大连海事大学

本科专业培养计划

（上）

UNDERGRADUATE PROGRAM OF DALIAN MARITIME UNIVERSITY

大连海事大学教务处

2025年9月

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大连海事大学本科专业一览表

序号 NO.	学院 College	大类名称 Categories	大类代码 Categories Code	专业名称 Major Name	专业代码 Major Code	学科门类 Disciplinaru Attribute	授予学位(学士） Degree Conferred（ Bachelor of）
1	航海学院 Navigation College			航海技术 Nautical Science	081803K	工学 Engineering	工学 Engineering
2				海事管理 Maritime Safety Administration	120408T	管理学 Management	管理学 Management
3				安全工程 Safety Engineering	082901	工学 Engineering	工学 Engineering
4				地理信息科学 GeographicalInformation Science	070504	理学 Science	理学 Science
5	轮机工程学院 Marine Engineering College			轮机工程（海上） Marine Engineering	081804K	工学 Engineering	工学 Engineering
6				轮机工程（陆上） Marine Engineering	081804K	工学 Engineering	工学 Engineering
7	船舶与海洋工程学院 Naval Architecture and Ocean Engineering College	机械类 Mechanics	080200	船舶与海洋工程 Naval Architecture and Ocean Engineering	081901	工学 Engineering	工学 Engineering
8				机械设计制造及其自动化 Mechanical Design & Manufacturing and Their Automation	080202	工学 Engineering	工学 Engineering
9				救助与打捞工程（海洋智能装备） Rescue and Salvage Engineering Major (Marine Intelligent Equipment)	081807T	工学 Engineering	工学 Engineering
10				能源与动力工程 Energy and Power Engineering	080501	工学 Engineering	工学 Engineering

序号 NO.	学院 College	大类名称 Categories	大类代码 Categories Code	专业名称 Major Name	专业代码 Major Code	学科门类 Disciplinaru Attribute	授予学位(学士） Degree Conferred（Bachelor of）
11	船舶电气工程学院 Marine Electrical Engineering College			船舶电子电气工程 Marine Electrical and Electronic Engineering	081808TK	工学 Engineering	工学 Engineering
12		自动化类 Automation	080800	自动化 Automation	080801	工学 Engineering	工学 Engineering
13				电气工程及其自动化 Electrical Engineering and Automation	080601	工学 Engineering	工学 Engineering
14				测控技术与仪器 Measurement Control Technology and Instruments	080301	工学 Engineering	工学 Engineering
15				物联网工程 Internet of Things Engineering	080905	工学 Engineering	工学 Engineering
16	人工智能学院 Artificial Intelligence College			人工智能 Artificial Intelligence	080717T	工学 Engineering	工学 Engineering
17	信息科学技术学院 Information Science and Technology College	计算机类 Computer	080900	计算机科学与技术 Computer Science and Technology	080901	工学 Engineering	工学 Engineering
18				软件工程 Software Engineering	080902	工学 Engineering	工学 Engineering
19				网络工程 Network Engineering	080903	工学 Engineering	工学 Engineering
20				智能科学与技术 Intelligence Science and Technology	080907T	工学 Engineering	工学 Engineering

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21				数据科学与大数据技术 Data Science and Big Data Technology	080910T	工学 Engineering	工学 Engineering
22		电子 信息类 Electronic Information	080700	电子信息工程 Electronic Information Engineering	080701	工学 Engineering	工学 Engineering
23				电子信息科学与技术 Electronic Information Science and Technology	080714T	工学 Engineering	工学 Engineering
24				通信工程 Communication Engineering	080703	工学 Engineering	工学 Engineering
25				光电信息科学与工程 Opto-Electronics Information Science and Engineering	080705	工学 Engineering	工学 Engineering
26	交通运输工程学院 Transportation Engineering College			交通管理 Transportation Management	120407T	管理学 Management	管理学 Management
27		交通 运输类 Transportation	081800	交通运输 Transportation	081801	工学 Engineering	工学 Engineering
28				交通工程 Transport Engineering	081802	工学 Engineering	工学 Engineering
29				土木工程 Civil Engineering	081001	工学 Engineering	工学 Engineering
30				材料科学与工程 Materials Science and Engineering	080401	工学 Engineering	工学 Engineering
31				物流工程 Logistics Engineering	120602	管理学 Management	工学 Engineering

序号 NO.	学院 College	大类名称 Categories	大类代码 Categories Code	专业名称 Major Name	专业代码 Major Code	学科门类 Disciplinaru Attribute	授予学位(学士） Degree Conferred（Bachelor of）
32	航运经济与管理学院 School of Maritime Economics and Management			金融工程 Financial Engineering	020302	经济学 Economics	经济学 Economics
33		经济学类 Economics	020100	经济学 Economics	020101	经济学 Economics	经济学 Economics
34				国际经济与贸易 International Economics and Trade	020401	经济学 Economics	经济学 Economics
35		工商管理类 Business Administration	120200	工商管理 Business Administration	120201K	管理学 Management	管理学 Management
36				财务管理 Financial Management	120204	管理学 Management	管理学 Management
37				旅游管理 Tourism Management	120901K	管理学 Management	管理学 Management
38				物流管理 Logistics Management	120601	管理学 Management	管理学 Management
39				供应链管理 Supply Chain Management	120604T	管理学 Management	管理学 Management
40				电子商务 Electronic Business	120801	管理学 Management	管理学 Management
41		管理科学与工程类 Management Science and Engineering	120100	信息管理与信息系统 Information Management and Information System	120102	管理学 Management	管理学 Management
42				大数据管理与应用 Big Data Management and Application	120108T	管理学 Management	管理学 Management

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43	环境科学与工程学院 Environmental Science and Engineering College	环境科学与工程类 Environmental Science and Engineering	082500	环境工程 Environmental Engineering	082502	工学 Engineering	工学 Engineering
44				海洋科学 Marine Science	070701	理学 Science	理学 Science
45				海洋资源与环境 Marine Resources and Environment	070703T	理学 Science	理学 Science
46	法学院 School of Law			法学 Law	030101K	法学 Law	法学 Law
47	外国语学院 Foreign Languages College			英语 English	050201	文学 Arts	文学 Arts
48				日语 Japanese	050207	文学 Arts	文学 Arts
49	公共管理与人文艺术学院 Public Administration and Humanities College	公共管理类 Public Administration	120400	社会工作 Social Work	030302	法学 Law	法学 Law
50				行政管理 Public Administration	120402	管理学 Management	管理学 Management
51				公共事业管理 Public Affairs Management	120401	管理学 Management	管理学 Management
52				政治学与行政学 Politics and Public Administration	030201	法学 Law	法学 Law
53	理学院 School of Science	数学类 Mathematics	070100	数学与应用数学 Mathematics and Applied Mathematics	070101	理学 Science	理学 Science
54				统计学 Statistics	071201	理学 Science	理学 Science
55				应用物理学 Applied Physics	070202	理学 Science	理学 Science

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划
Undergraduate Program for Nautical Science Major

[2025 级适用]

★航海技术专业（081803K）

大连海事大学教务处

2025 年 9 月

航海技术专业本科培养计划（2025 版）

Undergraduate Program for Nautical Science Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养爱党爱国、具有社会主义核心价值观，扎实的数学、自然科学和工程理论基础，系统掌握船舶航行、船舶货物管理、船舶作业管理和人员管理、船舶通信导航、智能船舶应用等航海核心知识和技能，家国情怀厚、全球视野广、综合素养好、创新能力强的新时代“航海家”型应用人才。 This program cultivates new-era "navigator" type application talents who love the Party and the country, have core socialist values, have a solid foundation in mathematics, natural sciences and engineering theory, and systematically master core navigation knowledge and skills such as ship navigation, ship cargo management, ship operation management and personnel management, ship communication and navigation, and intelligent ship applications. They have a strong sense of patriotism, a broad global vision, good comprehensive qualities, and strong innovation capabilities.	1. 培养爱党爱国、德智体美劳全面发展的社会主义建设者和接班人，具有健全人格、强壮体魄、深厚人文素养和社会责任感，能够践行国家交通强国、海洋强国和航运强国战略，适应航海智能化发展的需要，遵守航海技术工程伦理、职业道德和规范； 1. To cultivate socialist builders and successors who love the Party and the country, are well-rounded in morals, intelligence, physique, aesthetics and labor, have sound personality, strong physique, profound humanistic qualities and social responsibility, can implement the national strategy of building a strong transportation country, a strong ocean country and a strong shipping country, adapt to the needs of the development of intelligent navigation, and abide by the ethics, professional ethics and norms of navigation technology and engineering;
	2. 能够综合运用数学、自然科学、计算、工程基础和专业知识解决航海技术相关复杂工程问题，并在设计/开发解决方案过程中考虑社会、健康、安全、法律、文化、环境和可持续发展的影响； 2. Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to solve complex engineering problems related to marine technology, and consider the impact of society, health, safety, law, culture, environment and sustainable development in the process of designing/developing solutions;
	3. 具有良好的国际视野，了解国际海事发展动态，能够在跨文化背景下有效沟通和交流，具有良好的团队合作精神，在团队中发挥有效作用； 3. Have a good international perspective, understand the development of international maritime affairs, be able to

	communicate effectively in a cross-cultural context, have a good team spirit, and play an effective role in the team;
	4. 具有实践动手能力、创新能力、批判性思维、自主学习和终身学习的意识，能不断学习提高并适应社会发展，长期为航海领域相关产业、政府职能部门和学术界服务。 4. Possess practical skills, innovation ability, critical thinking, self-learning and lifelong learning awareness, be able to continuously learn and improve and adapt to social development, and serve the maritime-related industries, government departments and academia for a long time.

本专业的就业方向主要包括：远洋船舶驾驶、船舶引航、航海教育、海事管理、航运及相关领域技术和管理、攻读更高学位等。学生在毕业后 5 年左右，预期能够达到的职业胜任力如下：

（1）在包括新型、特殊船舶和智能船舶等在内的远洋运输船舶任职，并有能力担任管理级驾驶员职务；

（2）在交通运输工程、船舶与海洋工程、安全工程等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家和管理人才；

（3）取得硕士学位并在相关领域任职，或攻读博士研究生，具有较高水平的科研能力；

（4）在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务和技术骨干。

The employment directions of this major mainly include: ocean-going ship driving, ship pilotage, navigation education, maritime management, shipping and related field technology and management, and pursuing higher degrees. About 5 years after graduation, students are expected to achieve the following professional competencies:

(1) Work on ocean-going transport ships including new, special ships and intelligent ships, and have the ability to serve as management-level mariner;

(2) Work in enterprises, institutions or administrative units related to transportation engineering, ship and marine engineering, safety engineering and other fields, and have the ability to grow into technical experts and management talents;

(3) Obtain a master's degree and work in related fields, or study for a doctorate, and have a high level of scientific research ability;

(4) Work in colleges and universities or scientific research institutions, obtain intermediate or above professional titles, and have the ability to grow into business and technical backbones.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备将数学、自然	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
科学、计算、工程基础和专业知识应用于航海技术领域复杂工程问题的能力。 1. Engineering knowledge: Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to complex engineering problems in the field of marine technology.	到航海领域工程问题的恰当表述中； 1-1 Be able to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to the appropriate formulation of engineering problems in the field of navigation;
	1-2 能够利用数学、自然科学、计算、工程基础和专业知识对复杂航海技术问题进行详细的分析和建模； 1-2 Be able to use mathematics, natural sciences, computing, engineering foundations and professional knowledge to conduct detailed analysis and modeling of complex navigation technical problems;
	1-3 能够利用数学、自然科学、计算、工程基础和专业知识，提出航海复杂工程问题的解决方案并验证其有效性。 1-3 Be able to use mathematics, natural science, computing, engineering fundamentals and professional knowledge to propose solutions to complex marine engineering problems and verify their effectiveness.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂航海技术问题，综合考虑可持续发展的要求，以获得有效结论。 2. Problem Analysis: Ability to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express and analyse complex maritime technical problems through literature research, taking into account the requirements of sustainable development to obtain effective conclusions.	2-1 能够识别和判断复杂航海技术问题的核心特征与关键环节及约束条件； 2-1 Be able to identify and judge the core features, key links and constraints of complex navigation technical problems;
	2-2 通过文献研究和多学科交叉分析，提出兼顾技术可行性与可持续发展要求的解决方案，并验证其有效性。 2-2 Through literature research and multidisciplinary cross-analysis, propose solutions that take into account both technical feasibility and sustainable development requirements, and verify their effectiveness.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
3. 设计/开发解决方案：能够设计针对复杂航海技术问题的解决方案，设计满足航海需求的系统或流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/Develop Solutions: Ability to design solutions to complex maritime technical problems, design systems or processes that meet maritime needs, demonstrate innovation, and consider feasibility from the perspectives of health, safety and environment, life cycle costs and net zero carbon requirements, legal and ethical, social and cultural aspects.	3-1 能够进行复杂工程问题的针对性调研，设计满足航海功能需求的基础方案； 3-1 Be able to conduct targeted research on complex engineering problems and design basic solutions that meet the needs of navigation functions;
	3-2 开发具有创新性的航海技术解决方案，优化系统性能并整合多学科知识； 3-2 Develop innovative marine technology solutions, optimize system performance and integrate multidisciplinary knowledge;
	3-3 综合健康、安全、全生命周期成本、净零碳目标及法律伦理等因素，验证解决方案的可持续性。 3-3 Verify the sustainability of the solution by taking into account factors such as health, safety, life cycle costs, net zero carbon goals, and legal ethics.
4. 研究：能够基于科学原理并采用科学方法对复杂航海技术问题进行研究，并能得到合理有效的结论。 4. Research: Ability to study complex navigation technology issues based on scientific principles and using scientific methods, and to obtain reasonable and effective conclusions.	4-1 运用科学方法和专业理论，分析航海技术领域的典型问题，并提出初步解决方案； 4-1 Use scientific methods and professional theories to analyze typical problems in the field of navigation technology and propose preliminary solutions;
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验实践方案，获取合理有效的结论。 4-2 Be able to select research routes based on professional theories and according to the characteristics of the object, design feasible experimental practice plans, and obtain reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂航海技术问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复	5-1 熟练使用现代主流和信息技术工具，完成常规技术分析与操作任务； 5-1 Proficient in using modern mainstream and information technology tools to complete routine technical analysis and

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
杂航海技术问题的预测与模拟，并能够理解其局限性。 5. Use of modern tools: Ability to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for complex marine technical problems, including prediction and simulation of complex marine technical problems, and be able to understand their limitations.	operation tasks;
	5-2 能够开发或整合现代工具，解决航海技术领域的复杂问题，并评估其适用性与局限性。 5-2 Be able to develop or integrate modern tools to solve complex problems in the field of marine technology and assess their applicability and limitations.
6. 工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价航海实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development. When solving complex engineering problems, students should be able to analyze and evaluate the impact of maritime practices on health, safety, environment, law, and economic and social sustainable development based on engineering-related background knowledge, and understand the responsibilities that should be assumed.	6-1 具有工程实习和社会实践的经历，识别航海工程实践中的可持续发展关键要素； 6-1 Have experience in engineering internship and social practice, and identify the key elements of sustainable development in marine engineering practice;
	6-2 能够对比评估航海工程方案的多维度可持续性影响； 6-2 Be able to compare and evaluate the multi-dimensional sustainability impacts of marine engineering projects;
	6-3 能够提出符合可持续发展责任的航海工程改进方案。 6-3 Be able to propose improvement plans for marine engineering that are consistent with sustainable development responsibilities.
7. 工程伦理和职业规范。有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在航海工程实践中遵守工程职业道	7-1 理解航海职业的伦理要求和法律规范，树立工程报国意识； 7-1 Understand the ethical requirements and legal norms of the maritime profession and establish a sense of serving the country through engineering;

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms. Have the awareness of serving the country and benefiting the people through engineering, have the literacy of humanities and social sciences and a sense of social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in the practice of marine engineering, and fulfill responsibilities.	7-2 在航海工程实践中识别伦理冲突，基于法律和职业规范做出合理决策； 7-2 Identify ethical conflicts in marine engineering practice and make reasonable decisions based on laws and professional norms;
	7-3 主动履行社会责任，践行负责任的航海职业行为。 7-3 Actively fulfill social responsibilities and practice responsible maritime professional behavior.
8. 个人和团队：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Ability to assume roles as an individual, team member, and leader within a diverse, multidisciplinary team.	8-1 在航海管理团队中，明确个人职责并完成分工任务； 8-1 In the navigation management team, clarify individual responsibilities and complete division of labor tasks;
	8-2 在多样化、多学科背景团队中主动沟通协调，整合不同专业视角解决问题； 8-2 Actively communicate and coordinate within a diverse, multidisciplinary team, integrating different professional perspectives to solve problems;
	8-3 了解与本专业相关学科等领域的技术衔接，担任团队负责人，组织多背景成员高效完成复杂任务。 8-3 Understand the technical connection with related disciplines and other fields of this major, serve as a team leader, and organize members from multiple backgrounds to efficiently complete complex tasks.
9. 沟通：能够就复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或	9-1 能够使用航海专业术语和技术文档，清晰表达工程问题及解决方案； 9-1 Be able to use maritime terminology and technical documents to clearly express engineering problems and

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: Ability to communicate effectively with industry peers and the public on complex engineering issues, including writing reports and design documents, making presentations, expressing oneself clearly or responding to instructions; Ability to communicate in a cross-cultural context, and understand and respect language and cultural differences.	solutions;
	9-2 能够在国际化工作环境中进行有效沟通，适应语言和文化差异。 9-2 Ability to communicate effectively in an international work environment and adapt to language and cultural differences.
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. Project Management: Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 掌握航海相关项目管理的基本原理和方法，制定项目运营的初步计划，如制定船舶运营计划等； 10-1 Master the basic principles and methods of maritime-related project management and formulate preliminary plans for project operations, such as formulating ship operation plans;
	10-2 在多学科协作环境下，运用管理知识和经济分析方法优化航海相关项目决策。 10-2 Apply management knowledge and economic analysis methods to optimize decision-making in navigation-related projects in a multidisciplinary collaborative environment.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11. Lifelong learning: Have the awareness and ability of independent learning, lifelong	11-1 具备自主学习和持续更新航海专业知识的意识，掌握航海技术领域的学习方法； 11-1 Have the awareness of independent learning and continuous updating of maritime professional knowledge, and master the learning methods in the field of maritime technology;
	11-2 能够分析航海技术变革的社会影响，提出创新性解决方案以适应航海行业发展。

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
learning and critical thinking, be able to understand the impact of broad technological changes on engineering and society, and adapt to new technological changes.	11-2 Be able to analyze the social impact of changes in maritime technology and propose innovative solutions to adapt to the development of the maritime industry.

三、专业核心课程

III．Core Courses

航海学、船舶结构与设备、船舶操纵、船舶避碰与值班、船舶货运、航海气象学与海洋学、船舶安全管理、航海仪器、船舶导航雷达、GMDSS 通信设备与业务、驾驶台资源管理、电子海图显示与信息系统、远洋业务与海商法

Marine Navigation, Ship Construction and Equipment, Ship Handling， Ship Collision Avoidance and Watch Keeping, Marine Cargo Operations, Marine meteorology and Oceanography, Ship Safety Management, Nautical Instruments, Shipborne Navigation Radar, GMDSS Communication Equipment and Services, Bridge Resources Management, Electronic Chart Display and Information System, Ocean Shipping Operation and Maritime Law

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport / Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty & innovation	行业共建 industry collaboration
船艺训练 Seamanship Training	●					●
航海学 Marine Navigation	●		●		●	●
船舶结构与设备 Ship Construction and Equipment	●					●
船舶操纵 Ship Handling	●	●		●	●	●
船舶避碰与值班 Ship Collision Avoidance and Watch Keeping	●				●	●
船舶货运 Marine Cargo	●	●	●	●	●	●

Operations						
航海气象学与海洋学 Marine meteorology and Oceanography	●	●	●		●	
船舶安全管理 Ship Safety Management	●	●		●		●
航海仪器 Nautical Instruments	●				●	●
船舶导航雷达 Shipborne Navigation Radar	●			●	●	●
GMDSS 通信设备与业务 GMDSS Communication Equipment and Services	●	●				●
驾驶台资源管理 Bridge Resources Management	●	●				●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="14">11</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>12</td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td>化学类
Chemistry</td><td>2</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td rowspan="7">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>11</td><td rowspan="3">/</td></tr>
<tr><td rowspan="2">专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>42.5</td></tr>
<tr><td colspan="2">方向模块课（智能航运方向）
Directional Module Courses
方向模块课（海上执法模块）
Directional Module Courses
方向模块课（航运管理模块）
Directional Module Courses</td><td>/</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
集中实践 环节 Practical &Training	军事实践课 Military Practical Course	3	/	
	专业实践课 Specialized Practical Course	6.5		
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	10.5		
合计：170.5 Total：170.5		151.5	11	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018510	专业导论(航海)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：航海技术(普通班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（170.5 学分） In-class Teaching Courses （170.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	151.5	11	8	7.5	178

表 2：航海技术(普通班)必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory	必修-公共基础及通识教育课 Public		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	

			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			5	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			6	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	

			17	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	2-1	
			20	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			21	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			25	1713027714	大学英语(海上)(4) College English	3	考试		综合素养	48	48	0	2-2	
			26	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	2-2	
			27	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			28	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	

	必修-专业及方向课程 Stream Courses		1	1713027390	航海学(上) MARINE NAVIGATION	4	考试	√	综合素养	64	58	6	2-2	课外学时 16
			2	1713029590	航海气象学与海洋学 Marine Meteorology and Oceanography	2.5	考试	√	综合素养	40	34	6	2-2	课外学时 8
			3	1713004480	轮机概论 Introduction to Marine Engineering	2	考查		综合素养	32	26	6	3-1	
			4	1713017420	航海仪器 Nautical Instruments	3	考试	√	综合素养	48	38	10	3-1	课外学时 16
			5	1713027260	船舶操纵 ship handling	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
			6	1713029600	船舶结构与设备 Ship Construction and Equipment	2.5	考试	√	综合素养	40	34	6	3-1	课外学时 8
			7	1713029610	GMDSS 通信设备与业务 GMDSS Communication Equipment and Service	3.5	考试	√	综合素养	56	56	0	3-1	课外学时 8
			8	1713015970	航海英语会话与评估 Maritime English Listening and Speaking	2	考查		综合素养	32	16	16	3-2	
			9	1713016570	船舶导航雷达 Shipborne Navigation Radar	2	考试	√	综合素养	32	32	0	3-2	
			10	1713027250	船舶避碰与值班 Ship collision avoidance and watchkeeping	3	考试	√	综合素养	48	48	0	3-2	课外学时 8
			11	1713027290	航海英语阅读 Maritime English Reading Comprehension	3	考试	√	综合素养	48	48	0	3-2	课外学时 16
			12	1713029620	船舶货运 Marine Cargo Operations	3.5	考试	√	综合素养	56	56	0	3-2	课外学时 8

			13	1713029630	船舶安全管理 Ship Safety Management	2.5	考试	√	综合素养	40	40	0	3-2	课外学时 8
			14	1713016550	电子海图显示与信息系统 ECDIS	2	考试	√	综合素养	32	12	20	4-1	
			15	1713027340	远洋业务与海商法 Ocean Shipping Operation and Maritime Law	2	考试	√	综合素养	32	30	2	4-1	
			16	1713027391	航海学(下) Marine Navigation	2.5	考试	√	综合素养	40	36	4	4-1	课外学时 8
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713015890	电工学 I Electrical Engineering Technology	2	考试		综合素养	32	28	4	2-1	
			3	1713015930	航海力学 Nautical Mechanics	2	考试		综合素养	32	26	6	2-1	
			4	1713025620	航海专业数学 Mathematics for Marine Navigation	2.5	考试		综合素养	40	40	0	2-1	
			5	1713029580	船舶原理 Principles of naval Architecture	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
合计 Total						120.5				2008	1682	326		

表 3：航海技术(普通班) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713025590	Python 数据分析 Data Analysis with Python	2	考查		综合素养	32	16	16	1-2	
			3	1713025600	MATLAB 语言与可视化仿真 MATLAB Language and Visual Simulation	2	考查		综合素养	32	16	16	1-2	
			4	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
			5	1713016040	英语阅读 English Reading Comprehension	2	考查		综合素养	32	32	0	2-1	
	限选-专业及方向课程（智能航运方向） Stream Courses		1	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	
			2	1713024640	物联网与船联网技术 Technology on Internet of things and Internet of vessels	1	考查		综合素养	16	16	0	2-2	
			3	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	3-1	
			4	1713016090	船舶建模与控制 Math Models and Ship Controls	1	考查		综合素养	16	16	0	3-2	

			5	1713024620	智能船岸基支持系统与远程控制 Shore support system and remote control of Intelligent Ship	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（海上执法模块）Stream Courses		1	1713006410	法理学 Jurisprudence of Law	3	考试		综合素养	48	48	0	2-1	
			2	1713005440	海洋法 Law of the Sea	2	考试		综合素养	32	32	0	2-2	
			3	1713018070	海上行政执法 Maritime Administrative Law Enforcement	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（航运管理模块）Stream Courses		1	1713007480	宏观经济学 Macroeconomics	2	考试		综合素养	32	32	0	2-2	
			2	1713007540	管理沟通 Management Communication	2	考试		综合素养	32	32	0	3-1	
			3	1713018090	国际商务 International Commerce	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	1-1	
			2	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	1-1	
			3	1713016120	航海涉外礼仪 Maritime International Etiquette	1	考查		综合素养	16	16	0	2-2	

			4	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	2-2	
			5	1713016070	海洋船舶气象定线 Weather Routing of Ship	1	考查		综合素养	16	12	4	3-1	
			6	1713016130	国际海事发展动态 Development of International Maritime Issues	1	考查		综合素养	16	16	0	3-1	
			7	1713022080	GMDSS 通信英语 GMDSS Service	2	考试		综合素养	32	28	4	3-1	
			8	1713016050	海事调查与案例分析 Investigation and Analysis of Marine Accidents	1	考查		综合素养	16	16	0	3-2	
			9	1713016100	特种货物运输 Special Cargoes Operations	2	考查		综合素养	32	32	0	4-1	
			10	1713016110	LNG 船货物运输 Cargo Operations of LNG Carriers	2	考查		综合素养	32	16	16	4-1	
合计 Total						**41.5**				**696**	**640**	**56**		

表 4：航海技术(普通班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and“other courses”. Among them, need to take at least 2 credits from“Humanities and art courses”,“national and social courses”,“science and technology courses”, “innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.
2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：航海技术(普通班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			5	1713025610	船艺训练 Seamanship Training	1	考查		综合素养	30	0	30	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	

			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713016150	船舶认识实习(航海技术) Ship Observation	4	考查		综合素养	120	0	120	3-1	
			9	1713016160	货物积载与系固 Cargo Stowage and Securing	1	考查		综合素养	40	0	40	3-2	
			10	1713016180	驾驶台资源管理 Bridge Resources Management	1	考查		综合素养	40	20	20	3-2	
			11	1713016200	GMDSS 设备操作 GMDSS Equipment Operation	2	考查		综合素养	60	0	60	3-2	
			12	1713016210	雷达操作与应用 Rarar Operation	1	考查		综合素养	40	0	40	3-2	
			13	1713016170	航线设计 Ship Course Design	1	考查		综合素养	30	0	30	4-1	
			14	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**33**				**1020**	**86**	**934**		

表 6：航海技术(普通班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018510	专业导论(航海) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			5	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			6	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			7	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			8	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			9	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			10	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			11	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			12	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
			13	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-1	

			14	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
合计 Total						**5.5**				**136**	**136**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	计算机及程序设计(Python)	必修	24	1.5	●
5	思想道德与法治	必修	8	0.5	
6	人工智能通识(B)	必修	4	0.25	●
7	马克思主义基本原理	必修	8	0.5	
8	大学物理实验	必修	48	2	●
9	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
10	机械制图	必修	4	0.25	●
11	电工学 I	必修	4	0.25	●
12	航海力学	必修	6	0.375	●
13	航海气象学与海洋学	必修	6	0.375	●
14	航海学	必修	10	0.625	●
15	轮机概论	必修	6	0.375	●
16	船舶结构与设备	必修	6	0.375	●
17	航海仪器	必修	10	0.625	●
18	航海英语会话与评估	必修	16	1	
19	电子海图显示与信息系统	必修	20	1.25	●
20	远洋业务与海商法	必修	2	0.125	
21	精通救生艇筏和救助艇	必修	28	1	●
22	船舶保安	必修	20	0.5	●
23	高级消防	必修	36	1	●
24	船艺训练	必修	30	1	●
25	基本安全	必修	32	0.93	●
26	精通急救	必修	12	0.5	
27	船舶认识实习（航海技术）	必修	120	4	●
28	货物积载与系固	必修	40	1	●
29	驾驶台资源管理	必修	20	0.5	●
30	GMDSS 设备操作	必修	60	2	●
31	雷达操作与应用	必修	40	1	●
32	航线设计	必修	30	1	●
33	毕业实习及毕业论文	必修	360	12	●
合计 Total			1244	44.805	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation**		●		

Requirements 6-1				
毕业要求 6-2 **Graduation Requirements 6-2**		●		
毕业要求 6-3 **Graduation Requirements 6-3**				●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 7-3 **Graduation Requirements 7-3**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		
毕业要求 10-2 **Graduation Requirements 10-2**		●		
毕业要求 11-1 **Graduation Requirements 11-1**				●

毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类																												
1	高等数学	H	H	H	M	M																						
2	线性代数	H	H	H	M	M																						
3	概率论与数理统计	M	M	M	H	H																						
4	大学物理	H	H	H	M	M																						
5	大学物理实验				M	M				H	H																	
6	大学化学(海上)		H				M	M	M		M																	
工程基础类																												
7	机械制图		H					M	M																			
8	MATLAB 语言与可视化仿真											H	H															
9	Python 数据分析											H	H															
10	计算机及程序设计(Python)											H	H										M					
专业基础类																												
11	专业导论（航海）	M												M			M						H				H	
12	电工学 I	H					M					M																
13	航海力学		H				M				M																	
14	航海专业数学	H	M	H		M																						
15	船舶原理	H	H	H		M										M												
专业方向类																												
16	航海气象学与海洋学	M			H										H								H					
17	航海学	M	M	H	H																		H					

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
18	轮机概论	M																		M	H	H						
19	船舶结构与设备		H	H	H																		H					
20	GMDSS 通信设备与业务			H				M				M	M															
21	船舶操纵		H	H	H								H										H					
22	航海仪器	M	H								H	M											H					
23	船舶货运	H	H	M		H			M																			
24	航海英语会话与评估											M	M										H	H				
25	航海英语阅读											M	M										H	H				
26	船舶安全管理							M										H		H	H	H						
27	船舶导航雷达	M									M	H			M	M												
28	船舶避碰与值班		H	H	H								H										H					
29	电子海图显示与信息系统		H	H	H							H											H					
30	远洋业务与海商法														M	H	H	H	M									
31	海事管理概论	M	M	M																H		H						
32	海洋船舶气象定线	M				H										H												
33	GMDSS 通信英语			H								M	M										H	H				
34	海事调查与案例分析	H				H										H			H									
35	特种货物运输				M	H				H	M																	
36	LNG 船货物运输				M	H				H	M																	
37	智能航海导论	M	M				H					H																H
38	物联网与船联网技术	M	M				H					H																H
39	航运大数据技术与应用	M	M				H					H																H
40	船舶建模与控制	M	M				H					H																H

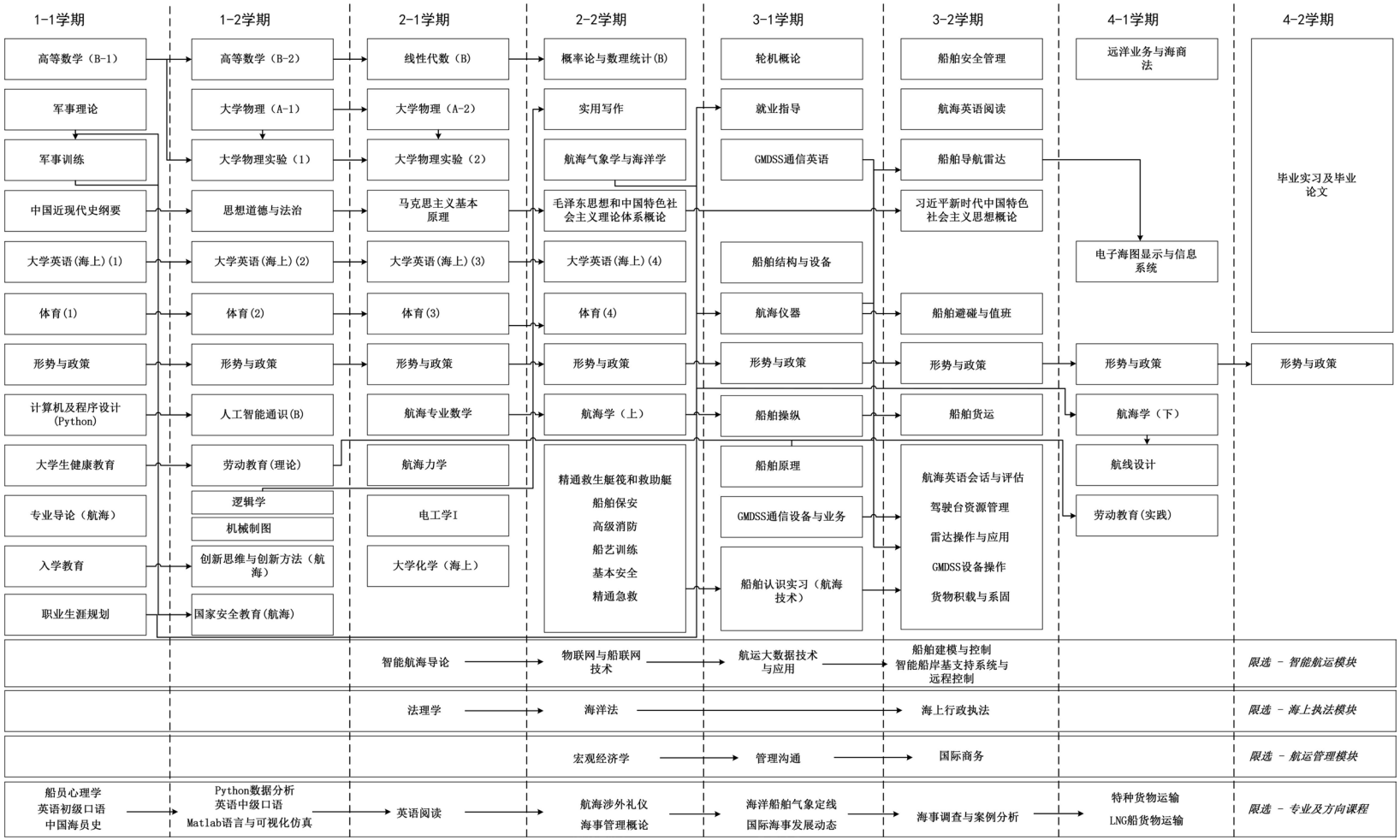
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
41	智能船岸基支持系统与远程控制	M	M				H					H																H
42	法理学							M									H	H	M			H						
43	海洋法							M									H	H	M			H						
44	海上行政执法							M									H	H	M			H						
45	宏观经济学							M											M			H			H	H		
46	管理沟通																			H	H	H	M	M				
47	国际商务							M														H		H	H	H		
48	中国海员史					H											M	H										H
49	船员心理学																H	H	M	M								
50	国际海事发展动态					H											M	M										
51	航海涉外礼仪																					H	H	H				
实践类																												
52	军事训练																			H	H	H						
53	精通救生艇筏和救助艇			M										H						H	H		M					
54	船舶保安			M										H						H	H		M					
55	高级消防			M										H						H	H		M					
56	船艺训练			M										H						H	H		M					
57	基本安全			M										H						H	H		M					
58	精通急救			M										H						H	H		M					
59	船舶认识实习（航海技术）			M										H						H	H		M					
60	货物积载与系固			M										H						H	H		M					
61	驾驶台资源管理			M										H						H	H		M					

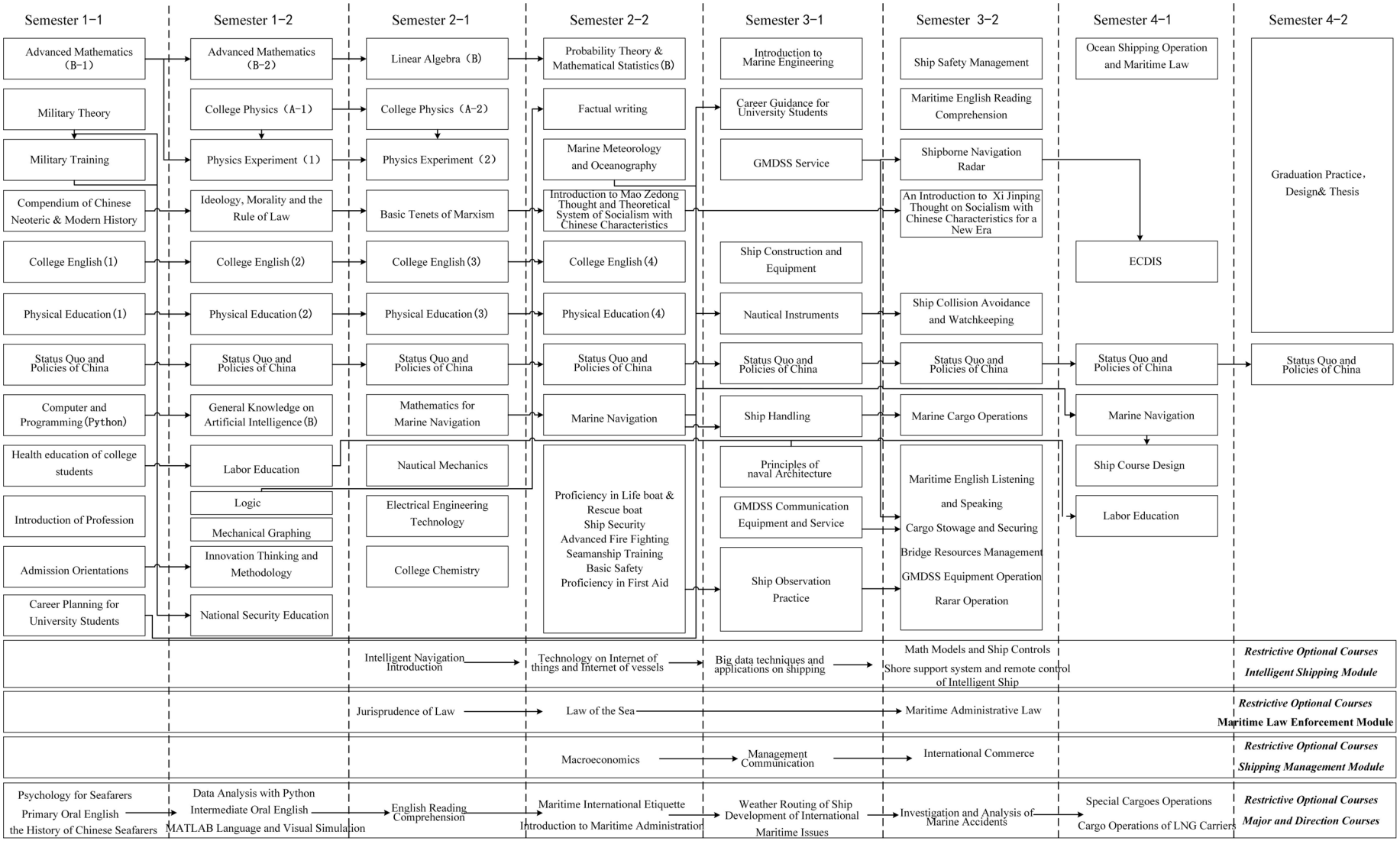
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
62	GMDSS 设备操作			M										H						H	H		M					
63	雷达操作与应用			M										H						H	H		M					
64	航线设计		H	M										H						H	H							
65	劳动教育(实践)								M					H					H									
66	毕业实习及毕业论文			H		H					H	M		H														
人文社科与通识类																												
67	马克思主义基本原理																H	H	H									
68	中国近现代史纲要																H	H	H									
69	思想道德与法治														M	M	H	H	H									
70	毛泽东思想和中国特色社会主义理论体系概论																H	H	H									
71	习近平新时代中国特色社会主义思想概论																H	H	H									
72	形势与政策																H	H	H									
73	军事理论																			H	H	H						
74	英语中级口语																				H		H	H				
75	英语初级口语																				H		H	H				
76	英语阅读																				H		H	H				
77	大学英语																				H	H	H	H				
78	体育																			H	H	H						
79	大学生健康教育																H	H	H	M	M							
80	职业生涯规划																H	H	H									
81	就业指导																H	H	H									

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
82	国家安全教育(航海)																H	H	H									
83	逻辑学	M	M			H										M											H	
84	人工智能通识																										H	H
85	实用写作																						H	H				
86	入学教育																H	H	H	H	H							
87	劳动教育(理论)								M					H					H									

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Advanced Mathematics (B-1)
Military Theory
Military Training
Compendium of Chinese Neoteric & Modern History
College English (1)
Physical Education (1)
Status Quo and Policies of China
Computer and Programming (Python)
Health education of college students
Introduction of Profession
Admission Orientations
Career Planning for University Students
Advanced Mathematics (B-2)
College Physics (A-1)
Physics Experiment (1)
Ideology, Morality and the Rule of Law
College English (2)
Physical Education (2)
Status Quo and Policies of China
General Knowledge on Artificial Intelligence (B)
Labor Education
Logic
Mechanical Graphing
Innovation Thinking and Methodology
National Security Education
Linear Algebra (B)
College Physics (A-2)
Physics Experiment (2)
Basic Tenets of Marxism
College English (3)
Physical Education (3)
Status Quo and Policies of China
Mathematics for Marine Navigation
Nautical Mechanics
Electrical Engineering Technology
College Chemistry
Probability Theory & Mathematical Statistics (B)
Factual writing
Marine Meteorology and Oceanography
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
College English (4)
Physical Education (4)
Status Quo and Policies of China
Marine Navigation
Proficiency in Life boat & Rescue boat
Ship Security
Advanced Fire Fighting
Seamanship Training
Basic Safety
Proficiency in First Aid
Introduction to Marine Engineering
Career Guidance for University Students
GMDSS Service
Ship Construction and Equipment
Nautical Instruments
Status Quo and Policies of China
Ship Handling
Principles of naval Architecture
GMDSS Communication Equipment and Service
Ship Observation Practice
Ship Safety Management
Maritime English Reading Comprehension
Shipborne Navigation Radar
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Ship Collision Avoidance and Watchkeeping
Status Quo and Policies of China
Marine Cargo Operations
Maritime English Listening and Speaking
Cargo Stowage and Securing
Bridge Resources Management
GMDSS Equipment Operation
Rarar Operation
Ocean Shipping Operation and Maritime Law
ECDIS
Status Quo and Policies of China
Marine Navigation
Ship Course Design
Labor Education
Graduation Practice, Design& Thesis
Status Quo and Policies of China
Intelligent Navigation Introduction
Technology on Internet of things and Internet of vessels
Big data techniques and applications on shipping
Math Models and Ship Controls
Shore support system and remote control of Intelligent Ship
Restrictive Optional Courses
Intelligent Shipping Module
Jurisprudence of Law
Law of the Sea
Maritime Administrative Law
Restrictive Optional Courses
Maritime Law Enforcement Module
Macroeconomics
Management Communication
International Commerce
Restrictive Optional Courses
Shipping Management Module
Psychology for Seafarers
Primary Oral English
the History of Chinese Seafarers
Data Analysis with Python
Intermediate Oral English
MATLAB Language and Visual Simulation
English Reading Comprehension
Maritime International Etiquette
Introduction to Maritime Administration
Weather Routing of Ship
Development of International Maritime Issues
Investigation and Analysis of Marine Accidents
Special Cargoes Operations
Cargo Operations of LNG Carriers
Restrictive Optional Courses
Major and Direction Courses

航海技术（英语班）专业本科培养计划（2025 版）

Undergraduate Program for Nautical Science Major [English-Emphasized Class]

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养爱党爱国、具有社会主义核心价值观，扎实的数学、自然科学和工程理论基础，系统掌握船舶航行、船舶货物管理、船舶作业管理和人员管理、船舶通信导航、智能船舶应用等航海核心知识和技能，家国情怀厚、全球视野广、综合素养好、创新能力强的新时代“航海家”型国际化人才。 This program cultivates international talents of the new era "navigator" type who love the Party and the country, have core socialist values, have a solid foundation in mathematics, natural sciences and engineering theory, and systematically master core navigation knowledge and skills such as ship navigation, ship cargo management, ship operation management and personnel management, ship communication and navigation, and intelligent ship applications. They have a strong sense of patriotism, a broad global vision, good comprehensive qualities, and strong innovation	1. 培养爱党爱国、德智体美劳全面发展的社会主义建设者和接班人，具有健全人格、强壮体魄、深厚人文素养和社会责任感，能够践行国家交通强国、海洋强国和航运强国战略，适应航海智能化发展的需要，遵守航海技术工程伦理、职业道德和规范； 1. To cultivate socialist builders and successors who love the Party and the country, are well-rounded in morals, intelligence, physique, aesthetics and labor, have sound personality, strong physique, profound humanistic qualities and social responsibility, can implement the national strategy of building a strong transportation country, a strong ocean country and a strong shipping country, adapt to the needs of the development of intelligent navigation, and abide by the ethics, professional ethics and norms of navigation technology and engineering;
	2. 能够综合运用数学、自然科学、计算、工程基础和专业知识解决航海技术相关复杂工程问题，并在设计/开发解决方案过程中考虑社会、健康、安全、法律、文化、环境和可持续发展的影响； 2. Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to solve complex engineering problems related to marine technology, and consider the impact of society, health, safety, law, culture, environment and sustainable development in the process of designing/developing solutions;
	3. 具有良好的国际视野，了解国际海事发展动态，英语运用能力强，能够在跨文化背景下有效沟通和交流，具有良好的团队合作精神，在团队中发挥有效作用；

capabilities.	3. Have a good international perspective, understand the development of international maritime affairs, strong English proficiency, be able to communicate effectively in a cross-cultural context, have a good team spirit, and play an effective role in the team;
	4. 具有实践动手能力、创新能力、批判性思维、自主学习和终身学习的意识，能不断学习提高并适应社会发展，长期为航海领域相关产业、政府职能部门和学术界服务。 4. Possess practical skills, innovation ability, critical thinking, self-learning and lifelong learning awareness, be able to continuously learn and improve and adapt to social development, and serve the maritime-related industries, government departments and academia for a long time.

本专业的就业方向主要包括：远洋船舶驾驶、船舶引航、航海教育、海事管理、航运及相关领域技术和管理、攻读更高学位等。学生在毕业后 5 年左右，预期能够达到的职业胜任力如下：

（1）在包括新型、特殊船舶和智能船舶等在内的远洋运输船舶任职，并有能力担任管理级驾驶员职务；

（2）在交通运输工程、船舶与海洋工程、安全工程等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家和管理人才；

（3）取得硕士学位并在相关领域任职，或攻读博士研究生，具有较高水平的科研能力；

（4）在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务和技术骨干。

The employment directions of this major mainly include: ocean-going ship driving, ship pilotage, navigation education, maritime management, shipping and related field technology and management, and pursuing higher degrees. About 5 years after graduation, students are expected to achieve the following professional competencies:

(1) Work on ocean-going transport ships including new, special ships and intelligent ships, and have the ability to serve as management-level mariner;

(2) Work in enterprises, institutions or administrative units related to transportation engineering, ship and marine engineering, safety engineering and other fields, and have the ability to grow into technical experts and management talents;

(3) Obtain a master's degree and work in related fields, or study for a doctorate, and have a high level of scientific research ability;

(4) Work in colleges and universities or scientific research institutions, obtain intermediate or above professional titles, and have the ability to grow into business and technical backbones.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备将数学、自然科学、计算、工程基础和专业知识应用于航海技术领域复杂工程问题的能力。 1. Engineering knowledge: Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to complex engineering problems in the field of marine technology.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到航海领域工程问题的恰当表述中； 1-1 Be able to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to the appropriate formulation of engineering problems in the field of navigation;
	1-2 能够利用数学、自然科学、计算、工程基础和专业知识对复杂航海技术问题进行详细的分析和建模； 1-2 Be able to use mathematics, natural sciences, computing, engineering foundations and professional knowledge to conduct detailed analysis and modeling of complex navigation technical problems;
	1-3 能够利用数学、自然科学、计算、工程基础和专业知识，提出航海复杂工程问题的解决方案并验证其有效性。 1-3 Be able to use mathematics, natural science, computing, engineering fundamentals and professional knowledge to propose solutions to complex marine engineering problems and verify their effectiveness.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂航海技术问题，综合考虑可持续发展的要求，以获得有效结论。 2. Problem Analysis: Ability to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express and analyse complex maritime technical problems through literature research, taking into account the requirements of sustainable development to	2-1 能够识别和判断复杂航海技术问题的核心特征与关键环节及约束条件； 2-1 Be able to identify and judge the core features, key links and constraints of complex navigation technical problems;
	2-2 通过文献研究和多学科交叉分析，提出兼顾技术可行性与可持续发展要求的解决方案，并验证其有效性。 2-2 Through literature research and multidisciplinary cross-analysis, propose solutions that take into account both technical feasibility and sustainable development requirements, and verify their effectiveness.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
obtain effective conclusions.	
3. 设计/开发解决方案：能够设计针对复杂航海技术问题的解决方案，设计满足航海需求的系统或流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/Develop Solutions: Ability to design solutions to complex maritime technical problems, design systems or processes that meet maritime needs, demonstrate innovation, and consider feasibility from the perspectives of health, safety and environment, life cycle costs and net zero carbon requirements, legal and ethical, social and cultural aspects.	3-1 能够进行复杂工程问题的针对性调研，设计满足航海功能需求的基础方案； 3-1 Be able to conduct targeted research on complex engineering problems and design basic solutions that meet the needs of navigation functions;
	3-2 开发具有创新性的航海技术解决方案，优化系统性能并整合多学科知识； 3-2 Develop innovative marine technology solutions, optimize system performance and integrate multidisciplinary knowledge;
	3-3 综合健康、安全、全生命周期成本、净零碳目标及法律伦理等因素，验证解决方案的可持续性。 3-3 Verify the sustainability of the solution by taking into account factors such as health, safety, life cycle costs, net zero carbon goals, and legal ethics.
4. 研究：能够基于科学原理并采用科学方法对复杂航海技术问题进行研究，并能得到合理有效的结论。 4. Research: Ability to study complex navigation technology issues based on scientific principles and using scientific methods, and to obtain reasonable and effective conclusions.	4-1 运用科学方法和专业理论，分析航海技术领域的典型问题，并提出初步解决方案； 4-1 Use scientific methods and professional theories to analyze typical problems in the field of navigation technology and propose preliminary solutions;
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验实践方案，获取合理有效的结论。 4-2 Be able to select research routes based on professional theories and according to the characteristics of the object, design feasible experimental practice plans, and obtain reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂航海技术问题，开发、选择与	5-1 熟练使用现代主流和信息技术工具，完成常规技术分析与操作任务；

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂航海技术问题的预测与模拟，并能够理解其局限性。 5. Use of modern tools: Ability to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for complex marine technical problems, including prediction and simulation of complex marine technical problems, and be able to understand their limitations.	5-1 Proficient in using modern mainstream and information technology tools to complete routine technical analysis and operation tasks;
	5-2 能够开发或整合现代工具，解决航海技术领域的复杂问题，并评估其适用性与局限性。 5-2 Be able to develop or integrate modern tools to solve complex problems in the field of marine technology and assess their applicability and limitations.
6. 工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价航海实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development. When solving complex engineering problems, students should be able to analyze and evaluate the impact of maritime practices on health, safety, environment, law, and economic and social sustainable development based on engineering-related background knowledge, and understand the responsibilities that should be assumed.	6-1 具有工程实习和社会实践的经历，识别航海工程实践中的可持续发展关键要素； 6-1 Have experience in engineering internship and social practice, and identify the key elements of sustainable development in marine engineering practice;
	6-2 能够对比评估航海工程方案的多维度可持续性影响； 6-2 Be able to compare and evaluate the multi-dimensional sustainability impacts of marine engineering projects;
	6-3 能够提出符合可持续发展责任的航海工程改进方案。 6-3 Be able to propose improvement plans for marine engineering that are consistent with sustainable development responsibilities.
7. 工程伦理和职业规范。有工程报国、为民造福的意识，具有	7-1 理解航海职业的伦理要求和法律规范，树立工程报国意识；

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
人文社会科学素养和社会责任感，能够理解和践行工程伦理，在航海工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms. Have the awareness of serving the country and benefiting the people through engineering, have the literacy of humanities and social sciences and a sense of social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in the practice of marine engineering, and fulfill responsibilities.	7-1 Understand the ethical requirements and legal norms of the maritime profession and establish a sense of serving the country through engineering;
	7-2 在航海工程实践中识别伦理冲突，基于法律和职业规范做出合理决策； 7-2 Identify ethical conflicts in marine engineering practice and make reasonable decisions based on laws and professional norms;
	7-3 主动履行社会责任，践行负责任的航海职业行为。 7-3 Actively fulfill social responsibilities and practice responsible maritime professional behavior.
8. 个人和团队：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Ability to assume roles as an individual, team member, and leader within a diverse, multidisciplinary team.	8-1 在航海管理团队中，明确个人职责并完成分工任务； 8-1 In the navigation management team, clarify individual responsibilities and complete division of labor tasks;
	8-2 在多样化、多学科背景团队中主动沟通协调，整合不同专业视角解决问题； 8-2 Actively communicate and coordinate within a diverse, multidisciplinary team, integrating different professional perspectives to solve problems;
	8-3 了解与本专业相关学科等领域的技术衔接，担任团队负责人，组织多背景成员高效完成复杂任务。 8-3 Understand the technical connection with related disciplines and other fields of this major, serve as a team leader, and organize members from multiple backgrounds to efficiently complete complex tasks.
9. 沟通：能够就复杂工程问题	9-1 能够使用航海专业术语和技术文档，清晰表达工程问题及

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: Ability to communicate effectively with industry peers and the public on complex engineering issues, including writing reports and design documents, making presentations, expressing oneself clearly or responding to instructions; Ability to communicate in a cross-cultural context, and understand and respect language and cultural differences.	解决方案； 9-1 Be able to use maritime terminology and technical documents to clearly express engineering problems and solutions;
	9-2 能够在国际化工作环境中进行有效沟通，适应语言和文化差异。 9-2 Ability to communicate effectively in an international work environment and adapt to language and cultural differences.
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. Project Management: Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 掌握航海相关项目管理的基本原理和方法，制定项目运营的初步计划，如制定船舶运营计划等； 10-1 Master the basic principles and methods of maritime-related project management and formulate preliminary plans for project operations, such as formulating ship operation plans;
	10-2 在多学科协作环境下，运用管理知识和经济分析方法优化航海相关项目决策。 10-2 Apply management knowledge and economic analysis methods to optimize decision-making in navigation-related projects in a multidisciplinary collaborative environment.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新	11-1 具备自主学习和持续更新航海专业知识的意识，掌握航海技术领域的学习方法； 11-1 Have the awareness of independent learning and continuous updating of maritime professional knowledge, and master the

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
技术变革。 11. Lifelong learning: Have the awareness and ability of independent learning, lifelong learning and critical thinking, be able to understand the impact of broad technological changes on engineering and society, and adapt to new technological changes.	learning methods in the field of maritime technology; 11-2 能够分析航海技术变革的社会影响，提出创新性解决方案以适应航海行业发展。 11-2 Be able to analyze the social impact of changes in maritime technology and propose innovative solutions to adapt to the development of the maritime industry.

三、专业核心课程

III．Core Courses

航海学（英）、船舶结构与设备（英）、船舶操纵（英）、船舶避碰与值班（英）、船舶货运（英）、航海气象学与海洋学（英）、船舶安全管理（英）、航海仪器（英）、船舶导航雷达（英）、GMDSS 通信设备与业务（英）、驾驶台资源管理（英）、电子海图显示与信息系统（英）、远洋业务与海商法（英）

Marine Navigation, Ship Construction and Equipment, Ship Handling， Ship Collision Avoidance and Watch Keeping, Marine Cargo Operations, Marine meteorology and Oceanography, Ship Safety Management, Nautical Instruments, Shipborne Navigation Radar, GMDSS Communication Equipment and Services, Bridge Resources Management, Electronic Chart Display and Information System, Ocean Shipping Operation and Maritime Law

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船艺训练 Seamanship Training	●					●
航海学 Marine Navigation	●		●		●	●
船舶结构与设备 Ship Construction and Equipment	●					●
船舶操纵 Ship Handling	●	●		●	●	●
船舶避碰与值班 Ship Collision	●				●	●

Avoidance and Watch Keeping						
船舶货运 Marine Cargo Operations	●	●	●	●	●	●
航海气象学与海洋学 Marine meteorology and Oceanography	●	●	●		●	
船舶安全管理 Ship Safety Management	●	●		●		●
航海仪器 Nautical Instruments	●				●	●
船舶导航雷达 Shipborne Navigation Radar	●			●	●	●
GMDSS 通信设备与业务 GMDSS Communication Equipment and Services	●	●				●
驾驶台资源管理 Bridge Resources Management	●	●				●

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and

so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="14">11</td><td rowspan="11">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>12</td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td>化学类
Chemistry</td><td>2</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td rowspan="7">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>11</td><td rowspan="4">/</td></tr>
<tr><td rowspan="2">专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>45.5</td></tr>
<tr><td colspan="2">方向模块课（智能航运方向）
Directional Module Courses
方向模块课（海上执法模块）
Directional Module Courses
方向模块课（航运管理模块）
Directional Module Courses</td><td>/</td></tr>
<tr><td>集中实践环节 Practical</td><td colspan="2">军事实践课
Military</td><td>3</td><td></td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
&Training	专业实践课 Specialized Practical Course	6.5	/	
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	10.5		
合计：173.5 Total：173.5		154.5	11	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018510	专业导论(航海)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：航海技术(英语班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（173.5 学分） In-class Teaching Courses （173.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	154.5	11	8	7.5	181

表 2：航海技术(英语班)必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			5	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			6	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	

			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	2-1	
			20	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			21	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			25	1713027714	大学英语(海上)(4) College English	3	考试		综合素养	48	48	0	2-2	
			26	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	2-2	
			27	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	

			28	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713016230	电工学 I(英) Electrical Engineering Technology	2	考试	√	综合素养	32	28	4	2-1	
			3	1713016260	航海力学(英) Nautical Mechanics	2	考试		综合素养	32	26	6	2-1	
			4	1713027300	航海专业数学(英) Nautical Mathematics	2.5	考试		综合素养	40	40	0	2-1	
			5	1713029640	船舶原理(英) Principles of naval Architecture	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
	必修-专业及方向课程 Stream Courses		1	1713029650	航海气象学与海洋学(英) Marine Meteorology and	2.5	考试	√	综合素养	40	34	6	2-2	课外学时 8
			2	1713029661	航海学(上)(英) Marine Navigation	4	考试	√	综合素养	64	58	6	2-2	课外学时 16
			3	1713016300	轮机概论(英) Introduction to Marine Engineering	2	考查		综合素养	32	26	6	3-1	
			4	1713029670	船舶结构与设备(英) Ship Construction and Equipment	2.5	考试	√	综合素养	40	34	6	3-1	课外学时 8
			5	1713029680	GMDSS 通信设备与业务(英) GMDSS Communication Equipment and Service	3.5	考试	√	综合素养	56	56	0	3-1	课外学时 8
			6	1713029690	船舶操纵(英) Ship Handling	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
			7	1713029700	航海仪器(英) Nautical Instruments	3	考试	√	综合素养	48	38	10	3-1	课外学时 16

			8	1713029740	初级航海英语 Primary Maritime English	2	考查	√	综合素养	32	32	0	3-1	课外学时 8
			9	1713015970	航海英语会话与评估 Maritime English Listening and Speaking	2	考查		综合素养	32	16	16	3-2	
			10	1713016400	船舶导航雷达(英) Shipborne Navigation Radar	2	考试	√	综合素养	32	32	0	3-2	
			11	1713029710	船舶货运(英) Marine Cargo Operations	3.5	考试	√	综合素养	56	56	0	3-2	课外学时 8
			12	1713029720	船舶安全管理(英) Ship Safety Management	2.5	考试	√	综合素养	40	40	0	3-2	课外学时 8
			13	1713029730	船舶避碰与值班(英) Ship Collision Avoidance and Watchkeeping	3	考试	√	综合素养	48	48	0	3-2	课外学时 8
			14	1713029750	中级航海英语 Intermediate Maritime English	2	考查	√	综合素养	32	32	0	3-2	课外学时 8
			15	1713016380	电子海图显示与信息系统(英) ECDIS	2	考试	√	综合素养	32	12	20	4-1	
			16	1713027350	远洋业务与海商法(英) Shipping Practice and Maritime Law (in English)	2	考试	√	综合素养	32	32	0	4-1	
			17	1713029662	航海学(下)(英) Marine Navigation	2.5	考试	√	综合素养	40	36	4	4-1	课外学时 8
			18	1713029760	高级航海英语 Advanced Maritime English	2	考查	√	综合素养	32	32	0	4-1	课外学时 8
合计 Total						123.5				2056	1732	324		

表 3：航海技术(英语班) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-专业及方向课程（海上执法模块） Stream Courses		1	1713006410	法理学 Jurisprudence of Law	3	考试		综合素养	48	48	0	2-1	
			2	1713005440	海洋法 Law of the Sea	2	考试		综合素养	32	32	0	2-2	
			3	1713018070	海上行政执法 Maritime Administrative Law Enforcement	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（航运管理模块） Stream Courses		1	1713007480	宏观经济学 Macroeconomics	2	考试		综合素养	32	32	0	2-2	
			2	1713007540	管理沟通 Management Communication	2	考试		综合素养	32	32	0	3-1	
			3	1713018090	国际商务 International Commerce	2	考试		综合素养	32	32	0	3-2	
	限选-公共基础及通识教育课		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	

			2	1713025590	Python 数据分析 Data Analysis with Python	2	考查		综合素养	32	16	16	1-2	
			3	1713025600	MATLAB 语言与可视化仿真 MATLAB Language and Visual Simulation	2	考查		综合素养	32	16	16	1-2	
			4	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
			5	1713016040	英语阅读 English Reading Comprehension	2	考查		综合素养	32	32	0	2-1	
			6	1713016610	英语报刊导读 English journal Reading	3	考试		综合素养	48	48	0	2-1	
			7	1713018810	跨文化交际 Cross culture Communication	3	考试		综合素养	48	48	0	2-1	
			8	1713016470	大学英语视听说(高级) College English Viewing, Listening, and Speaking (Advanced Level)	2	考试		综合素养	32	32	0	2-2	
			9	1713016480	英语口语(高级) Spoken English(Advanced)	2	考试		综合素养	32	32	0	2-2	
	限选-专业及方向课程 Stream Courses		1	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	1-1	
			2	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	1-2	

			3	1713016120	航海涉外礼仪 Maritime International Etiquette	1	考查		综合素养	16	16	0	2-2	
			4	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	2-2	
			5	1713016070	海洋船舶气象定线 Weather Routing of Ship	1	考查		综合素养	16	12	4	3-1	
			6	1713016500	国际海事发展动态(英) Development of International Maritime Issues	1	考查		综合素养	16	16	0	3-1	
			7	1713022080	GMDSS 通信英语 GMDSS Service	2	考试		综合素养	32	28	4	3-1	
			8	1713016490	海事调查与案例分析(英) Investigation and Analysis of Marine Accidents	1	考查		综合素养	16	16	0	3-2	
			9	1713016510	特种货物运输(英) Special Cargoes Operations	2	考查		综合素养	32	32	0	4-1	
			10	1713016520	LNG 船货物运输(英) Cargo Operations of LNG Carriers	2	考查		综合素养	32	16	16	4-1	
	限选-专业及方向课程（智能航运方向）		1	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	

			2	1713024640	物联网与船联网技术 Technology on Internet of things and Internet of vessels	1	考查		综合素养	16	16	0	2-2	
			3	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	3-1	
			4	1713016090	船舶建模与控制 Math Models and Ship Controls	1	考查		综合素养	16	16	0	3-2	
			5	1713024620	智能船岸基支持系统与远程控制 Shore support system and remote control of Intelligent Ship	2	考试		综合素养	32	32	0	3-2	
合计 Total						51.5				856	800	56		

表 4：航海技术(英语班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and“other courses”. Among them, need to take at least 2 credits from“Humanities and art courses”,“national and social courses”,“science and technology courses”, “innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：航海技术(英语班) 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			5	1713025610	船艺训练 Seamanship Training	1	考查		综合素养	30	0	30	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	
			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713016150	船舶认识实习(航海技术) Ship Observation	4	考查		综合素养	120	0	120	3-1	
			9	1713016160	货物积载与系固 Cargo Stowage and Securing	1	考查		综合素养	40	0	40	3-2	
			10	1713016180	驾驶台资源管理 Bridge Resources Management	1	考查		综合素养	40	20	20	3-2	
			11	1713016200	GMDSS 设备操作 GMDSS Equipment Operation	2	考查		综合素养	60	0	60	3-2	
			12	1713016210	雷达操作与应用 Rarar Operation	1	考查		综合素养	40	0	40	3-2	

			13	1713016170	航线设计 Ship Course Design	1	考查		综合素养	30	0	30	4-1	
			14	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**33**				**1020**	**86**	**934**		

表 6：航海技术(英语班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018510	专业导论(航海) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			5	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			6	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	

			7	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			8	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			9	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			10	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			11	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			12	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
			13	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-1	
			14	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
合计 Total						5.5				136	136	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	计算机及程序设计(Python)	必修	24	1.5	●
5	思想道德与法治	必修	8	0.5	
6	人工智能通识(B)	必修	4	0.25	●
7	马克思主义基本原理	必修	8	0.5	
8	大学物理实验	必修	48	2	●
9	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
10	机械制图	必修	4	0.25	●
11	电工学 I（英）	必修	4	0.25	●
12	航海力学（英）	必修	6	0.375	●
13	航海气象学与海洋学（英）	必修	6	0.375	●
14	航海学（英）	必修	10	0.625	●
15	轮机概论（英）	必修	6	0.375	●
16	船舶结构与设备（英）	必修	6	0.375	●
17	航海仪器（英）	必修	10	0.625	●
18	航海英语会话与评估	必修	16	1	
19	电子海图显示与信息系统（英）	必修	20	1.25	●
20	远洋业务与海商法（英）	必修	2	0.125	
21	精通救生艇筏和救助艇	必修	28	1	●
22	船舶保安	必修	20	0.5	●
23	高级消防	必修	36	1	●
24	船艺训练	必修	30	1	●
25	基本安全	必修	32	0.93	●
26	精通急救	必修	12	0.5	
27	船舶认识实习（航海技术）	必修	120	4	●
28	货物积载与系固	必修	40	1	●
29	驾驶台资源管理	必修	20	0.5	●
30	GMDSS 设备操作	必修	60	2	●
31	雷达操作与应用	必修	40	1	●
32	航线设计	必修	30	1	●
33	毕业实习及毕业论文	必修	360	12	●
合计 Total			1244	44.508	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation**		●		

Requirements 6-1				
毕业要求 6-2 **Graduation Requirements 6-2**		●		
毕业要求 6-3 **Graduation Requirements 6-3**				●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 7-3 **Graduation Requirements 7-3**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		
毕业要求 10-2 **Graduation Requirements 10-2**		●		
毕业要求 11-1 **Graduation Requirements 11-1**				●

毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类																												
1	高等数学	H	H	H	M	M																						
2	线性代数	H	H	H	M	M																						
3	概率论与数理统计	M	M	M	H	H																						
4	大学物理	H	H	H	M	M																						
5	大学物理实验				M	M				H	H																	
6	大学化学(海上)		H				M	M	M		M																	
工程基础类																												
7	机械制图		H					M	M																			
8	MATLAB 语言与可视化仿真											H	H															
9	Python 数据分析											H	H															
10	计算机及程序设计(Python)											H	H										M					
专业基础类																												
11	专业导论（航海）	M												M			M						H				H	
12	电工学 I（英）	H					M					M																
13	航海力学（英）		H				M				M																	
14	航海专业数学（英）	H	M	H		M																						
15	船舶原理（英）	H	H	H		M										M												
专业方向类																												
16	航海气象学与海洋学（英）	M			H										H								H					
17	航海学（英）	M	M	H	H																		H					

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
18	轮机概论（英）	M																		M	H	H						
19	船舶结构与设备（英）		H	H	H																		H					
20	GMDSS 通信设备与业务（英）			H				M				M	M															
21	船舶操纵（英）		H	H	H								H										H					
22	航海仪器（英）	M	H								H	M											H					
23	船舶货运（英）	H	H	M		H			M																			
24	航海英语会话与评估											M	M										H	H				
25	初级航海英语											M	M										H	H				
26	中级航海英语											M	M										H	H				
27	高级航海英语											M	M										H	H				
28	船舶安全管理（英）							M										H		H	H	H						
29	船舶导航雷达（英）	M									M	H			M	M												
30	船舶避碰与值班（英）		H	H	H								H										H					
31	电子海图显示与信息系统（英）		H	H	H							H											H					
32	远洋业务与海商法（英）														M	H	H	H	M									
33	海事管理概论	M	M	M																H		H						
34	海洋船舶气象定线	M				H										H												
35	GMDSS 通信英语			H								M	M										H	H				
36	海事调查与案例分析（英）	H				H										H			H									
37	特种货物运输（英）				M	H				H	M																	
38	LNG 船货物运输（英）				M	H				H	M																	
39	智能航海导论	M	M				H					H																H
40	物联网与船联网技术	M	M				H					H																H

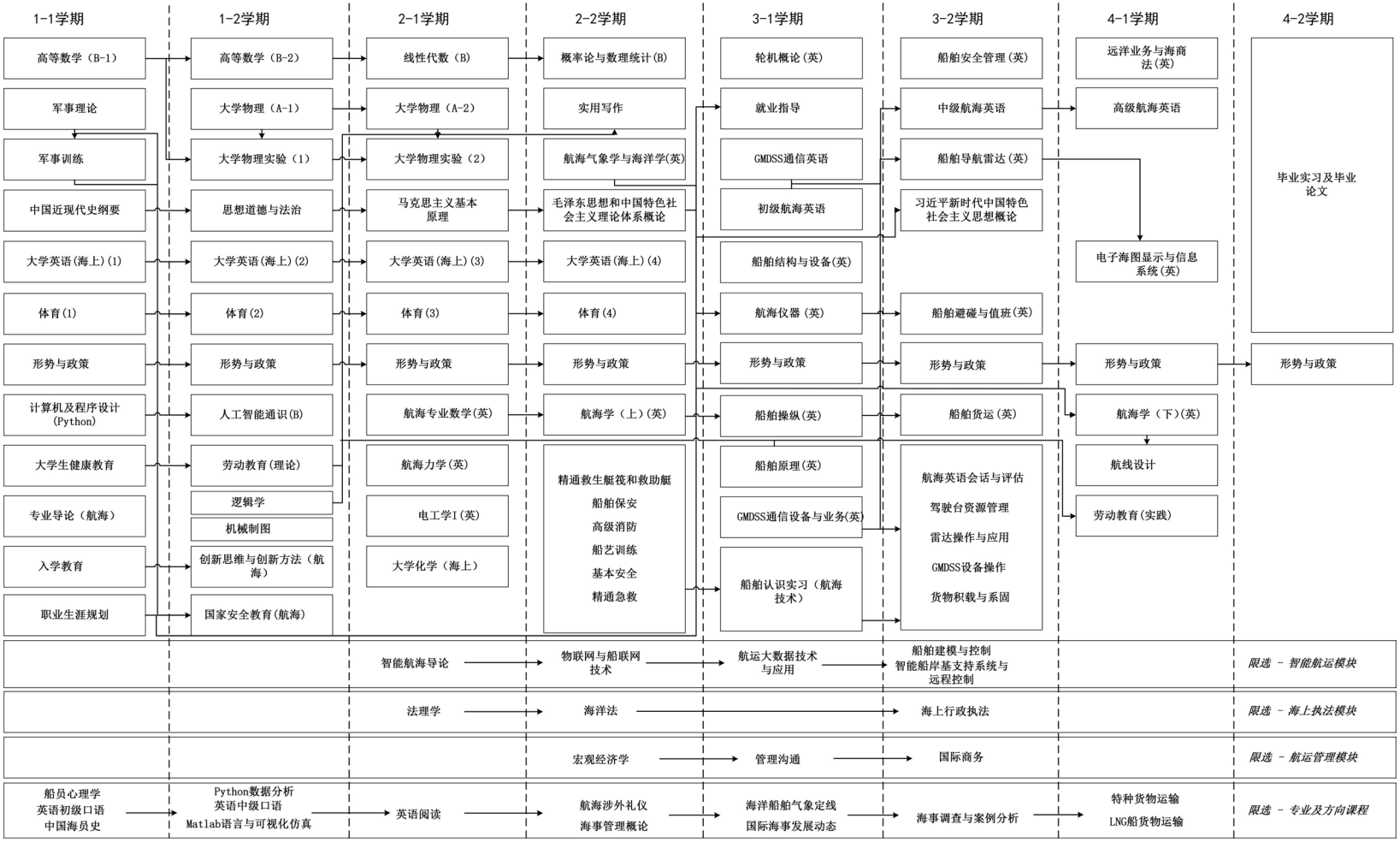
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
41	航运大数据技术与应用	M	M				H					H																H
42	船舶建模与控制	M	M				H					H																H
43	智能船岸基支持系统与远程控制	M	M				H					H																H
44	法理学							M									H	H	M			H						
45	海洋法							M									H	H	M			H						
46	海上行政执法							M									H	H	M			H						
47	宏观经济学							M											M			H			H	H		
48	管理沟通																			H	H	H	M	M				
49	国际商务							M														H		H	H	H		
50	中国海员史					H											M	H										H
51	船员心理学																H	H	M	M								
52	国际海事发展动态（英）					H											M	M										
53	航海涉外礼仪																					H	H	H				
实践类																												
54	军事训练																			H	H	H						
55	精通救生艇筏和救助艇			M										H						H	H		M					
56	船舶保安			M										H						H	H		M					
57	高级消防			M										H						H	H		M					
58	船艺训练			M										H						H	H		M					
59	基本安全			M										H						H	H		M					
60	精通急救			M										H						H	H		M					
61	船舶认识实习（航海技术）			M										H						H	H		M					

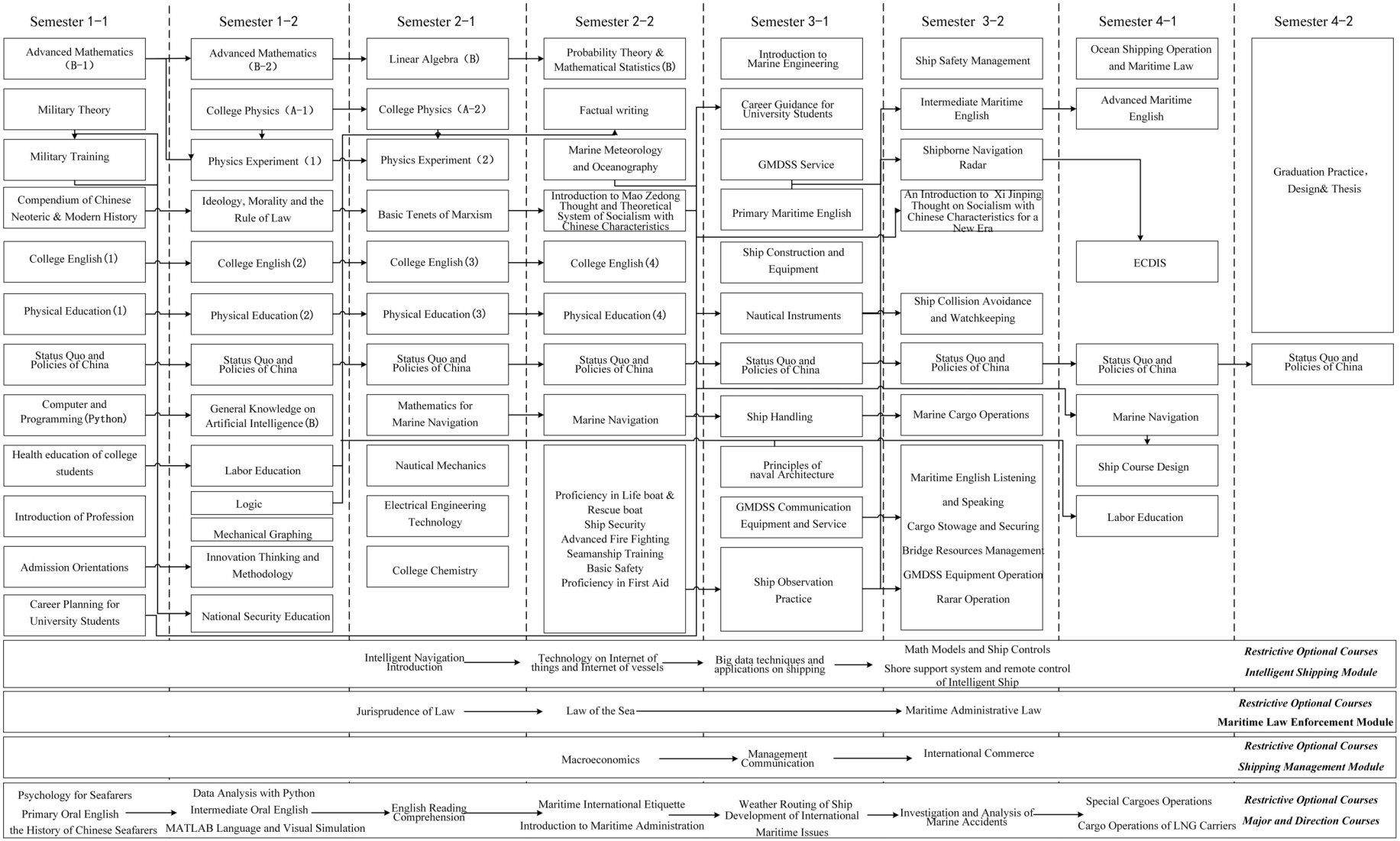
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
62	货物积载与系固			M										H						H	H		M					
63	驾驶台资源管理			M										H						H	H		M					
64	GMDSS 设备操作			M										H						H	H		M					
65	雷达操作与应用			M										H						H	H		M					
66	航线设计		H	M										H						H	H							
67	劳动教育(实践)								M					H					H									
68	毕业实习及毕业论文			H		H					H	M		H														
人文社科与通识类																												
69	马克思主义基本原理																H	H	H									
70	中国近现代史纲要																H	H	H									
71	思想道德与法治														M	M	H	H	H									
72	毛泽东思想和中国特色社会主义理论体系概论																H	H	H									
73	习近平新时代中国特色社会主义思想概论																H	H	H									
74	形势与政策																H	H	H									
75	军事理论																			H	H	H						
76	英语中级口语																				H		H	H				
77	英语初级口语																				H		H	H				
78	英语阅读																				H		H	H				
79	英语报刊导读																				H		H	H				
80	跨文化交际																				H		H	H				
81	大学英语视听说（高级）																				H		H	H				

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
82	英语口语（高级）																				H		H	H				
83	大学英语																				H	H	H	H				
84	体育																			H	H	H						
85	大学生健康教育																H	H	H	M	M							
86	职业生涯规划																H	H	H									
87	就业指导																H	H	H									
88	国家安全教育(航海)																H	H	H									
89	逻辑学	M	M			H										M											H	
90	人工智能通识																										H	H
91	实用写作																						H	H				
92	入学教育																H	H	H	H	H							
93	劳动教育(理论)								M					H					H									

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Advanced Mathematics (B-1)
Military Theory
Military Training
Compendium of Chinese Neoteric & Modern History
College English (1)
Physical Education (1)
Status Quo and Policies of China
Computer and Programming (Python)
Health education of college students
Introduction of Profession
Admission Orientations
Career Planning for University Students
Advanced Mathematics (B-2)
College Physics (A-1)
Physics Experiment (1)
Ideology, Morality and the Rule of Law
College English (2)
Physical Education (2)
Status Quo and Policies of China
General Knowledge on Artificial Intelligence (B)
Labor Education
Logic
Mechanical Graphing
Innovation Thinking and Methodology
National Security Education
Linear Algebra (B)
College Physics (A-2)
Physics Experiment (2)
Basic Tenets of Marxism
College English (3)
Physical Education (3)
Status Quo and Policies of China
Mathematics for Marine Navigation
Nautical Mechanics
Electrical Engineering Technology
College Chemistry
Probability Theory & Mathematical Statistics (B)
Factual writing
Marine Meteorology and Oceanography
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
College English (4)
Physical Education (4)
Status Quo and Policies of China
Marine Navigation
Proficiency in Life boat & Rescue boat
Ship Security
Advanced Fire Fighting
Seamanship Training
Basic Safety
Proficiency in First Aid
Introduction to Marine Engineering
Career Guidance for University Students
GMDSS Service
Primary Maritime English
Ship Construction and Equipment
Nautical Instruments
Status Quo and Policies of China
Ship Handling
Principles of naval Architecture
GMDSS Communication Equipment and Service
Ship Observation Practice
Ship Safety Management
Intermediate Maritime English
Shipborne Navigation Radar
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Ship Collision Avoidance and Watchkeeping
Status Quo and Policies of China
Marine Cargo Operations
Maritime English Listening and Speaking
Cargo Stowage and Securing
Bridge Resources Management
GMDSS Equipment Operation
Rarar Operation
Ocean Shipping Operation and Maritime Law
Advanced Maritime English
ECDIS
Status Quo and Policies of China
Marine Navigation
Ship Course Design
Labor Education
Graduation Practice, Design& Thesis
Status Quo and Policies of China
Intelligent Navigation Introduction
Technology on Internet of things and Internet of vessels
Big data techniques and applications on shipping
Math Models and Ship Controls
Shore support system and remote control of Intelligent Ship
Restrictive Optional Courses
Intelligent Shipping Module
Jurisprudence of Law
Law of the Sea
Maritime Administrative Law
Restrictive Optional Courses
Maritime Law Enforcement Module
Macroeconomics
Management Communication
International Commerce
Restrictive Optional Courses
Shipping Management Module
Psychology for Seafarers
Primary Oral English
the History of Chinese Seafarers
Data Analysis with Python
Intermediate Oral English
MATLAB Language and Visual Simulation
English Reading Comprehension
Maritime International Etiquette
Introduction to Maritime Administration
Weather Routing of Ship
Development of International Maritime Issues
Investigation and Analysis of Marine Accidents
Special Cargoes Operations
Cargo Operations of LNG Carriers
Restrictive Optional Courses
Major and Direction Courses

航海技术（实验班）专业本科培养计划（2025 版）

Undergraduate Program for Nautical Science Major [Elite Class]

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业培养爱党爱国、具有社会主义核心价值观，扎实的数学、自然科学和工程理论基础，系统掌握船舶航行、船舶货物管理、船舶作业管理和人员管理、船舶通信导航、智能船舶应用等航海核心知识和技能，家国情怀厚、全球视野广、综合素养好、创新能力强的新时代“航海家”型拔尖创新人才。 This program cultivates outstanding innovative talents of the new era "navigator" type who love the Party and the country, have core socialist values, have a solid foundation in mathematics, natural sciences and engineering theory, and systematically master core navigation knowledge and skills such as ship navigation, ship cargo management, ship operation management and personnel management, ship communication and navigation, and intelligent ship applications. They have a strong sense of patriotism, a broad global vision, good comprehensive qualities, and strong innovation	1. 培养爱党爱国、德智体美劳全面发展的社会主义建设者和接班人，具有健全人格、强壮体魄、深厚人文素养和社会责任感，能够践行国家交通强国、海洋强国和航运强国战略，适应航海智能化发展的需要，遵守航海技术工程伦理、职业道德和规范； 1. To cultivate socialist builders and successors who love the Party and the country, are well-rounded in morals, intelligence, physique, aesthetics and labor, have sound personality, strong physique, profound humanistic qualities and social responsibility, can implement the national strategy of building a strong transportation country, a strong ocean country and a strong shipping country, adapt to the needs of the development of intelligent navigation, and abide by the ethics, professional ethics and norms of navigation technology and engineering;
	2. 能够综合运用数学、自然科学、计算、工程基础和专业知识解决航海技术相关复杂工程问题，并在设计/开发解决方案过程中考虑社会、健康、安全、法律、文化、环境和可持续发展的影响； 2. Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to solve complex engineering problems related to marine technology, and consider the impact of society, health, safety, law, culture, environment and sustainable development in the process of designing/developing solutions;
	3. 具有良好的国际视野，了解国际海事发展动态，英语运用能力强，能够在跨文化背景下有效沟通和交流，具有良好的团队合作精神，在团队中发挥有效作用；

capabilities.	3. Have a good international perspective, understand the development of international maritime affairs, strong English proficiency, be able to communicate effectively in a cross-cultural context, have a good team spirit, and play an effective role in the team;
	4. 具有实践动手能力、科研能力、创新能力、批判性思维、自主学习和终身学习的意识，能不断学习提高并适应社会发展，长期为航海领域相关产业、政府职能部门和学术界服务。 4. Possess practical skills, scientific research ability, innovation ability, critical thinking, self-learning and lifelong learning awareness, be able to continuously learn and improve and adapt to social development, and serve the maritime-related industries, government departments and academia for a long time.

本专业的就业方向主要包括：攻读更高学位、科学研究、航海教育、海事管理、航运及相关领域技术和管理、远洋船舶驾驶、船舶引航等。学生在毕业后 5 年左右，预期能够达到的职业胜任力如下：

（1）取得硕士学位并在相关领域任职，或攻读博士研究生，具有较高水平的科研能力；

（2）在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务和技术骨干；

（3）在交通运输工程、船舶与海洋工程、安全工程等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家和管理人才；

（4）在包括新型、特殊船舶和智能船舶等在内的远洋运输船舶任职，并有能力担任管理级驾驶员职务。

The employment directions of this major mainly include: pursuing higher degrees, scientific research, maritime education, maritime management, shipping and related field technology and management, ocean-going ship driving, ship pilotage, etc. About 5 years after graduation, students are expected to achieve the following professional competences:

(1) Obtain a master's degree and work in related fields, or study for a doctorate, with a high level of scientific research ability;

(2) Work in colleges and universities or scientific research institutions, obtain intermediate or above professional titles, and have the ability to grow into business and technical backbones;

(3) Work in enterprises, institutions or administrative units related to transportation engineering, ship and marine engineering, safety engineering, etc., and have the ability to grow into technical experts and management talents;

(4) Work on ocean-going transport ships including new, special ships and intelligent ships, and have the ability to serve as management-level mariner.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备将数学、自然科学、计算、工程基础和专业知识应用于航海技术领域复杂工程问题的能力。 1. Engineering knowledge: Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to complex engineering problems in the field of marine technology.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到航海领域工程问题的恰当表述中； 1-1 Be able to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to the appropriate formulation of engineering problems in the field of navigation;
	1-2 能够利用数学、自然科学、计算、工程基础和专业知识对复杂航海技术问题进行详细的分析和建模； 1-2 Be able to use mathematics, natural sciences, computing, engineering foundations and professional knowledge to conduct detailed analysis and modeling of complex navigation technical problems;
	1-3 能够利用数学、自然科学、计算、工程基础和专业知识，提出航海复杂工程问题的解决方案并验证其有效性。 1-3 Be able to use mathematics, natural science, computing, engineering fundamentals and professional knowledge to propose solutions to complex marine engineering problems and verify their effectiveness.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂航海技术问题，综合考虑可持续发展的要求，以获得有效结论。 2. Problem Analysis: Ability to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express and analyse complex maritime technical problems through literature research, taking into account the requirements of sustainable development to	2-1 能够识别和判断复杂航海技术问题的核心特征与关键环节及约束条件； 2-1 Be able to identify and judge the core features, key links and constraints of complex navigation technical problems;
	2-2 通过文献研究和多学科交叉分析，提出兼顾技术可行性与可持续发展要求的解决方案，并验证其有效性。 2-2 Through literature research and multidisciplinary cross-analysis, propose solutions that take into account both technical feasibility and sustainable development requirements, and verify their effectiveness.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
obtain effective conclusions.	
3. 设计/开发解决方案：能够设计针对复杂航海技术问题的解决方案，设计满足航海需求的系统或流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/Develop Solutions: Ability to design solutions to complex maritime technical problems, design systems or processes that meet maritime needs, demonstrate innovation, and consider feasibility from the perspectives of health, safety and environment, life cycle costs and net zero carbon requirements, legal and ethical, social and cultural aspects.	3-1 能够进行复杂工程问题的针对性调研，设计满足航海功能需求的基础方案； 3-1 Be able to conduct targeted research on complex engineering problems and design basic solutions that meet the needs of navigation functions;
	3-2 开发具有创新性的航海技术解决方案，优化系统性能并整合多学科知识； 3-2 Develop innovative marine technology solutions, optimize system performance and integrate multidisciplinary knowledge;
	3-3 综合健康、安全、全生命周期成本、净零碳目标及法律伦理等因素，验证解决方案的可持续性。 3-3 Verify the sustainability of the solution by taking into account factors such as health, safety, life cycle costs, net zero carbon goals, and legal ethics.
4. 研究：能够基于科学原理并采用科学方法对复杂航海技术问题进行研究，并能得到合理有效的结论。 4. Research: Ability to study complex navigation technology issues based on scientific principles and using scientific methods, and to obtain reasonable and effective conclusions.	4-1 运用科学方法和专业理论，分析航海技术领域的典型问题，并提出初步解决方案； 4-1 Use scientific methods and professional theories to analyze typical problems in the field of navigation technology and propose preliminary solutions;
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验实践方案，获取合理有效的结论。 4-2 Be able to select research routes based on professional theories and according to the characteristics of the object, design feasible experimental practice plans, and obtain reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂航海技术问题，开发、选择与	5-1 熟练使用现代主流和信息技术工具，完成常规技术分析与操作任务；

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂航海技术问题的预测与模拟，并能够理解其局限性。 5. Use of modern tools: Ability to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for complex marine technical problems, including prediction and simulation of complex marine technical problems, and be able to understand their limitations.	5-1 Proficient in using modern mainstream and information technology tools to complete routine technical analysis and operation tasks;
	5-2 能够开发或整合现代工具，解决航海技术领域的复杂问题，并评估其适用性与局限性。 5-2 Be able to develop or integrate modern tools to solve complex problems in the field of marine technology and assess their applicability and limitations.
6. 工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价航海实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development. When solving complex engineering problems, students should be able to analyze and evaluate the impact of maritime practices on health, safety, environment, law, and economic and social sustainable development based on engineering-related background knowledge, and understand the responsibilities that should be assumed.	6-1 具有工程实习和社会实践的经历，识别航海工程实践中的可持续发展关键要素； 6-1 Have experience in engineering internship and social practice, and identify the key elements of sustainable development in marine engineering practice;
	6-2 能够对比评估航海工程方案的多维度可持续性影响； 6-2 Be able to compare and evaluate the multi-dimensional sustainability impacts of marine engineering projects;
	6-3 能够提出符合可持续发展责任的航海工程改进方案。 6-3 Be able to propose improvement plans for marine engineering that are consistent with sustainable development responsibilities.
7. 工程伦理和职业规范。有工程报国、为民造福的意识，具有	7-1 理解航海职业的伦理要求和法律规范，树立工程报国意识；

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
人文社会科学素养和社会责任感，能够理解和践行工程伦理，在航海工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms. Have the awareness of serving the country and benefiting the people through engineering, have the literacy of humanities and social sciences and a sense of social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in the practice of marine engineering, and fulfill responsibilities.	7-1 Understand the ethical requirements and legal norms of the maritime profession and establish a sense of serving the country through engineering;
	7-2 在航海工程实践中识别伦理冲突，基于法律和职业规范做出合理决策； 7-2 Identify ethical conflicts in marine engineering practice and make reasonable decisions based on laws and professional norms;
	7-3 主动履行社会责任，践行负责任的航海职业行为。 7-3 Actively fulfill social responsibilities and practice responsible maritime professional behavior.
8. 个人和团队：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Ability to assume roles as an individual, team member, and leader within a diverse, multidisciplinary team.	8-1 在航海管理团队中，明确个人职责并完成分工任务； 8-1 In the navigation management team, clarify individual responsibilities and complete division of labor tasks;
	8-2 在多样化、多学科背景团队中主动沟通协调，整合不同专业视角解决问题； 8-2 Actively communicate and coordinate within a diverse, multidisciplinary team, integrating different professional perspectives to solve problems;
	8-3 了解与本专业相关学科等领域的技术衔接，担任团队负责人，组织多背景成员高效完成复杂任务。 8-3 Understand the technical connection with related disciplines and other fields of this major, serve as a team leader, and organize members from multiple backgrounds to efficiently complete complex tasks.
9. 沟通：能够就复杂工程问题	9-1 能够使用航海专业术语和技术文档，清晰表达工程问题及

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: Ability to communicate effectively with industry peers and the public on complex engineering issues, including writing reports and design documents, making presentations, expressing oneself clearly or responding to instructions; Ability to communicate in a cross-cultural context, and understand and respect language and cultural differences.	解决方案； 9-1 Be able to use maritime terminology and technical documents to clearly express engineering problems and solutions;
	9-2 能够在国际化工作环境中进行有效沟通，适应语言和文化差异。 9-2 Ability to communicate effectively in an international work environment and adapt to language and cultural differences.
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. Project Management: Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 掌握航海相关项目管理的基本原理和方法，制定项目运营的初步计划，如制定船舶运营计划等； 10-1 Master the basic principles and methods of maritime-related project management and formulate preliminary plans for project operations, such as formulating ship operation plans;
	10-2 在多学科协作环境下，运用管理知识和经济分析方法优化航海相关项目决策。 10-2 Apply management knowledge and economic analysis methods to optimize decision-making in navigation-related projects in a multidisciplinary collaborative environment.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新	11-1 具备自主学习和持续更新航海专业知识的意识，掌握航海技术领域的学习方法； 11-1 Have the awareness of independent learning and continuous updating of maritime professional knowledge, and master the

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
技术变革。 11. Lifelong learning: Have the awareness and ability of independent learning, lifelong learning and critical thinking, be able to understand the impact of broad technological changes on engineering and society, and adapt to new technological changes.	learning methods in the field of maritime technology;
	11-2 能够分析航海技术变革的社会影响，提出创新性解决方案以适应航海行业发展。 11-2 Be able to analyze the social impact of changes in maritime technology and propose innovative solutions to adapt to the development of the maritime industry.

三、专业核心课程

III．Core Courses

航海学（英）、船舶结构与设备（英）、船舶操纵（英）、船舶避碰与值班（英）、船舶货运（英）、航海气象学与海洋学（英）、船舶安全管理（英）、航海仪器（英）、船舶导航雷达（英）、GMDSS 通信设备与业务（英）、驾驶台资源管理（英）、电子海图显示与信息系统（英）、远洋业务与海商法（英）

Marine Navigation, Ship Construction and Equipment, Ship Handling， Ship Collision Avoidance and Watch Keeping, Marine Cargo Operations, Marine meteorology and Oceanography, Ship Safety Management, Nautical Instruments, Shipborne Navigation Radar, GMDSS Communication Equipment and Services, Bridge Resources Management, Electronic Chart Display and Information System, Ocean Shipping Operation and Maritime Law

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船艺训练 Seamanship Training	●					●
航海学（英） Marine Navigation	●		●		●	●
船舶结构与设备（英） Ship Construction and Equipment	●					●
船舶操纵（英） Ship Handling	●	●		●	●	●

船舶避碰与值班（英）Ship Collision Avoidance and Watch Keeping	●				●	●
船舶货运（英）Marine Cargo Operations	●	●	●	●	●	●
航海气象学与海洋学（英）Marine meteorology and Oceanography	●	●	●		●	
船舶安全管理（英）Ship Safety Management	●	●		●		●
航海仪器（英）Nautical Instruments	●				●	●
船舶导航雷达（英）Shipborne Navigation Radar	●			●	●	●
GMDSS 通信设备与业务（英）GMDSS Communication Equipment and Services	●	●				●
驾驶台资源管理（英）Bridge Resources Management	●	●				●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">9</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>12</td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td>化学类
Chemistry</td><td>2</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td rowspan="6">通识类
General Courses</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="4">/</td><td rowspan="4">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>11</td><td rowspan="2">/</td></tr>
<tr><td>专业及方向课</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>44.5</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
Stream Courses	方向模块课（智能航运方向） Directional Module Courses 方向模块课（海上执法模块） Directional Module Courses 方向模块课（航运管理模块） Directional Module Courses	/		
集中实践环节 Practical &Training	军事实践课 Military Practical Course	3		
	专业实践课 Specialized Practical Course	6.5	/	
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	10.5		
合计：173.5 Total：173.5		156.5	9	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018510	专业导论(航海)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：航海技术(实验班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（173.5 学分） In-class Teaching Courses （173.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	156.5	9	8	7.5	181

表 2：航海技术(实验班)必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考查		综合素养	48	24	24	1-1	
			6	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	

			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	2-1	
			21	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			22	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			23	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			24	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			26	1713027714	大学英语(海上)(4) College English	3	考试		综合素养	48	48	0	2-2	
			27	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	2-2	
			28	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	3-1	

			29	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713016230	电工学 I(英) Electrical Engineering Technology	2	考试	√	综合素养	32	28	4	2-1	
			3	1713016260	航海力学(英) Nautical Mechanics	2	考试		综合素养	32	26	6	2-1	
			4	1713027300	航海专业数学(英) Nautical Mathematics	2.5	考试		综合素养	40	40	0	2-1	
			5	1713029640	船舶原理(英) Principles of naval Architecture	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
	必修-专业及方向课程 Stream Courses		1	1713029650	航海气象学与海洋学(英) Marine Meteorology and	2.5	考试	√	综合素养	40	34	6	2-2	课外学时 8
			2	1713029661	航海学(上)(英) Marine Navigation	4	考试	√	综合素养	64	58	6	2-2	课外学时 16
			3	1713016300	轮机概论(英) Introduction to Marine Engineering	2	考查		综合素养	32	26	6	3-1	
			4	1713029670	船舶结构与设备(英) Ship Construction and Equipment	2.5	考试	√	综合素养	40	34	6	3-1	课外学时 8
			5	1713029680	GMDSS 通信设备与业务(英) GMDSS Communication Equipment and Service	3.5	考试	√	综合素养	56	56	0	3-1	课外学时 8

			6	1713029690	船舶操纵(英) Ship Handling	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
			7	1713029700	航海仪器(英) Nautical Instruments	3	考试	√	综合素养	48	38	10	3-1	课外学时 16
			8	1713015970	航海英语会话与评估 Maritime English Listening and Speaking	2	考查		综合素养	32	16	16	3-2	
			9	1713016400	船舶导航雷达(英) Shipborne Navigation Radar	2	考试	√	综合素养	32	32	0	3-2	
			10	1713016620	船舶建模与控制 Math Models and Ship Controls	2	考查		综合素养	32	32	0	3-2	
			11	1713027290	航海英语阅读 Maritime English Reading Comprehension	3	考试	√	综合素养	48	48	0	3-2	课外学时 16
			12	1713029710	船舶货运(英) Marine Cargo Operations	3.5	考试	√	综合素养	56	56	0	3-2	课外学时 8
			13	1713029720	船舶安全管理(英) Ship Safety Management	2.5	考试	√	综合素养	40	40	0	3-2	课外学时 8
			14	1713029730	船舶避碰与值班(英) Ship Collision Avoidance and Watchkeeping	3	考试	√	综合素养	48	48	0	3-2	课外学时 8
			15	1713016380	电子海图显示与信息系统(英) ECDIS	2	考试	√	综合素养	32	12	20	4-1	
			16	1713027350	远洋业务与海商法(英) Shipping Practice and Maritime Law (in English)	2	考试	√	综合素养	32	32	0	4-1	

			17	1713029662	航海学(下)(英) Marine Navigation	2.5	考试	√	综合素养	40	36	4	4-1	课外学时 8
合计 Total						**125.5**				**2088**	**1764**	**324**		

表 3：航海技术(实验班) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-专业及方向课程（智能航运方向） Stream Courses		1	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	
			2	1713024640	物联网与船联网技术 Technology on Internet of things and Internet of vessels	1	考查		综合素养	16	16	0	2-2	
			3	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	3-1	
			4	1713024620	智能船岸基支持系统与远程控制 Shore support system and remote control of Intelligent Ship	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（海上执法		1	1713006410	法理学 Jurisprudence of Law	3	考试		综合素养	48	48	0	2-2	

			2	1713005440	海洋法 Law of the Sea	2	考试		综合素养	32	32	0	3-1	
			3	1713018070	海上行政执法 Maritime Administrative Law Enforcement	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（航运管理模块）Stream Courses		1	1713007480	宏观经济学 Macroeconomics	2	考试		综合素养	32	32	0	2-2	
			2	1713007540	管理沟通 Management Communication	2	考试		综合素养	32	32	0	3-1	
			3	1713018090	国际商务 International Commerce	2	考试		综合素养	32	32	0	3-2	
	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713025590	Python 数据分析 Data Analysis with Python	2	考查		综合素养	32	16	16	1-2	
			3	1713025600	MATLAB 语言与可视化仿真 MATLAB Language and Visual Simulation	2	考查		综合素养	32	16	16	1-2	
			4	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
			5	1713016040	英语阅读 English Reading Comprehension	2	考查		综合素养	32	32	0	2-1	

			6	1713016470	大学英语视听说(高级) College English Viewing, Listening, and Speaking (Advanced Level)	2	考试		综合素养	32	32	0	2-1	
			7	1713012100	计算方法 Computing Method	2	考试		综合素养	32	24	8	2-2	
			8	1713016920	运筹学 Operations Research	3	考试		综合素养	48	48	0	2-2	
			9	1713016480	英语口语(高级) Spoken English(Advanced)	2	考试		综合素养	32	32	0	3-1	
	限选-专业(类)基础课 Disciplinary Courses		1	1713015450	信号与系统 Signal and System	2	考试		综合素养	32	22	10	3-2	
			2	1713016630	数据结构 Data Structure	2.5	考试		综合素养	40	28	12	4-1	
	限选-专业及方向课程 Stream Courses		1	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	1-1	
			2	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	1-2	
			3	1713016120	航海涉外礼仪 Maritime International Etiquette	1	考查		综合素养	16	16	0	2-2	
			4	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	2-2	

			5	1713016070	海洋船舶气象定线 Weather Routing of Ship	1	考查		综合素养	16	12	4	3-1	
			6	1713016500	国际海事发展动态(英) Development of International Maritime Issues	1	考查		综合素养	16	16	0	3-1	
			7	1713022080	GMDSS 通信英语 GMDSS Service	2	考试		综合素养	32	28	4	3-1	
			8	1713016490	海事调查与案例分析(英) Investigation and Analysis of Marine Accidents	1	考查		综合素养	16	16	0	3-2	
			9	1713016510	特种货物运输(英) Special Cargoes Operations	2	考查		综合素养	32	32	0	4-1	
			10	1713016520	LNG 船货物运输(英) Cargo Operations of LNG Carriers	2	考查		综合素养	32	16	16	4-1	
合计 Total						54				896	810	86		

表 4：航海技术(实验班)任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.
2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：航海技术(实验班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			5	1713025610	船艺训练 Seamanship Training	1	考查		综合素养	30	0	30	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	

			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713016150	船舶认识实习(航海技术) Ship Observation	4	考查		综合素养	120	0	120	3-1	
			9	1713016160	货物积载与系固 Cargo Stowage and Securing	1	考查		综合素养	40	0	40	3-2	
			10	1713016180	驾驶台资源管理 Bridge Resources Management	1	考查		综合素养	40	20	20	3-2	
			11	1713016200	GMDSS 设备操作 GMDSS Equipment Operation	2	考查		综合素养	60	0	60	3-2	
			12	1713016210	雷达操作与应用 Rarar Operation	1	考查		综合素养	40	0	40	3-2	
			13	1713016170	航线设计 Ship Course Design	1	考查		综合素养	30	0	30	4-1	
			14	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						33				1020	86	934		

表 6：航海技术(实验班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018510	专业导论(航海) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			5	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			6	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			7	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			8	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			9	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			10	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			11	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			12	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
			13	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-1	

			14	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
合计 Total						5.5				136	136	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	计算机及程序设计(Python)	必修	24	1.5	●
5	思想道德与法治	必修	8	0.5	
6	人工智能通识(B)	必修	4	0.25	●
7	马克思主义基本原理	必修	8	0.5	
8	大学物理实验	必修	48	2	●
9	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
10	机械制图	必修	4	0.25	●
11	电工学 I	必修	4	0.25	●
12	航海力学	必修	6	0.375	●
13	航海气象学与海洋学	必修	6	0.375	●
14	航海学	必修	10	0.625	●
15	轮机概论	必修	6	0.375	●
16	船舶结构与设备	必修	6	0.375	●
17	航海仪器	必修	10	0.625	●
18	航海英语会话与评估	必修	16	1	
19	电子海图显示与信息系统	必修	20	1.25	●
20	远洋业务与海商法	必修	2	0.125	
21	精通救生艇筏和救助艇	必修	28	1	●
22	船舶保安	必修	20	0.5	●
23	高级消防	必修	36	1	●
24	船艺训练	必修	30	1	●
25	基本安全	必修	32	0.93	●
26	精通急救	必修	12	0.5	
27	船舶认识实习（航海技术）	必修	120	4	●
28	货物积载与系固	必修	40	1	●
29	驾驶台资源管理	必修	20	0.5	●
30	GMDSS 设备操作	必修	60	2	●
31	雷达操作与应用	必修	40	1	●
32	航线设计	必修	30	1	●
33	毕业实习及毕业论文	必修	360	12	●
合计 Total			1244	44.805	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation**		●		

Requirements 6-1				
毕业要求 6-2 **Graduation Requirements 6-2**		●		
毕业要求 6-3 **Graduation Requirements 6-3**				●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 7-3 **Graduation Requirements 7-3**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		
毕业要求 10-2 **Graduation Requirements 10-2**		●		
毕业要求 11-1 **Graduation Requirements 11-1**				●

毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类																												
1	高等数学	H	H	H	M	M																						
2	线性代数	H	H	H	M	M																						
3	概率论与数理统计	M	M	M	H	H																						
4	大学物理	H	H	H	M	M																						
5	大学物理实验				M	M				H	H																	
6	大学化学(海上)		H				M	M	M		M																	
7	复变函数与积分变换(B)	H	H	H	M	M																						
工程基础类																												
8	机械制图		H					M	M																			
9	MATLAB 语言与可视化仿真											H	H															
10	Python 数据分析											H	H															
11	计算机及程序设计(Python)											H	H										M					
专业基础类																												
12	专业导论（航海）	M												M			M						H				H	
13	电工学 I（英）	H					M					M																
14	航海力学（英）		H				M				M																	
15	航海专业数学（英）	H	M	H		M																						
16	船舶原理（英）	H	H	H		M										M												
17	船舶建模与控制	M	M				H					H																H
18	信号与系统	M		M						H	H																	

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
19	数据结构			H		M						H	H															
专业方向类																												
20	航海气象学与海洋学（英）	M			H										H								H					
21	航海学（英）	M	M	H	H																		H					
22	轮机概论（英）	M																		M	H	H						
23	船舶结构与设备（英）		H	H	H																		H					
24	GMDSS 通信设备与业务（英）			H				M				M	M															
25	船舶操纵（英）		H	H	H								H										H					
26	航海仪器（英）	M	H								H	M											H					
27	船舶货运（英）	H	H	M		H			M																			
28	航海英语会话与评估											M	M										H	H				
29	航海英语阅读											M	M										H	H				
30	船舶安全管理（英）							M										H		H	H	H						
31	船舶导航雷达（英）	M									M	H			M	M												
32	船舶避碰与值班（英）		H	H	H								H										H					
33	电子海图显示与信息系统（英）		H	H	H							H											H					
34	远洋业务与海商法（英）														M	H	H	H	M									
35	海事管理概论	M	M	M																H		H						
36	海洋船舶气象定线	M				H										H												
37	GMDSS 通信英语			H								M	M										H	H				
38	海事调查与案例分析（英）	H				H										H			H									
39	特种货物运输（英）				M	H				H	M																	
40	LNG 船货物运输（英）				M	H				H	M																	

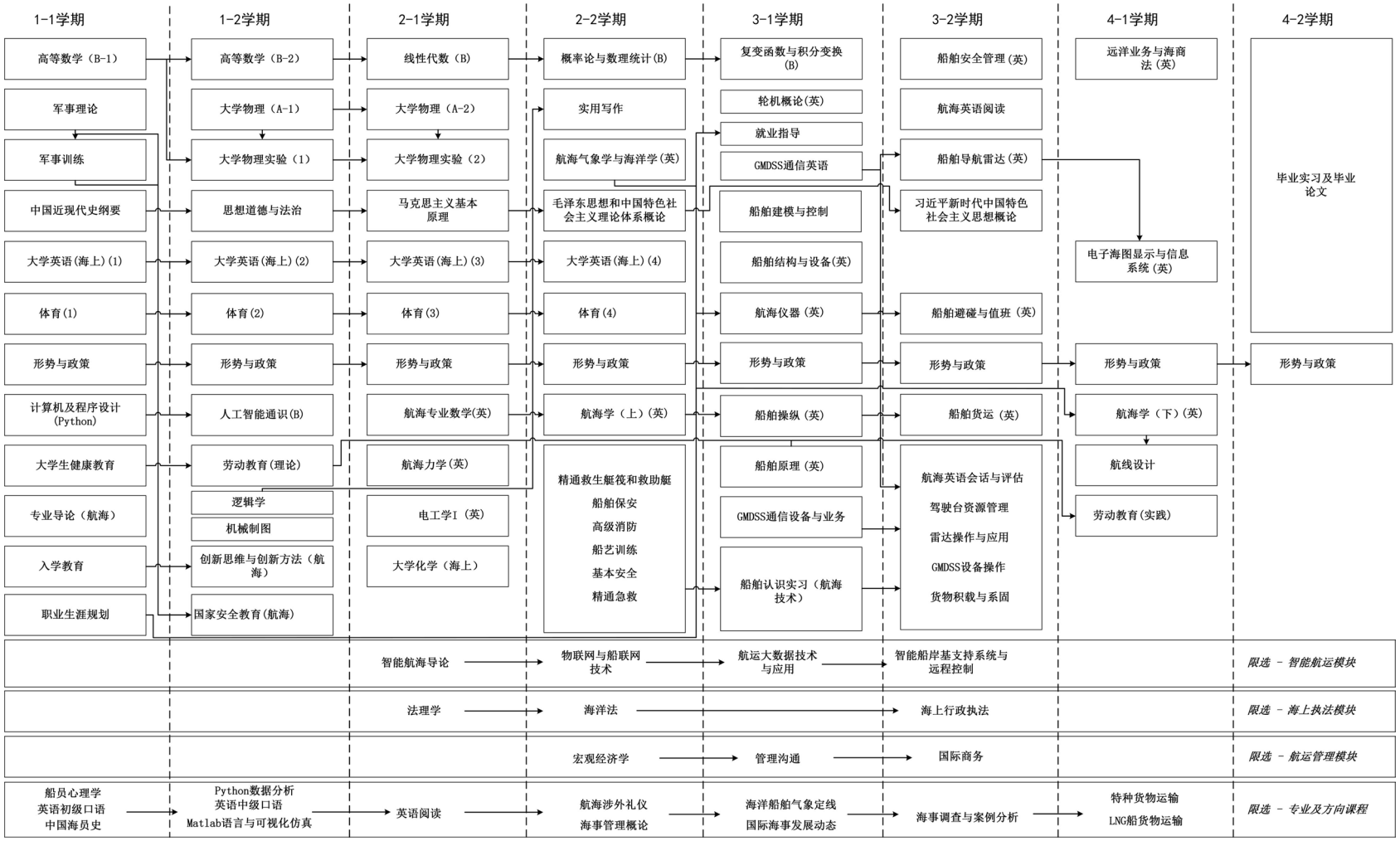
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
41	智能航海导论	M	M				H					H																H
42	物联网与船联网技术	M	M				H					H																H
43	航运大数据技术与应用	M	M				H					H																H
44	智能船岸基支持系统与远程控制	M	M				H					H																H
45	法理学							M									H	H	M			H						
46	海洋法							M									H	H	M			H						
47	海上行政执法							M									H	H	M			H						
48	宏观经济学							M											M			H			H	H		
49	管理沟通																			H	H	H	M	M				
50	国际商务							M														H		H	H	H		
51	中国海员史					H											M	H										H
52	船员心理学																H	H	M	M								
53	国际海事发展动态（英）					H											M	M										
54	航海涉外礼仪																					H	H	H				
实践类																												
55	军事训练																			H	H	H						
56	精通救生艇筏和救助艇			M										H						H	H		M					
57	船舶保安			M										H						H	H		M					
58	高级消防			M										H						H	H		M					
59	船艺训练			M										H						H	H		M					
60	基本安全			M										H						H	H		M					
61	精通急救			M										H						H	H		M					

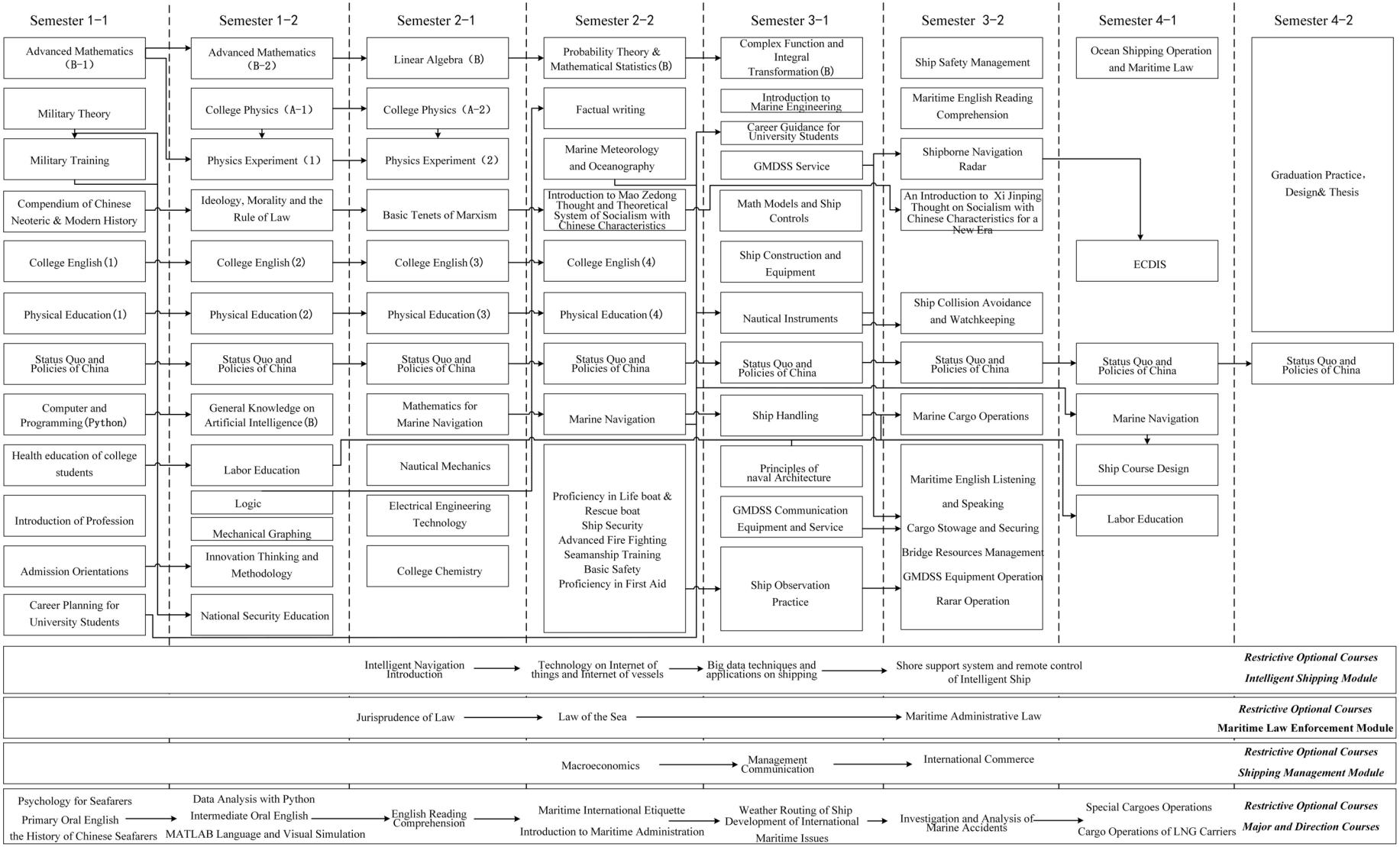
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
62	船舶认识实习（航海技术）			M										H						H	H		M					
63	货物积载与系固			M										H						H	H		M					
64	驾驶台资源管理			M										H						H	H		M					
65	GMDSS 设备操作			M										H						H	H		M					
66	雷达操作与应用			M										H						H	H		M					
67	航线设计		H	M										H						H	H							
68	劳动教育(实践)								M					H					H									
69	毕业实习及毕业论文			H		H					H	M		H														
人文社科与通识类																												
70	马克思主义基本原理																H	H	H									
71	中国近现代史纲要																H	H	H									
72	思想道德与法治														M	M	H	H	H									
73	毛泽东思想和中国特色社会主义理论体系概论																H	H	H									
74	习近平新时代中国特色社会主义思想概论																H	H	H									
75	形势与政策																H	H	H									
76	军事理论																			H	H	H						
77	英语中级口语																				H		H	H				
78	英语初级口语																				H		H	H				
79	英语阅读																				H		H	H				
80	大学英语																				H	H	H	H				
81	大学英语视听说（高级）																				H		H	H				

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
82	英语口语（高级）																				H		H	H				
83	体育																			H	H	H						
84	大学生健康教育																H	H	H	M	M							
85	职业生涯规划																H	H	H									
86	就业指导																H	H	H									
87	国家安全教育(航海)																H	H	H									
88	逻辑学	M	M			H										M											H	
89	计算方法	H	H	H	M					M																		
90	运筹学	H	H	H	H					M																		
91	人工智能通识																										H	H
92	实用写作																						H	H				
93	入学教育																H	H	H	H	H							
94	劳动教育(理论)								M					H					H									

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Advanced Mathematics (B-1)
Military Theory
Military Training
Compendium of Chinese Neoteric & Modern History
College English (1)
Physical Education (1)
Status Quo and Policies of China
Computer and Programming (Python)
Health education of college students
Introduction of Profession
Admission Orientations
Career Planning for University Students
Advanced Mathematics (B-2)
College Physics (A-1)
Physics Experiment (1)
Ideology, Morality and the Rule of Law
College English (2)
Physical Education (2)
Status Quo and Policies of China
General Knowledge on Artificial Intelligence (B)
Labor Education
Logic
Mechanical Graphing
Innovation Thinking and Methodology
National Security Education
Linear Algebra (B)
College Physics (A-2)
Physics Experiment (2)
Basic Tenets of Marxism
College English (3)
Physical Education (3)
Status Quo and Policies of China
Mathematics for Marine Navigation
Nautical Mechanics
Electrical Engineering Technology
College Chemistry
Probability Theory & Mathematical Statistics (B)
Factual writing
Marine Meteorology and Oceanography
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
College English (4)
Physical Education (4)
Status Quo and Policies of China
Marine Navigation
Proficiency in Life boat & Rescue boat
Ship Security
Advanced Fire Fighting
Seamanship Training
Basic Safety
Proficiency in First Aid
Complex Function and Integral Transformation (B)
Introduction to Marine Engineering
Career Guidance for University Students
GMDSS Service
Math Models and Ship Controls
Ship Construction and Equipment
Nautical Instruments
Status Quo and Policies of China
Ship Handling
Principles of naval Architecture
GMDSS Communication Equipment and Service
Ship Observation Practice
Ship Safety Management
Maritime English Reading Comprehension
Shipborne Navigation Radar
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Ship Collision Avoidance and Watchkeeping
Status Quo and Policies of China
Marine Cargo Operations
Maritime English Listening and Speaking
Cargo Stowage and Securing
Bridge Resources Management
GMDSS Equipment Operation
Rarar Operation
Ocean Shipping Operation and Maritime Law
ECDIS
Status Quo and Policies of China
Marine Navigation
Ship Course Design
Labor Education
Graduation Practice, Design& Thesis
Status Quo and Policies of China
Intelligent Navigation Introduction
Technology on Internet of things and Internet of vessels
Big data techniques and applications on shipping
Shore support system and remote control of Intelligent Ship
Restrictive Optional Courses
Intelligent Shipping Module
Jurisprudence of Law
Law of the Sea
Maritime Administrative Law
Restrictive Optional Courses
Maritime Law Enforcement Module
Macroeconomics
Management Communication
International Commerce
Restrictive Optional Courses
Shipping Management Module
Psychology for Seafarers
Primary Oral English
the History of Chinese Seafarers
Data Analysis with Python
Intermediate Oral English
MATLAB Language and Visual Simulation
English Reading Comprehension
Maritime International Etiquette
Introduction to Maritime Administration
Weather Routing of Ship
Development of International Maritime Issues
Investigation and Analysis of Marine Accidents
Special Cargoes Operations
Cargo Operations of LNG Carriers
Restrictive Optional Courses
Major and Direction Courses

航海技术（校企合作班）专业本科培养计划（2025 版）

Undergraduate Program for Nautical Science Major

[School and Enterprise Cooperation Class]

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养爱党爱国、具有社会主义核心价值观，扎实的数学、自然科学和工程理论基础，系统掌握船舶航行、船舶货物管理、船舶作业管理和人员管理、船舶通信导航、智能船舶应用等航海核心知识和技能，家国情怀厚、全球视野广、综合素养好、创新能力强的新时代“航海家”型卓越人才。 This program cultivates outstanding talents of the new era "navigator" type who love the Party and the country, have core socialist values, have a solid foundation in mathematics, natural sciences and engineering theory, and systematically master core navigation knowledge and skills such as ship navigation, ship cargo management, ship operation management and personnel management, ship communication and navigation, and intelligent ship applications. They have a strong sense of patriotism, a broad global vision, good comprehensive qualities, and strong innovation	1. 培养爱党爱国、德智体美劳全面发展的社会主义建设者和接班人，具有健全人格、强壮体魄、深厚人文素养和社会责任感，能够践行国家交通强国、海洋强国和航运强国战略，适应航海智能化发展的需要，遵守航海技术工程伦理、职业道德和规范； 1. To cultivate socialist builders and successors who love the Party and the country, are well-rounded in morals, intelligence, physique, aesthetics and labor, have sound personality, strong physique, profound humanistic qualities and social responsibility, can implement the national strategy of building a strong transportation country, a strong ocean country and a strong shipping country, adapt to the needs of the development of intelligent navigation, and abide by the ethics, professional ethics and norms of navigation technology and engineering;
	2. 能够综合运用数学、自然科学、计算、工程基础和专业知识解决航海技术相关复杂工程问题，并在设计/开发解决方案过程中考虑社会、健康、安全、法律、文化、环境和可持续发展的影响； 2. Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to solve complex engineering problems related to marine technology, and consider the impact of society, health, safety, law, culture, environment and sustainable development in the process of designing/developing solutions;
	3. 具有良好的国际视野，了解国际海事发展动态，能够在跨文化背景下有效沟通和交流，具有良好的团队合作精神，在团队中发挥有效作用；

capabilities.	3. Have a good international perspective, understand the development of international maritime affairs, be able to communicate effectively in a cross-cultural context, have a good team spirit, and play an effective role in the team;
	4. 具有实践动手能力、创新能力、批判性思维、自主学习和终身学习的意识，能不断学习提高并适应航运业发展，长期为航海领域相关产业服务。 4. Possess practical skills, innovation ability, critical thinking, self-learning and lifelong learning awareness, be able to continuously learn and improve and adapt to social development, and serve the maritime-related industries for a long time.

本专业的就业方向主要包括：远洋船舶驾驶、船舶引航、航海教育、海事管理、航运及相关领域技术和管理、攻读更高学位等。学生在毕业后 5 年左右，预期能够达到的职业胜任力如下：

（1）在包括新型、特殊船舶和智能船舶等在内的远洋运输船舶任职，并有能力担任管理级驾驶员职务；

（2）在交通运输工程、船舶与海洋工程、安全工程等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家和管理人才；

（3）取得硕士学位并在相关领域任职，或攻读博士研究生，具有较高水平的科研能力；

（4）在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务和技术骨干。

The employment directions of this major mainly include: ocean-going ship driving, ship pilotage, navigation education, maritime management, shipping and related field technology and management, and pursuing higher degrees. About 5 years after graduation, students are expected to achieve the following professional competencies:

(1) Work on ocean-going transport ships including new, special ships and intelligent ships, and have the ability to serve as management-level mariner;

(2) Work in enterprises, institutions or administrative units related to transportation engineering, ship and marine engineering, safety engineering and other fields, and have the ability to grow into technical experts and management talents;

(3) Obtain a master's degree and work in related fields, or study for a doctorate, and have a high level of scientific research ability;

(4) Work in colleges and universities or scientific research institutions, obtain intermediate or above professional titles, and have the ability to grow into business and technical backbones.

二、毕业要求

II．Graduation Requirements

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备将数学、自然科学、计算、工程基础和专业知识应用于航海技术领域复杂工程问题的能力。 1. Engineering knowledge: Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to complex engineering problems in the field of marine technology.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到航海领域工程问题的恰当表述中； 1-1 Be able to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to the appropriate formulation of engineering problems in the field of navigation;
	1-2 能够利用数学、自然科学、计算、工程基础和专业知识对复杂航海技术问题进行详细的分析和建模； 1-2 Be able to use mathematics, natural sciences, computing, engineering foundations and professional knowledge to conduct detailed analysis and modeling of complex navigation technical problems;
	1-3 能够利用数学、自然科学、计算、工程基础和专业知识，提出航海复杂工程问题的解决方案并验证其有效性。 1-3 Be able to use mathematics, natural science, computing, engineering fundamentals and professional knowledge to propose solutions to complex marine engineering problems and verify their effectiveness.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂航海技术问题，综合考虑可持续发展的要求，以获得有效结论。 2. Problem Analysis: Ability to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express and analyse complex maritime technical problems through literature research, taking into account the requirements of sustainable development to obtain effective conclusions.	2-1 能够识别和判断复杂航海技术问题的核心特征与关键环节及约束条件； 2-1 Be able to identify and judge the core features, key links and constraints of complex navigation technical problems;
	2-2 通过文献研究和多学科交叉分析，提出兼顾技术可行性与可持续发展要求的解决方案，并验证其有效性。 2-2 Through literature research and multidisciplinary cross-analysis, propose solutions that take into account both technical feasibility and sustainable development requirements, and verify their effectiveness.
3. 设计/开发解决方案：能够设计针对复杂航海技术问题的解决方案，设计满足航海需求的系统或流程，体现创	3-1 能够进行复杂工程问题的针对性调研，设计满足航海功能需求的基础方案； 3-1 Be able to conduct targeted research on complex engineering problems

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/Develop Solutions: Ability to design solutions to complex maritime technical problems, design systems or processes that meet maritime needs, demonstrate innovation, and consider feasibility from the perspectives of health, safety and environment, life cycle costs and net zero carbon requirements, legal and ethical, social and cultural aspects.	and design basic solutions that meet the needs of navigation functions;
	3-2 开发具有创新性的航海技术解决方案，优化系统性能并整合多学科知识； 3-2 Develop innovative marine technology solutions, optimize system performance and integrate multidisciplinary knowledge;
	3-3 综合健康、安全、全生命周期成本、净零碳目标及法律伦理等因素，验证解决方案的可持续性。 3-3 Verify the sustainability of the solution by taking into account factors such as health, safety, life cycle costs, net zero carbon goals, and legal ethics.
4. 研究：能够基于科学原理并采用科学方法对复杂航海技术问题进行研究，并能得到合理有效的结论。 4. Research: Ability to study complex navigation technology issues based on scientific principles and using scientific methods, and to obtain reasonable and effective conclusions.	4-1 运用科学方法和专业理论，分析航海技术领域的典型问题，并提出初步解决方案； 4-1 Use scientific methods and professional theories to analyze typical problems in the field of navigation technology and propose preliminary solutions;
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验实践方案，获取合理有效的结论。 4-2 Be able to select research routes based on professional theories and according to the characteristics of the object, design feasible experimental practice plans, and obtain reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂航海技术问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂航海技术问题的预测与模拟，并能够理解其局限性。 5. Use of modern tools: Ability to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for complex marine technical problems, including prediction	5-1 熟练使用现代主流和信息技术工具，完成常规技术分析与操作任务； 5-1 Proficient in using modern mainstream and information technology tools to complete routine technical analysis and operation tasks;
	5-2 能够开发或整合现代工具，解决航海技术领域的复杂问题，并评估其适用性与局限性。 5-2 Be able to develop or integrate modern tools to solve complex problems in the field of marine technology and assess their applicability and limitations.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
and simulation of complex marine technical problems, and be able to understand their limitations.	
6. 工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价航海实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development. When solving complex engineering problems, students should be able to analyze and evaluate the impact of maritime practices on health, safety, environment, law, and economic and social sustainable development based on engineering-related background knowledge, and understand the responsibilities that should be assumed.	6-1 具有工程实习和社会实践的经历，识别航海工程实践中的可持续发展关键要素； 6-1 Have experience in engineering internship and social practice, and identify the key elements of sustainable development in marine engineering practice;
	6-2 能够对比评估航海工程方案的多维度可持续性影响； 6-2 Be able to compare and evaluate the multi-dimensional sustainability impacts of marine engineering projects;
	6-3 能够提出符合可持续发展责任的航海工程改进方案。 6-3 Be able to propose improvement plans for marine engineering that are consistent with sustainable development responsibilities.
7. 工程伦理和职业规范。有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在航海工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms. Have the awareness of serving the country and benefiting the people through engineering, have the literacy of humanities and social sciences and a sense of social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in the practice of marine engineering, and fulfill responsibilities.	7-1 理解航海职业的伦理要求和法律规范，树立工程报国意识； 7-1 Understand the ethical requirements and legal norms of the maritime profession and establish a sense of serving the country through engineering;
	7-2 在航海工程实践中识别伦理冲突，基于法律和职业规范做出合理决策； 7-2 Identify ethical conflicts in marine engineering practice and make reasonable decisions based on laws and professional norms;
	7-3 主动履行社会责任，践行负责任的航海职业行为。 7-3 Actively fulfill social responsibilities and practice responsible maritime professional behavior.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
8. 个人和团队：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Ability to assume roles as an individual, team member, and leader within a diverse, multidisciplinary team.	8-1 在航海管理团队中，明确个人职责并完成分工任务； 8-1 In the navigation management team, clarify individual responsibilities and complete division of labor tasks;
	8-2 在多样化、多学科背景团队中主动沟通协调，整合不同专业视角解决问题； 8-2 Actively communicate and coordinate within a diverse, multidisciplinary team, integrating different professional perspectives to solve problems;
	8-3 了解与本专业相关学科等领域的技术衔接，担任团队负责人，组织多背景成员高效完成复杂任务。 8-3 Understand the technical connection with related disciplines and other fields of this major, serve as a team leader, and organize members from multiple backgrounds to efficiently complete complex tasks.
9. 沟通：能够就复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: Ability to communicate effectively with industry peers and the public on complex engineering issues, including writing reports and design documents, making presentations, expressing oneself clearly or responding to instructions; Ability to communicate in a cross-cultural context, and understand and respect language and cultural differences.	9-1 能够使用航海专业术语和技术文档，清晰表达工程问题及解决方案； 9-1 Be able to use maritime terminology and technical documents to clearly express engineering problems and solutions;
	9-2 能够在国际化工作环境中进行有效沟通，适应语言和文化差异。 9-2 Ability to communicate effectively in an international work environment and adapt to language and cultural differences.
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，	10-1 掌握航海相关项目管理的基本原理和方法，制定项目运营的初步计划，如制定船舶运营计划等； 10-1 Master the basic principles and methods of maritime-related project

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
并能够在多学科环境中应用。 10. Project Management: Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	management and formulate preliminary plans for project operations, such as formulating ship operation plans;
	10-2 在多学科协作环境下，运用管理知识和经济分析方法优化航海相关项目决策。 10-2 Apply management knowledge and economic analysis methods to optimize decision-making in navigation-related projects in a multidisciplinary collaborative environment.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11. Lifelong learning: Have the awareness and ability of independent learning, lifelong learning and critical thinking, be able to understand the impact of broad technological changes on engineering and society, and adapt to new technological changes.	11-1 具备自主学习和持续更新航海专业知识的意识，掌握航海技术领域的学习方法； 11-1 Have the awareness of independent learning and continuous updating of maritime professional knowledge, and master the learning methods in the field of maritime technology;
	11-2 能够分析航海技术变革的社会影响，提出创新性解决方案以适应航海行业发展。 11-2 Be able to analyze the social impact of changes in maritime technology and propose innovative solutions to adapt to the development of the maritime industry.

三、专业核心课程

III．Core Courses

航海学、船舶结构与设备、船舶操纵、船舶避碰与值班、船舶货运、航海气象学与海洋学、船舶安全管理、航海仪器、船舶导航雷达、GMDSS 通信设备与业务、驾驶台资源管理、电子海图显示与信息系统、远洋业务与海商法

Marine Navigation, Ship Construction and Equipment, Ship Handling， Ship Collision Avoidance and Watch Keeping, Marine Cargo Operations, Marine meteorology and Oceanography, Ship Safety Management, Nautical Instruments, Shipborne Navigation Radar, GMDSS Communication Equipment and Services, Bridge Resources Management, Electronic Chart Display and Information System, Ocean Shipping Operation and Maritime Law

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船艺训练 Seamanship Training	●					●

航海学 Marine Navigation	●		●		●	●
船舶结构与设备 Ship Construction and Equipment	●					●
船舶操纵 Ship Handling	●	●		●	●	●
船舶避碰与值班 Ship Collision Avoidance and Watch Keeping	●				●	●
船舶货运 Marine Cargo Operations	●	●	●	●	●	●
航海气象学与海洋学 Marine meteorology and Oceanography	●	●	●		●	
船舶安全管理 Ship Safety Management	●	●		●		●
航海仪器 Nautical Instruments	●				●	●
船舶导航雷达 Shipborne Navigation Radar	●			●	●	●
GMDSS 通信设备与业务 GMDSS Communication Equipment and Services	●	●				●
驾驶台资源管理 Bridge Resources Management	●	●				●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分

学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="17">11</td><td rowspan="12">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>12</td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td>化学类
Chemistry</td><td>2</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>11</td><td rowspan="2">/</td></tr>
<tr><td>专业及方向课</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>42.5</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
Stream Courses	方向模块课（智能航运方向） Directional Module Courses 方向模块课（海上执法模块） Directional Module Courses 方向模块课（航运管理模块） Directional Module Courses	/		
集中实践环节 Practical &Training	军事实践课 Military Practical Course	3	/	
	专业实践课 Specialized Practical Course	6.5		
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	10.5		
合计：170.5 Total：170.5		151.5	11	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018510	专业导论(航海)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：航海技术(校企合作班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（170.5 学分） In-class Teaching Courses （170.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	151.5	11	8	7.5	178

表 2：航海技术(校企合作班)必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			5	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			6	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	

			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	2-1	
			21	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			22	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			23	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			24	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			26	1713027714	大学英语(海上)(4) College English	3	考试		综合素养	48	48	0	2-2	
			27	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	2-2	

			28	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713015890	电工学 I Electrical Engineering Technology	2	考试		综合素养	32	28	4	2-1	
			3	1713015930	航海力学 Nautical Mechanics	2	考试		综合素养	32	26	6	2-1	
			4	1713025620	航海专业数学 Mathematics for Marine Navigation	2.5	考试		综合素养	40	40	0	2-1	
			5	1713029580	船舶原理 Principles of naval Architecture	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
	必修-专业及方向课程 Stream Courses		1	1713027390	航海学(上) MARINE NAVIGATION	4	考试	√	综合素养	64	58	6	2-2	课外学时 16
			2	1713029590	航海气象学与海洋学 Marine Meteorology and Oceanography	2.5	考试	√	综合素养	40	34	6	2-2	课外学时 8
			3	1713004480	轮机概论 Introduction to Marine Engineering	2	考查		综合素养	32	26	6	3-1	
			4	1713017420	航海仪器 Nautical Instruments	3	考试	√	综合素养	48	38	10	3-1	课外学时 16
			5	1713027260	船舶操纵 ship handling	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8

			6	1713029600	船舶结构与设备 Ship Construction and Equipment	2.5	考试	√	综合素养	40	34	6	3-1	课外学时 8
			7	1713029610	GMDSS 通信设备与业务 GMDSS Communication Equipment and Service	3.5	考试	√	综合素养	56	56	0	3-1	课外学时 8
			8	1713015970	航海英语会话与评估 Maritime English Listening and Speaking	2	考查		综合素养	32	16	16	3-2	
			9	1713016570	船舶导航雷达 Shipborne Navigation Radar	2	考试	√	综合素养	32	32	0	3-2	
			10	1713027250	船舶避碰与值班 Ship collision avoidance and watchkeeping	3	考试	√	综合素养	48	48	0	3-2	课外学时 8
			11	1713027290	航海英语阅读 Maritime English Reading Comprehension	3	考试	√	综合素养	48	48	0	3-2	课外学时 16
			12	1713029620	船舶货运 Marine Cargo Operations	3.5	考试	√	综合素养	56	56	0	3-2	课外学时 8
			13	1713029630	船舶安全管理 Ship Safety Management	2.5	考试	√	综合素养	40	40	0	3-2	课外学时 8
			14	1713016550	电子海图显示与信息系统 ECDIS	2	考试	√	综合素养	32	12	20	4-1	
			15	1713027340	远洋业务与海商法 Ocean Shipping Operation and Maritime Law	2	考试	√	综合素养	32	30	2	4-1	
			16	1713027391	航海学(下) Marine Navigation	2.5	考试	√	综合素养	40	36	4	4-1	课外学时 8
合计 Total						**120.5**				**2008**	**1682**	**326**		

表 3：航海技术(校企合作班) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713025590	Python 数据分析 Data Analysis with Python	2	考查		综合素养	32	16	16	1-2	
			3	1713025600	MATLAB 语言与可视化仿真 MATLAB Language and Visual Simulation	2	考查		综合素养	32	16	16	1-2	
			4	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
			5	1713016040	英语阅读 English Reading Comprehension	2	考查		综合素养	32	32	0	2-1	
	限选-专业及方向课程（智能航运方向） Stream Courses		1	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	
			2	1713024640	物联网与船联网技术 Technology on Internet of things and Internet of vessels	1	考查		综合素养	16	16	0	2-2	

			3	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	3-1	
			4	1713016090	船舶建模与控制 Math Models and Ship Controls	1	考查		综合素养	16	16	0	3-2	
			5	1713024620	智能船岸基支持系统与远程控制 Shore support system and remote control of Intelligent Ship	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（海上执法模块）Stream Courses		1	1713006410	法理学 Jurisprudence of Law	3	考试		综合素养	48	48	0	2-1	
			2	1713005440	海洋法 Law of the Sea	2	考试		综合素养	32	32	0	2-2	
			3	1713018070	海上行政执法 Maritime Administrative Law Enforcement	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（航运管理模块）Stream Courses		1	1713007480	宏观经济学 Macroeconomics	2	考试		综合素养	32	32	0	2-2	
			2	1713007540	管理沟通 Management Communication	2	考试		综合素养	32	32	0	3-1	
			3	1713018090	国际商务 International Commerce	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	1-1	

			2	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	1-1	
			3	1713016120	航海涉外礼仪 Maritime International Etiquette	1	考查		综合素养	16	16	0	2-2	
			4	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	2-2	
			5	1713016070	海洋船舶气象定线 Weather Routing of Ship	1	考查		综合素养	16	12	4	3-1	
			6	1713016130	国际海事发展动态 Development of International Maritime Issues	1	考查		综合素养	16	16	0	3-1	
			7	1713022080	GMDSS 通信英语 GMDSS Service	2	考试		综合素养	32	28	4	3-1	
			8	1713016050	海事调查与案例分析 Investigation and Analysis of Marine Accidents	1	考查		综合素养	16	16	0	3-2	
			9	1713016100	特种货物运输 Special Cargoes Operations	2	考查		综合素养	32	32	0	4-1	
			10	1713016110	LNG 船货物运输 Cargo Operations of LNG Carriers	2	考查		综合素养	32	16	16	4-1	
合计 Total						**41.5**				**696**	**640**	**56**		

表 4：航海技术(校企合作班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.
2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：航海技术(校企合作班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			5	1713025610	船艺训练 Seamanship Training	1	考查		综合素养	30	0	30	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	

			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713016150	船舶认识实习(航海技术) Ship Observation	4	考查		综合素养	120	0	120	3-1	
			9	1713016160	货物积载与系固 Cargo Stowage and Securing	1	考查		综合素养	40	0	40	3-2	
			10	1713016180	驾驶台资源管理 Bridge Resources Management	1	考查		综合素养	40	20	20	3-2	
			11	1713016200	GMDSS 设备操作 GMDSS Equipment Operation	2	考查		综合素养	60	0	60	3-2	
			12	1713016210	雷达操作与应用 Rarar Operation	1	考查		综合素养	40	0	40	3-2	
			13	1713016170	航线设计 Ship Course Design	1	考查		综合素养	30	0	30	4-1	
			14	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						33				1020	86	934		

表 6：航海技术(校企合作班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018510	专业导论(航海) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			7	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	

			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						5.5				136	136	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	是否工程实践与毕业设计相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	计算机及程序设计(Python)	必修	24	1.5	●
5	思想道德与法治	必修	8	0.5	
6	人工智能通识(B)	必修	4	0.25	●
7	马克思主义基本原理	必修	8	0.5	
8	大学物理实验	必修	48	2	●
9	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
10	机械制图	必修	4	0.25	●
11	电工学 I	必修	4	0.25	●
12	航海力学	必修	6	0.375	●
13	航海气象学与海洋学	必修	6	0.375	●
14	航海学	必修	10	0.625	●
15	轮机概论	必修	6	0.375	●
16	船舶结构与设备	必修	6	0.375	●
17	航海仪器	必修	10	0.625	●
18	航海英语会话与评估	必修	16	1	
19	电子海图显示与信息系统	必修	20	1.25	●
20	远洋业务与海商法	必修	2	0.125	
21	精通救生艇筏和救助艇	必修	28	1	●
22	船舶保安	必修	20	0.5	●
23	高级消防	必修	36	1	●
24	船艺训练	必修	30	1	●
25	基本安全	必修	32	0.93	●
26	精通急救	必修	12	0.5	
27	船舶认识实习（航海技术）	必修	120	4	●
28	货物积载与系固	必修	40	1	●
29	驾驶台资源管理	必修	20	0.5	●
30	GMDSS 设备操作	必修	60	2	●
31	雷达操作与应用	必修	40	1	●
32	航线设计	必修	30	1	●
33	毕业实习及毕业论文	必修	360	12	●
合计 Total			1244	44.805	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation**		●		

Requirements 6-1				
毕业要求 6-2 **Graduation Requirements 6-2**		●		
毕业要求 6-3 **Graduation Requirements 6-3**				●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 7-3 **Graduation Requirements 7-3**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		
毕业要求 10-2 **Graduation Requirements 10-2**		●		
毕业要求 11-1 **Graduation Requirements 11-1**				●

毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类																												
1	高等数学	H	H	H	M	M																						
2	线性代数	H	H	H	M	M																						
3	概率论与数理统计	M	M	M	H	H																						
4	大学物理	H	H	H	M	M																						
5	大学物理实验				M	M				H	H																	
6	大学化学(海上)		H				M	M	M		M																	
工程基础类																												
7	机械制图		H					M	M																			
8	MATLAB 语言与可视化仿真											H	H															
9	Python 数据分析											H	H															
10	计算机及程序设计(Python)											H	H										M					
专业基础类																												
11	专业导论（航海）	M												M			M						H				H	
12	电工学 I	H					M					M																
13	航海力学		H				M				M																	
14	航海专业数学	H	M	H		M																						
15	船舶原理	H	H	H		M										M												
专业方向类																												
16	航海气象学与海洋学	M			H										H								H					
17	航海学	M	M	H	H																		H					

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
18	轮机概论	M																		M	H	H						
19	船舶结构与设备		H	H	H																		H					
20	GMDSS 通信设备与业务			H				M				M	M															
21	船舶操纵		H	H	H								H										H					
22	航海仪器	M	H								H	M											H					
23	船舶货运	H	H	M		H			M																			
24	航海英语会话与评估											M	M										H	H				
25	航海英语阅读											M	M										H	H				
26	船舶安全管理							M										H		H	H	H						
27	船舶导航雷达	M									M	H			M	M												
28	船舶避碰与值班		H	H	H								H										H					
29	电子海图显示与信息系统		H	H	H							H											H					
30	远洋业务与海商法														M	H	H	H	M									
31	海事管理概论	M	M	M																H		H						
32	海洋船舶气象定线	M				H										H												
33	GMDSS 通信英语			H								M	M										H	H				
34	海事调查与案例分析	H				H										H			H									
35	特种货物运输				M	H				H	M																	
36	LNG 船货物运输				M	H				H	M																	
37	智能航海导论	M	M				H					H																H
38	物联网与船联网技术	M	M				H					H																H
39	航运大数据技术与应用	M	M				H					H																H
40	船舶建模与控制	M	M				H					H																H

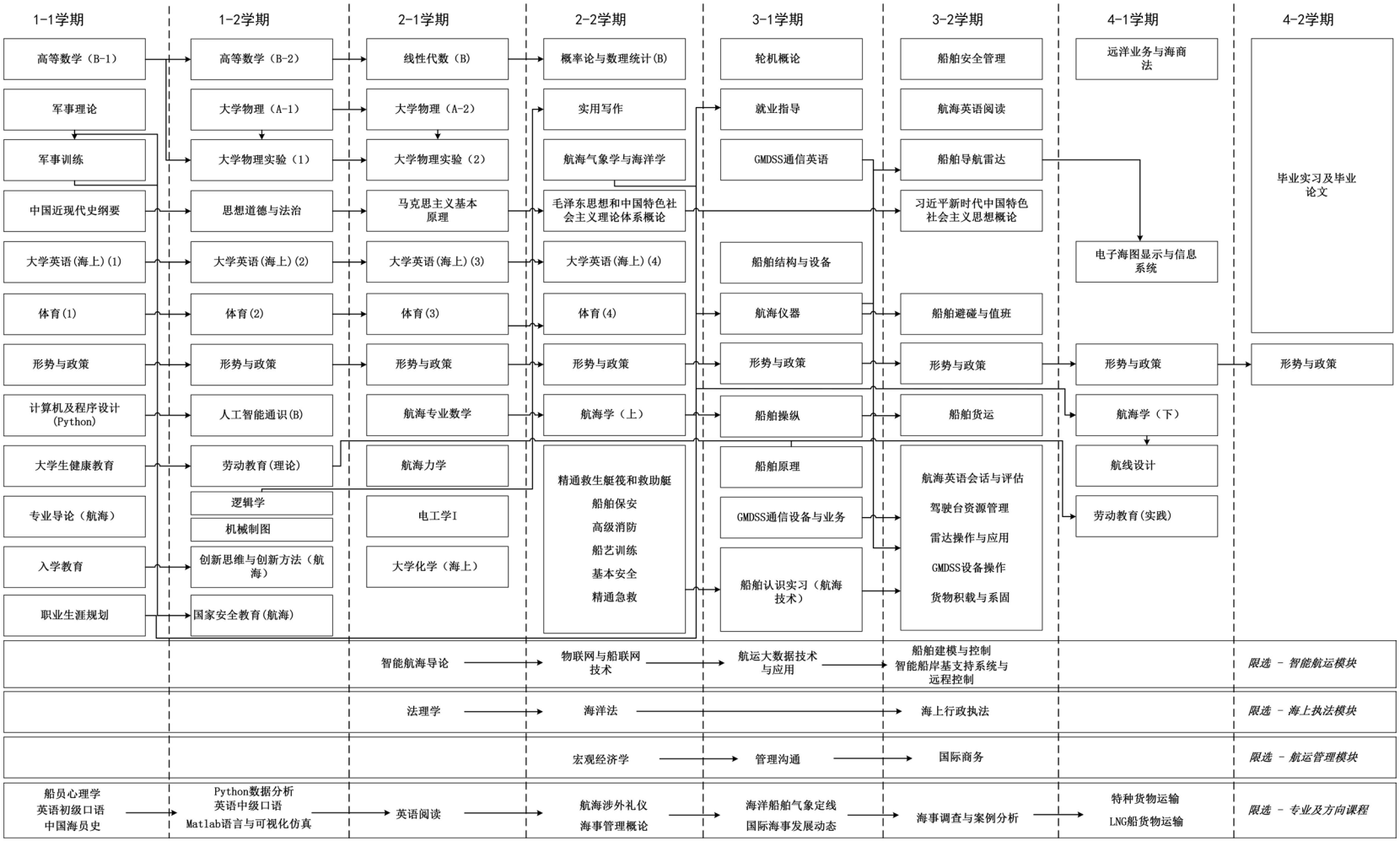
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
41	智能船岸基支持系统与远程控制	M	M				H					H																H
42	法理学							M									H	H	M			H						
43	海洋法							M									H	H	M			H						
44	海上行政执法							M									H	H	M			H						
45	宏观经济学							M											M			H			H	H		
46	管理沟通																			H	H	H	M	M				
47	国际商务							M														H		H	H	H		
48	中国海员史					H											M	H										H
49	船员心理学																H	H	M	M								
50	国际海事发展动态					H											M	M										
51	航海涉外礼仪																					H	H	H				
实践类																												
52	军事训练																			H	H	H						
53	精通救生艇筏和救助艇			M										H						H	H		M					
54	船舶保安			M										H						H	H		M					
55	高级消防			M										H						H	H		M					
56	船艺训练			M										H						H	H		M					
57	基本安全			M										H						H	H		M					
58	精通急救			M										H						H	H		M					
59	船舶认识实习（航海技术）			M										H						H	H		M					
60	货物积载与系固			M										H						H	H		M					
61	驾驶台资源管理			M										H						H	H		M					

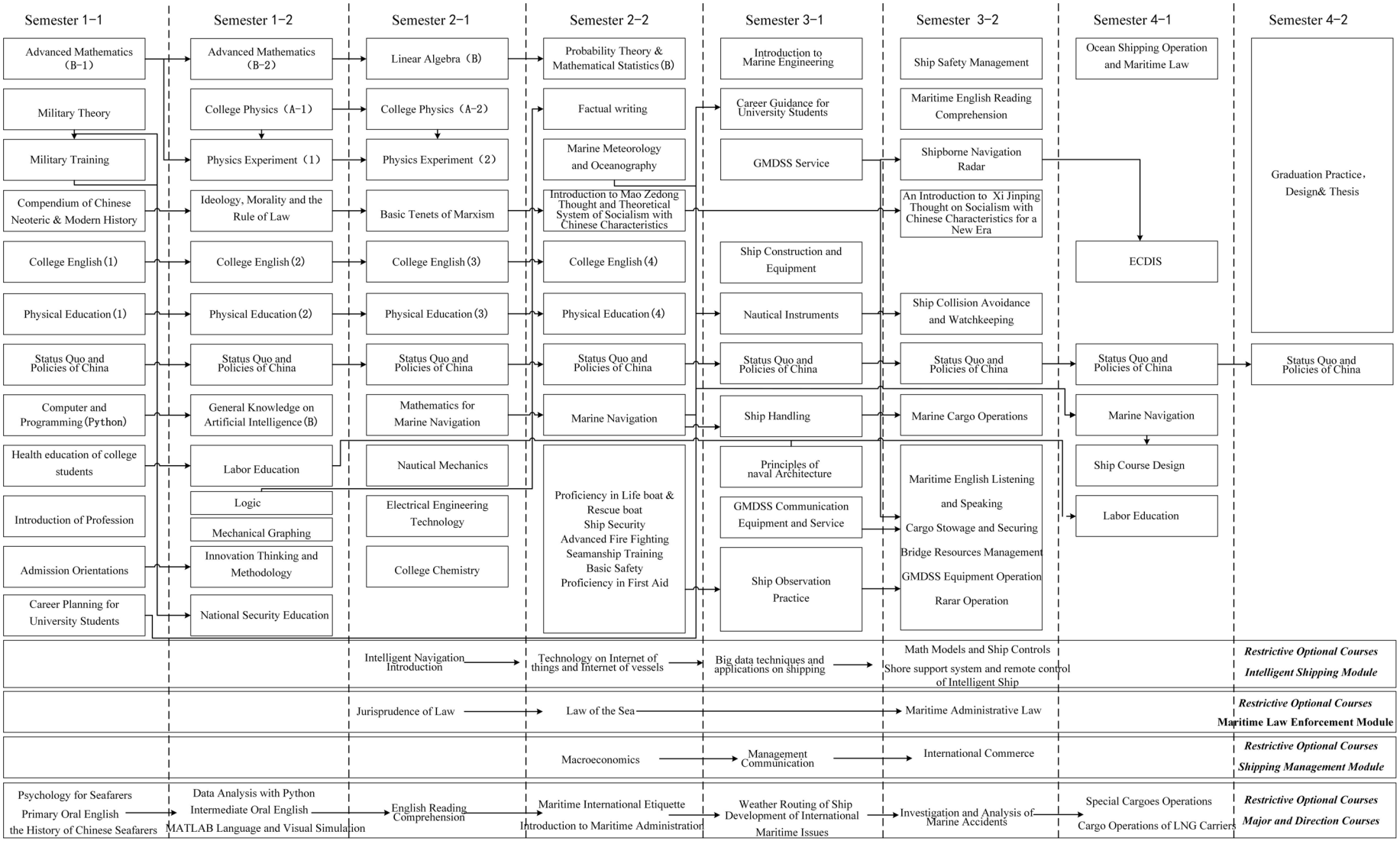
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
62	GMDSS 设备操作			M										H						H	H		M					
63	雷达操作与应用			M										H						H	H		M					
64	航线设计		H	M										H						H	H							
65	劳动教育(实践)								M					H					H									
66	毕业实习及毕业论文			H		H					H	M		H														
人文社科与通识类																												
67	马克思主义基本原理																H	H	H									
68	中国近现代史纲要																H	H	H									
69	思想道德与法治														M	M	H	H	H									
70	毛泽东思想和中国特色社会主义理论体系概论																H	H	H									
71	习近平新时代中国特色社会主义思想概论																H	H	H									
72	形势与政策																H	H	H									
73	军事理论																			H	H	H						
74	英语中级口语																				H		H	H				
75	英语初级口语																				H		H	H				
76	英语阅读																				H		H	H				
77	大学英语																				H	H	H	H				
78	体育																			H	H	H						
79	大学生健康教育																H	H	H	M	M							
80	职业生涯规划																H	H	H									
81	就业指导																H	H	H									

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
82	国家安全教育(航海)																H	H	H									
83	逻辑学	M	M			H										M											H	
84	人工智能通识																										H	H
85	实用写作																						H	H				
86	入学教育																H	H	H	H	H							
87	劳动教育(理论)								M					H					H									

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Advanced Mathematics (B-1)
Military Theory
Military Training
Compendium of Chinese Neoteric & Modern History
College English (1)
Physical Education (1)
Status Quo and Policies of China
Computer and Programming (Python)
Health education of college students
Introduction of Profession
Admission Orientations
Career Planning for University Students
Advanced Mathematics (B-2)
College Physics (A-1)
Physics Experiment (1)
Ideology, Morality and the Rule of Law
College English (2)
Physical Education (2)
Status Quo and Policies of China
General Knowledge on Artificial Intelligence (B)
Labor Education
Logic
Mechanical Graphing
Innovation Thinking and Methodology
National Security Education
Linear Algebra (B)
College Physics (A-2)
Physics Experiment (2)
Basic Tenets of Marxism
College English (3)
Physical Education (3)
Status Quo and Policies of China
Mathematics for Marine Navigation
Nautical Mechanics
Electrical Engineering Technology
College Chemistry
Probability Theory & Mathematical Statistics (B)
Factual writing
Marine Meteorology and Oceanography
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
College English (4)
Physical Education (4)
Status Quo and Policies of China
Marine Navigation
Proficiency in Life boat & Rescue boat
Ship Security
Advanced Fire Fighting
Seamanship Training
Basic Safety
Proficiency in First Aid
Introduction to Marine Engineering
Career Guidance for University Students
GMDSS Service
Ship Construction and Equipment
Nautical Instruments
Status Quo and Policies of China
Ship Handling
Principles of naval Architecture
GMDSS Communication Equipment and Service
Ship Observation Practice
Ship Safety Management
Maritime English Reading Comprehension
Shipborne Navigation Radar
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Ship Collision Avoidance and Watchkeeping
Status Quo and Policies of China
Marine Cargo Operations
Maritime English Listening and Speaking
Cargo Stowage and Securing
Bridge Resources Management
GMDSS Equipment Operation
Rarar Operation
Ocean Shipping Operation and Maritime Law
ECDIS
Status Quo and Policies of China
Marine Navigation
Ship Course Design
Labor Education
Graduation Practice, Design& Thesis
Status Quo and Policies of China
Intelligent Navigation Introduction
Technology on Internet of things and Internet of vessels
Big data techniques and applications on shipping
Math Models and Ship Controls
Shore support system and remote control of Intelligent Ship
Restrictive Optional Courses
Intelligent Shipping Module
Jurisprudence of Law
Law of the Sea
Maritime Administrative Law
Restrictive Optional Courses
Maritime Law Enforcement Module
Macroeconomics
Management Communication
International Commerce
Restrictive Optional Courses
Shipping Management Module
Psychology for Seafarers
Primary Oral English
the History of Chinese Seafarers
Data Analysis with Python
Intermediate Oral English
MATLAB Language and Visual Simulation
English Reading Comprehension
Maritime International Etiquette
Introduction to Maritime Administration
Weather Routing of Ship
Development of International Maritime Issues
Investigation and Analysis of Marine Accidents
Special Cargoes Operations
Cargo Operations of LNG Carriers
Restrictive Optional Courses
Major and Direction Courses

航海技术（LNG 校企合作班）专业本科培养计划（2025 版）

Undergraduate Program for Nautical Science Major [LNG School and Enterprise Cooperation Class]

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业培养爱党爱国、具有社会主义核心价值观，扎实的数学、自然科学和工程理论基础，系统掌握船舶航行、船舶货物管理、船舶作业管理和人员管理、船舶通信导航、智能船舶应用等航海核心知识和技能，家国情怀厚、全球视野广、综合素养好、创新能力强的新时代“航海家”型专业化人才。 This program cultivates new-era “navigator” type professional talents who love the Party and the country, have core socialist values, have a solid foundation in mathematics, natural sciences and engineering theory, and systematically master core navigation knowledge and skills such as ship navigation, ship cargo management, ship operation management and personnel management, ship communication and navigation, and intelligent ship applications. They have a strong sense of patriotism, a broad global vision,	1. 培养爱党爱国、德智体美劳全面发展的社会主义建设者和接班人，具有健全人格、强壮体魄、深厚人文素养和社会责任感，能够践行国家交通强国、海洋强国和航运强国战略，适应航海智能化发展的需要，遵守航海技术工程伦理、职业道德和规范； 1. To cultivate socialist builders and successors who love the Party and the country, are well-rounded in morals, intelligence, physique, aesthetics and labor, have sound personality, strong physique, profound humanistic qualities and social responsibility, can implement the national strategy of building a strong transportation country, a strong ocean country and a strong shipping country, adapt to the needs of the development of intelligent navigation, and abide by the ethics, professional ethics and norms of navigation technology and engineering; 2. 能够综合运用数学、自然科学、计算、工程基础和专业知识解决航海技术相关复杂工程问题，并在设计/开发解决方案过程中考虑社会、健康、安全、法律、文化、环境和可持续发展的影响； 2. Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to solve complex engineering problems related to marine technology, and consider the impact of society, health, safety, law, culture, environment and sustainable development in the process of designing/developing solutions; 3. 具有良好的国际视野，了解国际海事发展动态，能够在跨文化背景下有效沟通和交流，具有良好的团队合作精神，在团队

good comprehensive qualities, and strong innovation capabilities.	中发挥有效作用； 3. Have a good international perspective, understand the development of international maritime affairs, be able to communicate effectively in a cross-cultural context, have a good team spirit, and play an effective role in the team; 4. 具有实践动手能力、创新能力、批判性思维、自主学习和终身学习的意识，能不断学习提高并适应航运业发展，长期为液货海运相关产业服务。 4. Possess practical skills, innovation ability, critical thinking, self-learning and lifelong learning awareness, be able to continuously learn and improve and adapt to the development of the shipping industry, and serve the liquid cargo shipping related industries for a long time.

本专业的就业方向主要包括：远洋船舶驾驶、船舶引航、海事管理、航运及相关领域技术和管理等。学生在毕业后 5 年左右，预期能够达到的职业胜任力如下：

（1）在远洋液货运输相关船舶任职，并有能力担任管理级驾驶员职务；

（2）在交通运输工程、船舶与海洋工程、安全工程等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家和管理人才。

The employment directions of this major mainly include: ocean-going ship driving, ship pilotage, maritime management, shipping and related field technology and management, etc. About 5 years after graduation, students are expected to achieve the following professional competencies:

(1) Work on ocean-going liquid cargo transport-related ships and have the ability to serve as management-level mariners;

(2) Work in enterprises, institutions or administrative units related to transportation engineering, ship and marine engineering, safety engineering and other fields, and have the ability to grow into technical experts and management talents.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备将数学、自然科学、计算、工程基础和专业知识应用于航海技术领域复杂工程问题的能力。 1. Engineering knowledge: Ability to apply mathematics,	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到航海领域工程问题的恰当表述中； 1-1 Be able to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to the appropriate formulation of engineering problems in the field of navigation;

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
natural sciences, computing, engineering fundamentals and professional knowledge to complex engineering problems in the field of marine technology.	1-2 能够利用数学、自然科学、计算、工程基础和专业知识对复杂航海技术问题进行详细的分析和建模； 1-2 Be able to use mathematics, natural sciences, computing, engineering foundations and professional knowledge to conduct detailed analysis and modeling of complex navigation technical problems;
	1-3 能够利用数学、自然科学、计算、工程基础和专业知识，提出航海复杂工程问题的解决方案并验证其有效性。 1-3 Be able to use mathematics, natural science, computing, engineering fundamentals and professional knowledge to propose solutions to complex marine engineering problems and verify their effectiveness.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂航海技术问题，综合考虑可持续发展的要求，以获得有效结论。 2. Problem Analysis: Ability to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express and analyse complex maritime technical problems through literature research, taking into account the requirements of sustainable development to obtain effective conclusions.	2-1 能够识别和判断复杂航海技术问题的核心特征与关键环节及约束条件； 2-1 Be able to identify and judge the core features, key links and constraints of complex navigation technical problems;
	2-2 通过文献研究和多学科交叉分析，提出兼顾技术可行性与可持续发展要求的解决方案，并验证其有效性。 2-2 Through literature research and multidisciplinary cross-analysis, propose solutions that take into account both technical feasibility and sustainable development requirements, and verify their effectiveness.
3. 设计/开发解决方案：能够设计针对复杂航海技术问题的解决方案，设计满足航海需求的系统或流程，体现创新性，并从健康、安全与环境、全生命周期成	3-1 能够进行复杂工程问题的针对性调研，设计满足航海功能需求的基础方案； 3-1 Be able to conduct targeted research on complex engineering problems and design basic solutions that meet the needs of navigation functions;

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/Develop Solutions: Ability to design solutions to complex maritime technical problems, design systems or processes that meet maritime needs, demonstrate innovation, and consider feasibility from the perspectives of health, safety and environment, life cycle costs and net zero carbon requirements, legal and ethical, social and cultural aspects.	3-2 开发具有创新性的航海技术解决方案，优化系统性能并整合多学科知识； 3-2 Develop innovative marine technology solutions, optimize system performance and integrate multidisciplinary knowledge;
	3-3 综合健康、安全、全生命周期成本、净零碳目标及法律伦理等因素，验证解决方案的可持续性。 3-3 Verify the sustainability of the solution by taking into account factors such as health, safety, life cycle costs, net zero carbon goals, and legal ethics.
4. 研究：能够基于科学原理并采用科学方法对复杂航海技术问题进行研究，并能得到合理有效的结论。 4. Research: Ability to study complex navigation technology issues based on scientific principles and using scientific methods, and to obtain reasonable and effective conclusions.	4-1 运用科学方法和专业理论，分析航海技术领域的典型问题，并提出初步解决方案； 4-1 Use scientific methods and professional theories to analyze typical problems in the field of navigation technology and propose preliminary solutions;
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验实践方案，获取合理有效的结论。 4-2 Be able to select research routes based on professional theories and according to the characteristics of the object, design feasible experimental practice plans, and obtain reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂航海技术问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂航海技术问题的预测与模拟，并能够理解其局限性。 5. Use of modern tools: Ability to develop, select and use appropriate techniques, resources,	5-1 熟练使用现代主流和信息技术工具，完成常规技术分析与操作任务； 5-1 Proficient in using modern mainstream and information technology tools to complete routine technical analysis and operation tasks;
	5-2 能够开发或整合现代工具，解决航海技术领域的复杂问题，并评估其适用性与局限性。 5-2 Be able to develop or integrate modern tools to solve complex

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
modern engineering tools and information technology tools for complex marine technical problems, including prediction and simulation of complex marine technical problems, and be able to understand their limitations.	problems in the field of marine technology and assess their applicability and limitations.
6. 工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价航海实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development. When solving complex engineering problems, students should be able to analyze and evaluate the impact of maritime practices on health, safety, environment, law, and economic and social sustainable development based on engineering-related background knowledge, and understand the responsibilities that should be assumed.	6-1 具有工程实习和社会实践的经历，识别航海工程实践中的可持续发展关键要素； 6-1 Have experience in engineering internship and social practice, and identify the key elements of sustainable development in marine engineering practice;
	6-2 能够对比评估航海工程方案的多维度可持续性影响； 6-2 Be able to compare and evaluate the multi-dimensional sustainability impacts of marine engineering projects;
	6-3 能够提出符合可持续发展责任的航海工程改进方案。 6-3 Be able to propose improvement plans for marine engineering that are consistent with sustainable development responsibilities.
7. 工程伦理和职业规范。有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在航海工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and	7-1 理解航海职业的伦理要求和法律规范，树立工程报国意识； 7-1 Understand the ethical requirements and legal norms of the maritime profession and establish a sense of serving the country through engineering;
	7-2 在航海工程实践中识别伦理冲突，基于法律和职业规范做出合理决策； 7-2 Identify ethical conflicts in marine engineering practice and

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
professional norms. Have the awareness of serving the country and benefiting the people through engineering, have the literacy of humanities and social sciences and a sense of social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in the practice of marine engineering, and fulfill responsibilities.	make reasonable decisions based on laws and professional norms;
	7-3 主动履行社会责任，践行负责任的航海职业行为。 7-3 Actively fulfill social responsibilities and practice responsible maritime professional behavior.
8. 个人和团队：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Ability to assume roles as an individual, team member, and leader within a diverse, multidisciplinary team.	8-1 在航海管理团队中，明确个人职责并完成分工任务； 8-1 In the navigation management team, clarify individual responsibilities and complete division of labor tasks;
	8-2 在多样化、多学科背景团队中主动沟通协调，整合不同专业视角解决问题； 8-2 Actively communicate and coordinate within a diverse, multidisciplinary team, integrating different professional perspectives to solve problems;
	8-3 了解与本专业相关学科等领域的技术衔接，担任团队负责人，组织多背景成员高效完成复杂任务。 8-3 Understand the technical connection with related disciplines and other fields of this major, serve as a team leader, and organize members from multiple backgrounds to efficiently complete complex tasks.
9. 沟通：能够就复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重	9-1 能够使用航海专业术语和技术文档，清晰表达工程问题及解决方案； 9-1 Be able to use maritime terminology and technical documents to clearly express engineering problems and solutions;
	9-2 能够在国际化工作环境中进行有效沟通，适应语言和文化差异。

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
语言和文化差异。 9. Communication: Ability to communicate effectively with industry peers and the public on complex engineering issues, including writing reports and design documents, making presentations, expressing oneself clearly or responding to instructions; Ability to communicate in a cross-cultural context, and understand and respect language and cultural differences.	9-2 Ability to communicate effectively in an international work environment and adapt to language and cultural differences.
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. Project Management: Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 掌握航海相关项目管理的基本原理和方法，制定项目运营的初步计划，如制定船舶运营计划等； 10-1 Master the basic principles and methods of maritime-related project management and formulate preliminary plans for project operations, such as formulating ship operation plans;
	10-2 在多学科协作环境下，运用管理知识和经济分析方法优化航海相关项目决策。 10-2 Apply management knowledge and economic analysis methods to optimize decision-making in navigation-related projects in a multidisciplinary collaborative environment.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11. Lifelong learning: Have the awareness and ability of independent learning, lifelong learning and critical thinking, be able to understand the impact of	11-1 具备自主学习和持续更新航海专业知识的意识，掌握航海技术领域的学习方法； 11-1 Have the awareness of independent learning and continuous updating of maritime professional knowledge, and master the learning methods in the field of maritime technology;
	11-2 能够分析航海技术变革的社会影响，提出创新性解决方案以适应航海行业发展。 11-2 Be able to analyze the social impact of changes in maritime technology and propose innovative solutions to adapt to the

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
broad technological changes on engineering and society, and adapt to new technological changes.	development of the maritime industry.

三、专业核心课程

III．Core Courses

航海学、船舶结构与设备、船舶操纵、船舶避碰与值班、船舶货运、航海气象学与海洋学、船舶安全管理、航海仪器、船舶导航雷达、GMDSS 通信设备与业务、驾驶台资源管理、电子海图显示与信息系统、远洋业务与海商法

Marine Navigation, Ship Construction and Equipment, Ship Handling， Ship Collision Avoidance and Watch Keeping, Marine Cargo Operations, Marine meteorology and Oceanography, Ship Safety Management, Nautical Instruments, Shipborne Navigation Radar, GMDSS Communication Equipment and Services, Bridge Resources Management, Electronic Chart Display and Information System, Ocean Shipping Operation and Maritime Law

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船艺训练 Seamanship Training	●					●
航海学 Marine Navigation	●		●		●	●
船舶结构与设备 Ship Construction and Equipment	●					●
船舶操纵 Ship Handling	●	●		●	●	●
船舶避碰与值班 Ship Collision Avoidance and Watch Keeping	●				●	●
船舶货运 Marine Cargo Operations	●	●	●	●	●	●
航海气象学与海洋学 Marine meteorology and Oceanography	●	●	●		●	
船舶安全管理 Ship Safety Management	●	●		●		●

航海仪器 Nautical Instruments	●				●	●
船舶导航雷达 Shipborne Navigation Radar	●			●	●	●
GMDSS 通信设备与业务 GMDSS Communication Equipment and Services	●	●				●
驾驶台资源管理 Bridge Resources Management	●	●				●
液化气船货物操作安全导论	●	●			●	●
液化气船货物操作	●	●			●	●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="3">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="3">11</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>12</td></tr>
<tr><td>数学与自然科学</td><td>数学类
Mathematics</td><td>15</td></tr>
</table>

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="13"></td><td rowspan="2">类
Mathematics and Natural Sciences</td><td>物理类
Physics</td><td>9</td><td rowspan="13"></td><td rowspan="7"></td></tr>
<tr><td>化学类
Chemistry</td><td>2</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication
and Writing</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>11</td><td rowspan="4"></td><td rowspan="4">/</td></tr>
<tr><td rowspan="2">专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>45</td></tr>
<tr><td colspan="2">方向模块课（智能航运方向）
Directional Module Courses
方向模块课（海上执法模块）
Directional Module Courses
方向模块课（航运管理模块）
Directional Module Courses</td><td>/</td></tr>
<tr><td rowspan="3">集中实践
环节 Practical &Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>6.5</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
	其他实践课 Others	10.5		
合计：173 Total：173		154	11	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018510	专业导论(航海)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：航海技术(LNG 校企合作班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（173 学分） In-class Teaching Courses （173 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	154	11	8	7.5	180.5

表 2：航海技术(LNG 校企合作班)必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			5	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			6	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	

			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考试		综合素养	24	0	24	2-1	
			20	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	2-1	
			21	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			22	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			23	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			24	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			26	1713027714	大学英语(海上)(4) College English	3	考试		综合素养	48	48	0	2-2	
			27	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	2-2	

			28	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713015890	电工学 I Electrical Engineering Technology	2	考试		综合素养	32	28	4	2-1	
			3	1713015930	航海力学 Nautical Mechanics	2	考试		综合素养	32	26	6	2-1	
			4	1713025620	航海专业数学 Mathematics for Marine Navigation	2.5	考试		综合素养	40	40	0	2-1	
			5	1713029580	船舶原理 Principles of naval Architecture	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
	必修-专业及方向课程 Stream Courses		1	1713027370	液化气船货物操作安全导论 Introduction to Safety on Cargo Handling of Liquefied Gas Carriers	1	考查	√	综合素养	40	0	40	2-2	
			2	1713027390	航海学(上) MARINE NAVIGATION	4	考试	√	综合素养	64	58	6	2-2	课外学时 16
			3	1713029590	航海气象学与海洋学 Marine Meteorology and Oceanography	2.5	考试	√	综合素养	40	34	6	2-2	课外学时 8
			4	1713004480	轮机概论 Introduction to Marine Engineering	2	考查		综合素养	32	26	6	3-1	

			5	1713017420	航海仪器 Nautical Instruments	3	考试	√	综合素养	48	38	10	3-1	课外学时 16
			6	1713027260	船舶操纵 ship handling	2.5	考试	√	综合素养	40	40	0	3-1	课外学时 8
			7	1713029600	船舶结构与设备 Ship Construction and Equipment	2.5	考试	√	综合素养	40	34	6	3-1	课外学时 8
			8	1713029610	GMDSS 通信设备与业务 GMDSS Communication Equipment and Service	3.5	考试	√	综合素养	56	56	0	3-1	课外学时 8
			9	1713015970	航海英语会话与评估 Maritime English Listening and Speaking	2	考查		综合素养	32	16	16	3-2	
			10	1713016570	船舶导航雷达 Shipborne Navigation Radar	2	考试	√	综合素养	32	32	0	3-2	
			11	1713027250	船舶避碰与值班 Ship collision avoidance and watchkeeping	3	考试	√	综合素养	48	48	0	3-2	课外学时 8
			12	1713027290	航海英语阅读 Maritime English Reading Comprehension	3	考试	√	综合素养	48	48	0	3-2	课外学时 16
			13	1713027360	液化气船货物操作 Cargo Handling of Liquefied Gas Carriers	1.5	考查		综合素养	52	0	52	3-2	
			14	1713029620	船舶货运 Marine Cargo Operations	3.5	考试	√	综合素养	56	56	0	3-2	课外学时 8
			15	1713029630	船舶安全管理 Ship Safety Management	2.5	考试	√	综合素养	40	40	0	3-2	课外学时 8
			16	1713016550	电子海图显示与信息系统 ECDIS	2	考试	√	综合素养	32	12	20	4-1	

			17	1713027340	远洋业务与海商法 Ocean Shipping Operation and Maritime Law	2	考试	√	综合素养	32	30	2	4-1	
			18	1713027391	航海学(下) Marine Navigation	2.5	考试	√	综合素养	40	36	4	4-1	课外学时 8
合计 Total						123				2100	1682	418		

表 3：航海技术(LNG 校企合作班) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713025590	Python 数据分析 Data Analysis with Python	2	考查		综合素养	32	16	16	1-2	
			3	1713025600	MATLAB 语言与可视化仿真 MATLAB Language and Visual Simulation	2	考查		综合素养	32	16	16	1-2	
			4	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
			5	1713016040	英语阅读 English Reading Comprehension	2	考查		综合素养	32	32	0	2-1	

	限选-专业及方向课程（智能航运方向）Stream Courses		1	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	
			2	1713024640	物联网与船联网技术 Technology on Internet of things and Internet of vessels	1	考查		综合素养	16	16	0	2-2	
			3	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	3-1	
			4	1713016090	船舶建模与控制 Math Models and Ship Controls	1	考查		综合素养	16	16	0	3-2	
			5	1713024620	智能船岸基支持系统与远程控制 Shore support system and remote control of Intelligent Ship	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（海上执法模块）Stream Courses		1	1713006410	法理学 Jurisprudence of Law	3	考查		综合素养	48	48	0	2-1	
			2	1713005440	海洋法 Law of the Sea	2	考查		综合素养	32	32	0	2-2	
			3	1713018070	海上行政执法 Maritime Administrative Law Enforcement	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（航运管理		1	1713007480	宏观经济学 Macroeconomics	2	考查		综合素养	32	32	0	2-2	

			2	1713007540	管理沟通 Management Communication	2	考试		综合素养	32	32	0	3-1	
			3	1713018090	国际商务 International Commerce	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	1-1	
			2	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	1-1	
			3	1713016120	航海涉外礼仪 Maritime International Etiquette	1	考查		综合素养	16	16	0	2-2	
			4	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	2-2	
			5	1713016070	海洋船舶气象定线 Weather Routing of Ship	1	考查		综合素养	16	12	4	3-1	
			6	1713016130	国际海事发展动态 Development of International Maritime Issues	1	考查		综合素养	16	16	0	3-1	
			7	1713022080	GMDSS 通信英语 GMDSS Service	2	考试		综合素养	32	28	4	3-1	

			8	1713016050	海事调查与案例分析 Investigation and Analysis of Marine Accidents	1	考查		综合素养	16	16	0	3-2	
			9	1713016100	特种货物运输 Special Cargoes Operations	2	考查		综合素养	32	32	0	4-1	
			10	1713016110	LNG 船货物运输 Cargo Operations of LNG Carriers	2	考查		综合素养	32	16	16	4-1	
合计 Total						41.5				696	640	56		

表 4：航海技术(LNG 校企合作班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：航海技术(LNG 校企合作班) 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			5	1713025610	船艺训练 Seamanship Training	1	考查		综合素养	30	0	30	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	
			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713016150	船舶认识实习(航海技术) Ship Observation	4	考查		综合素养	120	0	120	3-1	
			9	1713016160	货物积载与系固 Cargo Stowage and Securing	1	考查		综合素养	40	0	40	3-2	
			10	1713016180	驾驶台资源管理 Bridge Resources Management	1	考查		综合素养	40	20	20	3-2	
			11	1713016200	GMDSS 设备操作 GMDSS Equipment Operation	2	考查		综合素养	60	0	60	3-2	
			12	1713016210	雷达操作与应用 Rarar Operation	1	考查		综合素养	40	0	40	3-2	
			13	1713016170	航线设计 Ship Course Design	1	考查		综合素养	30	0	30	4-1	
			14	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						33				1020	86	934		

表 6：航海技术(LNG 校企合作班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018510	专业导论(航海) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			7	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16

			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						5.5				136	136	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	计算机及程序设计(Python)	必修	24	1.5	●
5	思想道德与法治	必修	8	0.5	
6	人工智能通识(B)	必修	4	0.25	●
7	马克思主义基本原理	必修	8	0.5	
8	大学物理实验	必修	48	2	●
9	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
10	机械制图	必修	4	0.25	●
11	电工学 I	必修	4	0.25	●
12	航海力学	必修	6	0.375	●
13	航海气象学与海洋学	必修	6	0.375	●
14	航海学	必修	10	0.625	●
15	轮机概论	必修	6	0.375	●
16	船舶结构与设备	必修	6	0.375	●
17	航海仪器	必修	10	0.625	●
18	航海英语会话与评估	必修	16	1	
19	电子海图显示与信息系统	必修	20	1.25	●
20	远洋业务与海商法	必修	2	0.125	
21	液化气船货物操作安全导论	必修	52	1.5	●
22	液化气船货物操作	必修	40	1	●
23	精通救生艇筏和救助艇	必修	28	1	●
24	船舶保安	必修	20	0.5	●
25	高级消防	必修	36	1	●
26	船艺训练	必修	30	1	●
27	基本安全	必修	32	0.93	●
28	精通急救	必修	12	0.5	
29	船舶认识实习（航海技术）	必修	120	4	●
30	货物积载与系固	必修	40	1	●
31	驾驶台资源管理	必修	20	0.5	●
32	GMDSS 设备操作	必修	60	2	●
33	雷达操作与应用	必修	40	1	●
34	航线设计	必修	30	1	●
35	毕业实习及毕业论文	必修	360	12	●
合计 Total			1336	47.305	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation**		●		

Requirements 6-1				
毕业要求 6-2 **Graduation Requirements 6-2**		●		
毕业要求 6-3 **Graduation Requirements 6-3**				●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 7-3 **Graduation Requirements 7-3**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		
毕业要求 10-2 **Graduation Requirements 10-2**		●		
毕业要求 11-1 **Graduation Requirements 11-1**				●

毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类																												
1	高等数学	H	H	H	M	M																						
2	线性代数	H	H	H	M	M																						
3	概率论与数理统计	M	M	M	H	H																						
4	大学物理	H	H	H	M	M																						
5	大学物理实验				M	M				H	H																	
6	大学化学(海上)		H				M	M	M		M																	
工程基础类																												
7	机械制图		H					M	M																			
8	MATLAB 语言与可视化仿真											H	H															
9	Python 数据分析											H	H															
10	计算机及程序设计(Python)											H	H										M					
专业基础类																												
11	专业导论（航海）	M												M			M						H				H	
12	电工学 I	H					M					M																
13	航海力学		H				M				M																	
14	航海专业数学	H	M	H		M																						
15	船舶原理	H	H	H		M										M												
专业方向类																												
16	航海气象学与海洋学	M			H										H								H					
17	航海学	M	M	H	H																		H					

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
18	轮机概论	M																		M	H	H						
19	船舶结构与设备		H	H	H																		H					
20	GMDSS 通信设备与业务			H				M				M	M															
21	船舶操纵		H	H	H								H										H					
22	航海仪器	M	H								H	M											H					
23	船舶货运	H	H	M		H			M																			
24	航海英语会话与评估											M	M										H	H				
25	航海英语阅读											M	M										H	H				
26	船舶安全管理							M										H		H	H	H						
27	船舶导航雷达	M									M	H			M	M												
28	船舶避碰与值班		H	H	H								H										H					
29	电子海图显示与信息系统		H	H	H							H											H					
30	远洋业务与海商法														M	H	H	H	M									
31	远洋业务与海商法				H				H								H	H	H									
32	液化气船货物操作安全导论										H			H											H	H		
33	海事管理概论	M	M	M																H		H						
34	海洋船舶气象定线	M				H										H												
35	GMDSS 通信英语			H								M	M										H	H				
36	海事调查与案例分析	H				H										H			H									
37	特种货物运输				M	H				H	M																	
38	LNG 船货物运输				M	H				H	M																	
39	智能航海导论	M	M				H					H																H
40	物联网与船联网技术	M	M				H					H																H

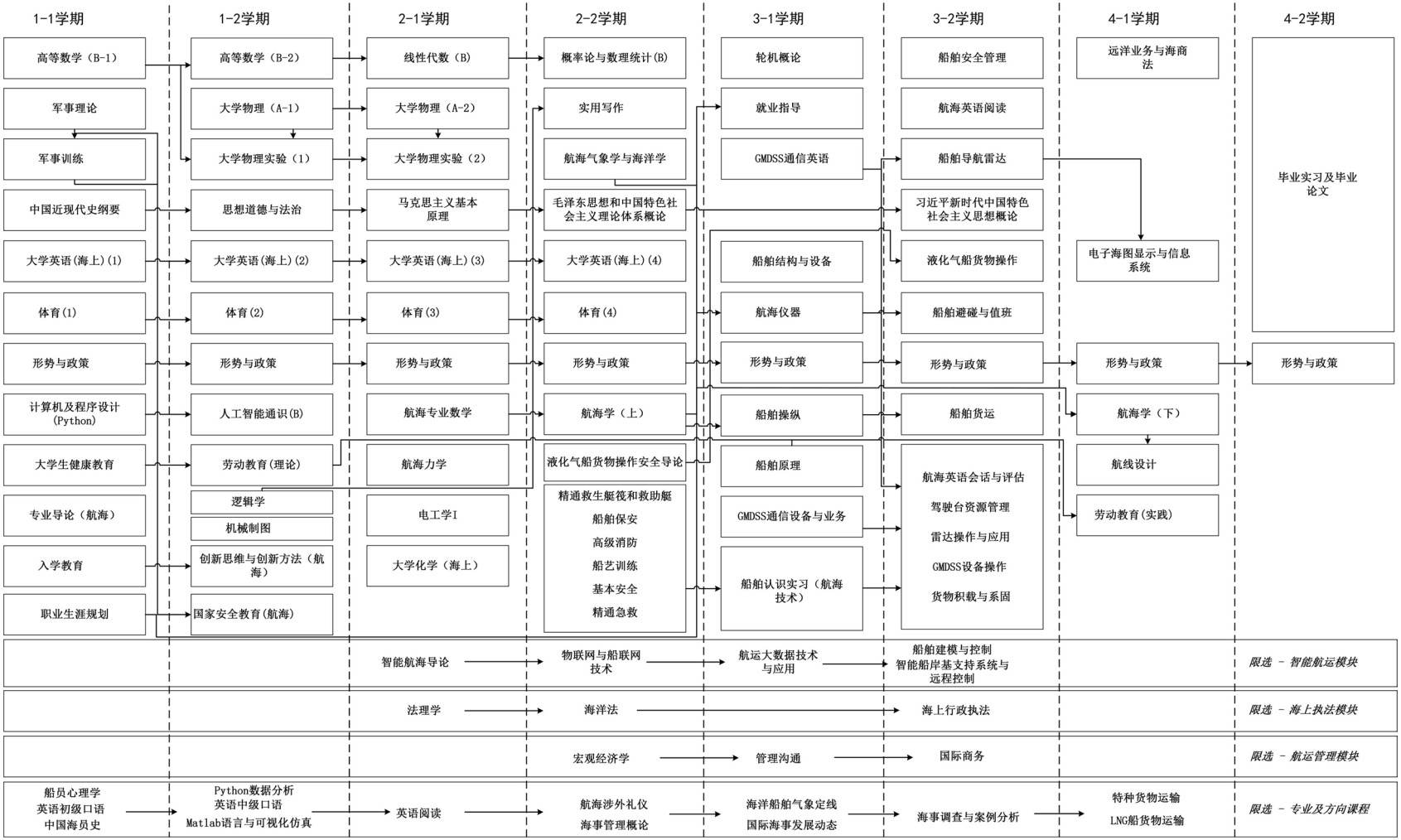
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
41	航运大数据技术与应用	M	M				H					H																H
42	船舶建模与控制	M	M				H					H																H
43	智能船岸基支持系统与远程控制	M	M				H					H																H
44	法理学							M									H	H	M			H						
45	海洋法							M									H	H	M			H						
46	海上行政执法							M									H	H	M			H						
47	宏观经济学							M											M			H			H	H		
48	管理沟通																			H	H	H	M	M				
49	国际商务							M														H		H	H	H		
50	中国海员史					H											M	H										H
51	船员心理学																H	H	M	M								
52	国际海事发展动态					H											M	M										
53	航海涉外礼仪																					H	H	H				
实践类																												
54	军事训练																			H	H	H						
55	精通救生艇筏和救助艇			M										H						H	H		M					
56	船舶保安			M										H						H	H		M					
57	高级消防			M										H						H	H		M					
58	船艺训练			M										H						H	H		M					
59	基本安全			M										H						H	H		M					
60	精通急救			M										H						H	H		M					
61	船舶认识实习（航海技术）			M										H						H	H		M					

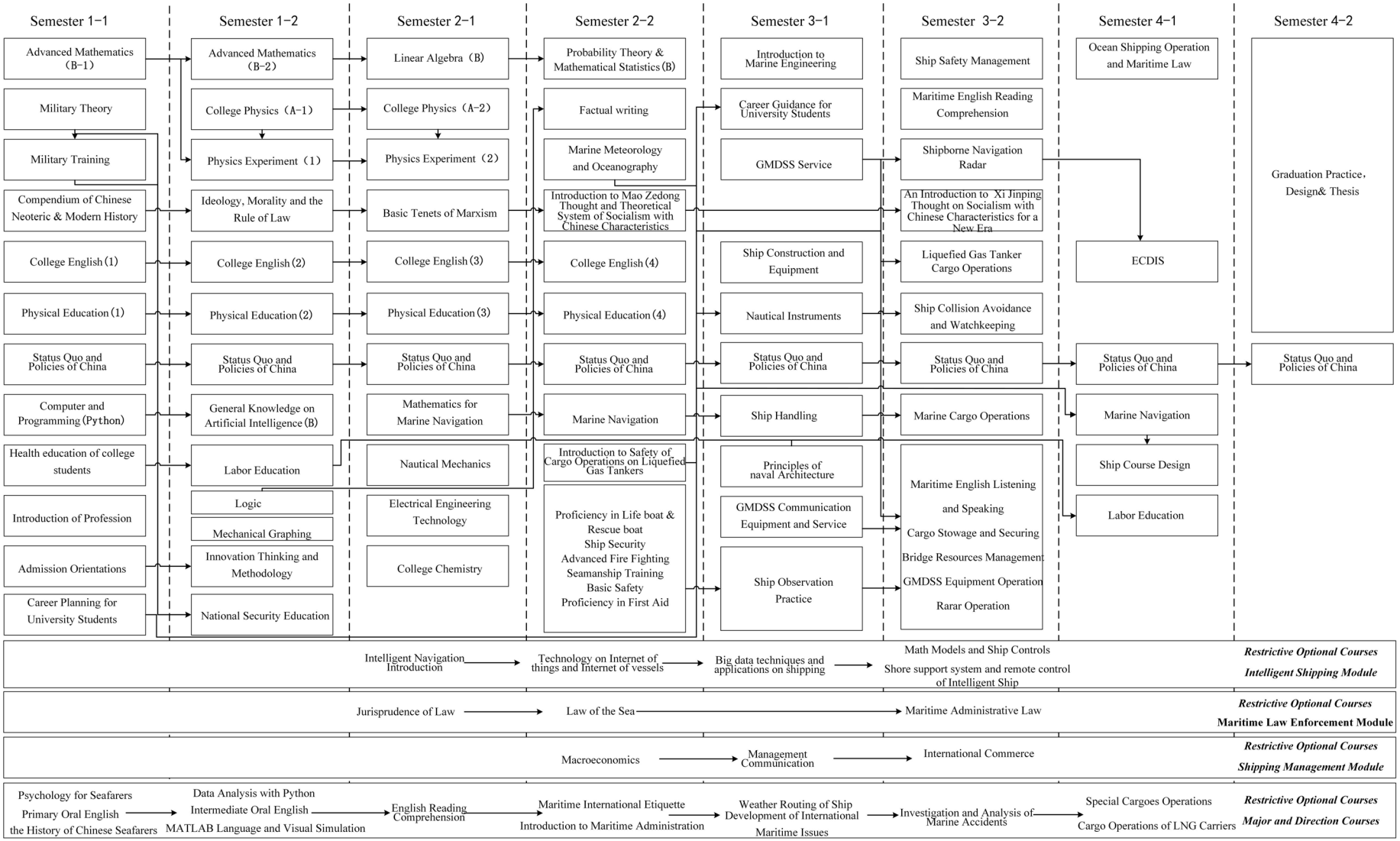
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
62	货物积载与系固			M										H						H	H		M					
63	驾驶台资源管理			M										H						H	H		M					
64	GMDSS 设备操作			M										H						H	H		M					
65	雷达操作与应用			M										H						H	H		M					
66	航线设计		H	M										H						H	H							
67	劳动教育(实践)								M					H					H									
68	毕业实习及毕业论文			H		H					H	M		H														
人文社科与通识类																												
69	马克思主义基本原理																H	H	H									
70	中国近现代史纲要																H	H	H									
71	思想道德与法治														M	M	H	H	H									
72	毛泽东思想和中国特色社会主义理论体系概论																H	H	H									
73	习近平新时代中国特色社会主义思想概论																H	H	H									
74	形势与政策																H	H	H									
75	军事理论																			H	H	H						
76	英语中级口语																				H		H	H				
77	英语初级口语																				H		H	H				
78	英语阅读																				H		H	H				
79	大学英语																				H	H	H	H				
80	体育																			H	H	H						
81	大学生健康教育																H	H	H	M	M							

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
82	职业生涯规划																H	H	H									
83	就业指导																H	H	H									
84	国家安全教育(航海)																H	H	H									
85	逻辑学	M	M			H										M											H	
86	人工智能通识																										H	H
87	实用写作																						H	H				
88	入学教育																H	H	H	H	H							
89	劳动教育(理论)								M					H					H									

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Advanced Mathematics (B-1)
Military Theory
Military Training
Compendium of Chinese Neoteric & Modern History
College English (1)
Physical Education (1)
Status Quo and Policies of China
Computer and Programming (Python)
Health education of college students
Introduction of Profession
Admission Orientations
Career Planning for University Students
Advanced Mathematics (B-2)
College Physics (A-1)
Physics Experiment (1)
Ideology, Morality and the Rule of Law
College English (2)
Physical Education (2)
Status Quo and Policies of China
General Knowledge on Artificial Intelligence (B)
Labor Education
Logic
Mechanical Graphing
Innovation Thinking and Methodology
National Security Education
Linear Algebra (B)
College Physics (A-2)
Physics Experiment (2)
Basic Tenets of Marxism
College English (3)
Physical Education (3)
Status Quo and Policies of China
Mathematics for Marine Navigation
Nautical Mechanics
Electrical Engineering Technology
College Chemistry
Probability Theory & Mathematical Statistics (B)
Factual writing
Marine Meteorology and Oceanography
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
College English (4)
Physical Education (4)
Status Quo and Policies of China
Marine Navigation
Introduction to Safety of Cargo Operations on Liquefied Gas Tankers
Proficiency in Life boat & Rescue boat
Ship Security
Advanced Fire Fighting
Seamanship Training
Basic Safety
Proficiency in First Aid
Introduction to Marine Engineering
Career Guidance for University Students
GMDSS Service
Ship Construction and Equipment
Nautical Instruments
Status Quo and Policies of China
Ship Handling
Principles of naval Architecture
GMDSS Communication Equipment and Service
Ship Observation Practice
Ship Safety Management
Maritime English Reading Comprehension
Shipborne Navigation Radar
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Liquefied Gas Tanker Cargo Operations
Ship Collision Avoidance and Watchkeeping
Status Quo and Policies of China
Marine Cargo Operations
Maritime English Listening and Speaking
Cargo Stowage and Securing
Bridge Resources Management
GMDSS Equipment Operation
Rarar Operation
Ocean Shipping Operation and Maritime Law
ECDIS
Status Quo and Policies of China
Marine Navigation
Ship Course Design
Labor Education
Graduation Practice, Design& Thesis
Status Quo and Policies of China
Intelligent Navigation Introduction
Technology on Internet of things and Internet of vessels
Big data techniques and applications on shipping
Math Models and Ship Controls
Shore support system and remote control of Intelligent Ship
Restrictive Optional Courses
Intelligent Shipping Module
Jurisprudence of Law
Law of the Sea
Maritime Administrative Law
Restrictive Optional Courses
Maritime Law Enforcement Module
Macroeconomics
Management Communication
International Commerce
Restrictive Optional Courses
Shipping Management Module
Psychology for Seafarers
Primary Oral English
the History of Chinese Seafarers
Data Analysis with Python
Intermediate Oral English
MATLAB Language and Visual Simulation
English Reading Comprehension
Maritime International Etiquette
Introduction to Maritime Administration
Weather Routing of Ship
Development of International Maritime Issues
Investigation and Analysis of Marine Accidents
Special Cargoes Operations
Cargo Operations of LNG Carriers
Restrictive Optional Courses
Major and Direction Courses

航海技术（智能航海班）专业本科培养计划（2025 版）

Undergraduate Program for Nautical Science Major

[Intelligent Marine Navigation Class]

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养爱党爱国、具有社会主义核心价值观，扎实的数学、自然科学和工程理论基础，系统掌握船舶航行、船舶货物管理、船舶作业管理和人员管理、船舶通信导航、智能船舶应用等航海核心知识和技能，家国情怀厚、全球视野广、综合素养好、创新能力强的新时代“航海家”型数智人才。 This program cultivates digital and intelligent talents of the new-era "navigator" type who love the Party and the country, have core socialist values, have a solid foundation in mathematics, natural sciences and engineering theory, and systematically master core navigation knowledge and skills such as ship navigation, ship cargo management, ship operation management and personnel management, ship communication and navigation, and intelligent ship applications. They have a strong sense of patriotism, a broad global vision, good comprehensive qualities, and strong innovation	1. 培养爱党爱国、德智体美劳全面发展的社会主义建设者和接班人，具有健全人格、强壮体魄、深厚人文素养和社会责任感，能够践行国家交通强国、海洋强国和航运强国战略，适应航海智能化发展的需要，遵守航海技术工程伦理、职业道德和规范； 1. To cultivate socialist builders and successors who love the Party and the country, are well-rounded in morals, intelligence, physique, aesthetics and labor, have sound personality, strong physique, profound humanistic qualities and social responsibility, can implement the national strategy of building a strong transportation country, a strong ocean country and a strong shipping country, adapt to the needs of the development of intelligent navigation, and abide by the ethics, professional ethics and norms of navigation technology and engineering;
	2. 能够综合运用数学、自然科学、计算、工程基础和专业知识解决航海技术相关复杂工程问题，并在设计/开发解决方案过程中考虑社会、健康、安全、法律、文化、环境和可持续发展的影响； 2. Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to solve complex engineering problems related to marine technology, and consider the impact of society, health, safety, law, culture, environment and sustainable development in the process of designing/developing solutions;
	3. 具有良好的国际视野，了解国际海事发展动态，能够在跨文化背景下有效沟通和交流，具有良好的团队合作精神，在团队中发挥有效作用；

capabilities.	3. Have a good international perspective, understand the development of international maritime affairs, be able to communicate effectively in a cross-cultural context, have a good team spirit, and play an effective role in the team;
	4. 具有实践动手能力、创新能力、数智思维、批判性思维、自主学习和终身学习的意识，能不断学习提高并适应社会发展，长期为航海领域相关产业、政府职能部门和学术界服务。 4. Possess practical skills, innovation ability, digital and intelligent thinking, critical thinking, self-learning and lifelong learning awareness, be able to continuously learn and improve and adapt to social development, and serve the maritime-related industries, government departments and academia for a long time.

本专业的就业方向主要包括：远洋船舶驾驶、船舶远程操纵、船舶引航、航海教育、海事管理、航运及相关领域技术和管理、攻读更高学位等。学生在毕业后 5 年左右，预期能够达到的职业胜任力如下：

（1）在包括新型、特殊船舶和智能船舶等在内的远洋运输船舶或在岸基远程控制中心任职，并有能力担任管理级驾驶员职务；

（2）在交通运输工程、船舶与海洋工程、安全工程等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家和管理人才；

（3）取得硕士学位并在相关领域任职，或攻读博士研究生，具有较高水平的科研能力；

（4）在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务和技术骨干。

The employment directions of this major mainly include: ocean-going ship driving, ship remote control, ship pilotage, navigation education, maritime management, shipping and related field technology and management, and pursuing higher degrees. About 5 years after graduation, students are expected to achieve the following professional competencies:

(1) Work on ocean-going vessels, including new, special and intelligent ships, or in shore-based remote control centres, and having the ability to serve as a management-level mariners;

(2) Work in enterprises, institutions or administrative units related to transportation engineering, ship and marine engineering, safety engineering and other fields, and have the ability to grow into technical experts and management talents;

(3) Obtain a master's degree and work in related fields, or study for a doctorate, and have a high level of scientific research ability;

(4) Work in colleges and universities or scientific research institutions, obtain intermediate or above professional titles, and have the ability to grow into business and technical backbones.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备将数学、自然科学、计算、工程基础和专业知识应用于航海技术领域复杂工程问题的能力。 1. Engineering knowledge: Ability to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to complex engineering problems in the field of marine technology.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到航海领域工程问题的恰当表述中； 1-1 Be able to apply mathematics, natural sciences, computing, engineering fundamentals and professional knowledge to the appropriate formulation of engineering problems in the field of navigation;
	1-2 能够利用数学、自然科学、计算、工程基础和专业知识对复杂航海技术问题进行详细的分析和建模； 1-2 Be able to use mathematics, natural sciences, computing, engineering foundations and professional knowledge to conduct detailed analysis and modeling of complex navigation technical problems;
	1-3 能够利用数学、自然科学、计算、工程基础和专业知识，提出航海复杂工程问题的解决方案并验证其有效性。 1-3 Be able to use mathematics, natural science, computing, engineering fundamentals and professional knowledge to propose solutions to complex marine engineering problems and verify their effectiveness.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂航海技术问题，综合考虑可持续发展的要求，以获得有效结论。 2. Problem Analysis: Ability to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express and analyse complex maritime technical problems through literature research, taking into account the requirements of sustainable development to	2-1 能够识别和判断复杂航海技术问题的核心特征与关键环节及约束条件； 2-1 Be able to identify and judge the core features, key links and constraints of complex navigation technical problems;
	2-2 通过文献研究和多学科交叉分析，提出兼顾技术可行性与可持续发展要求的解决方案，并验证其有效性。 2-2 Through literature research and multidisciplinary cross-analysis, propose solutions that take into account both technical feasibility and sustainable development requirements, and verify their effectiveness.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
obtain effective conclusions.	
3. 设计/开发解决方案：能够设计针对复杂航海技术问题的解决方案，设计满足航海需求的系统或流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/Develop Solutions: Ability to design solutions to complex maritime technical problems, design systems or processes that meet maritime needs, demonstrate innovation, and consider feasibility from the perspectives of health, safety and environment, life cycle costs and net zero carbon requirements, legal and ethical, social and cultural aspects.	3-1 能够进行复杂工程问题的针对性调研，设计满足航海功能需求的基础方案； 3-1 Be able to conduct targeted research on complex engineering problems and design basic solutions that meet the needs of navigation functions;
	3-2 开发具有创新性的航海技术解决方案，优化系统性能并整合多学科知识； 3-2 Develop innovative marine technology solutions, optimize system performance and integrate multidisciplinary knowledge;
	3-3 综合健康、安全、全生命周期成本、净零碳目标及法律伦理等因素，验证解决方案的可持续性。 3-3 Verify the sustainability of the solution by taking into account factors such as health, safety, life cycle costs, net zero carbon goals, and legal ethics.
4. 研究：能够基于科学原理并采用科学方法对复杂航海技术问题进行研究，并能得到合理有效的结论。 4. Research: Ability to study complex navigation technology issues based on scientific principles and using scientific methods, and to obtain reasonable and effective conclusions.	4-1 运用科学方法和专业理论，分析航海技术领域的典型问题，并提出初步解决方案； 4-1 Use scientific methods and professional theories to analyze typical problems in the field of navigation technology and propose preliminary solutions;
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验实践方案，获取合理有效的结论。 4-2 Be able to select research routes based on professional theories and according to the characteristics of the object, design feasible experimental practice plans, and obtain reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂航海技术问题，开发、选择与	5-1 熟练使用现代主流和信息技术工具，完成常规技术分析与操作任务；

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂航海技术问题的预测与模拟，并能够理解其局限性。 5. Use of modern tools: Ability to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for complex marine technical problems, including prediction and simulation of complex marine technical problems, and be able to understand their limitations.	5-1 Proficient in using modern mainstream and information technology tools to complete routine technical analysis and operation tasks;
	5-2 能够开发或整合现代工具，解决航海技术领域的复杂问题，并评估其适用性与局限性。 5-2 Be able to develop or integrate modern tools to solve complex problems in the field of marine technology and assess their applicability and limitations.
6. 工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价航海实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development. When solving complex engineering problems, students should be able to analyze and evaluate the impact of maritime practices on health, safety, environment, law, and economic and social sustainable development based on engineering-related background knowledge, and understand the responsibilities that should be assumed.	6-1 具有工程实习和社会实践的经历，识别航海工程实践中的可持续发展关键要素； 6-1 Have experience in engineering internship and social practice, and identify the key elements of sustainable development in marine engineering practice;
	6-2 能够对比评估航海工程方案的多维度可持续性影响； 6-2 Be able to compare and evaluate the multi-dimensional sustainability impacts of marine engineering projects;
	6-3 能够提出符合可持续发展责任的航海工程改进方案。 6-3 Be able to propose improvement plans for marine engineering that are consistent with sustainable development responsibilities.
7. 工程伦理和职业规范。有工程报国、为民造福的意识，具有	7-1 理解航海职业的伦理要求和法律规范，树立工程报国意识；

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
人文社会科学素养和社会责任感，能够理解和践行工程伦理，在航海工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms. Have the awareness of serving the country and benefiting the people through engineering, have the literacy of humanities and social sciences and a sense of social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in the practice of marine engineering, and fulfill responsibilities.	7-1 Understand the ethical requirements and legal norms of the maritime profession and establish a sense of serving the country through engineering;
	7-2 在航海工程实践中识别伦理冲突，基于法律和职业规范做出合理决策； 7-2 Identify ethical conflicts in marine engineering practice and make reasonable decisions based on laws and professional norms;
	7-3 主动履行社会责任，践行负责任的航海职业行为。 7-3 Actively fulfill social responsibilities and practice responsible maritime professional behavior.
8. 个人和团队：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Ability to assume roles as an individual, team member, and leader within a diverse, multidisciplinary team.	8-1 在航海管理团队中，明确个人职责并完成分工任务； 8-1 In the navigation management team, clarify individual responsibilities and complete division of labor tasks;
	8-2 在多样化、多学科背景团队中主动沟通协调，整合不同专业视角解决问题； 8-2 Actively communicate and coordinate within a diverse, multidisciplinary team, integrating different professional perspectives to solve problems;
	8-3 了解与本专业相关学科等领域的技术衔接，担任团队负责人，组织多背景成员高效完成复杂任务。 8-3 Understand the technical connection with related disciplines and other fields of this major, serve as a team leader, and organize members from multiple backgrounds to efficiently complete complex tasks.
9. 沟通：能够就复杂工程问题	9-1 能够使用航海专业术语和技术文档，清晰表达工程问题及

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: Ability to communicate effectively with industry peers and the public on complex engineering issues, including writing reports and design documents, making presentations, expressing oneself clearly or responding to instructions; Ability to communicate in a cross-cultural context, and understand and respect language and cultural differences.	解决方案； 9-1 Be able to use maritime terminology and technical documents to clearly express engineering problems and solutions;
	9-2 能够在国际化工作环境中进行有效沟通，适应语言和文化差异。 9-2 Ability to communicate effectively in an international work environment and adapt to language and cultural differences.
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. Project Management: Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 掌握航海相关项目管理的基本原理和方法，制定项目运营的初步计划，如制定船舶运营计划等； 10-1 Master the basic principles and methods of maritime-related project management and formulate preliminary plans for project operations, such as formulating ship operation plans;
	10-2 在多学科协作环境下，运用管理知识和经济分析方法优化航海相关项目决策。 10-2 Apply management knowledge and economic analysis methods to optimize decision-making in navigation-related projects in a multidisciplinary collaborative environment.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新	11-1 具备自主学习和持续更新航海专业知识的意识，掌握航海技术领域的学习方法； 11-1 Have the awareness of independent learning and continuous updating of maritime professional knowledge, and master the

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
技术变革。 11. Lifelong learning: Have the awareness and ability of independent learning, lifelong learning and critical thinking, be able to understand the impact of broad technological changes on engineering and society, and adapt to new technological changes.	learning methods in the field of maritime technology; 11-2 能够分析航海技术变革的社会影响，提出创新性解决方案以适应航海行业发展。 11-2 Be able to analyze the social impact of changes in maritime technology and propose innovative solutions to adapt to the development of the maritime industry.

三、专业核心课程

III．Core Courses

航海学、船舶结构与设备、船舶操纵、船舶避碰与值班、船舶货运、航海气象学与海洋学、船舶安全管理、航海仪器、船舶导航雷达、GMDSS 通信设备与业务、驾驶台资源管理、电子海图显示与信息系统、远洋业务与海商法

Marine Navigation, Ship Construction and Equipment, Ship Handling， Ship Collision Avoidance and Watch Keeping, Marine Cargo Operations, Marine meteorology and Oceanography, Ship Safety Management, Nautical Instruments, Shipborne Navigation Radar, GMDSS Communication Equipment and Services, Bridge Resources Management, Electronic Chart Display and Information System, Ocean Shipping Operation and Maritime Law

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船艺训练 Seamanship Training	●					●
航海学 Marine Navigation	●		●		●	●
船舶结构与设备 Ship Construction and Equipment	●					●
船舶操纵 Ship Handling	●	●		●	●	●
船舶避碰与值班 Ship Collision Avoidance and	●				●	●

Watch Keeping						
船舶货运 Marine Cargo Operations	●	●	●	●	●	●
航海气象学与海洋学 Marine meteorology and Oceanography	●	●	●		●	
船舶安全管理 Ship Safety Management	●	●		●		●
航海仪器 Nautical Instruments	●				●	●
船舶导航雷达 Shipborne Navigation Radar	●			●	●	●
GMDSS 通信设备与业务 GMDSS Communication Equipment and Services	●	●				●
驾驶台资源管理 Bridge Resources Management	●	●				●

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and

so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="13">9</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>12</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td rowspan="7">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>11</td><td rowspan="4"></td><td rowspan="4">/</td></tr>
<tr><td rowspan="2">专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>49.5</td></tr>
<tr><td colspan="2">方向模块课（海上执法模块）
Directional Module Courses
方向模块课（航运管理模块）
Directional Module Courses</td><td>/</td></tr>
<tr><td rowspan="2">集中实践环节 Practical &Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td></td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>6.5</td><td>/</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	10.5		
合计：173.5 Total：173.5		156.5	9	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018510	专业导论(航海)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：航海技术(智能航海班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（173.5 学分） In-class Teaching Courses （173.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	156.5	9	8	7.5	181

表 2：航海技术(智能航海班)必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory	必修-公共基础及通识教育课 Public		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	

			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			5	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			6	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	

			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考试		综合素养	24	0	24	2-1	
			20	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			21	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			25	1713027714	大学英语(海上)(4) College English	3	考试		综合素养	48	48	0	2-2	
			26	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	2-2	
			27	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	

	必修-专业及方向课程 Stream Courses		1	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	
			2	1713027310	航运信息网络 Shipping Information Network	2	考查		综合素养	32	32	0	2-1	
			3	1713016570	船舶导航雷达 Shipborne Navigation Radar	2	考试	√	综合素养	32	32	0	2-2	
			4	1713027320	物联网与船联网技术 Technology on Internet of Things and Internet of Vessels	2	考查		综合素养	32	32	0	2-2	
			5	1713027390	航海学(上) MARINE NAVIGATION	4	考试	√	综合素养	64	58	6	2-2	
			6	1713029590	航海气象学与海洋学 Marine Meteorology and Oceanography	2.5	考试	√	综合素养	40	34	6	2-2	
			7	1713004480	轮机概论 Introduction to Marine Engineering	2	考查		综合素养	32	26	6	3-1	
			8	1713017420	航海仪器 Nautical Instruments	3	考试	√	综合素养	48	38	10	3-1	
			9	1713027260	船舶操纵 ship handling	2.5	考试	√	综合素养	40	40	0	3-1	
			10	1713027330	智能船岸基支持系统与远程控制 Shore Based Support System and Remote Control of Intelligent Ship	1	考查		综合素养	16	16	0	3-1	
			11	1713029600	船舶结构与设备 Ship Construction and Equipment	2.5	考试	√	综合素养	40	34	6	3-1	

			12	1713029610	GMDSS 通信设备与业务 GMDSS Communication Equipment and Service	3.5	考试	√	综合素养	56	56	0	3-1	
			13	1713015970	航海英语会话与评估 Maritime English Listening and Speaking	2	考查		综合素养	32	16	16	3-2	
			14	1713027250	船舶避碰与值班 Ship collision avoidance and watchkeeping	3	考试	√	综合素养	48	48	0	3-2	
			15	1713027290	航海英语阅读 Maritime English Reading Comprehension	3	考试	√	综合素养	48	48	0	3-2	
			16	1713029620	船舶货运 Marine Cargo Operations	3.5	考试	√	综合素养	56	56	0	3-2	
			17	1713029630	船舶安全管理 Ship Safety Management	2.5	考试	√	综合素养	40	40	0	3-2	
			18	1713016550	电子海图显示与信息系统 ECDIS	2	考试	√	综合素养	32	12	20	4-1	
			19	1713027280	船舶智能航行技术 Intelligent Navigation for Ships	1	考查		综合素养	16	16	0	4-1	
			20	1713027340	远洋业务与海商法 Ocean Shipping Operation and Maritime Law	2	考试	√	综合素养	32	30	2	4-1	
			21	1713027391	航海学(下) Marine Navigation	2.5	考试	√	综合素养	40	36	4	4-1	
	必修-专业(类)基础课 Disciplina		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	

			2	1713015890	电工学 I Electrical Engineering Technology	2	考试		综合素养	32	28	4	2-1	
			3	1713015930	航海力学 Nautical Mechanics	2	考试		综合素养	32	26	6	2-1	
			4	1713025620	航海专业数学 Mathematics for Marine Navigation	2.5	考试		综合素养	40	40	0	2-1	
			5	1713029580	船舶原理 Principles of naval Architecture	2.5	考试	√	综合素养	40	40	0	3-1	
合计 Total						125.5				2088	1762	326		

表 3：航海技术(智能航海班) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713025590	Python 数据分析 Data Analysis with Python	2	考查		综合素养	32	16	16	1-2	
			3	1713025600	MATLAB 语言与可视化仿真 MATLAB Language and Visual Simulation	2	考查		综合素养	32	16	16	1-2	

			4	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
			5	1713016040	英语阅读 English Reading Comprehension	2	考查		综合素养	32	32	0	2-1	
	限选-专业及方向课程（海上执法模块）Stream Courses		1	1713006410	法理学 Jurisprudence of Law	3	考查		综合素养	48	48	0	2-1	
			2	1713005440	海洋法 Law of the Sea	2	考查		综合素养	32	32	0	2-2	
			3	1713018070	海上行政执法 Maritime Administrative Law Enforcement	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程（航运管理模块）Stream Courses		1	1713007480	宏观经济学 Macroeconomics	2	考查		综合素养	32	32	0	2-2	
			2	1713007540	管理沟通 Management Communication	2	考试		综合素养	32	32	0	3-1	
			3	1713018090	国际商务 International Commerce	2	考试		综合素养	32	32	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	1-1	
			2	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	1-1	

			3	1713016120	航海涉外礼仪 Maritime International Etiquette	1	考查		综合素养	16	16	0	2-2	
			4	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	2-2	
			5	1713016070	海洋船舶气象定线 Weather Routing of Ship	1	考查		综合素养	16	12	4	3-1	
			6	1713016130	国际海事发展动态 Development of International Maritime Issues	1	考查		综合素养	16	16	0	3-1	
			7	1713022080	GMDSS 通信英语 GMDSS Service	2	考试		综合素养	32	28	4	3-1	
			8	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	3-1	
			9	1713016050	海事调查与案例分析 Investigation and Analysis of Marine Accidents	1	考查		综合素养	16	16	0	3-2	
			10	1713016090	船舶建模与控制 Math Models and Ship Controls	1	考查		综合素养	16	16	0	3-2	
			11	1713016100	特种货物运输 Special Cargoes Operations	2	考查		综合素养	32	32	0	4-1	
			12	1713016110	LNG 船货物运输 Cargo Operations of LNG Carriers	2	考查		综合素养	32	16	16	4-1	

合计 Total					37.5				632	576	56		

表 4：航海技术(智能航海班)任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and“other courses”. Among them, need to take at least 2 credits from“Humanities and art courses”,“national and social courses”,“science and technology courses”, “innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.
2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：航海技术(智能航海班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	

			5	1713025610	船艺训练 Seamanship Training	1	考查		综合素养	30	0	30	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	
			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713016150	船舶认识实习(航海技术) Ship Observation	4	考查		综合素养	120	0	120	3-1	
			9	1713016160	货物积载与系固 Cargo Stowage and Securing	1	考查		综合素养	40	0	40	3-2	
			10	1713016180	驾驶台资源管理 Bridge Resources Management	1	考查		综合素养	40	20	20	3-2	
			11	1713016200	GMDSS 设备操作 GMDSS Equipment Operation	2	考查		综合素养	60	0	60	3-2	
			12	1713016210	雷达操作与应用 Rarar Operation	1	考查		综合素养	40	0	40	3-2	
			13	1713016170	航线设计 Ship Course Design	1	考查		综合素养	30	0	30	4-1	
			14	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						33				1020	86	934		

表 6：航海技术(智能航海班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018510	专业导论(航海) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			7	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	

			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						5.5				136	136	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	计算机及程序设计(Python)	必修	24	1.5	●
5	思想道德与法治	必修	8	0.5	
6	人工智能通识(B)	必修	4	0.25	●
7	马克思主义基本原理	必修	8	0.5	
8	大学物理实验	必修	48	2	●
9	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
10	机械制图	必修	4	0.25	●
11	电工学 I	必修	4	0.25	●
12	航海力学	必修	6	0.375	●
13	航海气象学与海洋学	必修	6	0.375	●
14	航海学	必修	10	0.625	●
15	轮机概论	必修	6	0.375	●
16	船舶结构与设备	必修	6	0.375	●
17	航海仪器	必修	10	0.625	●
18	航海英语会话与评估	必修	16	1	
19	电子海图显示与信息系统	必修	20	1.25	●
20	远洋业务与海商法	必修	2	0.125	
21	精通救生艇筏和救助艇	必修	28	1	●
22	船舶保安	必修	20	0.5	●
23	高级消防	必修	36	1	●
24	船艺训练	必修	30	1	●
25	基本安全	必修	32	0.93	●
26	精通急救	必修	12	0.5	
27	船舶认识实习（航海技术）	必修	120	4	●
28	货物积载与系固	必修	40	1	●
29	驾驶台资源管理	必修	20	0.5	●
30	GMDSS 设备操作	必修	60	2	●
31	雷达操作与应用	必修	40	1	●
32	航线设计	必修	30	1	●
33	毕业实习及毕业论文	必修	360	12	●
合计 Total			1244	44.805	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation**		●		

Requirements 6-1				
毕业要求 6-2 **Graduation Requirements 6-2**		●		
毕业要求 6-3 **Graduation Requirements 6-3**				●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 7-3 **Graduation Requirements 7-3**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		
毕业要求 10-2 **Graduation Requirements 10-2**		●		
毕业要求 11-1 **Graduation Requirements 11-1**				●

毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类																												
1	高等数学	H	H	H	M	M																						
2	线性代数	H	H	H	M	M																						
3	概率论与数理统计	M	M	M	H	H																						
4	大学物理	H	H	H	M	M																						
5	大学物理实验				M	M				H	H																	
工程基础类																												
6	机械制图		H					M	M																			
7	MATLAB 语言与可视化仿真											H	H															
8	Python 数据分析											H	H															
9	计算机及程序设计(Python)											H	H										M					
专业基础类																												
10	专业导论（航海）	M												M			M						H				H	
11	电工学 I	H					M					M																
12	航海力学		H				M				M																	
13	航海专业数学	H	M	H		M																						
14	船舶原理	H	H	H		M										M												
专业方向类																												
15	航海气象学与海洋学	M			H										H								H					
16	航海学	M	M	H	H																		H					
17	轮机概论	M																		M	H	H						

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
18	船舶结构与设备		H	H	H																		H					
19	GMDSS 通信设备与业务			H				M				M	M															
20	船舶操纵		H	H	H								H										H					
21	航海仪器	M	H								H	M											H					
22	船舶货运	H	H	M		H			M																			
23	航海英语会话与评估											M	M										H	H				
24	航海英语阅读											M	M										H	H				
25	船舶安全管理							M										H		H	H	H						
26	船舶导航雷达	M									M	H			M	M												
27	船舶避碰与值班		H	H	H								H										H					
28	电子海图显示与信息系统		H	H	H							H											H					
29	远洋业务与海商法														M	H	H	H	M									
30	海事管理概论	M	M	M																H		H						
31	海洋船舶气象定线	M				H										H												
32	GMDSS 通信英语			H								M	M										H	H				
33	海事调查与案例分析	H				H										H			H									
34	特种货物运输				M	H				H	M																	
35	LNG 船货物运输				M	H				H	M																	
36	智能航海导论	M	M				H					H																H
37	物联网与船联网技术	M	M				H					H																H
38	航运信息网络	M	M				H					H																H
39	船舶智能航行技术	M	M				H					H																H
40	智能船岸基支持系统与远程控	M	M				H					H																H

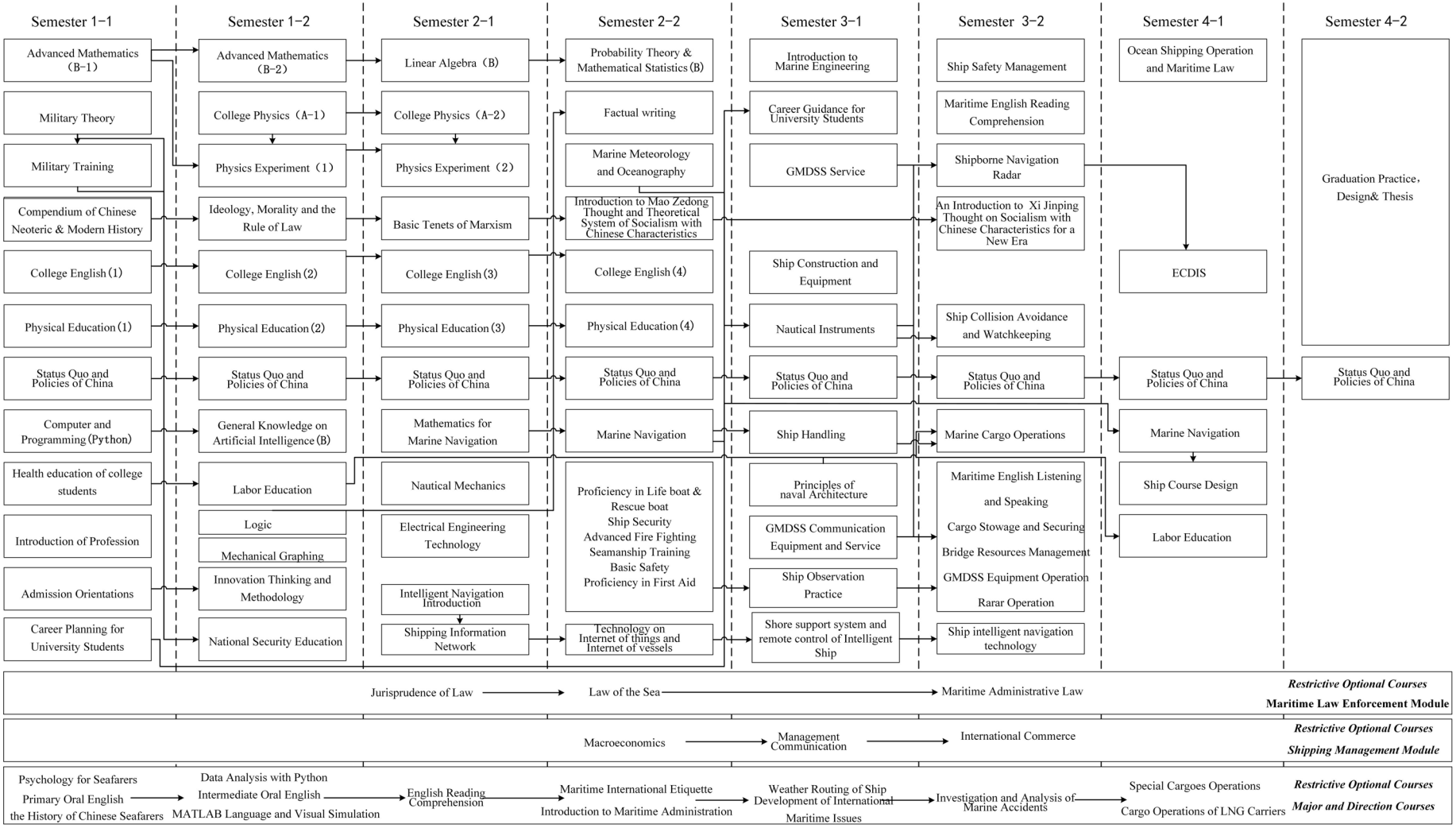
序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
	制																											
41	法理学							M									H	H	M			H						
43	海洋法							M									H	H	M			H						
44	海上行政执法							M									H	H	M			H						
45	宏观经济学							M											M			H			H	H		
46	管理沟通																			H	H	H	M	M				
47	国际商务							M														H		H	H	H		
48	中国海员史					H											M	H										H
49	船员心理学																H	H	M	M								
50	国际海事发展动态					H											M	M										
51	航海涉外礼仪																					H	H	H				
52	航运大数据技术与应用	M	M				H					H																
53	船舶建模与控制	M	M				H					H																
实践类																												
54	军事训练																			H	H	H						
55	精通救生艇筏和救助艇			M										H						H	H		M					
56	船舶保安			M										H						H	H		M					
57	高级消防			M										H						H	H		M					
58	船艺训练			M										H						H	H		M					
59	基本安全			M										H						H	H		M					
60	精通急救			M										H						H	H		M					
61	船舶认识实习（航海技术）			M										H						H	H		M					
62	货物积载与系固			M										H						H	H		M					

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
63	驾驶台资源管理			M										H						H	H		M					
64	GMDSS 设备操作			M										H						H	H		M					
65	雷达操作与应用			M										H						H	H		M					
66	航线设计		H	M										H						H	H							
67	劳动教育(实践)								M					H					H									
68	毕业实习及毕业论文			H		H					H	M		H														
人文社科与通识类																												
69	马克思主义基本原理																H	H	H									
70	中国近现代史纲要																H	H	H									
71	思想道德与法治														M	M	H	H	H									
72	毛泽东思想和中国特色社会主义理论体系概论																H	H	H									
73	习近平新时代中国特色社会主义思想概论																H	H	H									
74	形势与政策																H	H	H									
75	军事理论																			H	H	H						
76	英语中级口语																				H		H	H				
77	英语初级口语																				H		H	H				
78	英语阅读																				H		H	H				
79	大学英语																				H	H	H	H				
80	体育																			H	H	H						
81	大学生健康教育																H	H	H	M	M							
82	职业生涯规划																H	H	H									

序号	课程名称	毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6			毕业要求 7			毕业要求 8			毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	6-3	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	10-1	10-2	11-1	11-2
83	就业指导																H	H	H									
84	国家安全教育(航海)																H	H	H									
85	逻辑学	M	M			H										M											H	
86	人工智能通识																										H	H
87	实用写作																						H	H				
88	入学教育																H	H	H	H	H							
89	劳动教育(理论)								M					H					H									

十一、课程配置流程图

XI. Flowchart of Course Configuration


Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Advanced Mathematics (B-1)
Military Theory
Military Training
Compendium of Chinese Neoteric & Modern History
College English (1)
Physical Education (1)
Status Quo and Policies of China
Computer and Programming (Python)
Health education of college students
Introduction of Profession
Admission Orientations
Career Planning for University Students
Advanced Mathematics (B-2)
College Physics (A-1)
Physics Experiment (1)
Ideology, Morality and the Rule of Law
College English (2)
Physical Education (2)
Status Quo and Policies of China
General Knowledge on Artificial Intelligence (B)
Labor Education
Logic
Mechanical Graphing
Innovation Thinking and Methodology
National Security Education
Linear Algebra (B)
College Physics (A-2)
Physics Experiment (2)
Basic Tenets of Marxism
College English (3)
Physical Education (3)
Status Quo and Policies of China
Mathematics for Marine Navigation
Nautical Mechanics
Electrical Engineering Technology
Intelligent Navigation Introduction
Shipping Information Network
Probability Theory & Mathematical Statistics (B)
Factual writing
Marine Meteorology and Oceanography
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
College English (4)
Physical Education (4)
Status Quo and Policies of China
Marine Navigation
Proficiency in Life boat & Rescue boat
Ship Security
Advanced Fire Fighting
Seamanship Training
Basic Safety
Proficiency in First Aid
Technology on Internet of things and Internet of vessels
Introduction to Marine Engineering
Career Guidance for University Students
GMDSS Service
Ship Construction and Equipment
Nautical Instruments
Status Quo and Policies of China
Ship Handling
Principles of naval Architecture
GMDSS Communication Equipment and Service
Ship Observation Practice
Shore support system and remote control of Intelligent Ship
Ship Safety Management
Maritime English Reading Comprehension
Shipborne Navigation Radar
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Ship Collision Avoidance and Watchkeeping
Status Quo and Policies of China
Marine Cargo Operations
Maritime English Listening and Speaking
Cargo Stowage and Securing
Bridge Resources Management
GMDSS Equipment Operation
Rarar Operation
Ship intelligent navigation technology
Ocean Shipping Operation and Maritime Law
ECDIS
Status Quo and Policies of China
Marine Navigation
Ship Course Design
Labor Education
Graduation Practice, Design& Thesis
Status Quo and Policies of China
Jurisprudence of Law
Law of the Sea
Maritime Administrative Law
Restrictive Optional Courses
Maritime Law Enforcement Module
Macroeconomics
Management Communication
International Commerce
Restrictive Optional Courses
Shipping Management Module
Psychology for Seafarers
Primary Oral English
the History of Chinese Seafarers
Data Analysis with Python
Intermediate Oral English
MATLAB Language and Visual Simulation
English Reading Comprehension
Maritime International Etiquette
Introduction to Maritime Administration
Weather Routing of Ship
Development of International Maritime Issues
Investigation and Analysis of Marine Accidents
Special Cargoes Operations
Cargo Operations of LNG Carriers
Restrictive Optional Courses
Major and Direction Courses

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订是于2021年进行，为满足教育教学改革的需要，我校今年组织对本科专业培养计划进行再次全面修订。

新版培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮着的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

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教学院长：84725296

教 务 处：84723005

航海技术专业负责人：李连博

航海技术教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Maritime Safety Administration Major

[2025 级适用]

★海事管理专业（120408T）

大连海事大学教务处

2025 年 9 月

海事管理专业本科培养计划（2025 版）

Undergraduate Program for Maritime Safety Administration Major

一、培养目标

I. Program Objectives

本专业培养德、智、体、美、劳全面发展，熟悉海事公共管理的理论和方法，掌握海事管理的基础理论、专门知识和专业技能，具备“航行安全、水域清洁、服务交通、奉献社会”的公共意识和责任，具有创新精神、创业意识和创新创业能力，能适应社会发展要求的海事专业人才。

This program aims to cultivate the students to be moral, intellectual, physical, and aesthetic, master the theories and skills of the maritime public administration, master the basic theories, specialized knowledge, and professional skills of maritime management, have a public awareness and responsibility of "safe navigation, clean waters, serving transportation, and contributing to society", have innovative spirit, entrepreneurial awareness, and innovative entrepreneurial ability, to be maritime professionals who can adapt to the requirements of social development.

二、毕业要求

II. Graduation Requirements

毕业要求 **Graduation Requirements**	毕业要求具体描述 **Observation Points**
毕业要求 1 **Graduation Requirements 1**	热爱祖国，拥护中国共产党领导，掌握马克思主义基本原理、毛泽东思想和中国特色社会主义理论体系、习近平新时代特色社会主义思想；具有为人民服务，为社会主义现代化服务，为国家富强、民族昌盛而奋斗的志向和责任感；具有敬业爱岗、艰苦奋斗、热爱劳动、遵纪守法、团结合作的品质；具有良好的思想品德、社会公德和职业道德。 Be patriotic, support the leadership of the Chinese Communist Party, master the basic principles of Marxism, Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics, Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, have the sense of responsibility to serve the people, serve the socialist modernization, drive and strive for the prosperity of the nation; devote themselves to their jobs; be diligent; obey the laws; be united and cooperative; and observe social and professional ethics.
毕业要求 2 **Graduation Requirements 2**	具有一定的体育和军事基本知识，掌握科学锻炼身体的基本技能，养成良好的体育锻炼和卫生习惯，受到必要的军事训练，达到国家规定的大学生体育和军事训练合格标准，具备健全的心理和健康的体魄，能够履行建设祖国和保卫祖国的神圣义务。

毕业要求 Graduation Requirements	毕业要求具体描述 Observation Points
	Possess basic knowledge of physical and military cultures; master basic skills of physical exercises; meet the requirements of physical and military training; be psychologically and physically healthy; be able to fulfill the obligations of building and safeguarding the nation.
毕业要求 3 **Graduation Requirements 3**	具有独立获取知识、提出问题、分析问题和解决问题的基本能力及开拓创新的精神，具备一定的从事本专业业务工作的能力和适应相邻专业业务工作的基本能力与素质。 Have the basic ability to independently acquire knowledge, raise questions, analyze and solve problems, as well as the spirit of innovation and exploration，have the ability to engage in professional work and the basic skills and qualities to adapt to adjacent professional work.
毕业要求 4 **Graduation Requirements 4**	具有一定的人文社会科学知识；具有一定的公共管理、行政法、安全管理基础理论的相关知识。 Have certain knowledge on social science; have relevant knowledge of basic theories in public management, administrative law, and safety management.
毕业要求 5 **Graduation Requirements 5**	熟悉海事管理业务，能够适任海事管理相关工作，具有较强的独立工作能力、初步的组织管理和研究能力，具有进一步深造的基础。 Be familiar with maritime safety administration; be capable of handling maritime management related work, be able to work independently; possess strong independent work ability, preliminary organizational management and research skills, and a foundation for further education.
毕业要求 6 **Graduation Requirements 6**	具有一定的英语表达能力，能顺利地听、说、读、译。 Master English to a certain degree that can listen, speak, read, and translate smoothly.
毕业要求 7 **Graduation Requirements 7**	熟悉并掌握现代化安全管理手段，适应航运企业的发展。 Master the skills of modern safe management; meet the need of the shipping enterprises.
毕业要求 8 **Graduation Requirements 8**	具有自主学习和终身学习的意识，有不断学习和适应发展的能力。 With autonomous learning and the consciousness of lifelong learning, could constantly learn and adapt to the development.

三、专业核心课程

III．Core Courses

航海学，船舶值班、操纵与避碰，海上交通工程，船舶与船员管理，船舶防污染管理，危险品运输安全管理，航标设备，海上搜寻与救助，海事调查与分析，海事公共管理。

Marine Navigation, Ship watch keeping, handling and collision prevention, Marine Traffic Engineering, Ship and Seafarer Administration, Safety Administration of Ships Pollution

Prevention, Safety Administration for Dangerous Goods Transportation, Aids To Navigation, Search And Rescue At Sea, Marine Accidents Investigation and Analysis, Maritime Public Management.

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
海上交通工程 Marine Traffic Engineering	●	●	●	●	●	●
船舶与船员管理 Ship and Seafarer Administration	●	●		●	●	●
船舶防污染管理 Safety Administration of Ships Pollution Prevention	●	●	●	●	●	●
危险品运输安全管理 Safety Administration for Dangerous Goods Transportation	●	●	●	●	●	●
航标设备 Aids To Navigation Equipment	●	●	●	●	●	●
航标管理 Aids To Navigation Management	●	●		●	●	●
海上搜寻与救助 Search And Rescue At Sea	●	●	●	●	●	●
海事调查与分析 Marine Accidents Investigation and Analysis	●	●	●	●	●	●

船舶交通管理系统 Vessel Traffic Service System	●	●	●	●	●	●
海事公共管理 Maritime Public Management	●	●		●	●	●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：管理学士学位

Degree conferred: Bachelor of Management

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="6">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="6">32</td><td rowspan="6">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td>数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td></tr>
<tr><td>通识类
General</td><td>军事素养
Military Literacy</td><td>2</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
	Courses	体育素质 Physical Literacy	4		
		沟通写作 Communication and Writing	2		
		创新思维 Invitational Thinking	2		
		创新与创业 Innovation and Entrepreneurship	/		8
		国家与社会 Nation and Society			
		科学与技术 Science and Technology			
		人文与艺术 Humanities and Art			
		其他 Others			
专业（类）基础课 Disciplinary Courses	专业基础课 Discipline Courses		13		/
专业及方向课 Stream Courses	专业课 Stream Courses Specialized course		35		
集中实践环节 Practical &Training	军事实践课 Military Practical Course		3	/	
	专业实践课 Specialized Practical Course		2		
	毕业实践课 Graduation Practice		12		
	其他实践课 Others		2		
合计：160 Total：160			120	32	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
&Training	安全实践 Safe Practical &Training	1713027790	安全熟悉	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018530	专业导论(海管)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：8.5 Total：8.5				8.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：海事管理（179）课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（160 学分） In-class Teaching Courses （161 credits）			拓展素养（8.5 学分） Centralized Practicum （8.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	120	32	8	8.5	168.5

表 2：海事管理（179）必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			5	1713027660	计算机及程序设计(C) Computer Program Design (C)	3	考试		综合素养	48	24	24	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713027900	创新思维与创新方法(海事管理) Innovative thinking and innovative methods (Maritime Administration)	2	考查		综合素养	32	32	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	

			14	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			15	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			16	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	2-1	
			17	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			18	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			19	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			20	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			21	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			22	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			23	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
			24	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	

	必修-专业(类)基础课 Disciplinary Courses		1	1713006760	管理学基础 Fundamental of Management	2	考试		综合素养	32	32	0	1-2	
			2	1713016750	船舶结构与设备 Ship Construction and Equipment	2	考查		综合素养	32	24	8	1-2	
			3	1713016790	航海气象与海洋学 Marine Meteorology and Oceanography	2	考试		综合素养	32	28	4	2-1	
			4	1713016840	国际法概论与海洋法公约 Introduction of International Law and Law of the Sea	2	考试		综合素养	32	32	0	2-2	
			5	1713016991	船舶消防 Ship Fire Fighting	1	考试		综合素养	16	16	0	2-2	
			6	1713016992	船舶求生 Ship Life-saving	1	考试		综合素养	16	16	0	2-2	
			7	1713016850	轮机管理 Marine Engineering Management	3	考查		综合素养	48	42	6	3-1	
	必修-专业及方向课程 Stream Courses		1	1713016760	航海学 Marine Navigation	4.5	考试	√	综合素养	72	66	6	2-1	
			2	1713016780	海事公共管理 Maritime Public Administration	3	考试	√	综合素养	48	48	0	2-1	
			3	1713016860	船舶值班、操纵与避碰 Ship watch keeping handling, and collision prevention	3	考查	√	综合素养	48	32	16	3-1	
			4	1713016870	海事调查与分析 Marine Accidents Investigation and Analysis	2	考试	√	综合素养	32	32	0	3-1	

			5	1713016880	航标设备 Aids To Navigation Equipment	2.5	考试	√	综合素养	40	32	8	3-1	
			6	1713016890	海上交通工程 Marine Traffic Engineering	3	考试	√	综合素养	48	48	0	3-1	
			7	1713029770	安全评价理论与技术 Safety Evaluation theory and Technology	3	考试	√	综合素养	48	48	0	3-1	
			8	1713016530	航标管理 Aids To Navigation Management	2	考试	√	综合素养	32	28	4	3-2	
			9	1713016800	船舶防污染管理 Safety Administration of Ship's Pollution Prevention	2	考查	√	综合素养	32	32	0	3-2	
			10	1713016810	危险品运输安全管理 Safety Administration for Dangerous Goods Transportation	2	考试	√	综合素养	32	32	0	3-2	
			11	1713016830	船舶交通管理系统 Vessel Traffic Service	2	考试		综合素养	32	32	0	3-2	
			12	1713002970	文献检索与阅读 Literature Searching	1	考试		综合素养	16	2	14	4-1	
			13	1713016820	船舶与船员管理 Ship and Seafarer Administration	3	考试	√	综合素养	48	48	0	4-1	
			14	1713016900	海上搜寻与救助 Search And Rescue At Sea	2	考试	√	综合素养	32	32	0	4-1	
合计 Total						**102**				**1696**	**1442**	**254**		

表 3：海事管理（179） 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713016920	运筹学 Operations Research	3	考试		综合素养	48	48	0	3-1	
	限选-专业(类)基础课 Disciplinary Courses		1	1713006780	船舶原理与货运 Vessel and Cargo Shipping	2	考试		综合素养	32	32	0	2-2	
			2	1713016930	交通工程基础 Basics of Traffic Engineering	2	考试		综合素养	32	32	0	2-2	
			3	1713016960	海事行政法 Maritime Administrative Law	3	考查		综合素养	48	48	0	3-1	
			4	1713016970	海事管理英语阅读 English Reading of Maritime Safety Administration	2	考试		综合素养	32	32	0	3-1	
			5	1713016980	船舶导航设备 Marine Navigational Equipment	3	考试		综合素养	48	24	24	3-1	

			6	1713015940	远洋业务与海商法 International Shipping Business and Maritime Law	4	考试		综合素养	64	60	4	3-2	
			7	1713016950	危机管理模拟训练 Crisis Management Simulation Training	1	考查		综合素养	24	0	24	3-2	
			8	1713029780	海事危管防污技术 Maritime DG Management and Pollution Prevention Technologies	3	考查		综合素养	48	16	32	3-2	
	限选-专业及方向课程 Stream Courses		1	1713017020	海事信息系统 Maritime Information System	2	考试		综合素养	32	24	8	2-1	
			2	1713017050	船舶防污染法 Ship’s Pollution Prevention Law	2	考查		综合素养	32	32	0	2-1	
			3	1713017090	控制论基础 Basis of Control Theory	2	考试		综合素养	32	32	0	2-1	
			4	1713024660	智能航海导论 Intelligent Navigation Introduction	1	考查		综合素养	16	16	0	2-1	
			5	1713017030	公共安全管理 Management of Public Safety	2	考查		综合素养	32	32	0	2-2	
			6	1713024630	航运大数据技术与应用 Big data techniques and applications on shipping	1	考查		综合素养	16	16	0	2-2	

			7	1713017040	海上安全公约 Convention for the Safety of the Sea	2	考试		综合素养	32	32	0	3-1	
			8	1713017060	行政诉讼与海事行政诉讼特别程序法 Administrative Litigation and Maritime Procedure law	2	考试		综合素养	32	32	0	3-1	
			9	1713017000	海事管理英语会话 English Conversation of Maritime Safety Administration	2	考查		综合素养	32	32	0	3-2	
			10	1713017010	VTS 实验 VTS Experiment	1	考查		综合素养	24	0	24	3-2	
			11	1713017080	海上污染应急管理与技术 Marine Pollution Emergency Management and Technology	2	考试		综合素养	32	32	0	4-1	
合计 Total						**42**				**688**	**572**	**116**		

表 4：海事管理（179）任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses”, At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook

表 5：海事管理（179） 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713017101	船舶消防实操 Practice of Fire Fighting	0.5	考查		综合素养	15	0	15	2-2	
			3	1713017102	船舶求生实操 Practice of Life-saving	0.5	考查		综合素养	15	0	15	2-2	
			4	1713017110	海事管理 GMDSS 实操 GMDSS Training	1	考查		综合素养	30	0	30	3-2	
			5	1713026192	船舶实习(技术) Ship Practice (Technology)	2	考查		综合素养	60	0	60	3-2	
			6	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			7	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
			8	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
合计 Total						21				616	0	616		

表 6：海事管理（179） 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713018530	专业导论(海管) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			4	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	

			7	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						5.5				136	136	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits
1	军事训练	必修	90	3
2	体育	必修	128	4
3	习近平新时代中国特色社会主义思想概论	必修	8	0.5
4	中国近代史纲要	必修	8	0.5
5	计算机及程序设计基础（C）	必修	24	1.5
6	船舶结构与设备	必修	8	0.5
7	航海学	必修	8	0.5
8	航海气象与海洋学	必修	4	0.25
9	船舶值班、操纵与避碰	必修	16	1
10	轮机管理	必修	8	0.5
11	航标设备	必修	8	0.5
12	航标管理	必修	4	0.25
13	文献检索与阅读	必修	14	0.875
14	船舶消防实操	必修	15	0.5
15	船舶求生实操	必修	15	0.5
16	海事管理 GMDSS 实操	必修	30	1
17	船舶实习	必修	60	2
18	毕业实习	必修	30	1
19	毕业论文	必修	360	12
合计 Total				30.875

九、课程体系对毕业要求的支撑关系矩阵

IX. Courses &Graduation Requirements Relationship Matrix

		毕业要求 **Graduation Requirements**							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	习近平新时代中国特色社会主义思想概论★	H		H	H			H	H
2	中国近现代史纲要	H		H	H				H
3	思想道德与法治	H		H	H				H
4	毛泽东思想和中国特色社会主义理论体系概论★	H	H	H	H				H
5	马克思主义基本原理	H		H					H
6	大学英语★						H	H	H
7	高等数学（A）★			H				H	H
8	概率论与数理统计（B）			H				H	H
9	线性代数（B）			H				H	H
10	人工智能通识（B）			H				H	H
11	计算机及程序设计基础（C）			H				H	H
12	军事理论	H	H						M
13	军事训练	H	H						M

14	体育	H	H						M
15	逻辑学			H				H	H
16	实用写作						H	H	H
17	创新思维与创新方法			H				H	H
18	船舶结构与设备★			H		H		H	
19	管理学基础			H		H		H	
20	航海学★			H		H		H	
21	航海气象与海洋学			H		H		H	
22	船舶值班、操纵与避碰★			H		H		H	
23	船舶消防			H		H		M	
24	船舶求生			H		H		M	
25	轮机管理★			H		H		H	
26	国际法概论与海洋法公约			H	M	H			
27	海事公共管理★	M		H	H	H		M	
28	文献检索与阅读			H			H		H
29	海上交通工程★			H		H		M	
30	安全评价理论与技术			H	H			M	

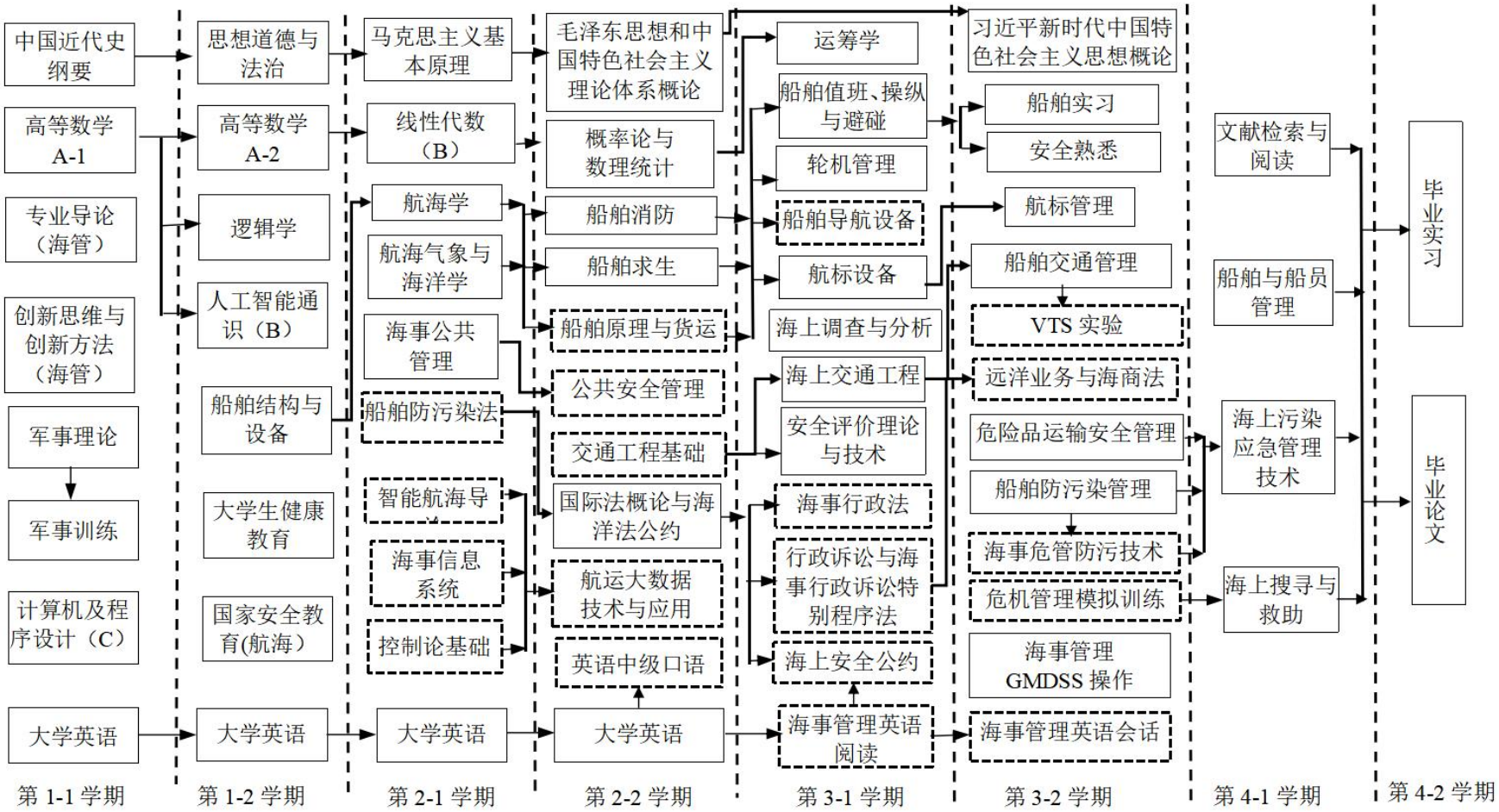
31	航标设备★			H		H		M	
32	航标管理★			H		H		M	
33	船舶交通管理系统★			H		H		M	
34	船舶防污染管理★			H		H		H	
35	危险品运输安全管理★			H		H		H	
36	船舶与船员管理★		M	H		H		H	
37	海事调查与分析★			H		H		H	
38	海上搜寻与救助★			H		H		M	
39	运筹学			H				H	
40	船舶原理与货运★			H		H		H	
41	交通工程基础			H		H		M	
42	海事行政法★	H		H	H	H		M	
43	海事管理英语阅读★			H		H	H	H	
44	船舶导航设备			H		H		M	
45	远洋运输业务与海商法			H	H	H		H	
46	海事危管防污技术			H		H		H	
47	危机管理模拟训练			H		H		H	

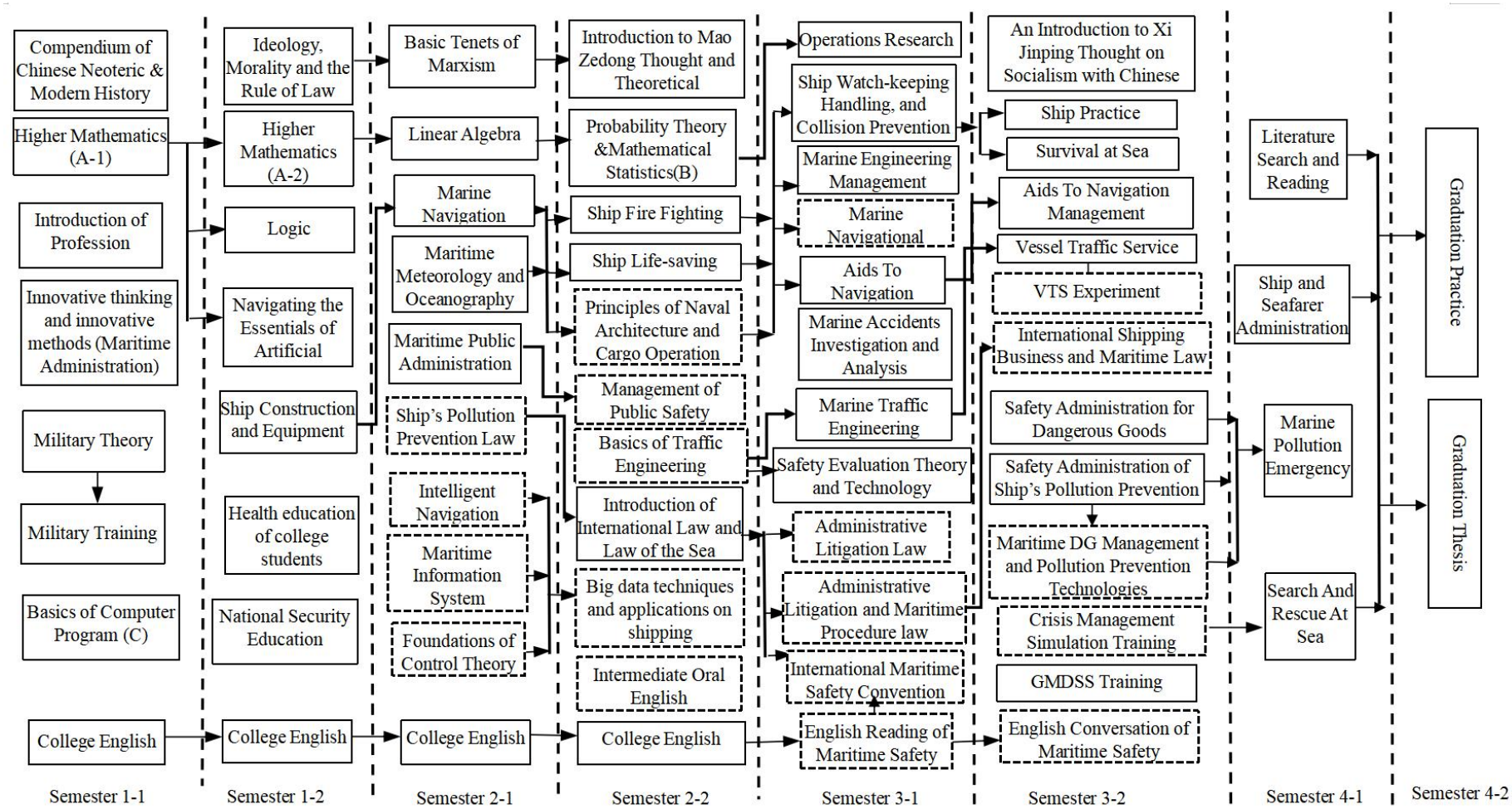
48	海上污染应急管理与技术			H		H		M	
49	船舶防污法			H	H	H		M	
50	公共安全管理			H	H	M			
51	海事信息系统			H		H		H	
52	航运大数据技术与应用			H		H		H	
53	智能航海导论			H		H		H	
54	海上安全公约★			H	H	H		M	
55	行政诉讼与海事行政诉讼特别程序法			H	H	H			
56	海事管理英语会话					H	H	M	
57	控制论基础			H		M		M	
58	VTS 实验			H		H		M	
59	船舶消防实操			H		H		H	
60	船舶求生实操			H		H		H	
61	海事管理 GMDSS 实操			H		H		H	
62	毕业实习及毕业论文				H	H	H	H	H
63	船舶实习			H		H	H	H	H

64	劳动教育（理论）	H	H						H
65	劳动教育（实践）	H	H						H
66	大学生健康教育		H						M
67	国家安全教育	H	H						H
68	安全熟悉				M	H	H	H	H
69	形势与政策	H			M				H
70	入学教育	H	H						H
71	专业导论			H		H			H
72	职业生涯规划			H		H			H
73	就业指导			H		H			H

十、课程配置流程图

X. Flowchart of Course Configuration




Compendium of Chinese Neoteric & Modern History
Higher Mathematics (A-1)
Introduction of Profession
Innovative thinking and innovative methods (Maritime Administration)
Military Theory
Military Training
Basics of Computer Program (C)
College English
Ideology, Morality and the Rule of Law
Higher Mathematics (A-2)
Logic
Navigating the Essentials of Artificial
Ship Construction and Equipment
Health education of college students
National Security Education
College English
Basic Tenets of Marxism
Linear Algebra
Marine Navigation
Maritime Meteorology and Oceanography
Maritime Public Administration
Ship's Pollution Prevention Law
Intelligent Navigation
Maritime Information System
Foundations of Control Theory
College English
Introduction to Mao Zedong Thought and Theoretical
Probability Theory &Mathematical Statistics(B)
Ship Fire Fighting
Ship Life-saving
Principles of Naval Architecture and Cargo Operation
Management of Public Safety
Basics of Traffic Engineering
Introduction of International Law and Law of the Sea
Big data techniques and applications on shipping
Intermediate Oral English
College English
Operations Research
Ship Watch-keeping Handling, and Collision Prevention
Marine Engineering Management
Marine Navigational
Aids To Navigation
Marine Accidents Investigation and Analysis
Marine Traffic Engineering
Safety Evaluation Theory and Technology
Administrative Litigation Law
Administrative Litigation and Maritime Procedure law
International Maritime Safety Convention
English Reading of Maritime Safety
An Introduction to Xi Jinping Thought on Socialism with Chinese
Ship Practice
Survival at Sea
Aids To Navigation Management
Vessel Traffic Service
VTS Experiment
International Shipping Business and Maritime Law
Safety Administration for Dangerous Goods
Safety Administration of Ship's Pollution Prevention
Maritime DG Management and Pollution Prevention Technologies
Crisis Management Simulation Training
GMDSS Training
English Conversation of Maritime Safety
Literature Search and Reading
Ship and Seafarer Administration
Marine Pollution Emergency
Search And Rescue At Sea
Graduation Practice
Graduation Thesis
Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84729637 84723367

教学院长：84725296

教 务 处：84723005

海事管理专业负责人：李猛

海事管理教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Safety Engineering Major

[2025 级适用]

★安全工程（082901）

大连海事大学教务处

2025 年 9 月

安全工程专业本科培养计划（2025 版）

Undergraduate Program for Safety Engineering

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业面向建设“交通强国”与“海洋强国”、推进航运业高质量发展的核心需求，致力于培养能够满足国家及行业发展所需的复合型安全工程技术与管理人才，使其掌握从事安全科学与工程类工作所需的自然科学、人文社会科学、工程技术等的基础知识和专业知识，并具备安全设计分析、安全技术管理等的基本能力，同时能够胜任以安全、数字、绿色、智能为指向的航运产业技术应用、管理与创新工作。 This program aligns with China’s strategic vision of becoming a “Strong Transportation Country” and a “Strong Maritime Country”, aiming to advance high-quality development in the maritime industry. It cultivates interdisciplinary professionals in safety engineering, providing them with comprehensive skills and management expertise essential for national and industry-specific advancement. Graduates will master foundational and specialized knowledge in natural sciences,	1. 掌握数学、自然科学以及相应的工程基础知识，掌握安全科学和技术、安全管理和评价以及职业健康等方面的知识和技能，能够识别和发现复杂工程中的危险源和安全隐患，并能对其予以独立地分析、评价和防治。 1. Graduates will possess fundamental knowledge in mathematics, natural sciences, and relevant engineering principles. They will acquire specialized expertise and skills in safety science and technology, safety management and assessment, and occupational health. Additionally, graduates will be capable of independently identifying, analyzing, evaluating, and mitigating hazards and safety risks within complex engineering scenarios.
	2. 能够利用先进的工具，对复杂工程安全问题进行安全监测、安全预测、安全评价以及安全设施设计，并能做到安全、环境友好与可持续发展兼顾。 2. Graduates will proficiently utilize advanced tools for safety monitoring, prediction, evaluation, and safety facility design in complex engineering contexts, ensuring an integrated approach that balances safety, environmental friendliness, and sustainable development.
	3. 具有良好的人文素养、社会责任感及职业道德，具备解决安全工程问题的系统性思维、创新性潜质和开阔的国际视野。 3. Graduates will demonstrate strong humanistic qualities, social responsibility, and professional ethics, along with systematic thinking, innovative potential, and a broad international perspective essential for solving safety

humanities, social sciences, and engineering technologies relevant to safety science and engineering. Additionally, they will develop core competencies in safety design and analysis, safety technology management, and be capable of performing technical applications, management roles, and innovation-oriented tasks in the maritime sector, particularly focusing on safety, digitalization, sustainability, and intelligent technologies.	engineering problems.
	4. 具有团队合作精神和创新精神，具备较强的组织管理及合作交流能力。 4. Graduates will exhibit strong teamwork and innovative spirit, along with effective organizational, management, and collaborative communication skills.
	5. 具有终身学习的理念，并通过继续教育或其它学习途径能够自我更新知识和提升能力，以不断适应社会发展和环境变化。 5. Graduates will embrace lifelong learning and demonstrate the ability to continuously update their knowledge and improve their skills through continuing education or other learning avenues. This adaptability will enable them to respond effectively to evolving societal and environmental challenges.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：具备一定的航运及其它行业的背景知识，能够将数学、自然科学、计算、工程基础和专业知识用于解决复杂安全工程问题。 1. Engineering knowledge: Possess a solid foundation in shipping and related industries, with the ability to apply mathematics, natural sciences, computation, fundamental engineering, and specialized knowledge to solve complex problems in safety engineering.	1-1 具备一定的航运及其它行业的背景知识。 1-1 Possess a solid foundation in shipping and related industries.
	1-2 掌握用于解决复杂安全工程问题所需的数学、自然科学、计算、工程基础和专业知识。 1-2 Master the mathematics, natural sciences, computation, fundamental engineering, and specialized knowledge required to solve complex safety engineering problems.
	1-3 具备应用数学、自然科学、计算、工程基础和专业知识解决复杂安全工程问题的能力。 1-3 Demonstrate the ability to apply knowledge of mathematics, natural sciences, computation, engineering fundamentals, and specialized knowledge to solve complex safety engineering problems.
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析复杂安全工程问题，	2-1 能正确识别和判断安全工程问题，对复杂工程问题进行有效分解，并能抽象出恰当的表征模型。 2-1 Identify and assess safety engineering problems accurately, effectively decompose complex engineering problems, and

综合考虑可持续发展中对安全的要求，以获得有效结论。 2. Problem analysis: The basic principles of mathematics, natural sciences and engineering sciences can be applied to identify, express, and analyze complex safety engineering problems through literature research to obtain effective conclusions.	abstract appropriate representative models.
	2-2 能独立检索文献，认识到复杂安全工程问题有多种解决途径，并能通过文献研究对复杂安全工程问题进行合理分析。 2-2 Demonstrate the ability to independently search and review academic literature, acknowledge the existence of multiple approaches to complex safety engineering problems, and perform sound analyses based on literature studies.
	2-3 能运用基本原理解释、分析、求解复杂安全工程问题的各类表征模型，并综合考虑安全与可持续发展的关系，寻求合理的解决方案，以获得有效结论。 2-3 Apply fundamental principles to explain, analyze, and solve various representative models of complex safety engineering problems, while comprehensively considering the relationship between safety and sustainable development to identify reasonable solutions and draw effective conclusions.
3. 设计/开发解决方案：能够针对航运及其它行业中的复杂安全工程问题设计和开发解决方案，设计满足安全要求的系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/development of solutions: Design solutions for complex safety engineering problems, design processes that meet specific needs, and be able to embody innovation awareness in the design process, taking into account social, health, safety, law, culture and environment and other factors.	3-1 针对安全工程的实际需求，能够理解安全管理的业务范畴和管理目标，设计出基本的安全管理业务流程。 3-1 Demonstrate an understanding of the scope and objectives of safety management in the context of practical safety engineering needs, and be capable of designing fundamental safety management workflows.
	3-2 针对具体场景，能够辨识、分析、评价系统、单元（部件）或工艺流程的安全风险问题，并能撰写安全分析与评估报告。 3-2 Demonstrate the ability to identify, analyze, and assess safety risks in systems, components, or process flows under specific scenarios, and to prepare comprehensive safety analysis and evaluation reports.
	3-3 针对航运及其它行业典型事故，能够综合考虑健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等因素，分析其事故成因、演化逻辑、损失认定与责任划分，并能撰写事故调查报告。 3-3 Demonstrate the ability to analyze typical accidents in the shipping and other related industries by comprehensively considering factors such as health, safety, and environment, life-cycle costs and net-zero carbon requirements, legal and ethical principles, and social and cultural contexts. Identify accident causes, trace their evolution, determine losses and assign responsibilities, and prepare accident investigation reports.

	3-4 针对航运及其它行业中的安全管理、安全评价、后果评估、风险控制、安全监控等复杂问题，能设计出合理有效的信息化解决方案，并提供辅助设计支持，体现创新意识。 3-4 Demonstrate the ability to design reasonable and effective information-based solutions for complex issues in safety management, safety assessment, consequence analysis, risk control, and safety monitoring in the shipping and related industries, while providing support for auxiliary design and reflecting a sense of innovation.
4. 研究：能够基于科学原理并采用科学方法对复杂安全工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 4. Research: Conduct research on complex safety engineering problems based on scientific principles and methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw well-founded and effective conclusions.	4-1 能够正确使用现有教学实验设备，根据其实验结果验证相关理论的正确性或方法的适用性。 4-1 Demonstrate the ability to properly use existing teaching and laboratory equipment to verify the correctness of relevant theories or the applicability of methods based on experimental results.
	4-2 能够基于安全科学理论和现有教学实验条件，根据对象特征，选择研究路线，设计可行的实验方案，采用科学的实验方法安全地开展实验研究。 4-2 Demonstrate the ability to select appropriate research approaches, design feasible experimental plans, and conduct experiments safely using scientific methods, based on safety science theories and available teaching and laboratory conditions, and in accordance with the characteristics of the research subject.
	4-3 能正确采集、处理实验数据，综合所需信息对实验结果进行关联、建模、分析和解释，获取合理有效的结论。 4-3 Demonstrate the ability to accurately collect and process experimental data, integrate relevant information, correlate, model, analyze, and interpret the results, and draw reasonable and effective conclusions.
5. 使用现代工具：能够针对复杂安全工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂安全工程问题的预测与模拟，并能够理解其局限性。 5. Utilization of modern tools: Develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for addressing complex safety engineering	5-1 能分析行业相关工程图和工艺流程图，并利用工程制图类软件独立设计及绘制平面规划图。 5-1 Demonstrate the ability to analyze industry-related engineering drawings and process flow diagrams, and independently design and produce layout plans using engineering drawing software.
	5-2 能运用信息化技术工具辅助分析、模拟、预测、评估复杂安全工程问题，并能理解工具的功能定位及其局限性。 5-2 Demonstrate the ability to use information technology tools to assist in the analysis, simulation, prediction, and evaluation of complex safety engineering problems, with a clear understanding of the tools' functions and limitations.
	5-3 针对具体工程需求，能运用计算机程序设计、计算机辅助设计等信息技术工具进行安全系统设计，并能理解不同工

problems, including the prediction and simulation of such problems, with a clear understanding of their limitations.	具的适用范围。 5-3 Demonstrate the ability to use information technology tools such as computer programming and computer-aided design to carry out safety system design in response to specific engineering needs, with an understanding of the applicable scope of different tools.
6. 工程与可持续发展：在解决复杂安全工程问题时，能够基于安全工程相关背景知识，分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and sustainable development: Possess ability to analyze and evaluate the impact of engineering practices on health, safety, the environment, legal frameworks, and economic and social sustainability, based on knowledge of safety engineering, and to understand the responsibilities involved in addressing complex safety engineering problems.	6-1 具有航运及其它行业背景知识，具有工程实习和社会实践经历。 6-1 Demonstrate background knowledge in the shipping and related industries, supported by experience in engineering internships and social engagement activities.
	6-2 能基于航运及其它行业背景知识，分析、评价工程实践和复杂安全工程问题解决方案对健康、安全、环境、法律、经济和社会可持续发展的影响，并理解应承担的责任。 6-2 Demonstrate the ability to analyze and evaluate the impacts of engineering practices and solutions to complex safety engineering problems on health, safety, the environment, legal frameworks, the economy, and social sustainability, based on knowledge of the shipping and related industries, and to understand the responsibilities involved.
7. 工程伦理和职业规范：有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在安全工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional conduct: Possess a sense of serving the nation through engineering and benefiting the public, with a foundation in humanities and social sciences and a strong sense of social responsibility. Understand and uphold engineering ethics, comply with professional codes of conduct	7-1 具备良好的思想道德和人文社会科学素养，掌握辩证思维方法，具有社会责任感。 7-1 Possess strong moral character and a solid foundation in the humanities and social sciences, with mastery of dialectical thinking and a strong sense of social responsibility.
	7-2 树立正确的世界观、人生观、价值观、道德观、法律观，理解社会主义核心价值体系。 7-2 Establish a right worldview, outlook on life, values, moral perspective, and legal awareness, and understand the core values of socialism.
	7-3 理解工程伦理的核心理念，熟悉安全工程职业的要求和社会责任，在工程实践中能够自觉遵守工程职业道德和规范并履行责任。 7-3 Understand the core principles of engineering ethics, be familiar with the professional requirements and social responsibilities of the safety engineering profession, and consciously adhere to professional ethics and standards in engineering practice while fulfilling corresponding

and relevant laws in safety engineering practice, and fulfill professional responsibilities.	responsibilities.
8. 个人与团队：在解决复杂安全工程问题时，能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and team: Take on the roles of an individual contributor, team member, and team leader in a diverse, multidisciplinary team when solving complex safety engineering problems.	8-1 能理解安全工程的多学科背景，并胜任团队中的角色与责任。 8-1 Understand the multidisciplinary background of safety engineering and effectively assume roles and responsibilities in a team.
	8-2 能理解个人与团队的关系，并独立或协同完成团队分配的工作。 8-2 Understand the interplay between individual and team, and be capable of completing assigned tasks either independently or in collaboration with others.
	8-3 能倾听其他团队成员的意见，并有效组织团队成员开展工作。 8-3 Demonstrate the ability to listen to the opinions of other team members and effectively organize the team to carry out tasks.
9. 沟通：能够就复杂安全工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并掌握安全咨询与安全培训的基本技能；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: Communicate effectively on complex safety engineering problems with professionals in the field and the general public, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions, and possessing basic skills in safety consultation and training. Be capable of communicating in cross-cultural contexts with an understanding of and respect for linguistic and cultural differences.	9-1 能撰写安全工程专业相关研究报告或设计文稿，具备在公众场合开展报告陈述及交流、答辩的能力。 9-1 Demonstrate the ability to write research reports or design documents related to safety engineering, and to deliver presentations, engage in discussions, and respond to questions in public or professional settings.
	9-2 了解安全相关的执业资格与机构设置，掌握安全咨询与安全培训的基本技能。 9-2 Understand safety-related professional qualifications and institutional structures, and possess basic skills in safety consulting and safety training.
	9-3 具备一定的国际视野，具有外语听说读写译的基本能力，了解安全工程领域的国际发展趋势和研究热点，并能够在跨文化背景下进行沟通和交流。 9-3 Possess a certain level of international perspective, with basic abilities in listening, speaking, reading, writing, and translating in a foreign language. Understand international development trends and research hotspots in the field of safety engineering, and be able to communicate and interact effectively in cross-cultural contexts.

10. 项目管理：理解并掌握工程项目相关的安全管理原理与安全经济决策方法，并能够在多学科环境中应用。 10. Project management: Understand and master principles of safety management and methods of safety-related economic decision-making in engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 能理解工程项目安全管理与安全经济决策的重要性，并掌握其基本原理和方法。 10-1 Understand the significance of safety management and economic decision-making in engineering projects, and possess a solid grasp of their basic theories and approaches.
	10-2 能将项目安全管理原理、安全经济决策方法应用到涉及多学科的工程实践中。 10-2 Demonstrate the ability to apply principles of project safety management and methods of safety-related economic decision-making in multidisciplinary engineering practices.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的安全影响，适应新技术变革。 11. Lifelong learning: Possess the awareness and ability for self-motivated learning, lifelong learning, and critical thinking. Understand the safety implications of broad technological changes on engineering and society, and adapt to emerging technologies.	11-1 能关注和了解安全工程专业领域的现状、研究热点和发展趋势，具有比较和批判思维意识。 11-1 Demonstrate awareness of the current state, research hotspots, and development trends in the field of safety engineering, with a mindset oriented toward comparison and critical thinking.
	11-2 能认识自主学习与终身学习的必要性，具有自主学习和终身学习的意识。 11-2 Recognize the necessity of continuous exploration and lifelong learning, with a strong sense of self- motivated and lifelong learning.
	11-3 能够采用合适的方法，针对个人或职业发展需求开展自主学习，以适应新技术发展。 11-3 Demonstrate the ability to engage in self-motivated learning using appropriate methods in response to personal or professional development needs, in order to adapt to emerging technological advancements.

三、专业核心课程

Ⅲ. Core Courses

安全原理、安全系统工程、安全人机工程、安全管理学、海运安全导论、船舶安全法规与业务、事故调查与分析、安全监测技术、燃烧与爆炸原理

Principle of Safety, System Safety Engineering, Safety Ergonomic, Safety Management, Introduction to Maritime Safety, Ship Safety Regulations and Business, Accident Investigation and Analysis, Safety Monitoring Technology, Theory of Combustion and Explosion

四、特色课程

Ⅳ. Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
安全心理与行为学 Phycology of Safety and Behavior		●		●		
海运安全导论 Introduction to Maritime Safety	●					●
船舶安全法规与业务 Ship Safety Regulations and Business	●					●
船舶原理与货运 Vessel and Cargo Shipping	●					●
海事安全综合评价理论与方法 Theory and Method of Formal Safety Assessment	●	●				
海上交通工程 Marine Traffic Engineering	●		●	●		
船舶与港口火灾爆炸防治 Prevention and Control of Marine Fire and Explosion	●	●		●		●
船舶与港口防污染技术 Pollution Prevention Technology for Ships and Ports	●					
危化品安全技术 Safety Technology for Hazardous Chemicals		●				

安全生产智能化保障技术 Intelligent Security Technology for Safe Production			●	●	●	
安全监测技术 Safety Monitoring Technology			●			

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="5">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="5">42</td><td rowspan="5">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td>化学类
Chemistry</td><td>2</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
	计算思维及信息技术 Computational Thinking and Information Technology		2		
	通识类 General Cours	军事素养 Military Literacy	2		
		体育素质 Physical Literacy	4		
		沟通写作 Communication and Writing	2		
		创新思维 Invitational Thinking	2		
		创新与创业 Innovation and Entrepreneurship	/		8
		国家与社会 Nation and Society			
		科学与技术 Science and Technology			
		人文与艺术 Humanities and Art			
		其他 Others			
专业（类）基础课 Disciplinary Courses	专业基础课 Disciplinary Courses		19		/
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course		12		
集中实践 环节 Practical &Training	军事实践课 Military Practical Course		3	/	
	专业实践课 Specialized Practical Course		6		
	毕业实践课 Graduation Practice		12		
	其他实践课 Others		3		
合计：166.5 Total：166.5			116.5	42	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
集中实践 环节 Practical &Training	安全实践 Safety Practical &Training	1713027790	安全熟悉	1
	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000110	专业导论(安全工程)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713029550	学科前沿知识讲座	1
合计：9.5 Total：9.5				9.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：安全工程课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（166.5 学分） In-class Teaching Courses （166.5 credits）			拓展素养（9.5 学分） Centralized Practicum （9.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	116.5	42	8	9.5	176

表 2：安全工程必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory	必修-公共基础及通识教育课 Public		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	

			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000430	大学化学 College Chemistry	2	考试		综合素养	32	32	0	1-1	
			5	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			10	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			11	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			12	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			13	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	

			17	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考试		综合素养	24	0	24	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713029570	创新思维与创新方法(安全工程) Innovative thinking and innovative methods (Safety Engineering)	2	考查		综合素养	32	22	10	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			27	2113000580	实用写作 Factual writing;	1	考查		综合素养	16	16	0	3-2	

			28	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713000720	电工电子学 Electrical Engineering and Electronics	2	考试		综合素养	32	32	0	1-2	
			2	1713017590	工程力学 Engineering Mechanics	3	考试		综合素养	48	48	0	2-1	
			3	1713025790	安全原理 Principle of Safety	2	考试	√	综合素养	32	32	0	2-1	
			4	1713025860	燃烧与爆炸原理 Theory of Combustion and Explosion	2	考试		综合素养	32	24	8	2-1	
			5	1713026450	机械工程基础 Mechanical Engineering Basic	3	考试		综合素养	48	48	0	2-2	
			6	1713020120	安全人机工程 Safety Ergonomic	2	考试	√	综合素养	32	24	8	3-1	
			7	1713025800	安全系统工程 System Safety Engineering	3	考试	√	综合素养	48	48	0	3-1	
			8	1713029480	安全管理学 Safety Management	2	考试	√	综合素养	32	32	0	4-1	
	必修-专业及方向课程 Stream Courses		1	1713025850	海运安全导论 Introduction to Maritime Safety	3	考试	√	综合素养	48	48	0	2-2	
			2	1713020140	船舶安全法规与业务 Ship Safety Regulations and Business	4	考试	√	综合素养	64	62	2	3-1	
			3	1713029470	安全监测技术 Safety Monitoring Technology	3	考试		综合素养	48	32	16	3-1	
			4	1713025810	事故调查与分析 Accident Investigation and Analysis	2	考试		综合素养	32	24	8	3-2	

合计 Total					93.5				1576	1312	264		

表 3：安全工程 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses	该课组应修学分为 3 学分	1	1713027690	计算机及程序设计 (Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
	限选-专业(类)基础课 Disciplinary Courses		1	1713007950	工程制图 Engineering Drawing	2	考查		综合素养	32	32	0	2-1	
			2	1713003190	工程流体力学 Engineering Fluid Mechanics	2	考试		综合素养	32	28	4	2-2	
			3	1713029560	工程 CAD 基础 Engineering CAD Basic	1	考查		综合素养	16	4	12	2-2	
			4	1713020180	安全工程专业英语 Professional English	2	考查		综合素养	32	32	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713006890	航海概论 Navigation Principles	2	考试		综合素养	32	28	4	1-2	

			2	1713004480	轮机概论 Introduction to Marine Engineering	2	考试		综合素养	32	26	6	2-1	
			3	1713025780	电气安全工程技术 Electrical Safety Engineering Technology	2	考试		综合素养	32	32	0	2-1	
			4	1713008220	船舶原理与货运 Vessel and Cargo Shipping	3	考试		综合素养	48	48	0	2-2	
			5	1713020170	船舶与海洋工程概论 Introduction to Naval Architecture and Ocean Engineering	2	考试		综合素养	32	32	0	2-2	
			6	1713020200	计算机数值模拟技术 Computer Numerical Simulation	2	考试		综合素养	32	16	16	2-2	
			7	1713020300	危化品安全技术 Safety Technology for Hazardous Chemicals	2	考试		综合素养	32	32	0	2-2	
			8	1713025830	安全心理与行为学 Phycology of Safety and Behavior	2	考试		综合素养	32	28	4	2-2	
			9	1713016140	海事管理概论 Introduction to Maritime Administration	1	考查		综合素养	16	16	0	3-1	
			10	1713020190	现代消防技术 Modern Fire Technology	2	考试		综合素养	32	24	8	3-1	
			11	1713025820	职业安全健康与危害防护 Occupational safety, health and hazard	2	考试		综合素养	32	28	4	3-1	

			12	1713017310	海上交通工程 Marine Traffic Engineering	2	考试		综合素养	32	32	0	3-2	
			13	1713017580	船舶与港口防污染技术 Ship And Port Pollution Prevention Technology	2	考试		综合素养	32	32	0	3-2	
			14	1713020280	火灾数值模拟 Fire Numerical Simulation	2	考试		综合素养	32	8	24	3-2	
			15	1713020290	海事安全综合评价理论与方法 Comprehensive evaluation theory and method of Maritime Safety	3	考试		综合素养	48	40	8	3-2	
			16	1713020320	安全经济学 Safety Economics	2	考试		综合素养	32	32	0	3-2	
			17	1713025840	安全生产智能化保障技术 Smart Techonologies for Industrial Safety	2	考试		综合素养	32	28	4	3-2	
			18	1713025870	船舶与港口火灾爆炸防治 Prevention and control of marine fire and	3	考试		综合素养	48	40	8	3-2	
			19	1713016130	国际海事发展动态 Development of International Maritime Issues	1	考查		综合素养	16	16	0	4-1	
			20	1713020310	应急管理与救援 Emergency Management and Rescue	2	考试		综合素养	32	32	0	4-1	
合计 Total						51				816	690	126		

表 4：安全工程任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”,“science and technology courses” , At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook

表 5：安全工程 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713020400	专业技能综合实习 Comprehensive Practice of Professional skills	1	考查		综合素养	30	0	30	2-2	
			3	2113000570	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	2-2	
			4	1713020360	安全人机工程课程设计 Course Design of Safety Ergonomics	1	考查		综合素养	30	0	30	3-1	

			5	1713020410	安全系统工程课程设计 Course Design of Safety System Engineering	1	考查		综合素养	30	0	30	3-1	
			6	1713026192	船舶实习(技术) Ship Practice (Technology)	2	考查		综合素养	60	0	60	3-1	
			7	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			8	1713020380	消防实习 Fire Fighting Practice	1	考查		综合素养	30	0	30	3-2	
			9	1713020390	安全生产实习 Professional Production-practice	2	考查		综合素养	60	0	60	3-2	
			10	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			11	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**26**				**766**	**0**	**766**		

表 6：安全工程 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	

			3	2113000110	专业导论(安全工程) Introduction to Profession	0.5	考查		拓展素养	8	8	0	1-1	
			4	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			7	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713029550	学科前沿知识讲座 Advanced Topics in Safety Engineering: From Theory to Practice	1	考查		拓展素养	16	16	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6.5				152	152	0		

八、实践学时学分
VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	思想道德与法治	必修	8	0.5	
5	马克思主义基本原理	必修	8	0.5	
6	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
7	大学物理实验	必修	48	2	●
8	人工智能通识(B)	必修	4	0.25	●
9	工程力学	必修	4	0.25	●
10	机械工程基础	必修	8	0.5	●
11	创新思维与创新方法	必修	10	0.625	●
12	安全人机工程	必修	8	0.5	●
13	燃烧与爆炸原理	必修	8	0.5	●
14	船舶安全法规与业务	必修	2	0.125	●
15	事故调查与分析	必修	8	0.5	●
16	安全监测技术	必修	16	1	●
17	安全系统工程课程设计	必修	30	1	●
18	安全人机工程课程设计	必修	30	1	●
19	专业技能综合实习	必修	30	1	●
20	消防实习	必修	30	1	●
21	安全生产实习	必修	60	2	●
22	金工实习	必修	30	1	●
23	船舶实习	必修	60	2	●
24	毕业设计（论文）	必修	360	12	●
合计 Total				36.25	27.25

九、毕业要求对培养目标的支撑关系矩阵

Ⅸ. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**	培养目标 5 **Program Objectives 5**
毕业要求 1-1 **Graduation Requirements 1-1**	●	●	●		●
毕业要求 1-2 **Graduation Requirements 1-2**	●	●			●
毕业要求 1-3 **Graduation Requirements 1-3**	●	●			●
毕业要求 2-1 **Graduation Requirements 2-1**	●	●			●
毕业要求 2-2 **Graduation Requirements 2-2**	●	●		●	●
毕业要求 2-3 **Graduation Requirements 2-3**	●	●	●	●	●
毕业要求 3-1 **Graduation Requirements 3-1**		●	●	●	
毕业要求 3-2 **Graduation Requirements 3-2**	●	●	●	●	●
毕业要求 3-3 **Graduation Requirements 3-3**	●	●	●	●	●
毕业要求 3-4 **Graduation Requirements 3-4**		●	●	●	
毕业要求 4-1 **Graduation Requirements 4-1**	●	●			
毕业要求 4-2 **Graduation Requirements 4-2**	●	●			

毕业要求 4-3 **Graduation Requirements 4-3**	●	●			
毕业要求 5-1 **Graduation Requirements 5-1**	●	●			
毕业要求 5-2 **Graduation Requirements 5-2**	●	●			
毕业要求 5-3 **Graduation Requirements 5-3**	●	●	●		●
毕业要求 6-1 **Graduation Requirements 6-1**		●	●	●	●
毕业要求 6-2 **Graduation Requirements 6-2**	●		●	●	●
毕业要求 7-1 **Graduation Requirements 7-1**			●	●	
毕业要求 7-2 **Graduation Requirements 7-2**			●	●	
毕业要求 7-3 **Graduation Requirements 7-3**			●	●	●
毕业要求 8-1 **Graduation Requirements 8-1**	●			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	●	●
毕业要求 9-1 **Graduation Requirements 9-1**	●	●	●	●	●
毕业要求 9-2 **Graduation Requirements 9-2**	●	●	●		

毕业要求 9-3 **Graduation Requirements 9-3**		●	●	●	●
毕业要求 10-1 **Graduation Requirements 10-1**	●	●		●	
毕业要求 10-2 **Graduation Requirements 10-2**	●	●	●	●	
毕业要求 11-1 **Graduation Requirements 11-1**	●	●	●		●
毕业要求 11-2 **Graduation Requirements 11-2**				●	●
毕业要求 11-3 **Graduation Requirements 11-3**		●	●	●	●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X．Courses &Graduation Requirements Relationship Matrix

		毕业要求 1 Graduation Requirements 1			毕业要求 2 Graduation Requirements 2			毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 4			毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7			毕业要求 8 Graduation Requirements 8			毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11		
		1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	3-3	3-4	4-1	4-2	4-3	5-1	5-2	5-3	6-1	6-2	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	9-3	10-1	10-2	11-1	11-2	11-3
1	军事理论																			M	H												
2	体　育																							H	M								
3	高等数学		H																														
4	大学化学		H																														
5	中国近现代史纲要																			H	H												
6	大学英语																											H					
7	大学物理		H	M																													
8	大学物理实验		H									H	M																				
9	逻辑学				M		M																										
10	电工电子学		H	M																													
11	思想道德与法治																			H	H	M											
12	马克思主义基本原理																			H	H												
13	线性代数		H																														
14	概率论与数理统计		H		M		H																										

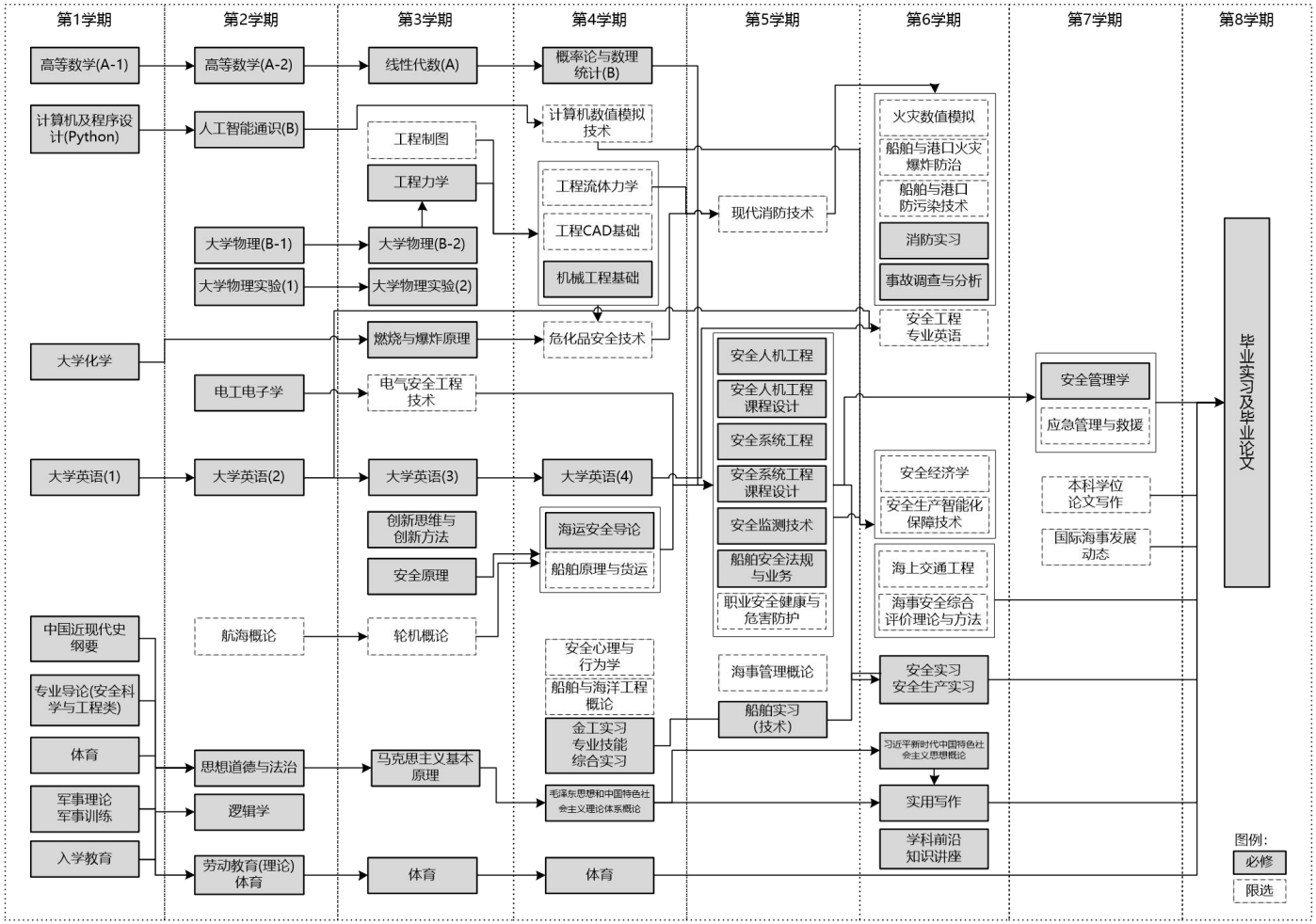
15	毛泽东思想和中国特色社会主义理论体系概论																			H	H												
16	习近平新时代中国特色社会主义思想概论																			H	H												
17	实用写作																									H							
18	安全原理		H	M	M				M																								
19	安全人机工程			H					H						M				M							M							
20	安全系统工程			H	H	M			H		H					H			H							H							
21	安全管理学							H	M													M					M		H	M			
22	燃烧与爆炸原理		H	M					H	M									M														
23	船舶原理与货运	H																M															
24	海运安全导论	H																M													M		
25	船舶安全法规与业务									H												H					H						
26	军事训练																						M	H	M								
27	专业技能综合实习												H	H				H	H			M	M	H	H	H							M
28	金工实习											M	M		H			H					M	H									
29	安全人机工程课程设计			H					H						H		M		M					M		M							
30	安全系统工程课程设计										H			H		H	H		H					H		H							M
31	船舶实习（技术）																	H				M	H	H									
32	消防实习									H			H						H			H		H									
33	安全生产实习							H	H										H			H		H		M	M			H			
34	毕业实习及毕业论文			H		H	H			H	H			H		H	H		H			H		H	H	H		M		H	M		H

35	职业生涯规划																															H	M
36	形势与政策																		M	M	H									M			
37	专业导论 （安全科学与工程类）	H																M												H			
38	大学生健康教育																			M													
39	国家安全教育																				H												
40	就业指导																					M					H					H	
41	计算机程序设计基础 （Python）		H														H																
42	工程制图		H												H																		
43	工程力学		H	M											M																		
44	工程流体力学		H	M																													
45	机械工程基础		H	M											M																		
46	计算机数值模拟技术		H													H	H																
47	安全心理与行为学								M													H											
48	安全监测技术								M		M	M				H																	
49	职业安全健康与危害防护								H										H								M						
50	安全工程专业英语																											H					
51	安全经济学																												H	H			
52	事故调查与分析				M	M	H			H																H							
53	安全生产智能化保障技术										H					H	H														M		
54	应急管理与救援							H	H	M									H							M	M		M				

55	航海概论	H																M															
56	轮机概论	H																M															
57	电气安全工程技术			H					H										M														
58	船舶与港口防污染技术	H																	H														
59	船舶与海洋工程概论	H																M															
60	危化品安全技术			H					H	M									M														
61	海事管理概论	H						M											M										H				
62	现代消防技术			H					H	M																							
63	海上交通工程	H		H	M				H																								
64	火灾数值模拟										M			H		H																	
65	海事安全综合评价理论与方法	H				M			H		H					H			H							H							
66	船舶与港口火灾爆炸防治	H		H					H	H									H														
67	国际海事发展动态	H																										H					H
68	工程CAD基础		H												H																		
69	学科前沿知识讲座	H																	H				H									H	
70	创新思维与创新方法																															H	
71	人工智能通识										H					H	M																
72	劳动教育																			M	H												
73	安全熟悉																	H						M									
74	入学教育																			M	H												

十一、课程配置流程图

XI. Flowchart of Course Configuration



后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84729637 84723367
教学院长：84725296
教 务 处：84723005

安全工程专业负责人：杨雪
安全工程教学指导委员会
大连海事大学教务处
2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Geographical Information Science Major

[2025 级适用]

★地理信息科学专业（070504）

大连海事大学教务处

2025 年 9 月

地理信息科学专业本科培养计划（2025 版）

Undergraduate Program for Geographical Information Science Major

一、培养目标

I. Program Objectives

本专业主要面向海洋强国和交通强国建设，培养适应交通空间信息化发展需要，德智体美劳全面发展，掌握扎实的地理信息技术、交通信息化技术，熟悉国际公约和国际形势变化，能够胜任大数据与人工智能背景下的交通、航海、海洋和海事信息化建设、具有良好的人文素养、科学素养、较强实践和创新创业能力的高级复合型人才。

Focusing primarily on supporting China's maritime power and transportation power development strategies, this major mainly cultivate professionals equipped to meet the demands of geospatial data-driven transportation development, innovative and entrepreneurial abilities, can accommodate the need of traffic information construction, have all-round development in morality, intelligence, physical fitness and aesthetics, master the space information technology and traffic information technology, meanwhile be acquainted with the international convention and the changes of international situation. They are qualified to the information construction of transportation, navigation, ocean and maritime affair under the background of Big Data and Artificial Intelligence.

二、毕业要求

II. Graduation Requirements

毕业要求 1　具有正确的世界观和人生观，热爱祖国，对祖国和社会有高度的责任感；具备敬业爱岗、艰苦奋斗、热爱劳动、遵纪守法、团结合作的品质。

毕业要求 2　掌握专业所需的数学、物理和计算机等自然科学和工程科学的基本原理，并能够将相关基本理论知识应用于地理实际问题。

毕业要求 3　系统地掌握地理信息系统、遥感技术、卫星定位导航等空间信息的基本理论、基本知识和基本实践技能以及地理信息系统技术开发原理和方法，了解学科应用前景和最近发展动态，具有整理、归纳、分析相关数据并得到合理有效的结论的能力。

毕业要求 4　能够针对复杂地理信息及遥感问题，选择、使用恰当的资源、技术和工具进行定量研究和解决实际问题，具有地理学区域综合分析能力。

毕业要求 5　掌握资料查询、文献检索及运用现代信息技术获取相关信息的基本方法；具备撰写论文、参与学术交流的能力；具备一定的国际视野，能够在跨文化背景下进行沟通和交流。

毕业要求 6　具备一定的创新创业能力，具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

Students have a correct world outlook and outlook on life, love the motherland, have a high sense of responsibility for the motherland and society, and have the

qualities of dedication and love for work, hard work, love of labor, compliance with discipline and law, unity and cooperation.

Students can master the basic principles of natural and engineering sciences such as mathematics, physics and computers required for the major, and are able to apply relevant basic theoretical knowledge to practical geographical problems.

Students can systematically grasp the basic theories, basic knowledge and basic practical skills of spatial information such as Geographical Information Systems, remote sensing technology, satellite positioning and navigation, as well as the principles and methods of Geographical Information System technology development, understand the application prospects and recent developments of the discipline, and have the ability to sort, summarize and analyze relevant data and obtain reasonable and effective conclusions.

Students are able to select and use appropriate resources, technologies and tools for quantitative research and practical problems for complex geographic fidelity and remote sensing problems, and have the ability to comprehensively analyze geographical areas.

Students can master the basic methods of data query, literature retrieval and the use of modern information technology to obtain relevant information; have the ability to write papers and participate in academic exchanges; have a certain international perspective, and be able to communicate and communicate in cross-cultural contexts.

Students have a certain ability of innovation and entrepreneurship, have the awareness of independent learning and lifelong learning, and have the ability to continuously learn and adapt to development.

三、专业核心课程

Ⅲ．Core Courses

地理信息系统、地图学、遥感原理与应用、空间分析、海洋遥感基础及应用、GIS 二次开发、遥感图像处理、电子海图技术、空间信息技术前沿。

Geographical Information System, Cartography, Principles and Applications of Remote Sensing, Spatial Analysis, Basis and Application of Marine Remote Sensing, GIS Redevelopment, Remote Sensing Image Processing, Electronic Chart Technology, Advanced Spatial Information Technologies.

四、特色课程

Ⅳ．Feature Courses

遥感图像处理、GIS 二次开发、电子海图技术、海洋测绘、海洋探测数据处理分析、航海学、航海气象与海洋学、港口 GIS、航运信息网络技术、海洋遥感基础及应用、海图制图。

Remote Sensing Image Processing, GIS Redevelopment, Electronic Chart Technology, Syllabus for Hydrography and Cartography, Ocean Exploration Data Processing and Analysis, Marine Navigation, Maritime Meteorology and Oceanography, Port GIS, Shipping Information Network Technology, Basis and Application of Marine Remote Sensing, Nautical Cartography.

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	专创融合 Specialty& innovation	行业共建 industry collaboration
遥感图像处理 Remote Sensing Image Processing		●	●	●	
GIS 二次开发 GIS Redevelopment		●	●	●	
电子海图技术 Electronic Chart Technology	●	●			
海洋测绘 Syllabus for Hydrography and Cartography	●	●			●
海洋探测数据处理分析 Data Processing and Analysis of Ocean Exploration	●		●	●	
航海学 Marine Navigation	●	●			
航海气象与海洋学 Maritime Meteorology and Oceanography	●	●			●
港口 GIS Port GIS	●	●		●	
航运信息网络技术 Shipping Information Network Technology	●	●			
海洋遥感基础及应用 Basis and Application of Marine Remote Sensing	●	●			
海图制图 Nautical Cartography	●	●			

五、学制与学位

Ⅴ. Duration and Degree

学制：4 年
Program duration: 4 years
授予学位：理学学士学位
Degree conferred: Bachelor of Science

六、学分修读要求
Ⅵ. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求
Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="13">40</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>2</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="3">/</td><td rowspan="3">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
		Science and Technology			
		人文与艺术 Humanities and Art			
		其他 Others			
专业（类）基础课 Disciplinary Courses	专业基础课 Discipline Courses		19.5		
专业及方向课 Stream Courses	专业课 Stream Courses Specialized course		15		
集中实践环节 Practical &Training	军事实践课 Military Practical Course		3	/	/
	专业实践课 Specialized Practical Course		2		
	毕业实践课 Graduation Practice		12		
	其他实践课 Others		1		
合计：160 Total：160			112	40	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
	安全实践 Safe Practical &Training	1713027790	安全熟悉	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000300	国家安全教育(航海)	1
	发展服务类	1713000480	入学教育	0

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
	Development and Guidance	1713018520	专业导论(地信)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：9 Total：9				9

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：地理信息科学课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（160 学分） In-class Teaching Courses （160 credits）			拓展素养（9 学分） Centralized Practicum （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	112	40	8	9	169

表 2：地理信息科学必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory	必修-公共基础及通识教育课 Public		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	

			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			5	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			6	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			7	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			8	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			9	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			10	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			11	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			12	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			15	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			16	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	2-1	

			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713021000	创新思维与创新方法(地理信息科学) Innovative thinking and innovative methods (Geographical Information Science)	2	考查		综合素养	32	22	10	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			22	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			23	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-2	
			24	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	

			27	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713017150	地图学 Cartography	2	考查		综合素养	32	26	6	1-1	
			2	1713025760	自然地理学 Physical geography	3	考查		综合素养	48	40	8	1-1	
			3	1713017140	地理信息系统 Geographic Information System	2	考试	√	综合素养	32	26	6	1-2	
			4	1713025730	地球科学概论 Introduction to Earth Science	2	考查		综合素养	32	26	6	1-2	
			5	1713016630	数据结构 Data Structure	2.5	考试	√	综合素养	40	28	12	2-1	
			6	1713017190	遥感原理与应用 Principles and Applications of Remote Sensing	2	考查	√	综合素养	32	26	6	2-1	
			7	1713017170	数据库原理与空间数据库 Database Principles and Spatial Database	3	考查		综合素养	48	28	20	2-2	
			8	1713017210	航海气象与海洋学 Maritime Meteorology and Oceanography	3	考试		综合素养	48	40	8	3-2	
	必修-专业及方向课程 Stream Courses		1	1713017230	GIS 二次开发 GIS Redevelopment	2.5	考查	√	综合素养	40	20	20	2-2	
			2	1713017260	空间分析 Spatial Analysis	2	考试	√	综合素养	32	26	6	2-2	
			3	1713017300	GIS 实习 GIS Practice	2.5	考查	√	综合素养	40	20	20	2-2	
			4	1713017250	遥感图像处理 Remote Sensing Image Processing	2	考试		综合素养	32	22	10	3-1	

			5	1713017290	海洋遥感基础及应用 Basis and Application Of Marine Remote Sensing	2	考查	√	综合素养	32	26	6	3-1	
			6	1713017240	电子海图技术 Electronic Chart Technology	2	考试	√	综合素养	32	22	10	3-2	
			7	1713017280	空间信息技术前沿 Advanced Spatial Information Technologies	2	考查	√	综合素养	32	26	6	4-1	
合计 Total						95				1600	1228	372		

表 3：地理信息科学 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713027660	计算机及程序设计(C) Computer Program Design (C)	3	考查		综合素养	48	24	24	1-1	

	限选-专业(类)基础课 Disciplinary Courses		1	1713017160	离散和组合数学 Discrete and Combination Mathematics	2.5	考试		综合素养	40	40	0	1-2	
			2	1713025740	人文地理学 Human geography	2	考查		综合素养	32	28	4	1-2	
			3	1713017180	测量学 Surveying	3	考查		综合素养	48	38	10	2-1	
			4	1713017410	JAVA 程序设计 JAVA Programming	2	考查		综合素养	32	16	16	2-2	
			5	1713002030	国际海洋污染防治法规 Marine Pollution Control Laws Marine Pollution Control Laws	2	考查		综合素养	32	32	0	3-1	
			6	1713017320	航海学 Marine Navigation	2.5	考试		综合素养	40	34	6	3-1	
			7	1713017330	图形学与仿真技术 Graphics and Simulation Technology	2.5	考查		综合素养	40	40	0	3-1	
			8	1713017370	面向对象程序设计 Object-Oriented Programming	2.5	考查		综合素养	40	30	10	3-1	
			9	1713026970	GNSS 原理与应用 GNSS Principles and Applications	2.5	考试		综合素养	40	34	6	3-1	
			10	1713017350	操作系统 Operation System	2	考试		综合素养	32	22	10	3-2	
			11	1713002970	文献检索与阅读 Literature Searching	1	考查		综合素养	16	2	14	4-1	

			12	1713017460	专业外语(地理信息科学) Specialty English	2	考查		综合素养	32	32	0	4-1	
	限选-专业及方向课程 Stream Courses		1	1713017440	GIS 应用与实践 GIS Applications and Practice	2	考查		综合素养	32	16	16	2-1	
			2	1713017270	海洋测绘 Hydrography and Cartography	2	考查		综合素养	32	16	16	3-1	
			3	1713017430	三维可视化与虚拟现实技术 Three- dimensional Visualization and Virtual Reality Technology	2	考查		综合素养	32	32	0	3-1	
			4	1713022250	空间信息智能分析 intelligent analysis for spatial information	2.5	考查		综合素养	40	20	20	3-1	
			5	1713031320	海图制图 Nautical Cartography	2	考查		综合素养	32	24	8	3-1	
			6	1713017220	海事管理 Maritime Safety Administration	2	考查		综合素养	32	32	0	3-2	
			7	1713017340	航运信息网络技术 Shipping Information Network Technology	2.5	考查		综合素养	40	40	0	3-2	
			8	1713017380	VTS 和 AIS 原理与应用 VTS and AIS Principles and Applications	2	考查		综合素养	32	32	0	3-2	
			9	1713017390	WebGIS Web GIS	2	考查		综合素养	32	16	16	3-2	
			10	1713017420	航海仪器 Nautical Instruments	3	考查		综合素养	48	32	16	3-2	课外学时 16

			11	1713017450	港口 GIS Port GIS	2	考查		综合素养	32	16	16	3-2	
			12	1713022180	传感网技术与应用 Sensor Network Technology and Application	2.5	考试		综合素养	40	34	6	3-2	
			13	1713025750	遥感地学分析 Remote sensing geoscience analysis	2	考查		综合素养	32	26	6	3-2	
			14	1713029140	海洋探测数据处理分析 Ocean Exploration Data Processing and Analysis	2	考查		综合素养	32	16	16	3-2	
			15	1713016530	航标管理 Aids To Navigation Management	2	考查		综合素养	32	28	4	4-1	
			16	1713017310	海上交通工程 Marine Traffic Engineering	2	考查		综合素养	32	32	0	4-1	
			17	1713017400	船舶污染物监测技术 Monitoring Technology for Pollutions from Ships	2	考查		综合素养	32	28	4	4-1	
			18	1713017470	GNSS-R 原理及应用 Principles and Applications of GNSS-R	2	考试		综合素养	32	26	6	4-1	
合计 Total						68				1088	838	250		

表 4：地理信息科学任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

表 5：地理信息科学 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713025720	GIS 软件开发实践 GIS software development practice	2	考查		综合素养	60	0	60	2-2	
			3	1713026191	船舶实习(技术) Ship Practice (Technoloay)	1	考查		综合素养	30	0	30	3-1	
			4	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			5	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			6	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						20				586	0	586		

表 6：地理信息科学 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713018520	专业导论(地信) Introduction of Profession	1	考查		拓展素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			4	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			5	2113000300	国家安全教育(航海) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			6	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			7	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	

			8	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			9	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			10	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			11	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			12	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
			13	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-1	
			14	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分
Ⅷ. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits
1	体育（1）	必修	26	1
2	体育（2）	必修	34	1
3	大学物理实验（1）	必修	24	1
4	体育（3）	必修	34	1
5	大学物理实验（2）	必修	24	1
6	体育（4）	必修	34	1
7	人工智能通识(B)	必修	4	0.25
8	中国近现代史纲要	必修	8	0.5
9	思想道德与法治	必修	8	0.5
10	马克思主义基本原理	必修	8	0.5
11	近平新时代中国特色社会主义思想概论	必修	8	0.5
12	创新思维与创新方法(地理信息科学专业)	必修	10	0.625
13	地图学	必修	6	0.375
14	自然地理学	必修	8	0.5
15	地理信息系统	必修	6	0.375
16	地球科学概论	必修	6	0.375
17	数据结构	必修	12	0.75
18	遥感原理与应用	必修	6	0.375
19	航海气象与海洋学	必修	8	0.5
20	空间信息技术前沿	必修	6	0.375
21	GIS 二次开发	必修	20	1.25
22	空间分析	必修	6	0.375
23	GIS 实习	必修	20	1.25
24	遥感图像处理	必修	10	0.625

25	海洋遥感基础及应用	必修	6	0.375
26	电子海图技术	必修	10	0.625
27	军事训练	必修	90	3
28	GIS 软件开发实践	必修	60	2
29	船舶实习（技术）	必修	30	1
30	毕业实习及毕业论文	必修	360	12
31	测量学	限选	10	0.625
32	面向对象程序设计			
33	数据库原理与空间数据库	必修	20	1.25
34	航海学	限选	6	0.375
35	GNSS 原理与应用			
36	GIS 应用与实践	限选	16	1
37	空间信息智能分析			
38	海洋测绘	限选	16	1
39	港口 GIS			
40	WebGIS	限选	16	1
41	海洋探测数据处理分析			
42	遥感地学分析	限选	6	0.375
43	传感网技术与应用			
合计 Total			982	40.625

九、课程体系对毕业要求的支撑关系矩阵

Ⅸ. Courses &Graduation Requirements Relationship Matrix

课程及教学活动	毕业要求 1	毕业要求 2	毕业要求 3	毕业要求 4	毕业要求 5	毕业要求 6
军事理论	H				M	M
体育	H					H
线性代数		H				M
概率论与数理统计		H				M
大学物理		H				M
大学物理实验		H			M	M
马克思主义基本原理	H					M
中国近现代史纲要	H					M
思想道德修养与法律基础	H					M
逻辑学	H	H				M
大学英语	M	H			H	M
毛泽东思想和中国特色社会主义理论体系概论	H					M
习近平新时代中国特色社会主义思想概论	H					M
实用写作	H	H				M
高等数学		H				M
大学计算机基础		H				M
创新思维与创新方法（地理信息科学专业）		M		H	H	M
地理信息系统	M	H	H	M	H	
人文地理学	M	H		M	M	M
自然地理学		H	M	M	M	M

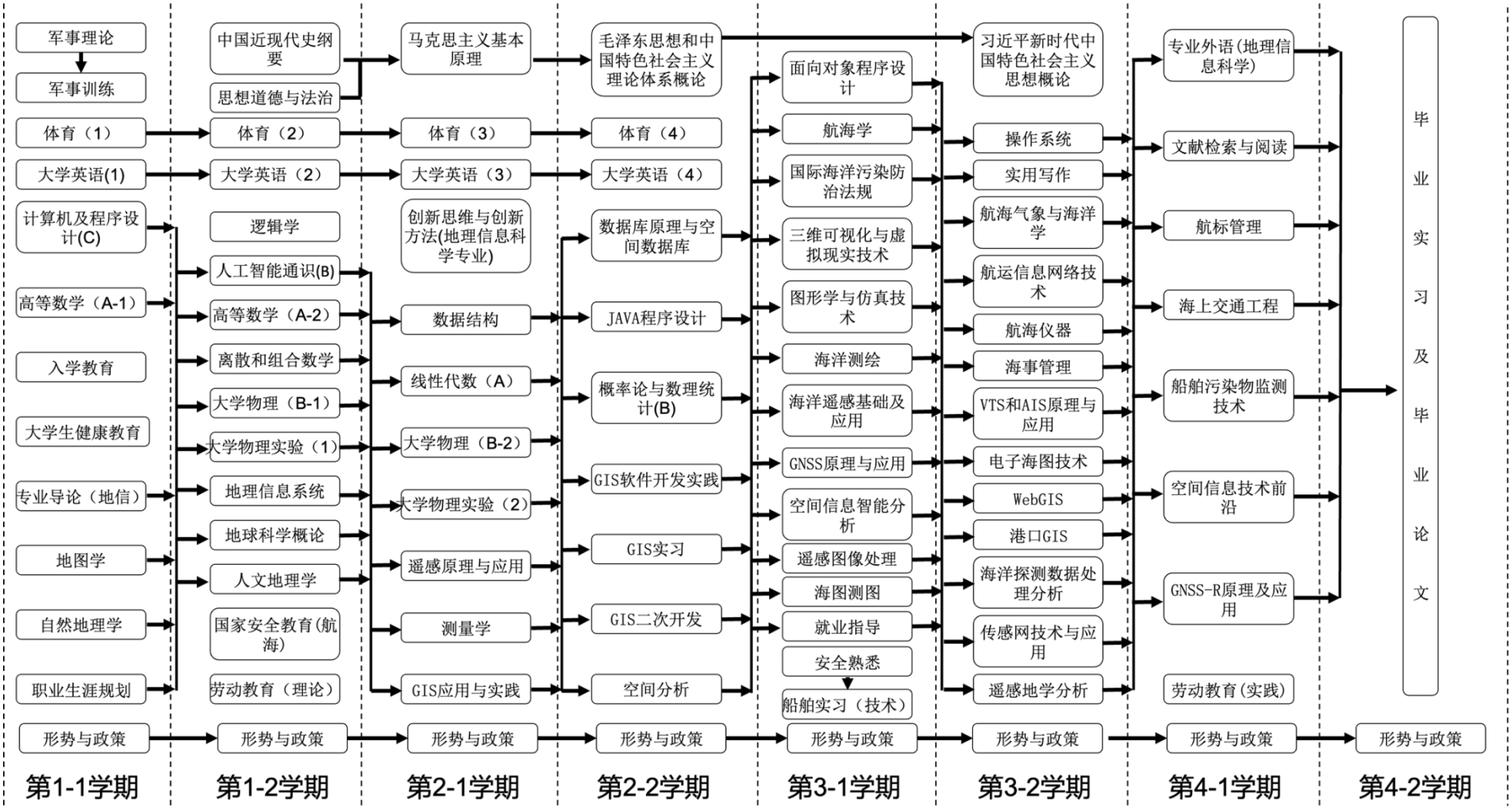
地图学		H	M	M	M	M
离散和组合数学		H				
数据结构		H				
数据库原理与空间数据库		H	H			
测量学	M	M	H	H		
遥感原理与应用	M	H	H	H		M
地球科学概论		H	M	M	M	M
航海气象与海洋学	M	H	H	M		
海事管理	M			H	H	
GIS 二次开发		M	M			
电子海图技术	M		H	H		M
遥感图像处理		H	H	M	M	M
空间分析		H	H	M	M	M
海洋测绘	M		H	H	M	
空间信息技术前沿			M		H	H
海洋遥感基础及应用		H	H	M	M	M
GIS 实习	H	M			H	M
计算机程序设计基础(C)		H			M	M
英语初级口语		H			M	M
海上交通工程			H	M	M	M
国际海洋污染防治法规	H			H	M	M
航海学			H	M	M	M
图形学与仿真技术			H	M	M	M
航运信息网络技术			H	M	M	M
操作系统		H			M	M
GPS 原理与应用			H	H	H	M

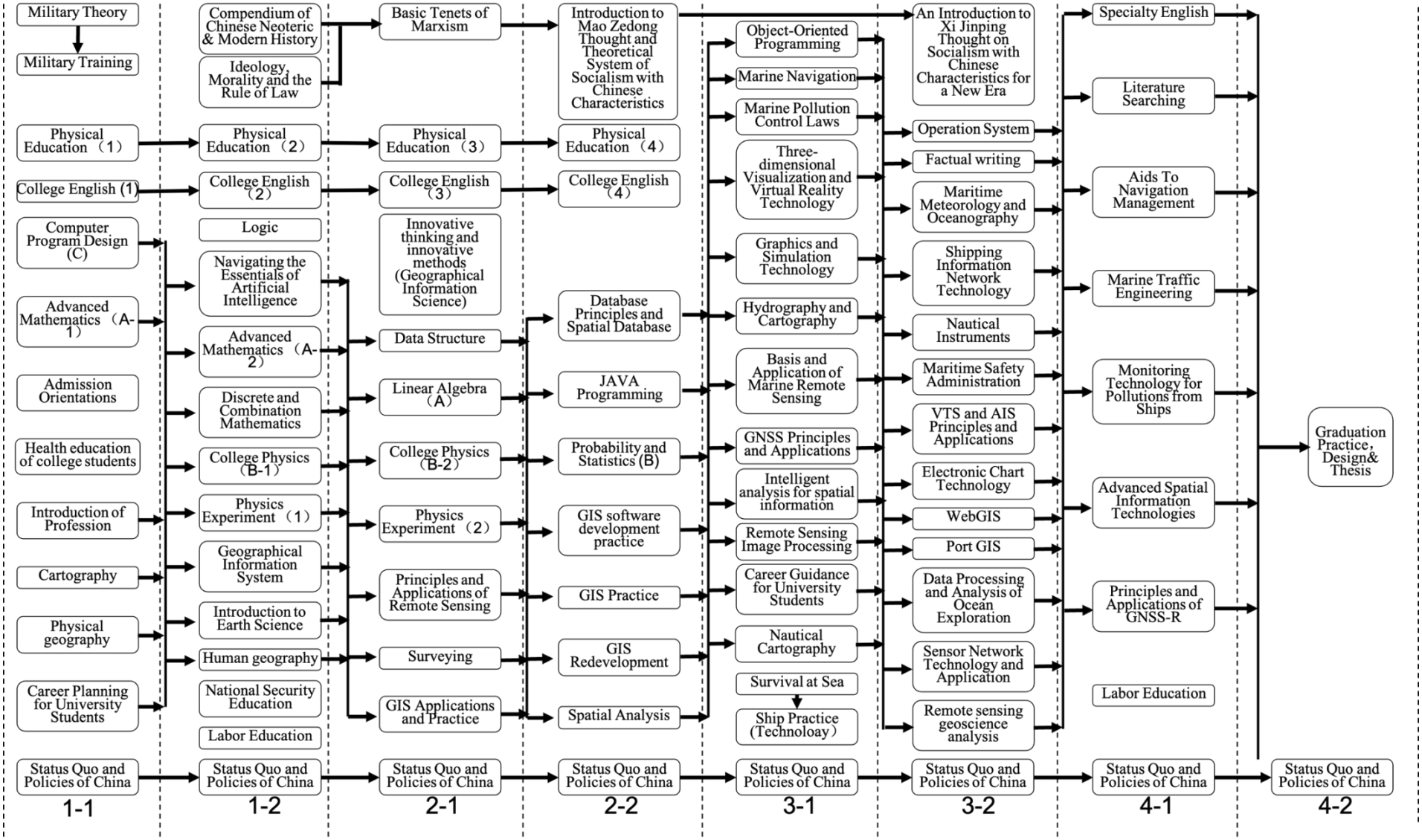
面向对象程序设计		H			M	M
VTS 和 AIS 原理与应用			H	M	M	M
Web GIS		M	H		M	M
船舶污染物监测技术				H	M	M
JAVA 程序设计		H				
航标管理				H	M	
航海仪器				H	M	
文献检索与阅读					H	H
三维可视化与虚拟现实技术				H	M	M
GIS 应用与实践		M	H	H	M	M
港口 GIS			H	H	M	
专业外语(地理信息科学)		M		H	H	M
GNSS-R 原理及应用		H	M			M
传感网络技术与应用		M	H	M	H	
遥感地学分析		H	M	H	M	
空间信息智能分析		H	M	H		
海洋探测数据处理分析			H	H	H	
海图制图		H	H			
军事训练	H					M
公益劳动	H					M
船舶实习（地理信息科学）	H		M	M		M
GIS 软件开发实践		M	M			
安全熟悉	H				M	M
形势与政策	H					M
大学生健康教育	H					M
入学教育	H					M
职业生涯规划	H					M

国家安全教育	H					M
就业指导	H					M
专业导论	M				H	M
毕业实习及毕业论文	H	H	H	H	H	H
注：关联度强的用“H”表示，关联度中等的用“M”表示。						

十、课程配置流程图

X. Flowchart of Course Configuration




Military Theory
Military Training
Physical Education（1）
College English (1)
Computer Program Design (C)
Advanced Mathematics（A-1）
Admission Orientations
Health education of college students
Introduction of Profession
Cartography
Physical geography
Career Planning for University Students
Status Quo and Policies of China
1-1
Compendium of Chinese Neoteric & Modern History
Ideology, Morality and the Rule of Law
Physical Education（2）
College English（2）
Logic
Navigating the Essentials of Artificial Intelligence
Advanced Mathematics（A-2）
Discrete and Combination Mathematics
College Physics（B-1）
Physics Experiment（1）
Geographical Information System
Introduction to Earth Science
Human geography
National Security Education
Labor Education
Status Quo and Policies of China
1-2
Basic Tenets of Marxism
Physical Education（3）
College English（3）
Innovative thinking and innovative methods (Geographical Information Science)
Data Structure
Linear Algebra（A）
College Physics（B-2）
Physics Experiment（2）
Principles and Applications of Remote Sensing
Surveying
GIS Applications and Practice
Status Quo and Policies of China
2-1
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Physical Education（4）
College English（4）
Database Principles and Spatial Database
JAVA Programming
Probability and Statistics (B)
GIS software development practice
GIS Practice
GIS Redevelopment
Spatial Analysis
Status Quo and Policies of China
2-2
Object-Oriented Programming
Marine Navigation
Marine Pollution Control Laws
Three-dimensional Visualization and Virtual Reality Technology
Graphics and Simulation Technology
Hydrography and Cartography
Basis and Application of Marine Remote Sensing
GNSS Principles and Applications
Intelligent analysis for spatial information
Remote Sensing Image Processing
Career Guidance for University Students
Nautical Cartography
Survival at Sea
Ship Practice (Technoloay)
Status Quo and Policies of China
3-1
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Operation System
Factual writing
Maritime Meteorology and Oceanography
Shipping Information Network Technology
Nautical Instruments
Maritime Safety Administration
VTS and AIS Principles and Applications
Electronic Chart Technology
WebGIS
Port GIS
Data Processing and Analysis of Ocean Exploration
Sensor Network Technology and Application
Remote sensing geoscience analysis
Status Quo and Policies of China
3-2
Specialty English
Literature Searching
Aids To Navigation Management
Marine Traffic Engineering
Monitoring Technology for Pollutions from Ships
Advanced Spatial Information Technologies
Principles and Applications of GNSS-R
Labor Education
Status Quo and Policies of China
4-1
Graduation Practice, Design& Thesis
Status Quo and Policies of China
4-2

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订是于2021年进行，为满足教育教学改革的需要，我校今年组织对本科专业培养计划进行再次全面修订。

新版培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮着的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84729637 84723367

教学院长：84725296

教 务 处：84723005

地理信息科学专业负责人：刘丙新

地理信息科学教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Marine Engineering Major

[2025 级适用]

★ 轮机工程（海上）专业（081804K）

大连海事大学教务处

2025 年 9 月

轮机工程专业本科培养计划

Undergraduate Program for Marine Engineering Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有健全人格与健康体魄、科学素养与创新精神、人文素养与家国情怀、国际视野与海洋意识，具有扎实的工程知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应绿色船舶、智能船舶发展需求，在轮机工程及相关领域从事操作与维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后 5 年左右，预期能够达到的职业发展水平如下： 1.在包括新型、特殊船舶、绿色船舶、智能船舶等在内的远洋船舶任职，并有能力担任管理级轮机员职务。 2.在船舶与海洋工程、机械工程或电气工程及自动化等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家或管理人才。 3.取得硕士学位并在相关领域任职，或攻读博士学位，具有较高水平的科研能力。 4.在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the demands of green and intelligent shipping, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the field of marine engineering and related disciplines. Within approximately five years after graduation, students are expected to achieve the following professional development milestones: 1. Serve on ocean-going vessels, including new types, specialized ships, green ships, and intelligent ships, with the competence to assume positions as management-level marine engineers. 2. Work in enterprises, institutions, or administrative organizations related to ship and ocean engineering, mechanical engineering, or electrical engineering and automation, with the potential to grow into technical experts or managerial professionals. 3. Obtain a master's degree and engage in relevant professional fields, or pursue a doctoral degree, demonstrating a high level of research capability. 4. Take positions in universities or research institutes, achieve intermediate or higher professional titles, and demonstrate the ability to become core members in their fields.	1.道德与修养。 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2.工程知识与实践能力。 具有扎实的船舶动力装置操作与维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力。 2. Engineering Knowledge and Practical Ability Equipped with solid theoretical foundations, professional knowledge, and practical skills in the operation and maintenance of marine power systems, manufacturing, technical services, operation management, and scientific and technological development.
	3.团队与管理。 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力。 3. Teamwork and Management Possessing a global vision and marine awareness, along with strong communication, interpersonal, teamwork, and management skills in diverse, interdisciplinary, and cross-cultural contexts.
	4.学习与发展。 具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应绿色船舶、智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of green and intelligent ship development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.	3-1 能够调查轮机工程领域问题背景和需求，明确设计或开发目标。能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of marine engineering, and to define design or development objectives. Capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对轮机工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of marine engineering based on scientific principles and	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex marine engineering problems in accordance with scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex marine engineering

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂轮机工程问题，如发动机燃烧与排放、船机故障诊断、机桨匹配、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex marine engineering problems such as engine combustion and emissions, engine fault diagnosis, propeller matching, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决轮机工程领域的复杂工程问题时，能够分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and relevant laws in marine engineering practice, and fulfill corresponding responsibilities.	7-1 了解工程伦理基本内涵、航海文化和轮机工程发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences, practicing the core values of socialism and the spirit of Chinese seafarers, establishing a correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as a marine engineer on a ship.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to marine engineering practice—as a team

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流轮机工程领域的问题。能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够使用公共英语和轮机工程专业英语，有效地与不同国家和地区的轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and marine engineering English to conduct oral and written intercultural communication with marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握船舶建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understanding the fundamental principles of engineering management and basic knowledge of economics, and mastering the cost structure of the full cycle and entire process of ship construction and operation, as well as equipment procurement and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the field of marine engineering.	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning, and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对轮机工程领域乃至整个工程与社会带来的影响。能够适应新技术变革，应对绿色化、智能化等对轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of marine engineering as well as on engineering and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the marine engineering field.

三、专业核心课程

III．Core Courses

工程材料基础、船舶电气设备及系统、单片机原理与应用、船舶柴油机、船舶辅机(1)、船舶辅机(2)、轮机自动化、船舶动力装置技术管理、轮机维护与修理、轮机综合实验、轮机模拟训练

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Principles and Applications of Microcontrollers, Marine Diesel Engine, Marine Auxiliary Machinery (1), Marine Auxiliary Machinery (2), Marine Engineering Automation, Marine Engineering Management, Marine Maintenance and Repairing, Marine Engineering General Experiment, Marine Engine Room Simulator Training.

四、特色课程

IV．Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty&innovation	行业共建 industry collaboration
创新思维与创新方法（轮机） Innovative thinking and innovative methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
单片机原理与应用 Principles and Applications of Microcontrollers	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机(1) Marine Auxiliary Machinery (1)			●	●
船舶辅机(2) Marine Auxiliary Machinery (2)			●	●
轮机自动化 Marine Engineering Automation	●	●		●
船舶动力装置技术管理 Marine Engineering Management		●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
轮机综合实验 Marine Engineering General Experiment	●			●
轮机模拟训练 Marine Engine Room Simulator Training		●	●	

五、学制与学位

V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（124 学分） Compulsory (124 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	118	6	10	8	38	6	186
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.29 %	51.625	29.00%	42.625	23.95%	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（178 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	10	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		
	计算思维及信息技术 Computational Thinking and Information Technology		5		
	通识类 General Course	军事素养 Military Literacy	2		

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Category</th><th rowspan="2" colspan="2">课程子类
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Option</th></tr>
<tr><td rowspan="8"></td><td rowspan="8"></td><td>体育素质
Physical Literacy</td><td>4</td><td rowspan="8"></td><td rowspan="3"></td></tr>
<tr><td>沟通写作
Communication
and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational
Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and
Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>22.5</td><td rowspan="5">/</td></tr>
<tr><td rowspan="2">专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>29.5</td></tr>
<tr><td colspan="2">方向模块课
模块 1：能源与动力
模块 2：管理与制造
模块 3：电气与控制
Directional Module Courses</td><td>/</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>22</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：178
Total：178</td><td>160</td><td>10</td><td>8</td></tr>
</table>

拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表
参见表 1～表 6
VII Curriculum Structure
Refer to Table1～Table6

表 1：轮机工程(普通班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（178 学分） In-class Teaching Courses （178 credits）			拓展素养（8 学分） Centralized Practicum（8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	160	10	8	8	186

表 2：轮机工程(普通班)必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	

			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			18	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			19	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			20	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			21	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			22	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			23	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			24	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			25	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			26	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	
			28	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	

			29	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			30	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713013680	电工学 Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	
			8	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	

	必修-专业及方向课程 Stream Courses		1	1713030570	工程材料基础(双语) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	
			3	1713019590	航海概论 Navigation Principles	1	考查		综合素养	16	16	0	3-1	
			4	1713030590	单片机原理与应用 Principles and Applications of Microcontrollers	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			5	1713030630	船舶柴油机(双语) Marine Diesel Engine	4	考试	√	综合素养	64	60	4	3-1	课外学时 16
			6	1713030651	船舶辅机(1)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	课外学时 8
			7	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			8	1713030680	船舶防污染技术(双语) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			9	1713013730	轮机自动化 Marine Engineering Automation	3	考试	√	综合素养	48	42	6	3-2	
			10	1713014590	轮机英语 Marine Engineering English	2	考查		综合素养	32	32	0	3-2	课外学时 16
			11	1713030652	船舶辅机(2)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	38	2	3-2	课外学时 8

			12	1713030700	船舶动力装置技术管理(双语) Marine Engineering Management	2	考试	√	综合素养	32	30	2	3-2	课外学时 16
			13	1713030730	轮机维护与修理(双语) Marine Maintenance and Repairing	2	考试	√	综合素养	32	27	5	3-2	课外学时 16
合计 Total						**124**				**2064**	**1750**	**314**		

表 3：轮机工程(普通班) 限选课程设置及进程

限选课学分要求：不少于 10 学分。其中，须从模块 1、模块 2、模块 3 中选修一个模块并从该模块中至少选修 9 学分（跨模块选修的课程学分不累加）。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713013770	工程热力学 Engineering Thermodynamics	3	考查		综合素养	48	44	4	3-1	
			2	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	3-1	
			3	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	3-2	

			4	1713028020	传热学及应用 Applied Heat Transfer	2	考试		综合素养	32	30	2	3-2	
	限选-专业及方向课程(模块 1-能源与动力) Stream Courses	若选择该模块，须至少修读 9 学分。	1	1713030930	新能源技术 New Energy Technology	1.5	考查		综合素养	24	22	2	3-1	课外学时 8
			2	1713030940	能源化学 Marine Energy Chemistry	1.5	考查		综合素养	24	20	4	3-2	课外学时 8
			3	1713030950	燃料电池与氢能 Fuel cell and hydrogen	1.5	考查		综合素养	24	22	2	3-2	课外学时 8
			4	1713030960	内燃机设计 ICE Design	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			5	1713030970	液货船设备 Equipments of Liquid Cargo Ships	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
			6	1713030980	船舶锅炉与蒸汽动力设备 Marine Boiler and Steam-powered equipment	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			7	1713030990	现代轮机技术与管理 Modern Marine Engineering Technology and Management	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			8	1713031000	船舶动力装置设计 Design of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
	限选-专业及方向课程(模块 2-管理与制造) Stream Courses	若选择该模块，须至少修读 9 学分。	1	1713031010	船舶动力装置测试技术 Measurement and Test Techniques of Marine Engineering	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			2	1713031020	船机制造工艺 Manufacture Techniques of Marine Machinery	1.5	考查		综合素养	24	24	0	3-2	课外学时 8

			3	1713031030	船舶液压设备原理及维修技术 Principles and Maintenance Technology of Marine Hydraulic Machinery	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			4	1713031040	优化设计与有限元 Optimal Design and Finite Element	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			5	1713031050	轮机案例分析 Case Analysis of Marine Engineering	1.5	考试		综合素养	24	24	0	4-1	课外学时 8
			6	1713031060	工程船舶概论 Introduction to Engineering Ship	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			7	1713031070	船舶坞修工程 Ship docking engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			8	1713031080	焊接技术 Welding Technology	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
	限选-专业及方向课程(模块 3-电气与控制) Stream Courses	若选择该模块，须至少修读 9 学分。	1	1713031090	自动控制理论 Automatic Control Theory	1.5	考查		综合素养	24	24	0	3-1	课外学时 8
			2	1713031100	船舶 PLC 及其网络技术 Marine PLC and its communication network	1.5	考查		综合素养	24	14	10	3-2	课外学时 8
			3	1713031110	船舶电气设备维修技术 Maintenance and Repair Techniques of Marine Electric Equipment	1.5	考查		综合素养	24	20	4	3-2	课外学时 8
			4	1713031120	船舶电力推进技术管理 Management of ship electric propulsion technology	1.5	考查		综合素养	24	20	4	3-2	课外学时 8

			5	1713031130	轮机建模与仿真 Modeling and Simulation of marine engine	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			6	1713031140	船舶电站自动控制系统 Automatic Control System of Marine Power Station	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			7	1713031150	轮机过程控制 Marine Engineering Process Control	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
			8	1713031160	轮机智能技术 Intelligent Technology of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
合计 Total						**46.5**				**776**	**720**	**56**		

表 4：轮机工程(普通班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”， “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(普通班) 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	
			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	
			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	
			7	1713014020	轮机课程设计 Course Design`	1	考查		综合素养	30	0	30	2-2	
			8	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			9	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			10	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	

			11	1713030790	轮机综合实验 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			12	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	1713030760	机舱资源管理(双语) Engine Room Resource Management	1	考查		综合素养	30	0	30	4-1	
			15	1713030780	轮机模拟训练(双语) Marine Engine Room Simulator Training	1	考查		综合素养	40	16	24	4-1	
			16	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	
			17	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	
			18	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	
			19	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**38**				**1160**	**82**	**1078**		

表 6：轮机工程(普通班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	

			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713030840	科技写作和文献检索 Technical Writing and Literature Retrieval	0.5	考查		拓展素养	8	8	0	3-1	
			13	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	体育（2）	必修	34	1	
3	体育（3）	必修	34	1	
4	体育（4）	必修	34	1	
5	思想道德与法治	必修	8	0.5	
6	计算机及程序设计(Python)	必修	24	1.5	●
7	大学物理实验（1）	必修	24	1	●
8	中国近现代史纲要	必修	8	0.5	
9	创新思维与创新方法(轮机）	必修	10	0.625	●
10	人工智能通识(B)	必修	4	0.25	●
11	马克思主义基本原理	必修	8	0.5	
12	大学物理实验（2）	必修	24	1	●
13	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
14	工程力学	必修	4	0.25	●
15	电工学	必修	8	0.5	●
16	机械设计基础	必修	2	0.125	●
17	工程流体力学	必修	2	0.125	●
18	热工基础	必修	8	0.5	●
19	工程材料基础(双语)	必修	3	0.1875	●
20	船舶电气设备及系统(双语)	必修	8	0.5	●
21	单片机原理与应用	必修	6	0.375	●
22	船舶柴油机(双语)	必修	4	0.25	●
23	船舶辅机(1)(双语)	必修	4	0.25	●
24	船舶防污染技术(双语)	必修	4	0.25	●
25	轮机自动化	必修	6	0.375	●
26	船舶辅机(2)(双语)	必修	2	0.125	●
27	船舶动力装置技术管理(双语)	必修	2	0.125	●
28	轮机维护与修理(双语)	必修	5	0.3125	●
29	军事训练	必修	90	3	
30	精通救生艇筏和救助艇	必修	28	1	●
31	船舶保安	必修	20	0.5	●
32	高级消防	必修	36	1	●
33	基本安全	必修	86	2.5	●
34	精通急救	必修	24	1	●
35	轮机课程设计	必修	30	1	●
36	船舶认识实习（轮机工程）	必修	120	4	●
37	船舶电气设备管理与工艺	必修	40	1	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
38	金工实习(轮机海上)	必修	120	4	●
39	轮机综合实验	必修	30	1	●
40	船舶柴油机拆装	必修	30	1	●
41	机舱资源管理(双语)	必修	30	1	●
42	轮机模拟训练(双语)	必修	40	1	●
43	调速器、增压器拆装	必修	15	0.5	●
44	辅机综合训练(1)	必修	30	1	●
45	辅机综合训练(2)	必修	15	0.5	●
46	毕业实习及毕业论文	必修	360	12	●
合计 Total			1458	51.625	42.625

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16。

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements & Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
工程基础类（限选）																							
19	工程热力学			H	M																		
20	传热学及应用			H	M																		
专业基础类（必修）																							

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
21	单片机原理与应用★		H			H																M	
22	专业导论（轮机）											M		H				M				M	M
23	造船大意					H						M											
24	航海概论											M		H		H							
专业基础类（限选）																							
25	新能源技术								M			M										H	H
26	能源化学	H		H								M											
27	船舶动力装置测试技术					M	M			H	H												
28	船机制造工艺					M				H	H									M	M		
29	自动控制理论		M																			H	H
30	船舶 PLC 及其网络技术		H					M		H	M												
专业方向类（必修）																							
31	船舶电气设备及系统★				H	H		M													M		
32	船舶柴油机★					M	H	H				M							M				
33	船舶辅机(1)(2)★					M	H	H											M				
34	轮机自动化★				H	H		M													M		
35	船舶动力装置技术管理★						H					H	H	H						H	H		
36	轮机维护与修理★						H					H	H							H	H		
37	船舶防污染技术						M					H	H	M									
38	船舶及海上设施检验(海上)											H	H	M						M	M		
39	轮机英语													M				H	H				
专业方向类（限选）																							
40	燃料电池与氢能							H				M											H
41	内燃机设计		M			H	H																
42	液货船设备					H		H				M											

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
43	船舶锅炉与蒸汽动力设备					H		H															
44	现代轮机技术与管理									H	M											M	H
45	船舶动力装置设计		M			H	H																
46	船舶液压设备原理及维修技术						H	H	M														
47	优化设计与有限元		M		M					H	H												
48	轮机案例分析				H			M					M										
49	工程船舶概论											M		H									
50	船舶坞修工程											M								H	H		
51	焊接技术				M					H	H												
52	船舶电气设备维修技术						H	H	M														
53	船舶电力推进技术管理				H			M															
54	轮机建模与仿真					M	M			H	H												
55	船舶电站自动控制系统				H			M															
56	轮机过程控制		M		H	M	M																
57	轮机智能技术		H							M	M											M	M
工程实践类（必修）																							
58	轮机课程设计		H		H													H					
59	船舶认识实习(轮机工程)★													H	H	M	M	H					
60	金工实习(轮机海上)						H			M			M		H								
61	船舶电气设备管理与工艺★								H	H	M												
62	船舶柴油机拆装★								H	H	M					M							
63	调速器、增压器拆装								H	H	M					M							
64	辅机综合训练								H	H	M					M							
65	轮机综合实验★								M	H	H					H	H						
66	轮机模拟训练★									H	H					H	M		M				

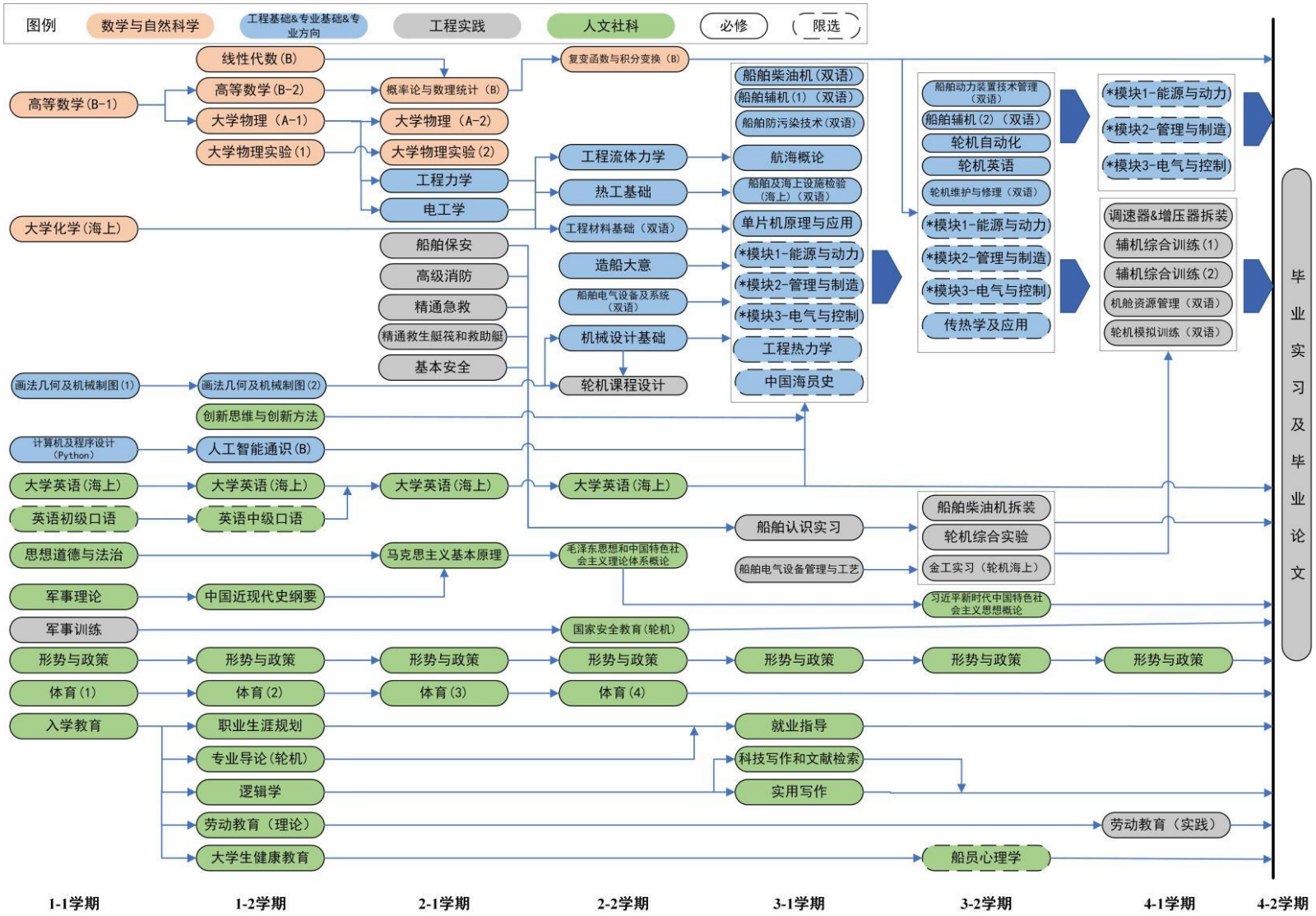
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
67	机舱资源管理★														H	H	H	M	M				
68	基本安全													H	H		M						
69	精通急救													H	H		M						
70	精通救生艇筏和救助艇													M		H	H						
71	高级消防													M		H	H						
72	船舶保安													M		H							
73	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
74	思想道德与法治														H								
75	中国近现代史纲要														H								
76	马克思主义基本原理												M		H					M			
77	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
78	习近平新时代中国特色社会主义思想概论												M		H					M			
79	形势与政策												M		H								
80	大学英语(海上)																		H				
81	体育														H	M	M						
82	军事理论														H								
83	军事训练														H	H	M						
84	劳动教育(理论)														H								
85	劳动教育(实践)														M	H	M						
86	逻辑学							M														H	H
87	实用写作																	H	H				
88	入学教育													H									
89	职业生涯规划													H								M	
90	大学生健康教育														H	M							

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
91	国家安全教育(轮机)														H								
92	就业指导														H								
人文社科与通识类（限选）																							
93	英语初级口语																	H	H				
94	英语中级口语																	H	H				
95	中国海员史													M	H								
96	船员心理学													M	H				M				

注：★表示该课程用于毕业要求达成评价，共 20 门；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration



轮机工程专业（英语加强班）本科培养计划

Undergraduate Program for Marine Engineering Major

（English-Enhanced Class）

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有健全人格与健康体魄、科学素养与创新精神、人文素养与家国情怀、国际视野与海洋意识，具有扎实的工程知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应绿色船舶、智能船舶发展需求，在轮机工程及相关领域从事操作与维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后 5 年左右，预期能够达到的职业发展水平如下： 1.在包括新型、特殊船舶、绿色船舶、智能船舶等在内的远洋船舶任职，并有能力担任管理级轮机员职务。 2.在船舶与海洋工程、机械工程或电气工程及自动化等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家或管理人才。 3.取得硕士学位并在相关领域任职，或攻读博士学位，具有较高水平的科研能力。 4.在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the demands of green and intelligent shipping, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the field of marine engineering and related disciplines. Within approximately five years after graduation, students are expected to achieve the following professional development milestones: 1. Serve on ocean-going vessels, including new types, specialized ships, green ships, and intelligent ships, with the competence to assume positions as management-level marine engineers. 2. Work in enterprises, institutions, or administrative organizations related to ship and ocean engineering, mechanical engineering, or electrical engineering and automation, with the potential to grow into technical experts or managerial professionals. 3. Obtain a master’s degree and engage in relevant professional fields, or pursue a doctoral degree, demonstrating a high level of research capability. 4. Take positions in universities or research institutes, achieve intermediate or higher professional titles, and demonstrate the ability to become core members in their fields.	1.道德与修养。 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2.工程知识与实践能力。 具有扎实的船舶动力装置操作与维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力。 2. Engineering Knowledge and Practical Ability Equipped with solid theoretical foundations, professional knowledge, and practical skills in the operation and maintenance of marine power systems, manufacturing, technical services, operation management, and scientific and technological development.
	3.团队与管理。 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力，特别是在轮机工程领域具备较强的英语表达能力。 3. Teamwork and Management Possess an international vision and maritime awareness, with well-developed communication, interpersonal, teamwork, and managerial skills in diverse, multidisciplinary, and cross-cultural contexts, and demonstrate particularly strong English proficiency in the field of marine engineering.
	4.学习与发展。 具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应绿色船舶、智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of green and intelligent ship development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.	3-1 能够调查轮机工程领域问题背景和需求，明确设计或开发目标。能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of marine engineering, and to define design or development objectives. Capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对轮机工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of marine engineering based on scientific principles and	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex marine engineering problems in accordance with scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex marine engineering

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂轮机工程问题，如发动机燃烧与排放、船机故障诊断、机桨匹配、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex marine engineering problems such as engine combustion and emissions, engine fault diagnosis, propeller matching, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决轮机工程领域的复杂工程问题时，能够分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and relevant laws in marine engineering practice, and fulfill corresponding responsibilities.	7-1 了解工程伦理基本内涵、航海文化和轮机工程发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences, practicing the core values of socialism and the spirit of Chinese seafarers, establishing a correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as a marine engineer on a ship.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to marine engineering practice—as a team

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流轮机工程领域的问题。能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够熟练使用公共英语和轮机工程专业英语，有效地与不同国家和地区的轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and marine engineering English proficiently to conduct oral and written intercultural communication with marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握船舶建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understanding the fundamental principles of engineering management and basic knowledge of economics, and mastering the cost structure of the full cycle and entire process of ship construction and operation, as well as equipment procurement and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the field of marine engineering.	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning, and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对轮机工程领域乃至整个工程与社会带来的影响。能够适应新技术变革，应对绿色化、智能化等对轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of marine engineering as well as on engineering and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the marine engineering field.

三、专业核心课程

III．Core Courses

工程材料基础、船舶电气设备及系统、单片机原理与应用、船舶柴油机、船舶辅机(1) 、船舶辅机(2)、轮机自动化、船舶动力装置技术管理、轮机维护与修理、轮机综合实验、轮机模拟训练

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Principles and Applications of Microcontrollers, Marine Diesel Engine, Marine Auxiliary Machinery (1), Marine Auxiliary Machinery (2), Marine Engineering Automation, Marine Engineering Management, Marine Maintenance and Repairing, Marine Engineering General Experiment, Marine Engine Room Simulator Training.

四、特色课程
IV．Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty& innovation	行业共建 industry collaboration
创新思维与创新方法（轮机） Innovative thinking and innovative methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
单片机原理与应用 Principles and Applications of Micro controllers	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机(1) Marine Auxiliary Machinery (1)			●	●
船舶辅机(2) Marine Auxiliary Machinery (2)			●	●
轮机自动化 Marine Engineering Automation	●	●		●
船舶动力装置技术管理 Marine Engineering Management		●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
轮机综合实验 Marine Engineering General Experiment	●			●
轮机模拟训练 Marine Engine Room Simulator Training		●	●	

五、学制与学位
V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求
VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（124 学分） Compulsory (124 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	118	6	10	8	38	6	186
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.29 %	51.625	29.00%	42.625	23.95%	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（178 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	10	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		

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Course
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Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="12"></td><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td><td rowspan="13"></td><td rowspan="5"></td></tr>
<tr><td rowspan="11">通识类
General
Coursees</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication
and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational
Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and
Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>22.5</td><td rowspan="8">/</td></tr>
<tr><td rowspan="2">专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>29.5</td></tr>
<tr><td colspan="2">方向模块课
模块 1：能源与动力
模块 2：管理与制造
模块 3：电气与控制
Directional Module Courses</td><td>/</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>22</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：178
Total：178</td><td>160</td><td>10</td><td>8</td></tr>
</table>

拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表
参见表 1～表 6
VII Curriculum Structure
Refer to Table1～Table6.

表 1：轮机工程(英语加强班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（178 学分） In-class Teaching Courses （178 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	160	10	8	8	186

表 2：轮机工程(英语加强班)必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			18	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	

			19	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			20	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			21	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			22	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			23	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			24	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			25	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			26	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	
			28	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	
			29	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	

			30	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713014290	电工学(英) Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713014260	工程流体力学(英) Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713014280	热工基础(英) Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	
			8	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	
	必修-专业及方向课程 Stream Courses		1	1713030580	工程材料基础(英) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	
			3	1713019600	航海概论(英) Navigation Principles	1	考查		综合素养	16	16	0	3-1	

			4	1713030600	单片机原理与应用(英) Principles and Applications of Microcontrollers	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			5	1713030640	船舶柴油机(英) Marine Diesel Engine(English)	4	考试	√	综合素养	64	60	4	3-1	课外学时 16
			6	1713030661	船舶辅机(1)(英) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	课外学时 8
			7	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			8	1713030690	船舶防污染技术(英) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			9	1713014330	轮机自动化(英) Marine Engineering Automation	3	考试	√	综合素养	48	42	6	3-2	
			10	1713014590	轮机英语 Marine Engineering English	2	考查		综合素养	32	32	0	3-2	课外学时 16
			11	1713030662	船舶辅机(2)(英) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	38	2	3-2	课外学时 8
			12	1713030710	船舶动力装置技术管理(英) Marine Engineering Management	2	考试	√	综合素养	32	30	2	3-2	课外学时 16
			13	1713030740	轮机维护与修理(英) Marine Maintenance and Repairing	2	考试	√	综合素养	32	27	5	3-2	课外学时 16
合计 Total						**124**				**2064**	**1750**	**314**		

表 3：轮机工程(英语加强班) 限选课程设置及进程

限选课学分要求：不少于 10 学分。其中，须从模块 1、模块 2、模块 3 中选修一个模块并从该模块中至少选修 9 学分（跨模块选修的课程学分不累加）。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713013770	工程热力学 Engineering Thermodynamics	3	考查		综合素养	48	44	4	3-1	
			2	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	3-1	
			3	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	3-2	
			4	1713028020	传热学及应用 Applied Heat Transfer	2	考试		综合素养	32	30	2	3-2	
	限选-专业及方向课程(模块 1-能源与动力) Stream Courses	若选择该模块，须至少修读 9 学分。	1	1713030930	新能源技术 New Energy Technology	1.5	考查		综合素养	24	22	2	3-1	课外学时 8
			2	1713030940	能源化学 Marine Energy Chemistry	1.5	考查		综合素养	24	20	4	3-2	课外学时 8
			3	1713030950	燃料电池与氢能 Fuel cell and hydrogen	1.5	考查		综合素养	24	22	2	3-2	课外学时 8
			4	1713030960	内燃机设计 ICE Design	1.5	考查		综合素养	24	24	0	3-2	课外学时 8

			5	1713030970	液货船设备 Equipments of Liquid Cargo Ships	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
			6	1713030980	船舶锅炉与蒸汽动力设备 Marine Boiler and Steam-powered equipment	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			7	1713030990	现代轮机技术与管理 Modern Marine Engineering Technology and Management	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			8	1713031000	船舶动力装置设计 Design of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
	限选-专业及方向课程(模块 2-管理与制造) Stream Courses	若选择该模块，须至少修读 9 学分。	1	1713031010	船舶动力装置测试技术 Measurement and Test Techniques of Marine Engineering	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			2	1713031020	船机制造工艺 Manufacture Techniques of Marine Machinery	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			3	1713031030	船舶液压设备原理及维修技术 Principles and Maintenance Technology of Marine Hydraulic Machinery	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			4	1713031040	优化设计与有限元 Optimal Design and Finite Element	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			5	1713031050	轮机案例分析 Case Analysis of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			6	1713031060	工程船舶概论 Introduction to Engineering Ship	1.5	考查		综合素养	24	24	0	4-1	课外学时 8

			7	1713031070	船舶坞修工程 Ship docking engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			8	1713031080	焊接技术 Welding Technology	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
	限选-专业及方向课程(模块 3-电气与控制) Stream Courses	若选择该模块，须至少修读 9 学分。	1	1713031090	自动控制理论 Automatic Control Theory	1.5	考查		综合素养	24	24	0	3-1	课外学时 8
			2	1713031100	船舶 PLC 及其网络技术 Marine PLC and its communication network	1.5	考查		综合素养	24	14	10	3-2	课外学时 8
			3	1713031110	船舶电气设备维修技术 Maintenance and Repair Techniques of Marine Electric Equipment	1.5	考查		综合素养	24	20	4	3-2	课外学时 8
			4	1713031120	船舶电力推进技术管理 Management of ship electric propulsion technology	1.5	考查		综合素养	24	20	4	3-2	课外学时 8
			5	1713031130	轮机建模与仿真 Modeling and Simulation of marine engine	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			6	1713031140	船舶电站自动控制系统 Automatic Control System of Marine Power Station	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			7	1713031150	轮机过程控制 Marine Engineering Process Control	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
			8	1713031160	轮机智能技术 Intelligent Technology of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
合计 Total						**46.5**				**776**	**720**	**56**		

表 4：轮机工程(英语加强班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”， “science and technology courses”， At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(英语加强班) 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	

			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	
			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	
			7	1713014020	轮机课程设计 Course Design`	1	考查		综合素养	30	0	30	2-2	
			8	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			9	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			10	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	
			11	1713030790	轮机综合实验 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			12	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	1713030760	机舱资源管理(双语) Engine Room Resource Management	1	考查		综合素养	30	0	30	4-1	
			15	1713030780	轮机模拟训练(双语) Marine Engine Room Simulator Training	1	考查		综合素养	40	16	24	4-1	
			16	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	
			17	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	

			18	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	
			19	2113000460	毕业实习及毕业论文 Graduation Practice，Design&Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**38**				**1160**	**82**	**1078**		

表 6：轮机工程(英语加强班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16

			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713030840	科技写作和文献检索 Technical Writing and Literature Retrieval	0.5	考查		拓展素养	8	8	0	3-1	
			13	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	体育（2）	必修	34	1	
3	体育（3）	必修	34	1	
4	体育（4）	必修	34	1	
5	思想道德与法治	必修	8	0.5	
6	计算机及程序设计(Python)	必修	24	1.5	●
7	大学物理实验（1）	必修	24	1	●
8	中国近现代史纲要	必修	8	0.5	
9	创新思维与创新方法(轮机）	必修	10	0.625	●
10	人工智能通识(B)	必修	4	0.25	●
11	马克思主义基本原理	必修	8	0.5	
12	大学物理实验（2）	必修	24	1	●
13	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
14	工程力学	必修	4	0.25	●
15	电工学（英）	必修	8	0.5	●
16	机械设计基础	必修	2	0.125	●
17	工程流体力学（英）	必修	2	0.125	●
18	热工基础（英）	必修	8	0.5	●
19	工程材料基础（英）	必修	3	0.1875	●
20	船舶电气设备及系统（双语）	必修	8	0.5	●
21	单片机原理与应用（英）	必修	6	0.375	●
22	船舶柴油机（英）	必修	4	0.25	●
23	船舶辅机(1) （英）	必修	4	0.25	●
24	船舶防污染技术（英）	必修	4	0.25	●
25	轮机自动化（英）	必修	6	0.375	●
26	船舶辅机(2) （英）	必修	2	0.125	●
27	船舶动力装置技术管理（英）	必修	2	0.125	●
28	轮机维护与修理（英）	必修	5	0.3125	●
29	军事训练	必修	90	3	
30	精通救生艇筏和救助艇	必修	28	1	●
31	船舶保安	必修	20	0.5	●
32	高级消防	必修	36	1	●
33	基本安全	必修	86	2.5	●
34	精通急救	必修	24	1	●
35	轮机课程设计	必修	30	1	●
36	船舶认识实习（轮机工程）	必修	120	4	●
37	船舶电气设备管理与工艺	必修	40	1	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
38	金工实习(轮机海上)	必修	120	4	●
39	轮机综合实验	必修	30	1	●
40	船舶柴油机拆装	必修	30	1	●
41	机舱资源管理(双语)	必修	30	1	●
42	轮机模拟训练(双语)	必修	40	1	●
43	调速器、增压器拆装	必修	15	0.5	●
44	辅机综合训练(1)	必修	30	1	●
45	辅机综合训练(2)	必修	15	0.5	●
46	毕业实习及毕业论文	必修	360	12	●
合计 Total			1458	51.625	42.625

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16。

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements & Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses & Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
工程基础类（限选）																							
19	工程热力学			H	M																		
20	传热学及应用			H	M																		
专业基础类（必修）																							

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
21	单片机原理与应用★		H			H																M	
22	专业导论（轮机）											M		H				M				M	M
23	造船大意					H						M											
24	航海概论											M		H		H							
专业基础类（限选）																							
25	新能源技术								M			M										H	H
26	能源化学	H		H								M											
27	船舶动力装置测试技术					M	M			H	H												
28	船机制造工艺					M				H	H									M	M		
29	自动控制理论		M																			H	H
30	船舶 PLC 及其网络技术		H					M		H	M												
专业方向类（必修）																							
31	船舶电气设备及系统★				H	H		M													M		
32	船舶柴油机★					M	H	H				M							M				
33	船舶辅机(1)(2)★					M	H	H											M				
34	轮机自动化★				H	H		M													M		
35	船舶动力装置技术管理★						H					H	H	H						H	H		
36	轮机维护与修理★						H					H	H							H	H		
37	船舶防污染技术						M					H	H	M									
38	船舶及海上设施检验(海上)											H	H	M						M	M		
39	轮机英语													M				H	H				
专业方向类（限选）																							
40	燃料电池与氢能							H				M											H
41	内燃机设计		M			H	H																
42	液货船设备					H		H				M											

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
43	船舶锅炉与蒸汽动力设备					H		H															
44	现代轮机技术与管理									H	M											M	H
45	船舶动力装置设计		M			H	H																
46	船舶液压设备原理及维修技术						H	H	M														
47	优化设计与有限元		M		M					H	H												
48	轮机案例分析				H			M					M										
49	工程船舶概论											M		H									
50	船舶坞修工程											M								H	H		
51	焊接技术				M					H	H												
52	船舶电气设备维修技术						H	H	M														
53	船舶电力推进技术管理				H			M															
54	轮机建模与仿真					M	M			H	H												
55	船舶电站自动控制系统				H			M															
56	轮机过程控制		M		H	M	M																
57	轮机智能技术		H							M	M											M	M
工程实践类（必修）																							
58	轮机课程设计		H		H													H					
59	船舶认识实习(轮机工程)★													H	H	M	M	H					
60	金工实习(轮机海上)						H			M			M		H								
61	船舶电气设备管理与工艺★								H	H	M												
62	船舶柴油机拆装★								H	H	M					M							
63	调速器、增压器拆装								H	H	M					M							
64	辅机综合训练								H	H	M					M							
65	轮机综合实验★								M	H	H					H	H						
66	轮机模拟训练★									H	H					H	M		M				

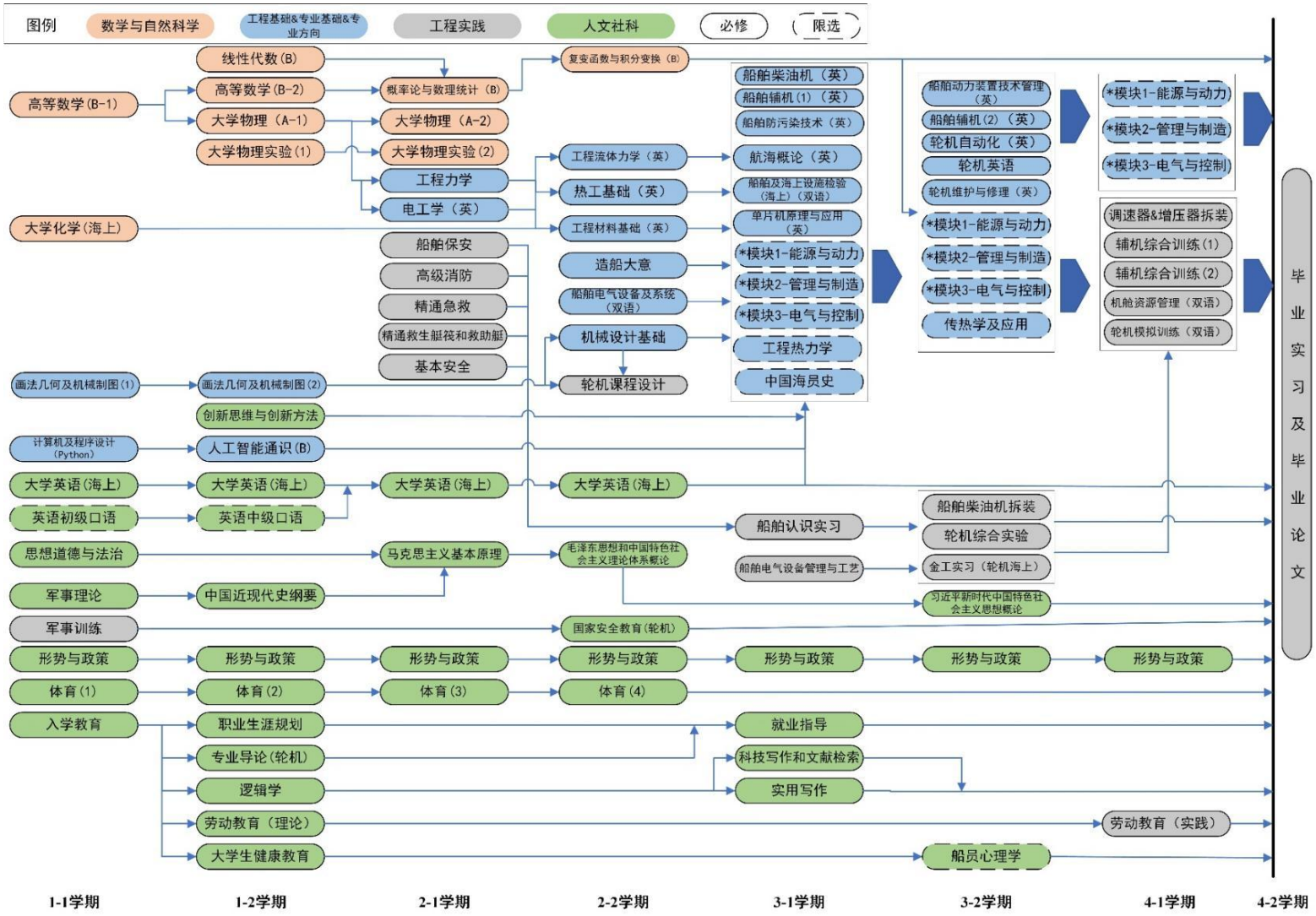
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
67	机舱资源管理★														H	H	H	M	M				
68	基本安全													H	H		M						
69	精通急救													H	H		M						
70	精通救生艇筏和救助艇													M		H	H						
71	高级消防													M		H	H						
72	船舶保安													M		H							
73	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
74	思想道德与法治														H								
75	中国近现代史纲要														H								
76	马克思主义基本原理												M		H					M			
77	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
78	习近平新时代中国特色社会主义思想概论												M		H					M			
79	形势与政策												M		H								
80	大学英语(海上)																		H				
81	体育														H	M	M						
82	军事理论														H								
83	军事训练														H	H	M						
84	劳动教育(理论)														H								
85	劳动教育(实践)														M	H	M						
86	逻辑学							M														H	H
87	实用写作																	H	H				
88	入学教育													H									
89	职业生涯规划													H								M	
90	大学生健康教育														H	M							

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
91	国家安全教育(轮机)														H								
92	就业指导														H								
人文社科与通识类（限选）																							
93	英语初级口语																	H	H				
94	英语中级口语																	H	H				
95	中国海员史													M	H								
96	船员心理学													M	H				M				

注：★表示该课程用于毕业要求达成评价，共 20 门；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration



轮机工程专业（实验班）本科培养计划

Undergraduate Program for Marine Engineering Major

（Elite Class）

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有健全人格与健康体魄、科学素养与创新精神、人文素养与家国情怀、国际视野与海洋意识，具有扎实的工程知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应绿色船舶、智能船舶发展需求，在轮机工程及相关领域从事操作与维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后 5 年左右，预期能够达到的职业发展水平如下： 1.在包括新型、特殊船舶、绿色船舶、智能船舶等在内的远洋船舶任职，并有能力担任管理级轮机员职务。 2.在船舶与海洋工程、机械工程或电气工程及自动化等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家或管理人才。 3.取得硕士学位并在相关领域任职，或攻读博士学位，具有较高水平的科研能力。 4.在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the demands of green and intelligent shipping, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the field of marine engineering and related disciplines. Within approximately five years after graduation, students are expected to achieve the following professional development milestones: 1. Serve on ocean-going vessels, including new types, specialized ships, green ships, and intelligent ships, with the competence to assume positions as management-level marine engineers. 2. Work in enterprises, institutions, or administrative organizations related to ship and ocean engineering, mechanical engineering, or electrical engineering and automation, with the potential to grow into technical experts or managerial professionals. 3. Obtain a master's degree and engage in relevant professional fields, or pursue a doctoral degree, demonstrating a high level of research capability. 4. Take positions in universities or research institutes, achieve intermediate or higher professional titles, and demonstrate the ability to become core members in their fields.	1.道德与修养。 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2.工程知识与实践能力。 具有扎实的船舶动力装置操作与维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力。 2. Engineering Knowledge and Practical Ability Equipped with solid theoretical foundations, professional knowledge, and practical skills in the operation and maintenance of marine power systems, manufacturing, technical services, operation management, and scientific and technological development.
	3.团队与管理。 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力。 3. Teamwork and Management Possessing a global vision and marine awareness, along with strong communication, interpersonal, teamwork, and management skills in diverse, interdisciplinary, and cross-cultural contexts.
	4.学习与发展。 具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应绿色船舶、智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of green and intelligent ship development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.	3-1 能够调查轮机工程领域问题背景和需求，明确设计或开发目标。能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of marine engineering, and to define design or development objectives. Capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对轮机工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of marine engineering based on scientific principles and	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex marine engineering problems in accordance with scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex marine engineering

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂轮机工程问题，如发动机燃烧与排放、船机故障诊断、机桨匹配、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex marine engineering problems such as engine combustion and emissions, engine fault diagnosis, propeller matching, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决轮机工程领域的复杂工程问题时，能够分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and relevant laws in marine engineering practice, and fulfill corresponding responsibilities.	7-1 了解工程伦理基本内涵、航海文化和轮机工程发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences, practicing the core values of socialism and the spirit of Chinese seafarers, establishing a correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as a marine engineer on a ship.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to marine engineering practice—as a team

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流轮机工程领域的问题。能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够使用公共英语和轮机工程专业英语，有效地与不同国家和地区的轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and marine engineering English to conduct oral and written intercultural communication with marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握船舶建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understanding the fundamental principles of engineering management and basic knowledge of economics, and mastering the cost structure of the full cycle and entire process of ship construction and operation, as well as equipment procurement and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the field of marine engineering.	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning, and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对轮机工程领域乃至整个工程与社会带来的影响。能够适应新技术变革，应对绿色化、智能化等对轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of marine engineering as well as on engineering and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the marine engineering field.

三、专业核心课程

III. Core Courses

工程材料基础、船舶电气设备及系统、单片机原理与应用、船舶柴油机、船舶辅机(1)、船舶辅机(2)、轮机自动化、船舶动力装置技术管理、轮机维护与修理、轮机综合实验、轮机模拟训练

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Principles and Applications of Microcontrollers, Marine Diesel Engine, Marine Auxiliary Machinery (1), Marine Auxiliary Machinery (2), Marine Engineering Automation, Marine Engineering Management, Marine Maintenance and Repairing, Marine Engineering General Experiment, Marine Engine Room Simulator Training.

四、特色课程

IV．Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty&innovation	行业共建 industry collaboration
创新思维与创新方法（轮机） Innovative thinking and innovative methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
单片机原理与应用 Principles and Applications of Microcontrollers	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机(1) Marine Auxiliary Machinery (1)			●	●
船舶辅机(2) Marine Auxiliary Machinery (2)			●	●
轮机自动化 Marine Engineering Automation	●	●		●
船舶动力装置技术管理 Marine Engineering Management		●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
轮机综合实验 Marine Engineering General Experiment	●			●
轮机模拟训练 Marine Engine Room Simulator Training		●	●	

五、学制与学位

V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（117 学分） Compulsory (124 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	111	6	10	8	38	6	179
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.96 %	51.375	30.04 %	42.375	24.78 %	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（171 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	10	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		

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Course
Sub-Category</th><th colspan="3">学分要求
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Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="11"></td><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td><td rowspan="12"></td><td rowspan="5"></td></tr>
<tr><td rowspan="10">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>21</td><td rowspan="6">/</td></tr>
<tr><td rowspan="2">专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>24</td></tr>
<tr><td colspan="2">方向模块课
Directional Module Courses
一、等效认可模块模块
二、智能低碳模块</td><td>/</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>22</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：171
Total：171</td><td>153</td><td>10</td><td>8</td></tr>
</table>

拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6

VII Curriculum Structure

Refer to Table1～Table6.

表 1：轮机工程(实验班)课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（171 学分） In-class Teaching Courses （171 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	153	10	8	8	179

表 2：轮机工程(实验班)必修课程设置及进程

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	
			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	

			18	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			19	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			20	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			21	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			22	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			23	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			24	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			25	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			26	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			28	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	
			29	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	

			30	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713013680	电工学 Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	
	必修-专业及方向课程 Stream Courses		1	1713030570	工程材料基础(双语) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	

			3	1713030590	单片机原理与应用 Principles and Applications of Microcontrollers	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			4	1713030630	船舶柴油机(双语) Marine Diesel Engine	4	考试	√	综合素养	64	60	4	3-1	课外学时 16
			5	1713030651	船舶辅机(1)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	课外学时 8
			6	1713013730	轮机自动化 Marine Engineering Automation	3	考试	√	综合素养	48	42	6	3-2	
			7	1713030652	船舶辅机(2)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	38	2	3-2	课外学时 8
			8	1713030700	船舶动力装置技术管理(双语) Marine Engineering Management	2	考试	√	综合素养	32	30	2	3-2	课外学时 16
			9	1713030730	轮机维护与修理(双语) Marine Maintenance and Repairing	2	考试	√	综合素养	32	27	5	3-2	课外学时 16
合计 Total						**117**				**1952**	**1642**	**310**		

表 3：轮机工程(实验班) 限选课程设置及进程

限选课学分要求：不少于 10 学分。其中，须从智能低碳模块中至少选修 9 学分。另外，造船大意及等效认可模块课程均为海事局适任考试科目等效认可要求的课程，不选修这些课程将不能进行海事局等效认可成绩报备。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	海事局适任考试科目等效认可要求的课程。
			2	1713013770	工程热力学 Engineering Thermodynamics	3	考查		综合素养	48	44	4	3-1	
			3	1713028020	传热学及应用 Applied Heat Transfer	2	考试		综合素养	32	30	2	3-2	
	限选-专业及方向课程(等效认可模块) Stream Courses	该模块课程及造船大意为海事局适任考试科目等效认可要求的课程，不选修这些课程将不能进行海事局等效认可成绩报备。	1	1713019590	航海概论 Navigation Principles	1	考查		综合素养	16	16	0	3-1	
			2	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			3	1713030680	船舶防污染技术(双语) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			4	1713014590	轮机英语 Marine Engineering English	2	考查		综合素养	32	32	0	3-2	课外学时 16

	限选-专业及方向课程(智能低碳模块) Stream Courses	须从该模块中至少选修 9 学分。	1	1713031010	船舶动力装置测试技术 Measurement and Test Techniques of Marine Engineering	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			2	1713030950	燃料电池与氢能 Fuel cell and hydrogen	1.5	考查		综合素养	24	22	2	3-2	课外学时 8
			3	1713030960	内燃机设计 ICE Design	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			4	1713031100	船舶 PLC 及其网络技术 Marine PLC and its communication network	1.5	考查		综合素养	24	14	10	3-2	课外学时 8
			5	1713031000	船舶动力装置设计 Design of Marine Engineering	1.5	考查	√	综合素养	24	24	0	4-1	课外学时 8
			6	1713031130	轮机建模与仿真 Modeling and Simulation of marine engine	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			7	1713031170	轮机智能运维技术 Marine intelligent operation and maintenance technology	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			8	1713031180	科技英语 A Guide to Technical English	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
合计 Total						**26**				**448**	**418**	**30**		

表 4：轮机工程(实验班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”， “science and technology courses”， At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.
2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(实验班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	
			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	
			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	

			7	1713014020	轮机课程设计 Course Design`	1	考查		综合素养	30	0	30	2-2	
			8	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			9	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			10	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	
			11	1713030790	轮机综合实验 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			12	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	1713030760	机舱资源管理(双语) Engine Room Resource Management	1	考查		综合素养	30	0	30	4-1	
			15	1713030780	轮机模拟训练(双语) Marine Engine Room Simulator Training	1	考查		综合素养	40	16	24	4-1	
			16	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	
			17	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	
			18	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	

			19	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**38**				**1160**	**82**	**1078**		

表 6：轮机工程(实验班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	

			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713030840	科技写作和文献检索 Technical Writing and Literature Retrieval	0.5	考查		拓展素养	8	8	0	3-1	
			13	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	体育（2）	必修	34	1	
3	体育（3）	必修	34	1	
4	体育（4）	必修	34	1	
5	思想道德与法治	必修	8	0.5	
6	计算机及程序设计(Python)	必修	24	1.5	●
7	大学物理实验（1）	必修	24	1	●
8	中国近现代史纲要	必修	8	0.5	
9	创新思维与创新方法(轮机）	必修	10	0.625	●
10	人工智能通识(B)	必修	4	0.25	●
11	马克思主义基本原理	必修	8	0.5	
12	大学物理实验（2）	必修	24	1	●
13	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
14	工程力学	必修	4	0.25	●
15	电工学	必修	8	0.5	●
16	机械设计基础	必修	2	0.125	●
17	工程流体力学	必修	2	0.125	●
18	热工基础	必修	8	0.5	●
19	工程材料基础(双语)	必修	3	0.1875	●
20	船舶电气设备及系统(双语)	必修	8	0.5	●
21	单片机原理与应用	必修	6	0.375	●
22	船舶柴油机(双语)	必修	4	0.25	●
23	船舶辅机(1)(双语)	必修	4	0.25	●
24	轮机自动化	必修	6	0.375	●
25	船舶辅机(2)(双语)	必修	2	0.125	●
26	船舶动力装置技术管理(双语)	必修	2	0.125	●
27	轮机维护与修理(双语)	必修	5	0.3125	●
28	军事训练	必修	90	3	
29	精通救生艇筏和救助艇	必修	28	1	●
30	船舶保安	必修	20	0.5	●
31	高级消防	必修	36	1	●
32	基本安全	必修	86	2.5	●
33	精通急救	必修	24	1	●
34	轮机课程设计	必修	30	1	●
35	船舶认识实习（轮机工程）	必修	120	4	●
36	船舶电气设备管理与工艺	必修	40	1	●
37	金工实习(轮机海上)	必修	120	4	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
38	轮机综合实验	必修	30	1	●
39	船舶柴油机拆装	必修	30	1	●
40	机舱资源管理(双语)	必修	30	1	●
41	轮机模拟训练(双语)	必修	40	1	●
42	调速器、增压器拆装	必修	15	0.5	●
43	辅机综合训练(1)	必修	30	1	●
44	辅机综合训练(2)	必修	15	0.5	●
45	毕业实习及毕业论文	必修	360	12	●
合计 Total			1454	51.375	42.375

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16。

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements & Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses & Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
工程基础类（限选）																							
19	工程热力学			H	M																		
20	传热学及应用			H	M																		
专业基础类（必修）																							

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
21	单片机原理与应用★		H			H																M	
22	专业导论（轮机）											M		H				M				M	M
专业基础类（限选）																							
23	造船大意					H						M											
24	航海概论											M		H		H							
25	船舶动力装置测试技术					M	M			H	H												
26	船舶 PLC 及其网络技术		H					M		H	M												
专业方向类（必修）																							
27	船舶电气设备及系统★				H	H		M													M		
28	船舶柴油机★					M	H	H				M							M				
29	船舶辅机(1)(2)★					M	H	H											M				
30	轮机自动化★				H	H		M													M		
31	船舶动力装置技术管理★						H					H	H	H						H	H		
32	轮机维护与修理★						H					H	H							H	H		
专业方向类（限选）																							
33	船舶防污染技术						M					H	H	M									
34	船舶及海上设施检验(海上)											H	H	M						M	M		
35	轮机英语													M				H	H				
36	燃料电池与氢能							H				M											H
37	内燃机设计		M			H	H																
38	船舶动力装置设计		M			H	H																
39	轮机建模与仿真					M	M			H	H												
40	科技英语							M						M				H	H				
41	轮机智能运维技术		H							M	M											M	M
工程实践类（必修）																							

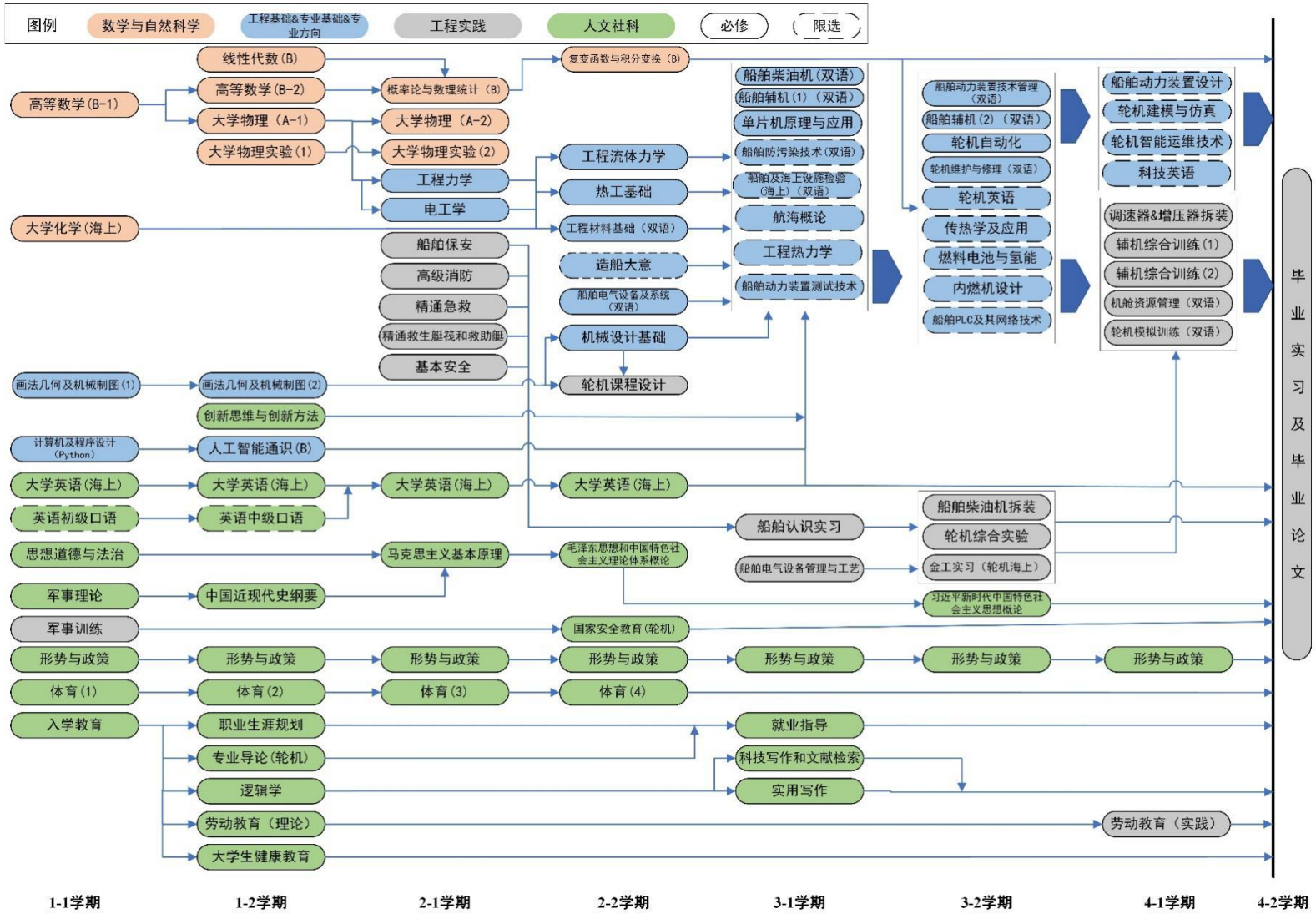
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
42	轮机课程设计		H		H													H					
43	船舶认识实习(轮机工程)★													H	H	M	M	H					
44	金工实习(轮机海上)						H			M			M		H								
45	船舶电气设备管理与工艺★								H	H	M												
46	船舶柴油机拆装★								H	H	M					M							
47	调速器、增压器拆装								H	H	M					M							
48	辅机综合训练								H	H	M					M							
49	轮机综合实验★								M	H	H					H	H						
50	轮机模拟训练★									H	H					H	M		M				
51	机舱资源管理★														H	H	H	M	M				
52	基本安全													H	H		M						
53	精通急救													H	H		M						
54	精通救生艇筏和救助艇													M		H	H						
55	高级消防													M		H	H						
56	船舶保安													M		H							
57	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
58	思想道德与法治														H								
59	中国近现代史纲要														H								
60	马克思主义基本原理												M		H					M			
61	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
62	习近平新时代中国特色社会主义思想概论												M		H					M			
63	形势与政策												M		H								
64	大学英语(海上)																		H				
65	体育														H	M	M						

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
66	军事理论														H								
67	军事训练														H	H	M						
68	劳动教育(理论)														H								
69	劳动教育(实践)														M	H	M						
70	逻辑学							M														H	H
71	实用写作																	H	H				
72	入学教育													H									
73	职业生涯规划													H								M	
74	大学生健康教育														H	M							
75	国家安全教育(轮机)														H								
76	就业指导														H								
人文社科与通识类（限选）																							
77	英语初级口语																	H	H				
78	英语中级口语																	H	H				

注：★表示该课程用于毕业要求达成评价，共 20 门；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration



轮机工程专业（智能航海班）本科培养计划

Undergraduate Program for Marine Engineering Major

（Intelligent Navigation Class）

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有健全人格与健康体魄、科学素养与创新精神、人文素养与家国情怀、国际视野与海洋意识，具有扎实的工程知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应绿色船舶、智能船舶发展需求，在轮机工程及相关领域从事操作与维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后 5 年左右，预期能够达到的职业发展水平如下： 1.在包括新型、特殊船舶、绿色船舶、智能船舶等在内的远洋船舶任职，并有能力担任管理级轮机员职务。 2.在船舶与海洋工程、机械工程或电气工程及自动化等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家或管理人才。 3.取得硕士学位并在相关领域任职，或攻读博士学位，具有较高水平的科研能力。 4.在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the demands of green and intelligent shipping, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the field of marine engineering and related disciplines. Within approximately five years after graduation, students are expected to achieve the following professional development milestones: 1. Serve on ocean-going vessels, including new types, specialized ships, green ships, and intelligent ships, with the competence to assume positions as management-level marine engineers. 2. Work in enterprises, institutions, or administrative organizations related to ship and ocean engineering, mechanical engineering, or electrical engineering and automation, with the potential to grow into technical experts or managerial professionals. 3. Obtain a master’s degree and engage in relevant professional fields, or pursue a doctoral degree, demonstrating a high level of research capability. 4. Take positions in universities or research institutes, achieve intermediate or higher professional titles, and demonstrate the ability to become core members in their fields.	1.道德与修养。 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2.工程知识与实践能力。 具有扎实的船舶动力装置操作与维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力，特别是智能船舶相关知识和能力。 2. Engineering Knowledge and Practical Ability Possessing a solid foundation in the operation and maintenance of marine power systems, production and manufacturing, technical services, operation management, and scientific and technological development. In particular, knowledge and practical skills related to intelligent ships.
	3.团队与管理。 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力。 3. Teamwork and Management Possessing a global vision and marine awareness, along with strong communication, interpersonal, teamwork, and management skills in diverse, interdisciplinary, and cross-cultural contexts.
	4.学习与发展。 具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应绿色船舶、智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of green and intelligent ship development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.	3-1 能够调查轮机工程领域问题背景和需求，明确设计或开发目标。能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of marine engineering, and to define design or development objectives. Capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对轮机工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of marine engineering based on scientific principles and	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex marine engineering problems in accordance with scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex marine engineering

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂轮机工程问题，如发动机燃烧与排放、船机故障诊断、机桨匹配、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex marine engineering problems such as engine combustion and emissions, engine fault diagnosis, propeller matching, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决轮机工程领域的复杂工程问题时，能够分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and relevant laws in marine engineering practice, and fulfill corresponding responsibilities.	7-1 了解工程伦理基本内涵、航海文化和轮机工程发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences, practicing the core values of socialism and the spirit of Chinese seafarers, establishing a correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as a marine engineer on a ship.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to marine engineering practice—as a team

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流轮机工程领域的问题。能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够使用公共英语和轮机工程专业英语，有效地与不同国家和地区的轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and marine engineering English to conduct oral and written intercultural communication with marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握船舶建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understanding the fundamental principles of engineering management and basic knowledge of economics, and mastering the cost structure of the full cycle and entire process of ship construction and operation, as well as equipment procurement and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the field of marine engineering.	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning, and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对轮机工程领域乃至整个工程与社会带来的影响。能够适应新技术变革，应对绿色化、智能化等对轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of marine engineering as well as on engineering and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the marine engineering field.

三、专业核心课程

III．Core Courses

工程材料基础、船舶电气设备及系统、轮机智能监控、船舶柴油机、船舶辅机(1)、船舶辅机(2)、轮机自动化、船舶动力装置智能运维、轮机维护与修理、轮机综合实验、轮机模拟训练

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Marine Intelligent Monitoring, Marine Diesel Engine, Marine Auxiliary Machinery (1), Marine Auxiliary Machinery (2), Marine Engineering Automation, Intelligent Operation and Maintenance of Ship Power Plant，Marine Maintenance and Repairing, Marine Engineering General Experiment, Marine Engine Room Simulator Training.

四、特色课程

IV．Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty& innovation	行业共建 industry collaboration
创新思维与创新方法（轮机） Innovative thinking and innovative methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
轮机智能监控 Marine Intelligent Monitoring	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机(1) Marine Auxiliary Machinery (1)			●	●
船舶辅机(2) Marine Auxiliary Machinery (2)			●	●
轮机自动化 Marine Engineering Automation	●	●		●
船舶动力装置智能运维 Intelligent Operation and Maintenance of Ship Power Plant	●	●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
智能轮机设计与实践 Design and Practice of Intelligent Ship Machinery	●	●	●	
轮机综合实验 Marine Engineering General Experiment	●			●
轮机模拟训练 Marine Engine Room Simulator Training		●	●	

五、学制与学位

V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（124 学分） Compulsory (124 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	118	6	10	8	38	6	186
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.29 %	51.625	29.00%	42.625	23.95%	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（178 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	10	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		
	计算思维及信息技术 Computational Thinking and Information Technology		5		

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Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
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Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
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General Course</td><td>军事素养
Military Literacy</td><td>2</td><td rowspan="10"></td><td rowspan="4"></td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication
and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational
Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and
Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
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Others</td></tr>
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Discipline Courses</td><td>22.5</td><td rowspan="6"></td><td rowspan="6">/</td></tr>
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方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>29.5</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>22</td><td rowspan="3">/</td></tr>
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Military Practical Course</td><td>3</td></tr>
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Graduation Practice</td><td>12</td></tr>
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Total：178</td><td>160</td><td>10</td><td>8</td></tr>
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拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6
VII Curriculum Structure
Refer to Table1～Table6.

表 1：轮机工程(智能航海班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（178 学分） In-class Teaching Courses （178 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	160	10	8	8	186

表 2：轮机工程(智能航海班)必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2			综合素养	32	28	4	1-2	

			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			18	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			19	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			20	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			21	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			22	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			23	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			24	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			25	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			26	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			28	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	

			29	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	
			30	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713013680	电工学 Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	
			8	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	

	必修-专业及方向课程 Stream Courses		1	1713030570	工程材料基础(双语) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	
			3	1713019590	航海概论 Navigation Principles	1	考查		综合素养	16	16	0	3-1	
			4	1713030610	轮机智能监控 Marine intelligent monitoring	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			5	1713030630	船舶柴油机(双语) Marine Diesel Engine	4	考试	√	综合素养	64	60	4	3-1	课外学时 16
			6	1713030651	船舶辅机(1)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	课外学时 8
			7	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			8	1713030680	船舶防污染技术(双语) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			9	1713013730	轮机自动化 Marine Engineering Automation	3	考试	√	综合素养	48	42	6	3-2	
			10	1713030652	船舶辅机(2)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	38	2	3-2	课外学时 8

			11	1713030720	船舶动力装置智能运维(双语) Intelligent operation and maintenance of ship power plaant	2	考试	√	综合素养	32	30	2	3-2	课外学时 16
			12	1713030730	轮机维护与修理(双语) Marine Maintenance and Repairing	2	考试	√	综合素养	32	27	5	3-2	课外学时 16
			13	1713030750	智能船舶轮机英语 Marine Engineering English for intelligent ship	2	考查		综合素养	32	32	0	3-2	课外学时 16
合计 Total						**124**				**2064**	**1750**	**314**		

表 3：轮机工程(智能航海班) 限选课程设置及进程

限选课学分要求：不少于 10 学分。其中，须从限选-专业及方向课程中至少选修 9 学分。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	**课程类别 Course Categories**	**类别备注 Course Categories Remark**	**序号 No.**	**课程编号 Course Code**	**课程名称 Course Name**	**学分 Credits**	**考核方式 Testing method**	**是否学位课 Degree Course**	**综合/拓展素养课程 Course Core**	**学时 Teaching Hours**			**上课学期 Semesters**	**备注 Notes**
										合计 Total	**讲课 Lectures**	**实践 Practicum**		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713013770	工程热力学 Engineering Thermodynamics	3	考试		综合素养	48	44	4	3-1	

			2	1713028020	传热学及应用 Applied Heat Transfer	2	考试		综合素养	32	30	2	3-2	
	限选-专业及方向课程 Stream Courses	需要选修 9 学分。	1	1713031090	自动控制理论 Automatic Control Theory	1.5	考查		综合素养	24	24	0	3-1	课外学时 8
			2	1713031200	智能传感与测试技术 Marine intelligent sensing and testing technology	1.5	考查		综合素养	24	20	4	3-2	课外学时 8
			3	1713031210	智能船舶数据挖掘 Data Mining for Intelligent Ships	1.5	考查		综合素养	24	16	8	3-2	课外学时 8
			4	1713031130	轮机建模与仿真 Modeling and Simulation of marine engine	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			5	1713031160	轮机智能技术 Intelligent Technology of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			6	1713031190	船舶计算机网络技术应用 Ship Network Technology and Its Application	1.5	考查		综合素养	24	22	2	4-1	课外学时 8
			7	1713031220	船舶智能能效管理 Intelligent Energy Efficiency Management for Ships	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
合计 Total						**17.5**				**312**	**288**	**24**		

表 4：轮机工程(智能航海班)任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”， “science and technology courses”， At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(智能航海班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	
			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	
			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	

			7	1713027410	智能轮机设计与实践 Design and Practice of Intelligent Ship Machinery	1	考查		综合素养	30	0	30	2-2	
			8	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			9	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			10	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	
			11	1713030800	轮机综合实验(智能) Marine Engineering General Experiment(Intelligent)	1	考查		综合素养	30	0	30	3-2	
			12	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	1713030770	机舱资源管理(智能)(双语) Engine Room Resource Management(Intelligent)	1	考查		综合素养	30	0	30	4-1	
			15	1713030780	轮机模拟训练(双语) Marine Engine Room Simulator Training	1	考查		综合素养	40	16	24	4-1	
			16	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	

			17	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	
			18	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	
			19	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**38**				**1160**	**82**	**1078**		

表 6：轮机工程(智能航海班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	

			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713030840	科技写作和文献检索 Technical Writing and Literature Retrieval	0.5	考查		拓展素养	8	8	0	3-1	
			13	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	体育（2）	必修	34	1	
3	体育（3）	必修	34	1	
4	体育（4）	必修	34	1	
5	思想道德与法治	必修	8	0.5	
6	计算机及程序设计(Python)	必修	24	1.5	●
7	大学物理实验（1）	必修	24	1	●
8	中国近现代史纲要	必修	8	0.5	
9	创新思维与创新方法(轮机）	必修	10	0.625	●
10	人工智能通识(B)	必修	4	0.25	●
11	马克思主义基本原理	必修	8	0.5	
12	大学物理实验（2）	必修	24	1	●
13	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
14	工程力学	必修	4	0.25	●
15	电工学	必修	8	0.5	●
16	机械设计基础	必修	2	0.125	●
17	工程流体力学	必修	2	0.125	●
18	热工基础	必修	8	0.5	●
19	工程材料基础(双语)	必修	3	0.1875	●
20	船舶电气设备及系统(双语)	必修	8	0.5	●
21	轮机智能监控	必修	6	0.375	●
22	船舶柴油机(双语)	必修	4	0.25	●
23	船舶辅机(1)(双语)	必修	4	0.25	●
24	船舶防污染技术(双语)	必修	4	0.25	●
25	轮机自动化	必修	6	0.375	●
26	船舶辅机(2)(双语)	必修	2	0.125	●
27	船舶动力装置智能运维(双语)	必修	2	0.125	●
28	轮机维护与修理(双语)	必修	5	0.3125	●
29	军事训练	必修	90	3	
30	精通救生艇筏和救助艇	必修	28	1	●
31	船舶保安	必修	20	0.5	●
32	高级消防	必修	36	1	●
33	基本安全	必修	86	2.5	●
34	精通急救	必修	24	1	●
35	智能轮机设计与实践	必修	30	1	●
36	船舶认识实习（轮机工程）	必修	120	4	●
37	船舶电气设备管理与工艺	必修	40	1	●
38	金工实习(轮机海上)	必修	120	4	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
39	轮机综合实验(智能)	必修	30	1	●
40	船舶柴油机拆装	必修	30	1	●
41	机舱资源管理(智能)(双语)	必修	30	1	●
42	轮机模拟训练(双语)	必修	40	1	●
43	调速器、增压器拆装	必修	15	0.5	●
44	辅机综合训练(1)	必修	30	1	●
45	辅机综合训练(2)	必修	15	0.5	●
46	毕业实习及毕业论文	必修	360	12	●
合计 Total			1458	51.625	42.625

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16。

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses & Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
工程基础类（限选）																							
19	工程热力学			H	M																		
20	传热学及应用			H	M																		
专业基础类（必修）																							

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
21	轮机智能监控★		H			H																M	
22	专业导论（轮机）											M		H				M				M	M
23	造船大意					H						M											
24	航海概论											M		H		H							
专业基础类（限选）																							
25	智能传感与测试技术					M	M			H	H												M
26	自动控制理论		M																			H	H
27	船舶计算机网络技术应用		H					M		H	M												
专业方向类（必修）																							
28	船舶电气设备及系统★				H	H		M													M		
29	船舶柴油机★					M	H	H				M							M				
30	船舶辅机★					M	H	H											M				
31	轮机自动化★				H	H		M													M		
32	船舶动力装置智能运维★						H					H	H	H						H	H		
33	轮机维护与修理★						H					H	H							H	H		
34	船舶防污染技术						M					H	H	M									
35	船舶及海上设施检验(海上)											H	H	M						M	M		
36	智能船舶轮机英语													M				H	H				
专业方向类（限选）																							
37	智能船舶数据挖掘									H	M											M	H
38	轮机建模与仿真					M	M			H	H												
39	船舶智能能效管理					M	M					H	H										
40	轮机智能技术									H	M											M	M
工程实践类（必修）																							
41	智能轮机设计与实践					H	H	M	M									H					

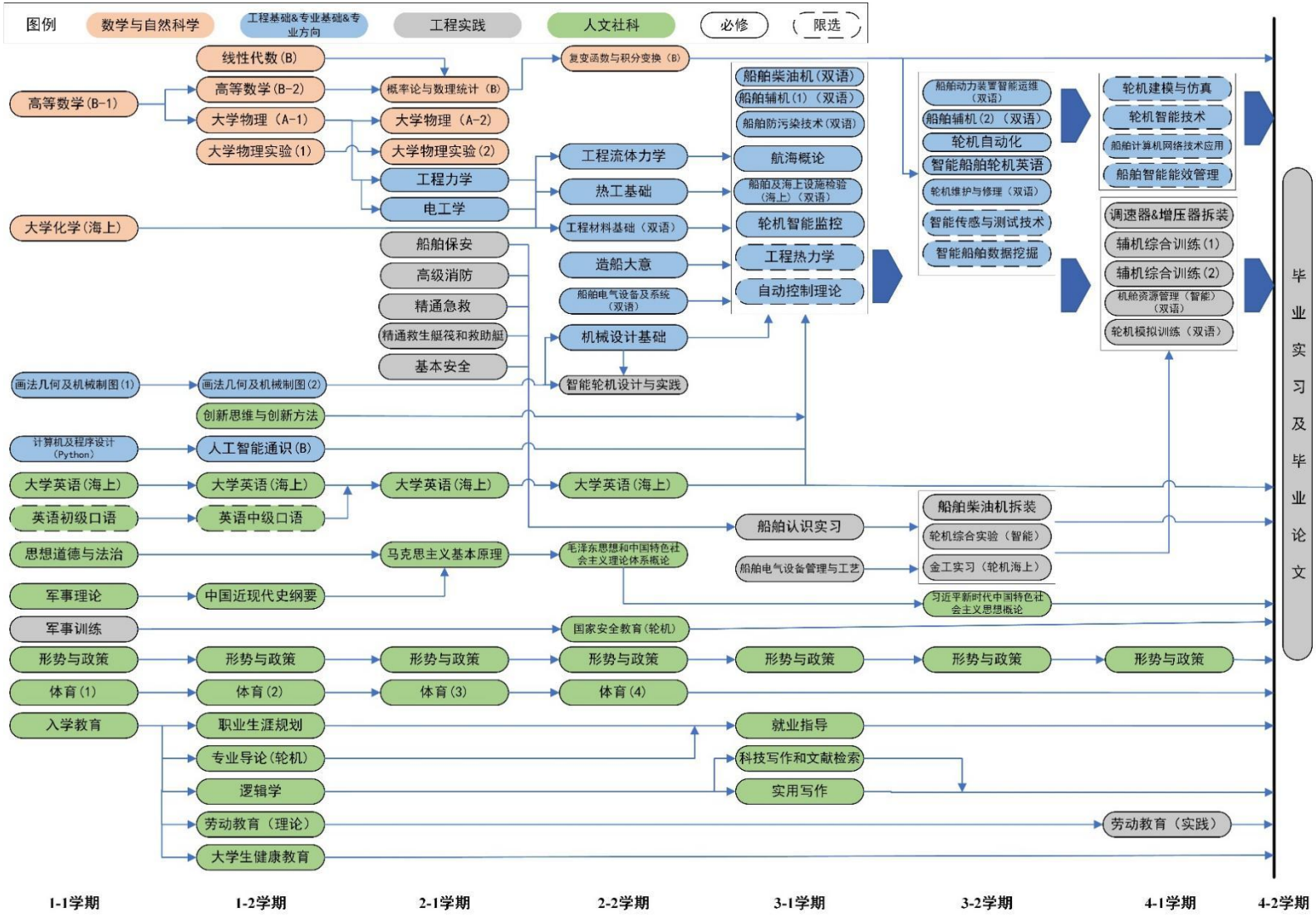
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
42	船舶认识实习(轮机工程)★													H	H	M	M	H					
43	金工实习(轮机海上)						H			M			M		H								
44	船舶电气设备管理与工艺★								H	H	M												
45	船舶柴油机拆装★								H	H	M					M							
46	调速器、增压器拆装								H	H	M					M							
47	辅机综合训练								H	H	M					M							
48	轮机综合实验(智能)★								M	H	H					H	H						
49	轮机模拟训练★									H	H					H	M		M				
50	机舱资源管理(智能)★														H	H	H	M	M				
51	基本安全													H	H		M						
52	精通急救													H	H		M						
53	精通救生艇筏和救助艇													M		H	H						
54	高级消防													M		H	H						
55	船舶保安													M		H							
56	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
57	思想道德与法治														H								
58	中国近现代史纲要														H								
59	马克思主义基本原理												M		H					M			
60	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
61	习近平新时代中国特色社会主义思想概论												M		H					M			
62	形势与政策												M		H								
63	大学英语(海上)																		H				
64	体育														H	M	M						
65	军事理论														H								

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
66	军事训练														H	H	M						
67	劳动教育(理论)														H								
68	劳动教育(实践)														M	H	M						
69	逻辑学							M														H	H
70	实用写作																	H	H				
71	入学教育													H									
72	职业生涯规划													H								M	
73	大学生健康教育														H	M							
74	国家安全教育(轮机)														H								
75	就业指导														H								
人文社科与通识类（限选）																							
76	英语初级口语																	H	H				
77	英语中级口语																	H	H				

注：★表示该课程用于毕业要求达成评价，共 20 门；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration



轮机工程专业（校企合作班）本科培养计划

Undergraduate Program for Marine Engineering Major

（College-Enterprise Cooperation Class）

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有健全人格与健康体魄、科学素养与创新精神、人文素养与家国情怀、国际视野与海洋意识，具有扎实的工程知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应绿色船舶、智能船舶发展需求，在轮机工程及相关领域从事操作与维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后 5 年左右，预期能够达到的职业发展水平如下： 1.在包括新型、特殊船舶、绿色船舶、智能船舶等在内的远洋船舶任职，并有能力担任管理级轮机员职务。 2.在船舶与海洋工程、机械工程或电气工程及自动化等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家或管理人才。 3.取得硕士学位并在相关领域任职，或攻读博士学位，具有较高水平的科研能力。 4.在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the demands of green and intelligent shipping, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the field of marine engineering and related disciplines. Within approximately five years after graduation, students are expected to achieve the following professional development milestones: 1. Serve on ocean-going vessels, including new types, specialized ships, green ships, and intelligent ships, with the competence to assume positions as management-level marine engineers. 2. Work in enterprises, institutions, or administrative organizations related to ship and ocean engineering, mechanical engineering, or electrical engineering and automation, with the potential to grow into technical experts or managerial professionals. 3. Obtain a master's degree and engage in relevant professional fields, or pursue a doctoral degree, demonstrating a high level of research capability. 4. Take positions in universities or research institutes, achieve intermediate or higher professional titles, and demonstrate the ability to become core members in their fields.	1.道德与修养。 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2.工程知识与实践能力。 具有扎实的船舶动力装置操作与维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力。 2. Engineering Knowledge and Practical Ability Equipped with solid theoretical foundations, professional knowledge, and practical skills in the operation and maintenance of marine power systems, manufacturing, technical services, operation management, and scientific and technological development.
	3.团队与管理。 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力。 3. Teamwork and Management Possessing a global vision and marine awareness, along with strong communication, interpersonal, teamwork, and management skills in diverse, interdisciplinary, and cross-cultural contexts.
	4.学习与发展。 具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应绿色船舶、智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of green and intelligent ship development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.	3-1 能够调查轮机工程领域问题背景和需求，明确设计或开发目标。能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of marine engineering, and to define design or development objectives. Capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对轮机工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of marine engineering based on scientific principles and	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex marine engineering problems in accordance with scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex marine engineering

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂轮机工程问题，如发动机燃烧与排放、船机故障诊断、机桨匹配、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex marine engineering problems such as engine combustion and emissions, engine fault diagnosis, propeller matching, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决轮机工程领域的复杂工程问题时，能够分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and relevant laws in marine engineering practice, and fulfill corresponding responsibilities.	7-1 了解工程伦理基本内涵、航海文化和轮机工程发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences, practicing the core values of socialism and the spirit of Chinese seafarers, establishing a correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as a marine engineer on a ship.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to marine engineering practice—as a team

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流轮机工程领域的问题。能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够使用公共英语和轮机工程专业英语，有效地与不同国家和地区的轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and marine engineering English to conduct oral and written intercultural communication with marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握船舶建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understanding the fundamental principles of engineering management and basic knowledge of economics, and mastering the cost structure of the full cycle and entire process of ship construction and operation, as well as equipment procurement and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the field of marine engineering.	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning, and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对轮机工程领域乃至整个工程与社会带来的影响。能够适应新技术变革，应对绿色化、智能化等对轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of marine engineering as well as on engineering and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the marine engineering field.

三、专业核心课程

III. Core Courses

工程材料基础、船舶电气设备及系统、单片机原理与应用、船舶柴油机、船舶辅机(1)、船舶辅机(2)、轮机自动化、船舶动力装置技术管理、轮机维护与修理、轮机综合实验、轮机模拟训练

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Principles and Applications of Microcontrollers, Marine Diesel Engine, Marine Auxiliary Machinery (1), Marine Auxiliary Machinery (2), Marine Engineering Automation, Marine Engineering Management, Marine Maintenance and Repairing, Marine Engineering General Experiment, Marine Engine Room Simulator Training.

四、特色课程

IV．Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty&innovation	行业共建 industry collaboration
创新思维与创新方法（轮机） Innovative thinking and innovative methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
单片机原理与应用 Principles and Applications of Microcontrollers	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机(1) Marine Auxiliary Machinery (1)			●	●
船舶辅机(2) Marine Auxiliary Machinery (2)			●	●
轮机自动化 Marine Engineering Automation	●	●		●
船舶动力装置技术管理 Marine Engineering Management		●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
轮机综合实验 Marine Engineering General Experiment	●			●
轮机模拟训练 Marine Engine Room Simulator Training		●	●	

五、学制与学位

V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（124 学分） Compulsory (124 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	118	6	10	8	38	6	186
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.29 %	51.625	29.00%	42.625	23.95%	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（178 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	10	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="12"></td><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td><td rowspan="12"></td><td rowspan="5"></td></tr>
<tr><td rowspan="11">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>22.5</td><td rowspan="5">/</td></tr>
<tr><td>专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>29.5</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>22</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：178
Total：178</td><td>160</td><td>10</td><td>8</td></tr>
</table>

拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6

VII Curriculum Structure

Refer to Table1～Table6.

表 1：轮机工程(校企合作班)课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（178 学分） In-class Teaching Courses （178 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	160	10	8	8	186

表 2：轮机工程(校企合作班)必修课程设置及进程

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2			综合素养	32	28	4	1-2	

			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			18	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			19	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			20	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			21	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			22	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			23	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			24	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			25	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			26	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			28	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	

			29	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	
			30	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713013680	电工学 Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	
			8	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	

	必修-专业及方向课程 Stream Courses		1	1713030570	工程材料基础(双语) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	
			3	1713019590	航海概论 Navigation Principles	1	考查		综合素养	16	16	0	3-1	
			4	1713030590	单片机原理与应用 Principles and Applications of Microcontrollers	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			5	1713030630	船舶柴油机(双语) Marine Diesel Engine	4	考试	√	综合素养	64	60	4	3-1	课外学时 16
			6	1713030651	船舶辅机(1)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	课外学时 8
			7	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			8	1713030680	船舶防污染技术(双语) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			9	1713013730	轮机自动化 Marine Engineering Automation	3	考试	√	综合素养	48	42	6	3-2	
			10	1713014590	轮机英语 Marine Engineering English	2	考查		综合素养	32	32	0	3-2	课外学时 16
			11	1713030652	船舶辅机(2)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	38	2	3-2	课外学时 8

			12	1713030700	船舶动力装置技术管理(双语) Marine Engineering Management	2	考试	√	综合素养	32	30	2	3-2	课外学时 16
			13	1713030730	轮机维护与修理(双语) Marine Maintenance and Repairing	2	考试	√	综合素养	32	27	5	3-2	课外学时 16
合计 Total						**124**				**2064**	**1750**	**314**		

表 3：轮机工程(校企合作班) 限选课程设置及进程

限选课学分要求：不少于 10 学分。其中，须从限选-专业及方向课程中至少选修 9 学分。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	**课程类别 Course Categories**	**类别备注 Course Categories Remark**	**序号 No.**	**课程编号 Course Code**	**课程名称 Course Name**	**学分 Credits**	**考核方式 Testing method**	**是否学位课 Degree Course**	**综合/拓展素养课程 Course Core**	**学时 Teaching Hours**			**上课学期 Semesters**	**备注 Notes**
										合计 Total	**讲课 Lectures**	**实践 Practicum**		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	3-1	
			2	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	3-2	

	限选-专业及方向课程 Stream Courses	需要选修 9 学分。	1	1713031010	船舶动力装置测试技术 Measurement and Test Techniques of Marine Engineering	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			2	1713031030	船舶液压设备原理及维修技术 Principles and Maintenance Technology of Marine Hydraulic Machinery	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			3	1713030970	液货船设备 Equipments of Liquid Cargo Ships	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
			4	1713030980	船舶锅炉与蒸汽动力设备 Marine Boiler and Steam-powered equipment	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			5	1713030990	现代轮机技术与管理 Modern Marine Engineering Technology and Management	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			6	1713031050	轮机案例分析 Case Analysis of Marine Engineering	1.5	考试		综合素养	24	24	0	4-1	课外学时 8
			7	1713031130	轮机建模与仿真 Modeling and Simulation of marine engine	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			8	1713031160	轮机智能技术 Intelligent Technology of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
合计 Total						**17.5**				**312**	**298**	**14**		

表 4：轮机工程(校企合作班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术、创新与创业 4 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”，“science and technology courses”，“innovation and entrepreneurship courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(校企合作班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	
			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	
			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	
			7	1713014020	轮机课程设计 Course Design`	1	考查		综合素养	30	0	30	2-2	

			8	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			9	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			10	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	
			11	1713030790	轮机综合实验 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			12	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	1713030760	机舱资源管理(双语) Engine Room Resource Management	1	考查		综合素养	30	0	30	4-1	
			15	1713030780	轮机模拟训练(双语) Marine Engine Room Simulator Training	1	考查		综合素养	40	16	24	4-1	
			16	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	
			17	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	
			18	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	
			19	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	

合计 Total						38				1160	82	1078		

表 6：轮机工程(校企合作班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	

			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713030840	科技写作和文献检索 Technical Writing and Literature Retrieval	0.5	考查		拓展素养	8	8	0	3-1	
			13	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		**合计 Total**

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	体育（2）	必修	34	1	
3	体育（3）	必修	34	1	
4	体育（4）	必修	34	1	
5	思想道德与法治	必修	8	0.5	
6	计算机及程序设计(Python)	必修	24	1.5	●
7	大学物理实验（1）	必修	24	1	●
8	中国近现代史纲要	必修	8	0.5	
9	创新思维与创新方法(轮机）	必修	10	0.625	●
10	人工智能通识(B)	必修	4	0.25	●
11	马克思主义基本原理	必修	8	0.5	
12	大学物理实验（2）	必修	24	1	●
13	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
14	工程力学	必修	4	0.25	●
15	电工学	必修	8	0.5	●
16	机械设计基础	必修	2	0.125	●
17	工程流体力学	必修	2	0.125	●
18	热工基础	必修	8	0.5	●
19	工程材料基础(双语)	必修	3	0.1875	●
20	船舶电气设备及系统(双语)	必修	8	0.5	●
21	单片机原理与应用	必修	6	0.375	●
22	船舶柴油机(双语)	必修	4	0.25	●
23	船舶辅机(1)(双语)	必修	4	0.25	●
24	船舶防污染技术(双语)	必修	4	0.25	●
25	轮机自动化	必修	6	0.375	●
26	船舶辅机(2)(双语)	必修	2	0.125	●
27	船舶动力装置技术管理(双语)	必修	2	0.125	●
28	轮机维护与修理(双语)	必修	5	0.3125	●
29	军事训练	必修	90	3	
30	精通救生艇筏和救助艇	必修	28	1	●
31	船舶保安	必修	20	0.5	●
32	高级消防	必修	36	1	●
33	基本安全	必修	86	2.5	●
34	精通急救	必修	24	1	●
35	轮机课程设计	必修	30	1	●
36	船舶认识实习（轮机工程）	必修	120	4	●
37	船舶电气设备管理与工艺	必修	40	1	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
38	金工实习(轮机海上)	必修	120	4	●
39	轮机综合实验	必修	30	1	●
40	船舶柴油机拆装	必修	30	1	●
41	机舱资源管理(双语)	必修	30	1	●
42	轮机模拟训练(双语)	必修	40	1	●
43	调速器、增压器拆装	必修	15	0.5	●
44	辅机综合训练(1)	必修	30	1	●
45	辅机综合训练(2)	必修	15	0.5	●
46	毕业实习及毕业论文	必修	360	12	●
合计 Total			1458	51.625	42.625

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16。

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements & Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses & Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
专业基础类（必修）																							
19	单片机原理与应用★		H			H																M	
20	专业导论（轮机）											M		H				M				M	M
21	造船大意					H						M											

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
22	航海概论											M		H		H							
专业基础类（限选）																							
23	船舶动力装置测试技术					M	M			H	H												
专业方向类（必修）																							
24	船舶电气设备及系统★				H	H		M													M		
25	船舶柴油机★					M	H	H				M							M				
26	船舶辅机(1)(2)★					M	H	H											M				
27	轮机自动化★				H	H		M													M		
28	船舶动力装置技术管理★						H					H	H	H						H	H		
29	轮机维护与修理★						H					H	H							H	H		
30	船舶防污染技术						M					H	H	M									
31	船舶及海上设施检验(海上)											H	H	M						M	M		
32	轮机英语													M				H	H				
专业方向类（限选）																							
33	液货船设备					H		H				M											
34	船舶锅炉与蒸汽动力设备					H		H															
35	现代轮机技术与管理									H	M											M	H
36	船舶液压设备原理及维修技术						H	H	M														
37	轮机案例分析				H			M					M										
38	轮机建模与仿真					M	M			H	H												
39	轮机智能技术		H							M	M											M	M
工程实践类（必修）																							
40	轮机课程设计		H		H													H					
41	船舶认识实习(轮机工程)★													H	H	M	M	H					
42	金工实习(轮机海上)						H			M			M		H								

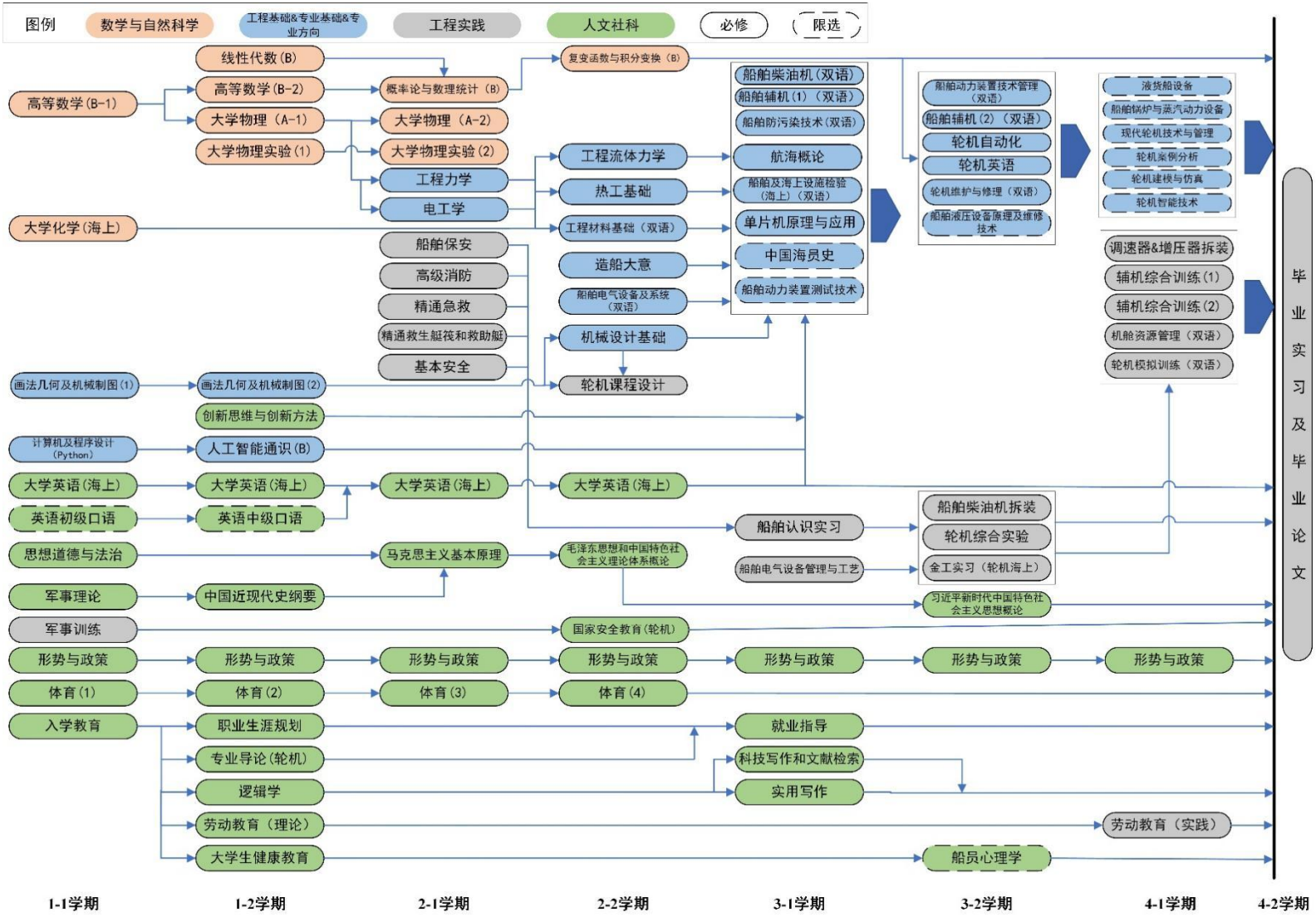
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
43	船舶电气设备管理与工艺★								H	H	M												
44	船舶柴油机拆装★								H	H	M					M							
45	调速器、增压器拆装								H	H	M					M							
46	辅机综合训练								H	H	M					M							
47	轮机综合实验★								M	H	H					H	H						
48	轮机模拟训练★									H	H					H	M		M				
49	机舱资源管理★														H	H	H	M	M				
50	基本安全													H	H		M						
51	精通急救													H	H		M						
52	精通救生艇筏和救助艇													M		H	H						
53	高级消防													M		H	H						
54	船舶保安													M		H							
55	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
56	思想道德与法治														H								
57	中国近现代史纲要														H								
58	马克思主义基本原理												M		H					M			
59	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
60	习近平新时代中国特色社会主义思想概论												M		H					M			
61	形势与政策												M		H								
62	大学英语(海上)																		H				
63	体育														H	M	M						
64	军事理论														H								
65	军事训练														H	H	M						
66	劳动教育(理论)														H								

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
67	劳动教育(实践)														M	H	M						
68	逻辑学							M														H	H
69	实用写作																	H	H				
70	入学教育													H									
71	职业生涯规划													H								M	
72	大学生健康教育														H	M							
73	国家安全教育(轮机)														H								
74	就业指导														H								
人文社科与通识类（限选）																							
75	英语初级口语																	H	H				
76	英语中级口语																	H	H				
77	中国海员史													M	H								
78	船员心理学													M	H				M				

注：★表示该课程用于毕业要求达成评价，共 20 门；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration



轮机工程专业（LNG 校企合作班）本科培养计划

Undergraduate Program for Marine Engineering Major

（LNG College-Enterprise Cooperation Class）

三、专业核心课程

III. Core Courses

工程材料基础、船舶电气设备及系统、单片机原理与应用、船舶柴油机、船舶辅机(1)、船舶辅机(2)、轮机自动化、船舶动力装置技术管理、轮机维护与修理、轮机综合实验、轮机模拟训练

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Principles and Applications of Microcontrollers, Marine Diesel Engine, Marine Auxiliary Machinery (1), Marine Auxiliary Machinery (2), Marine Engineering Automation, Marine Engineering Management, Marine Maintenance and Repairing, Marine Engineering General Experiment, Marine Engine Room Simulator Training.

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有健全人格与健康体魄、科学素养与创新精神、人文素养与家国情怀、国际视野与海洋意识，具有扎实的工程知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应绿色船舶、智能船舶发展需求，在轮机工程及相关领域从事操作与维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后 5 年左右，预期能够达到的职业发展水平如下： 1.在包括新型、特殊船舶、绿色船舶、智能船舶等在内的远洋船舶任职，并有能力担任管理级轮机员职务。 2.在船舶与海洋工程、机械工程或电气工程及自动化等领域相关的企业、事业或行政单位任职，并有能力成长为技术专家或管理人才。 3.取得硕士学位并在相关领域任职，或攻读博士学位，具有较高水平的科研能力。 4.在高校或科研机构任职，取得中级或以上职称，并有能力成长为业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the demands of green and intelligent shipping, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the field of marine engineering and related disciplines. Within approximately five years after graduation, students are expected to achieve the following professional development milestones: 1. Serve on ocean-going vessels, including new types, specialized ships, green ships, and intelligent ships, with the competence to assume positions as management-level marine engineers. 2. Work in enterprises, institutions, or administrative organizations related to ship and ocean engineering, mechanical engineering, or electrical engineering and automation, with the potential to grow into	1.道德与修养。 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2.工程知识与实践能力。 具有扎实的船舶动力装置操作与维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力，特别是 LNG 船舶相关知识和能力。 2. Engineering Knowledge and Practical Ability Equipped with solid theoretical foundations, professional knowledge, and practical skills in the operation and maintenance of marine power systems, manufacturing, technical services, operation management, and scientific and technological development. In particular, knowledge and practical skills related to LNG carriers.
	3.团队与管理。 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力。 3. Teamwork and Management Possessing a global vision and marine awareness, along with strong communication, interpersonal, teamwork, and management skills in diverse, interdisciplinary, and cross-cultural contexts.
	4.学习与发展。

technical experts or managerial professionals. 3. Obtain a master's degree and engage in relevant professional fields, or pursue a doctoral degree, demonstrating a high level of research capability. 4. Take positions in universities or research institutes, achieve intermediate or higher professional titles, and demonstrate the ability to become core members in their fields.	具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应绿色船舶、智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of green and intelligent ship development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal,	3-1 能够调查轮机工程领域问题背景和需求，明确设计或开发目标。能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of marine engineering, and to define design or development objectives. Capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
ethical, social, and cultural considerations.	legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对轮机工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of marine engineering based on scientific principles and methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex marine engineering problems in accordance with scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex marine engineering problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂轮机工程问题，如发动机燃烧与排放、船机故障诊断、机桨匹配、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex marine engineering problems such as engine combustion and emissions, engine fault diagnosis, propeller matching, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决轮机工程领域的复杂工程问题时，能够分析和评价轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and	7-1 了解工程伦理基本内涵、航海文化和轮机工程发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences, practicing the core values of socialism and the spirit of Chinese seafarers, establishing a

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
relevant laws in marine engineering practice, and fulfill corresponding responsibilities.	correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as a marine engineer on a ship.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to marine engineering practice—as a team member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流轮机工程领域的问题。能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够使用公共英语和轮机工程专业英语，有效地与不同国家和地区的轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and marine engineering English to conduct oral and written intercultural communication with marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握船舶建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understanding the fundamental principles of engineering management and basic knowledge of economics, and mastering the cost structure of the full cycle and entire process of ship construction and operation, as well as equipment procurement and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning, and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对轮机工程领域乃至整个工程与社会带来的影响。能够适应新技术变革，应对绿色化、智能化等对轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of marine engineering as well as on engineering

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
field of marine engineering.	and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the marine engineering field.

四、特色课程

IV．Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty&innovation	行业共建 industry collaboration
创新思维与创新方法（轮机） Innovative thinking and innovative methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
单片机原理与应用 Principles and Applications of Microcontrollers	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机(1) Marine Auxiliary Machinery (1)			●	●
船舶辅机(2) Marine Auxiliary Machinery (2)			●	●
轮机自动化 Marine Engineering Automation	●	●		●
船舶动力装置技术管理 Marine Engineering Management		●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
轮机综合实验 Marine Engineering General Experiment	●			●
轮机模拟训练 Marine Engine Room Simulator Training		●	●	
液化气船货物操作安全导论 Introduction to Safety on Cargo Handling of Liquefied Gas Carriers				●
液化气船货物操作 Cargo Handling of Liquefied Gas Carriers				●

五、学制与学位

V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（124 学分） Compulsory (124 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	118	6	9.5	8	40.5	6	188
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.07 %	54.125	29.99%	45.125	25.00%	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（180 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	9.5	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="12"></td><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>5</td><td rowspan="13"></td><td rowspan="5"></td></tr>
<tr><td rowspan="11">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>22.5</td><td rowspan="5">/</td></tr>
<tr><td>专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>29.5</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>24.5</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：180
Total：180</td><td>162.5</td><td>9.5</td><td>8</td></tr>
</table>

拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6

VII Curriculum Structure

Refer to Table1～Table6.

表 1：轮机工程(LNG 校企合作班)课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（180 学分） In-class Teaching Courses （180 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	162.5	9.5	8	8	188

表 2：轮机工程(LNG 校企合作班)必修课程设置及进程

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2			综合素养	32	28	4	1-2	

			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			18	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			19	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			20	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			21	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			22	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			23	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			24	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			25	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			26	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			28	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	

			29	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	
			30	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713013680	电工学 Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	
			8	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	

	必修-专业及方向课程 Stream Courses		1	1713030570	工程材料基础(双语) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	
			3	1713019590	航海概论 Navigation Principles	1	考查		综合素养	16	16	0	3-1	
			4	1713030590	单片机原理与应用 Principles and Applications of Microcontrollers	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			5	1713030630	船舶柴油机(双语) Marine Diesel Engine	4	考试	√	综合素养	64	60	4	3-1	课外学时 16
			6	1713030651	船舶辅机(1)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	课外学时 8
			7	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			8	1713030680	船舶防污染技术(双语) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			9	1713013730	轮机自动化 Marine Engineering Automation	3	考试	√	综合素养	48	42	6	3-2	
			10	1713014590	轮机英语 Marine Engineering English	2	考查		综合素养	32	32	0	3-2	课外学时 16

			11	1713030652	船舶辅机(2)(双语) Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	38	2	3-2	课外学时 8
			12	1713030700	船舶动力装置技术管理(双语) Marine Engineering Management	2	考试	√	综合素养	32	30	2	3-2	课外学时 16
			13	1713030730	轮机维护与修理(双语) Marine Maintenance and Repairing	2	考试	√	综合素养	32	27	5	3-2	课外学时 16
合计 Total						**124**				**2064**	**1750**	**314**		

表 3：轮机工程(LNG 校企合作班) 限选课程设置及进程

限选课学分要求：不少于 9.5 学分。其中，须从限选-专业及方向课程中至少选修 9 学分。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713022430	中国海员史 the History of Chinese Seafarers	2	考查		综合素养	32	32	0	3-1	
			2	1713016060	船员心理学 Psychology for Seafarers	1.5	考查		综合素养	24	24	0	3-2	

	限选-专业及方向课程 Stream Courses	需要选修 9 学分。	1	1713031010	船舶动力装置测试技术 Measurement and Test Techniques of Marine Engineering	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			2	1713031030	船舶液压设备原理及维修技术 Principles and Maintenance Technology of Marine Hydraulic Machinery	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			3	1713030970	液货船设备 Equipments of Liquid Cargo Ships	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
			4	1713030980	船舶锅炉与蒸汽动力设备 Marine Boiler and Steam-powered equipment	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			5	1713030990	现代轮机技术与管理 Modern Marine Engineering Technology and Management	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
			6	1713031050	轮机案例分析 Case Analysis of Marine Engineering	1.5	考试		综合素养	24	24	0	4-1	课外学时 8
			7	1713031130	轮机建模与仿真 Modeling and Simulation of marine engine	1.5	考查		综合素养	24	20	4	4-1	课外学时 8
			8	1713031160	轮机智能技术 Intelligent Technology of Marine Engineering	1.5	考查		综合素养	24	24	0	4-1	课外学时 8
合计 Total						**17.5**				**312**	**298**	**14**		

表 4：轮机工程(LNG 校企合作班)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”， “science and technology courses”， At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(LNG 校企合作班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	
			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	

			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	
			7	1713014020	轮机课程设计 Course Design`	1	考查		综合素养	30	0	30	2-2	
			8	1713027370	液化气船货物操作安全导论 Introduction to Safety on Cargo Handling of Liquefied Gas Carriers	1	考查	√	综合素养	40	0	40	2-2	
			9	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			10	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			11	1713027360	液化气船货物操作 Cargo Handling of Liquefied Gas Carriers	1.5	考查		综合素养	52	0	52	3-2	
			12	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	
			13	1713030790	轮机综合实验 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			14	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			15	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			16	1713030760	机舱资源管理(双语) Engine Room Resource Management	1	考查		综合素养	30	0	30	4-1	
			17	1713030780	轮机模拟训练(双语) Marine Engine Room Simulator Training	1	考查		综合素养	40	16	24	4-1	

			18	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	
			19	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	
			20	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	
			21	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**40.5**				**1252**	**82**	**1170**		

表 6：轮机工程(LNG 校企合作班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	

			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	体育（2）	必修	34	1	
3	体育（3）	必修	34	1	
4	体育（4）	必修	34	1	
5	思想道德与法治	必修	8	0.5	
6	计算机及程序设计(Python)	必修	24	1.5	●
7	大学物理实验（1）	必修	24	1	●
8	中国近现代史纲要	必修	8	0.5	
9	创新思维与创新方法(轮机）	必修	10	0.625	●
10	人工智能通识(B)	必修	4	0.25	●
11	马克思主义基本原理	必修	8	0.5	
12	大学物理实验（2）	必修	24	1	●
13	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
14	工程力学	必修	4	0.25	●
15	电工学	必修	8	0.5	●
16	机械设计基础	必修	2	0.125	●
17	工程流体力学	必修	2	0.125	●
18	热工基础	必修	8	0.5	●
19	工程材料基础(双语)	必修	3	0.1875	●
20	船舶电气设备及系统(双语)	必修	8	0.5	●
21	单片机原理与应用	必修	6	0.375	●
22	船舶柴油机(双语)	必修	4	0.25	●
23	船舶辅机(1)(双语)	必修	4	0.25	●
24	船舶防污染技术(双语)	必修	4	0.25	●
25	轮机自动化	必修	6	0.375	●
26	船舶辅机(2)(双语)	必修	2	0.125	●
27	船舶动力装置技术管理(双语)	必修	2	0.125	●
28	轮机维护与修理(双语)	必修	5	0.3125	●
29	军事训练	必修	90	3	
30	精通救生艇筏和救助艇	必修	28	1	●
31	船舶保安	必修	20	0.5	●
32	高级消防	必修	36	1	●
33	基本安全	必修	86	2.5	●
34	精通急救	必修	24	1	●
35	轮机课程设计	必修	30	1	●
36	船舶认识实习（轮机工程）	必修	120	4	●
37	船舶电气设备管理与工艺	必修	40	1	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
38	金工实习(轮机海上)	必修	120	4	●
39	轮机综合实验	必修	30	1	●
40	船舶柴油机拆装	必修	30	1	●
41	机舱资源管理(双语)	必修	30	1	●
42	轮机模拟训练(双语)	必修	40	1	●
43	调速器、增压器拆装	必修	15	0.5	●
44	辅机综合训练(1)	必修	30	1	●
45	辅机综合训练(2)	必修	15	0.5	●
46	液化气船货物操作安全导论	必修	40	1	●
47	液化气船货物操作	必修	52	1.5	●
48	毕业实习及毕业论文	必修	360	12	●
合计 Total			1550	54.125	45.125

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16。

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements & Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses & Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
专业基础类（必修）																							
19	单片机原理与应用★		H			H																M	
20	专业导论（轮机）											M		H				M				M	M
21	造船大意					H						M											

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
22	航海概论											M		H		H							
专业基础类（限选）																							
23	船舶动力装置测试技术					M	M			H	H												
专业方向类（必修）																							
24	船舶电气设备及系统★				H	H		M													M		
25	船舶柴油机★					M	H	H				M							M				
26	船舶辅机(1)(2)★					M	H	H											M				
27	轮机自动化★				H	H		M													M		
28	船舶动力装置技术管理★						H					H	H	H						H	H		
29	轮机维护与修理★						H					H	H							H	H		
30	船舶防污染技术						M					H	H	M									
31	船舶及海上设施检验(海上)											H	H	M						M	M		
32	轮机英语													M				H	H				
专业方向类（限选）																							
33	液货船设备					H		H				M											
34	船舶锅炉与蒸汽动力设备					H		H															
35	现代轮机技术与管理									H	M											M	H
36	船舶液压设备原理及维修技术						H	H	M														
37	轮机案例分析				H			M					M										
38	轮机建模与仿真					M	M			H	H												
39	轮机智能技术		H							M	M											M	M
工程实践类（必修）																							
40	轮机课程设计		H		H													H					
41	船舶认识实习(轮机工程)★													H	H	M	M	H					
42	金工实习(轮机海上)						H			M			M		H								

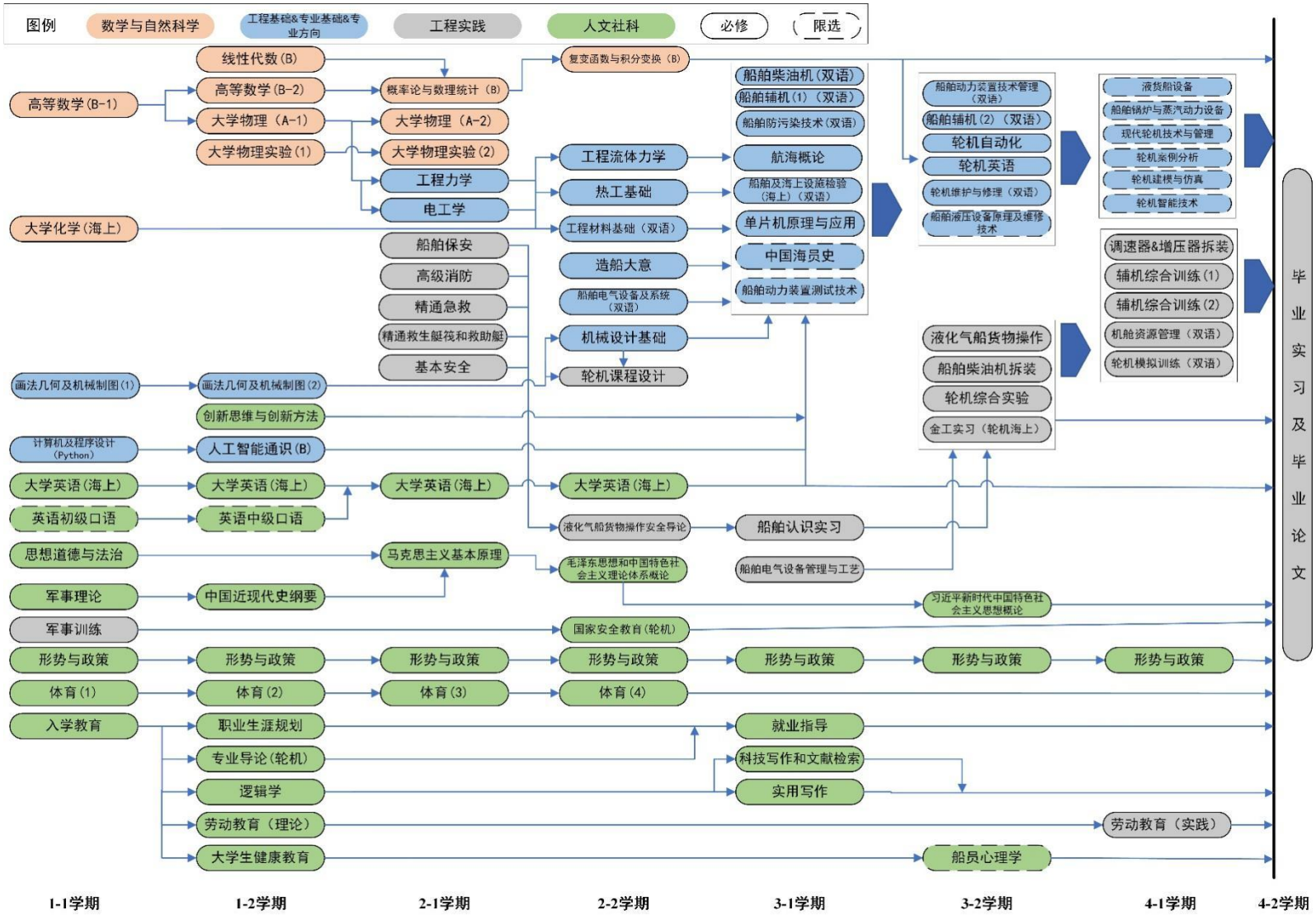
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
43	船舶电气设备管理与工艺★								H	H	M												
44	船舶柴油机拆装★								H	H	M					M							
45	调速器、增压器拆装								H	H	M					M							
46	辅机综合训练								H	H	M					M							
47	轮机综合实验★								M	H	H					H	H						
48	轮机模拟训练★									H	H					H	M		M				
49	机舱资源管理★														H	H	H	M	M				
50	液化气船货物操作安全导论						H		H				M										
51	液化气船货物操作						H		H				M										
52	基本安全													H	H		M						
53	精通急救													H	H		M						
54	精通救生艇筏和救助艇													M		H	H						
55	高级消防													M		H	H						
56	船舶保安													M		H							
57	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
58	思想道德与法治														H								
59	中国近现代史纲要														H								
60	马克思主义基本原理												M		H					M			
61	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
62	习近平新时代中国特色社会主义思想概论												M		H					M			
63	形势与政策												M		H								
64	大学英语(海上)																		H				
65	体育														H	M	M						
66	军事理论														H								

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
67	军事训练														H	H	M						
68	劳动教育(理论)														H								
69	劳动教育(实践)														M	H	M						
70	逻辑学							M														H	H
71	实用写作																	H	H				
72	入学教育													H									
73	职业生涯规划													H								M	
74	大学生健康教育														H	M							
75	国家安全教育(轮机)														H								
76	就业指导														H								
人文社科与通识类（限选）																							
77	英语初级口语																	H	H				
78	英语中级口语																	H	H				
79	中国海员史													M	H								
80	船员心理学													M	H				M				

注：★表示该课程用于毕业要求达成评价，共 20 门；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration



轮机工程（海洋装备技术与管理）专业本科培养计划

Undergraduate Program for Marine Engineering Major （Offshore Equipment Technology and Management）

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业培养具有健全人格与健康体魄、科学素养和创新精神、人文素养与家国情怀、国际视野和海洋意识，具有扎实的理论知识、较强的工程实践能力和安全环保意识，能够担当时代重任和使命，能够适应智能海洋装备、海洋平台与工程船舶、绿色与智能船舶发展需求，在海洋装备和轮机工程相关领域从事操作维护、生产制造、技术服务、运营管理以及科技开发等工作的高素质工程技术人才或管理人才。 学生在毕业后5年左右，预期成长为在海洋平台、海洋工程船舶或远洋船舶上任职的技术专家或管理人才，或在航运企业、修造船厂、船级社、救捞局、海事管理部门以及国内同类院校等单位从事生产管理、技术研发、教学科研等工作的业务骨干。 This program aims to cultivate high-quality engineering and managerial professionals with sound character, physical fitness, scientific literacy, innovative spirit, humanistic qualities, patriotism, international vision, and maritime awareness. Graduates are expected to possess solid engineering knowledge, strong practical abilities, and a commitment to safety and environmental protection. They will be capable of assuming significant responsibilities, meeting the development demands of intelligent offshore equipment, platforms and vessels as well as green and intelligent ships, and engaging in operation and maintenance, manufacturing, technical services, operation management, and scientific research and development in the fields of offshore equipment, marine engineering and related disciplines. Within approximately five years after graduation, the graduates are expected to grow into technical experts or management talents working on offshore platforms/vessels or on-board ships in ocean transportation, or to become the backbones in production management, technological research, teaching and scientific research in the shipping enterprises, shipyards, classification societies, rescue and salvage departments, maritime management departments and similar domestic universities.	1. 道德与修养 具有健全人格、健康体魄、科学素养、创新精神、人文素养、家国情怀，以服务交通强国、海洋强国战略为己任。 1. Moral Character and Cultivation Possessing a sound personality, robust health, scientific literacy, innovative spirit, humanistic qualities, and a deep sense of national responsibility, with a commitment to serving the strategies of building a strong transportation nation and a strong maritime nation.
	2. 工程知识与实践能力 具有扎实的船舶动力装置与海洋装备操作维护、生产制造、技术服务、运营管理以及科技开发等基础理论、专业知识和实践能力。 2. Engineering Knowledge and Practical Ability Equipped with solid theoretical foundations, professional knowledge, and practical skills in the operation and maintenance, manufacturing, technical services, operation management, and scientific and technological development of marine power systems and offshore equipment.
	3. 团队与管理 具有国际视野和海洋意识，具有多样化、多学科、跨文化背景下的表达能力、人际交往能力、团队合作能力和管理能力。 3. Teamwork and Management Possessing a global vision and marine awareness, along with strong communication, interpersonal, teamwork, and management skills in diverse, interdisciplinary, and cross-cultural contexts.
	4. 学习与发展 具有自主学习、终身学习和批判性思维的意识和能力，能够适应新技术变革，适应智能海洋装备、海洋平台与工程船舶、绿色与智能船舶发展需求。 4. Learning and Development Demonstrating awareness and ability in self-directed learning, lifelong learning, and critical thinking, with the capacity to adapt to technological innovations and meet the evolving demands of intelligent offshore equipment, platforms and vessels as well as green and intelligent ships.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
毕业要求 1 **工程知识：**能够将数学、自然科学、计算、工程基础和专业知识用于解决海洋装备与轮机工程领域的复杂工程问题。 **No.1 Engineering knowledge** Ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of offshore equipment and marine engineering.	1-1 能够将数学、自然科学、计算、工程基础和专业知识运用到海洋装备与轮机工程领域复杂工程问题的恰当表述中。 Ability to integrate mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge into the appropriate formulation and solution of complex engineering problems in the field of offshore equipment and marine engineering.
	1-2 具有计算思维，能够运用数学、自然科学、计算、工程基础和专业知识对海洋装备与轮机工程领域的复杂工程问题进行求解、推演、分析，并理解其局限性。 Possessing computational thinking, with the ability to apply mathematics, natural sciences, computing, engineering fundamentals, and specialized knowledge to solve, deduce, and analyze complex engineering problems in the field of offshore equipment and marine engineering, while also recognizing their limitations.
毕业要求 2 **问题分析：**能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析海洋装备与轮机工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **No.2 Problem analysis** Ability to apply the fundamental principles of mathematics, natural sciences, and engineering science to identify, articulate, and analyze complex engineering problems in the field of offshore equipment and marine engineering through literature research, while taking into account the requirements of sustainable development to reach valid conclusions.	2-1 能够运用数学、自然科学、工程科学的基本原理和方法，识别海洋装备与轮机工程问题的关键环节，并对问题进行追根溯源、解构分析和合理简化。 Ability to apply the fundamental principles and methods of mathematics, natural sciences, and engineering science to identify the key aspects of offshore equipment and marine engineering problems, and to conduct root-cause tracing, deconstructive analysis, and rational simplification.
	2-2 能够综合运用数学、自然科学、工程科学的基本原理和方法，结合文献研究、案例教训和专家经验，对复杂海洋装备与轮机工程问题进行分析（包括建立数学模型），综合考虑可持续发展的要求，以获得有效结论和解决方案。 Ability to comprehensively apply the fundamental principles and methods of mathematics, natural sciences, and engineering science, together with literature research, case studies, and expert experience, to analyze complex offshore equipment and marine engineering problems (including the establishment of mathematical models), while taking into account the requirements of sustainable development to obtain valid conclusions and practical solutions.
毕业要求 3 **设计/开发解决方案：**能够设计针对海洋装备与轮机工程领域复杂工程问题的解决方案，设计满足特定需求的轮机系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **No.3 Design/provide solutions** Ability to design solutions for complex engineering problems in the field of offshore equipment and marine engineering, including the design of marine systems, components, or processes that meet specific requirements, demonstrate innovation, and take into account feasibility from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.	3-1 能够调查海洋装备与轮机工程领域问题背景和需求，明确设计或开发目标，能够按照相关国际公约、法规和标准，建立有效可行的设计方案，并依据设计方案对轮机系统、单元或管理流程进行设计，并具有创新性。 Ability to investigate the background and requirements of problems in the field of offshore equipment and marine engineering, and to define design or development objectives; capable of formulating effective and feasible design schemes in accordance with relevant international conventions, regulations, and standards, and of designing marine systems, components, or management processes based on such schemes with an emphasis on innovation.
	3-2 在海洋装备与船舶动力装置设计、制造和开发的各环节中，从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 In all stages of design, manufacture and development of offshore equipment and marine engineering, feasibility is evaluated from the perspectives of health, safety and environment, life-cycle cost and net-zero carbon requirements, as well as legal, ethical, social, and cultural considerations.
毕业要求 4 **研究：**能够基于科学原理并采用科学方法对海洋装备与轮机工程领域的复杂工程问题	4-1 能够按照科学原理，运用文献研究、访谈、案例探究等方法，进行复杂海洋装备与轮机工程问题解决方案的调研和分析。 Ability to investigate and analyze solutions for complex offshore equipment and marine engineering problems in accordance with

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **No.4 Study and research** Ability to conduct research on complex engineering problems in the field of offshore equipment and marine engineering based on scientific principles and methods, including designing experiments, analyzing and interpreting data, and synthesizing information to draw sound and effective conclusions.	scientific principles, using methods such as literature review, interviews, and case studies.
	4-2 能够综合运用所学科学原理并采用科学方法，针对复杂海洋装备与轮机工程问题设计实验方案，建立实验系统进行实验，并对实验数据和结果进行分析和解释，获得合理有效的结论。 Ability to integrate learned scientific principles and apply scientific methods to design experimental schemes for complex offshore equipment and marine engineering problems, establish experimental systems to conduct experiments, and analyze and interpret experimental data and results to obtain sound and effective conclusions.
毕业要求 5 **使用现代工具：**能够针对海洋装备与轮机工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **No.5 Use of modern tools** Ability to develop, select, and utilize appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of offshore equipment and marine engineering, including prediction and simulation, with an awareness of their limitations.	5-1 了解常用的现代仪器、信息技术工具、工程工具和专业模拟软件等现代工具的使用原理和方法，并理解其局限性。 Understanding the principles and methods of using common modern instruments, information technology tools, engineering tools, and professional simulation software, with an awareness of their limitations.
	5-2 能够针对复杂海洋装备与轮机工程问题，如发动机燃烧与排放、海洋装备故障诊断、管系设计等，组合、选配、改进或开发现代工具进行分析、设计、模拟和预测，并能够理解相关结果的局限性。 Ability to integrate, adapt, improve, or develop modern tools to analyze, design, simulate, and predict complex offshore equipment and marine engineering problems such as engine combustion and emissions, offshore equipment fault diagnosis, and piping system design, with an understanding of the limitations of the results.
毕业要求 6 **工程与可持续发展：**在解决海洋装备与轮机工程领域的复杂工程问题时，能够基于工程相关背景知识，分析和评价海洋装备与轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **No.6 Engineering and Sustainable Development** When addressing complex engineering problems in the field of offshore equipment and marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, based on relevant engineering background knowledge, with an understanding of the responsibilities to be assumed.	6-1 能够理解我国及国际关于环境保护和社会可持续发展的理念、目标、政策等，尤其是海事领域的相关要求。 Ability to understand the concepts, goals, and policies of environmental protection and social sustainable development in China and at the international level, with particular attention to the relevant requirements in the maritime field.
	6-2 在解决海洋装备与轮机工程领域的复杂工程问题时，能够分析和评价海洋装备与轮机工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，尤其是对船舶、货物、人员及海洋环境产生的影响，并理解应承担的责任。 When solving complex engineering problems in the field of offshore equipment and marine engineering, ability to analyze and evaluate the impacts of engineering practice on health, safety, environment, law, as well as economic and social sustainable development, especially the impacts on ships, goods, personnel and the marine environment, and understanding of the responsibilities to be assumed.
毕业要求 7 **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在海洋装备与轮机工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **No.7 Engineering ethics and professional standards** With an awareness of serving the nation through engineering and benefiting society, possessing literacy in the humanities and social sciences and a strong sense of social responsibility; able to understand and practice engineering ethics, comply with professional ethics, norms, and relevant laws in offshore equipment and marine engineering practice, and	7-1 了解工程伦理基本内涵、航海文化以及轮机工程与海洋装备发展历史，熟知相关国际公约和国内法规，具有服务交通强国、海洋强国的高度责任感，遵守海洋装备与轮机工程职业道德和职业规范。 Understanding the fundamental connotations of engineering ethics, maritime culture, and the development history of marine engineering and offshore equipment; being well acquainted with relevant international conventions and domestic regulations; possessing a strong sense of responsibility in serving the goals of building a strong transportation nation and a strong maritime nation; and adhering to professional ethics and norms in offshore equipment and marine engineering practice.
	7-2 具有人文社会科学素养，践行社会主义核心价值观与中国海员精神，树立正确的人生观和世界观，具有履行职责和规范尤其是担任海洋平台/工程船舶技术人员及海船轮机员所需的健康体魄、健全人格和契约精神。 Possessing literacy in the humanities and social sciences,

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
fulfill corresponding responsibilities.	practicing the core values of socialism and the spirit of Chinese seafarers, establishing a correct outlook on life and the world, and maintaining the physical fitness, sound personality and contractual spirit required for fulfilling responsibilities and adhering to professional norms, especially as technicians on offshore platforms/vessels and marine engineers on ships.
毕业要求 8 **个人和团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **No.8 Individual role and teamwork** Ability to assume the roles of individual contributor, team member, and leader in teams with diverse and multidisciplinary backgrounds.	8-1 具有团队精神，能够在多样化、多学科背景下的团队中与其他成员进行有效地、包容地沟通与合作，能够作为团队成员完成指定任务，尤其是海洋装备与轮机工程实践任务。 Possessing team spirit, able to communicate and collaborate effectively and inclusively with other members in teams with diverse and multidisciplinary backgrounds, and capable of fulfilling assigned tasks—particularly those related to offshore equipment and marine engineering practice—as a team member.
	8-2 具有领导能力，能够作为负责人组织团队完成指定的海洋装备与轮机工程实践工作任务，并与团队成员有效沟通，共享信息。 Possessing leadership skills, able to act as a team leader to organize and accomplish assigned offshore equipment and marine engineering practice tasks, while communicating effectively with team members and sharing information.
毕业要求 9 **沟通：**能够就海洋装备与轮机工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **No.9 Communication** Ability to communicate and interact effectively with industry peers and the public on complex engineering problems in the field of offshore equipment and marine engineering, including writing reports and design documents, delivering presentations, clearly expressing or responding to instructions; possessing an international perspective, and being able to communicate and exchange in cross-cultural contexts with an understanding and respect for linguistic and cultural differences.	9-1 了解海洋装备与轮机工程领域的国内国际发展趋势、研究热点，能够以发言、讨论、工程图纸、撰写报告或论文的形式，与业界同行交流海洋装备与轮机工程领域的问题，能够准确表达观点、回应质疑并包容差异性。 Understanding domestic and international development trends and research frontiers in the field of offshore equipment and marine engineering; able to communicate issues in the field with industry peers through presentations, discussions, engineering drawings, reports, or academic papers; capable of articulating viewpoints accurately, responding to questions, and embracing differences.
	9-2 具有国际视野，能够理解和尊重世界不同语言、文化的差异性和多样性，能够使用公共英语以及海洋装备与轮机工程专业英语，有效地与不同国家和地区的海洋装备与轮机工程相关人员进行口语、书面等跨文化沟通交流。 Possessing an international perspective, with the ability to understand and respect linguistic and cultural differences and diversity, and be able to use both general English and professional English in the field of offshore equipment and marine engineering to conduct oral and written intercultural communication with offshore equipment and marine engineering professionals from different countries and regions effectively.
毕业要求 10 **项目管理：**理解并掌握与海洋装备与轮机工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **No.10 Project management** Understanding and mastering management principles and economic decision-making methods related to offshore equipment and marine engineering projects, and able to apply them in multidisciplinary environments.	10-1 理解工程管理的基本原理和经济学基本知识，掌握远洋船舶、海洋平台及工程船建造、运营和设备购置、维修等全周期、全流程的成本构成。 Understand the basic knowledge of engineering management and economics related to engineering activities, master the cost structure of the whole cycle and the whole process of construction and operation of ships and offshore platforms/vessels, as well as the equipment purchase and maintenance.
	10-2 能够在力学、材料、机械、热能、电气、电子、控制、人工智能等多学科环境下的项目管理过程中，针对海洋装备与轮机工程项目合理应用工程管理原理与经济决策方法。 Ability to apply engineering management principles and economic decision-making methods appropriately in the project management process of offshore equipment and marine engineering projects in a multi-disciplinary environment including mechanics, materials, machinery, thermal energy, electrical, electronics, control, artificial intelligence, etc.
毕业要求 11 **终身学习：**具有自主学习、终身学习和批	11-1 能在社会发展的大背景下，树立自主学习、终身学习和批判性思维的意识，具备自主学习、终身学习和批判性思维的能力。 Able to cultivate the awareness of self-learning, lifelong learning,

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革对海洋装备与轮机工程领域带来的挑战。 **No.11 Lifelong learning** Possessing the awareness and ability for self-learning, lifelong learning, and critical thinking; with the capacity to understand the impact of broad technological transformations on engineering and society, and to adapt to the challenges that emerging technologies bring to the field of offshore equipment and marine engineering.	and critical thinking within the broader context of social development, and to develop the corresponding abilities for autonomous learning, lifelong learning, and critical thinking.
	11-2 能够理解广泛的技术变革，如低碳、零碳、人工智能等技术对海洋装备与轮机工程领域乃至整个工程与社会带来的影响，能够适应新技术变革，应对绿色化、智能化等对海洋装备与轮机工程领域带来的新挑战。 Able to understand the impacts of broad technological changes, such as low-carbon and zero-carbon technologies, big data and artificial intelligence technologies, on the field of offshore equipment and marine engineering as well as on engineering and society as a whole; capable of adapting to emerging technological transformations and addressing new challenges brought by green and intelligent development in the field of offshore equipment and marine engineering.

三、专业核心课程

III. Core Courses

工程材料基础、船舶电气设备及系统、单片机原理与应用、船舶柴油机、船舶辅机、海洋装备辅助设备、锚泊及动力定位系统、液压传动与控制、轮机自动化基础、船舶动力装置技术管理、轮机维护与修理、轮机综合实验、轮机/DP 模拟器训练、直升飞机模拟舱训练。

Fundamentals of Engineering Materials, Marine Electrical Equipment and System, Principles and Applications of Microcontrollers, Marine Diesel Engine, Marine Auxiliary Machinery, Offshore Auxiliary Machinery, Anchoring and Dynamic Positioning System, Hydraulic Transmission and Control, Fundamental of Marine Engineering Automation, Marine Engineering Management, Marine Engineering Maintenance and Repairing, Marine Engineering General Experiment, Engineering/DP Simulator Training, Helicopter Flight Training of Simulation Cabin.

四、特色课程

IV. Feature Courses

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty& Innovation	行业共建 Industry Collaboration
创新思维与创新方法（轮机） Innovative Thinking and Innovative Methods			●	
工程材料基础 Fundamentals of Engineering Materials	●		●	
单片机原理与应用 Principles and Applications of Microcontrollers	●		●	
船舶电气设备及系统 Marine Electrical Equipment and System	●		●	
船舶柴油机 Marine Diesel Engine		●		●
船舶辅机 Marine Auxiliary Machinery			●	●

课程名称 Name	学科交叉 Cross-Disciplinary	智能+ Intelligent+	专创融合 Specialty&Innovation	行业共建 Industry Collaboration
海洋装备辅助设备 Offshore Auxiliary Machinery	●		●	
锚泊及动力定位系统 Anchoring and Dynamic Positioning System	●			●
液压传动与控制 Hydraulic Transmission and Control	●		●	
轮机自动化基础 Fundamental of Marine Engineering Automation	●	●		●
船舶动力装置技术管理 Marine Engineering Management		●		●
轮机维护与修理 Marine Engineering Maintenance and Repairing				●
轮机综合实验 Marine Engineering General Experiment	●			●
轮机/DP 模拟器训练 Engineering/DP Simulator Training		●	●	
直升飞机模拟舱训练 Helicopter Flight Training of Simulation Cabin	●			●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

课程设置及学分安排

Curriculum and Credits

课程分类 Course Categories	必修课程（120.5 学分） Compulsory (120.5 Credits)		限选课程 Restrictive Optional	任选课程 Free Optional	集中实践课程（必修） Intensive Practice (Compulsory)	讲座课程（必修） Lecture (Compulsory)	总计 Total
	理论 Theory	实践 Practice					
学分 Credits	114.5	6	14	8	39	6	187.5
关键环节学分及占综合素养总学分的比例 Key Component Credits and Proportion of Total Comprehensive Literacy Credits	自然科学类课程 Natural Science Courses		实践课程 Practical Courses		实践课程中的工程实践与毕业设计 Engineering Practice and Graduation Design in Practical Courses		
	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	学分 Credits	占比 Proportion	
	29	16.16 %	53.8125	29.98 %	44.8125	24.97 %	

备注：实践课程、工程实践与毕业设计对应的学分见第八部分“实践学时学分”。

综合素养学分要求（179.5 学分）

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	14	/
	外语类 Foreign Languages		12		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18		
		物理类 Physics	9		
		化学类 Chemistry	2		
	计算思维及信息技术 Computational Thinking and Information Technology		5		
	通识类 General Course	军事素养 Military Literacy	2		
		体育素质 Physical Literacy	4		
		沟通写作 Communication and Writing	2		
		创新思维 Invitational Thinking	2		

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
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Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
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Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="10"></td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
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Others</td></tr>
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基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>21</td><td rowspan="6">/</td></tr>
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方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>27.5</td></tr>
<tr><td colspan="2">方向模块课
Directional Module Courses
一、等效认可模块
MSA Equivalent Recognition Module
二、海洋装备模块
Offshore Equipment Module</td><td>/</td></tr>
<tr><td rowspan="3">集中实践环节
Practical &Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>23</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：179.5
Total：179.5</td><td>157.5</td><td>14</td><td>8</td></tr>
</table>

拓展素养学分要求（8 学分）

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018600	专业导论(轮机)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713030840	科技写作和文献检索	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6

VII Curriculum Structure

Refer to Table1～Table6.

表 1：轮机工程(海洋装备技术与管理)课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（179.5 学分） In-class Teaching Courses （179.5 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	157.5	14	8	8	187.5

表 2：轮机工程(海洋装备技术与管理)必修课程设置及进程

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000081	高等数学(B-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713022340	大学化学(海上) College Chemistry	2	考试		综合素养	32	32	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027690	计算机及程序设计(Python) Computer Program Design (Python)	3	考试		综合素养	48	24	24	1-1	
			7	1713027711	大学英语(海上)(1) College English	3	考试	√	综合素养	48	48	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000082	高等数学(B-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000120	线性代数(B) Linear Algebra	2	考试	√	综合素养	32	32	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			14	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			15	1713025581	大学物理(A-1) University Physics	3	考试	√	综合素养	48	48	0	1-2	
			16	1713027650	人工智能通识(B) Navigating the Essentials of Artificial Intelligence(B)	2	考试		综合素养	32	28	4	1-2	

			17	1713027712	大学英语(海上)(2) College English	3	考试	√	综合素养	48	48	0	1-2	
			18	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			19	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			20	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			21	1713025582	大学物理(A-2) University Physics	4	考试	√	综合素养	64	64	0	2-1	
			22	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			23	1713027713	大学英语(海上)(3) College English	3	考试	√	综合素养	48	48	0	2-1	
			24	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			25	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			26	1713027714	大学英语(海上)(4) College English	3	考试	√	综合素养	48	48	0	2-2	
			27	1713027750	复变函数与积分变换(B) Complex Function and Integral Transformation(B)	3	考试		综合素养	48	48	0	2-2	
			28	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-1	

			29	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			30	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713013651	画法几何及机械制图(1) Descriptive Geometry and Mechanical Graphing	2.5	考试		综合素养	40	40	0	1-1	
			2	1713013652	画法几何及机械制图(2) Descriptive Geometry and Mechanical Graphing	1.5	考试		综合素养	24	24	0	1-2	
			3	1713013620	工程力学 Engineering Mechanics	4	考试	√	综合素养	64	60	4	2-1	
			4	1713013680	电工学 Electricity & Electronics Engineering	4	考试	√	综合素养	64	56	8	2-1	
			5	1713003240	机械设计基础 Mechanical Design Basis	3	考试	√	综合素养	48	46	2	2-2	
			6	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试	√	综合素养	32	30	2	2-2	
			7	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考试	√	综合素养	64	56	8	2-2	

	必修-专业及方向课程 Stream Courses		1	1713030570	工程材料基础(双语) Fundamentals of Engineering Materials	2	考试	√	综合素养	32	29	3	2-2	课外学时 8
			2	1713030620	船舶电气设备及系统(双语) Marine Electrical Equipment and System	4	考试	√	综合素养	64	56	8	2-2	
			3	1713014160	船舶柴油机 Marine Diesel Engine	3	考试	√	综合素养	48	42	6	3-1	课外学时 16
			4	1713014621	海洋装备辅助设备(1) Offshore Auxiliary Machinery I	2	考试	√	综合素养	32	28	4	3-1	
			5	1713030590	单片机原理与应用 Principles and Applications of Microcontrollers	2	考试	√	综合素养	32	26	6	3-1	课外学时 16
			6	1713030850	船舶辅机 Marine Auxiliary Machinery	3.5	考试	√	综合素养	56	52	4	3-1	课外学时 8
			7	1713014580	轮机自动化基础 Fundamental of Marine Engineering Automation	2	考试	√	综合素养	32	26	6	3-2	
			8	1713014622	海洋装备辅助设备(2) Offshore Auxiliary Machinery II	2	考试	√	综合素养	32	28	4	3-2	
			9	1713014630	锚泊及动力定位系统 Anchoring and Dynamic Positioning System	2	考试	√	综合素养	32	20	12	3-2	
			10	1713014640	液压传动与控制 Hydraulic transmission and control	2	考试	√	综合素养	32	26	6	3-2	

			11	1713030860	轮机维护与修理 Marine Maintenance and Repairing	1.5	考试	√	综合素养	24	22	2	3-2	课外学时 8
			12	1713030870	船舶动力装置技术管理 Marine Engineering Management	1.5	考试	√	综合素养	24	22	2	3-2	课外学时 8
合计 Total						**120.5**				**2008**	**1675**	**333**		

表 3：轮机工程(海洋装备技术与管理) 限选课程设置及进程

限选课学分要求：不少于 14 学分。其中，须从海洋装备模块中至少选修 7.5 学分。另外，造船大意及等效认可模块课程均为海事局适任考试科目等效认可要求的课程，不选修这些课程将不能进行海事局等效认可成绩报备。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	**课程类别 Course Categories**	**类别备注 Course Categories Remark**	**序号 No.**	**课程编号 Course Code**	**课程名称 Course Name**	**学分 Credits**	**考核方式 Testing method**	**是否学位课 Degree Course**	**综合/拓展素养课程 Course Core**	**学时 Teaching Hours**			**上课学期 Semesters**	**备注 Notes**
										合计 Total	**讲课 Lectures**	**实践 Practicum**		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713027420	造船大意 Principle of The Ship	1.5	考查		综合素养	24	24	0	2-2	海事局适任考试科目等效认可要求的课程。
			2	1713013770	工程热力学 Engineering Thermodynamics	3	考查		综合素养	48	44	4	3-1	

			3	1713028020	传热学及应用 Applied Heat Transfer	2	考试		综合素养	32	30	2	3-2	
	限选-专业及方向课程(等效认可模块) Stream Courses	该模块课程及造船大意为海事局适任考试科目等效认可要求的课程，不选修这些课程将不能进行海事局等效认可成绩报备。	1	1713019590	航海概论 Navigation Principles	1	考查		综合素养	16	16	0	3-1	
			2	1713030670	船舶及海上设施检验(海上)(双语) Ships and Marine Facilities Inspection	1	考查		综合素养	16	16	0	3-1	
			3	1713030680	船舶防污染技术(双语) Marine Pollution Prevention Technology	1.5	考查		综合素养	24	20	4	3-1	课外学时 8
			4	1713014590	轮机英语 Marine Engineering English	2	考查		综合素养	32	32	0	3-2	课外学时 16
	限选-专业及方向课程(海洋装备模块) Stream Courses	须从该模块中至少选修7.5学分。	1	1713030890	海洋工程与技术概论 Introduction for ocean engineering and technology	1.5	考查		综合素养	24	24	0	2-2	课外学时 8
			2	1713030900	海洋工程规范与法规 Offshore Engineering Codes and Regulations	1.5	考查		综合素养	24	24	0	3-1	课外学时 8
			3	1713030910	海洋装备专业英语 Professional English for Offshore Equipment	1.5	考查		综合素养	24	24	0	3-1	课外学时 8
			4	1713030880	仪器仪表与检测技术 Instrument & Meter and detection Technology	1.5	考查		综合素养	24	22	2	3-2	课外学时 8

			5	1713030920	ANSYS 在海洋石油工程中的应用 Application of ANSYS in offshore oil engineering	1.5	考查		综合素养	24	24	0	3-2	课外学时 8
			6	1713031100	船舶 PLC 及其网络技术 Marine PLC and its communication network	1.5	考查		综合素养	24	14	10	3-2	课外学时 8
			7	1713030970	液货船设备 Equipments of Liquid Cargo Ships	1.5	考查		综合素养	24	18	6	4-1	课外学时 8
合计 Total						**24.5**				**424**	**396**	**28**		

表 4：轮机工程(海洋装备技术与管理)任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”， “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(海洋装备技术与管理) 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-1	
			3	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-1	
			4	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-1	
			5	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-1	
			6	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-1	
			7	1713014020	轮机课程设计 Course Design`	1	考查		综合素养	30	0	30	2-2	
			8	1713014010	船舶认识实习(轮机工程) Observation Practice	4	考查		综合素养	120	0	120	3-1	
			9	1713014040	船舶电气设备管理与工艺 Management and Techniques of Marine Electrical Equipment	1	考查		综合素养	40	0	40	3-1	
			10	1713014730	直升飞机模拟舱训练 Helicopter Flight Training of Simulation Cabin	0.5	考查		综合素养	15	0	15	3-2	

			11	1713027630	金工实习(轮机海上) Metalworking Practice	4	考查		综合素养	120	0	120	3-2	
			12	1713030790	轮机综合实验 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			13	1713030810	船舶柴油机拆装 Marine Engineering General Experiment	1	考查		综合素养	30	0	30	3-2	
			14	1713014740	液压设备拆装 Assembling and Disassembling of Hydraulic Equipment	0.5	考查		综合素养	15	0	15	4-1	
			15	1713014750	轮机/DP 模拟器训练 Marine Engineering/DP Simulator	1	考查		综合素养	30	0	30	4-1	
			16	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			17	1713030760	机舱资源管理(双语) Engine Room Resource Management	1	考查		综合素养	30	0	30	4-1	
			18	1713030820	调速器、增压器拆装 Installation and Disassembling of Governor and Turbocharger	0.5	考查		综合素养	15	0	15	4-1	
			19	1713030831	辅机综合训练(1) Auxiliary Machinery General Training	1	考查		综合素养	30	0	30	4-1	
			20	1713030832	辅机综合训练(2) Auxiliary Machinery General Training	0.5	考查		综合素养	15	0	15	4-1	
			21	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	

合计 Total					39				1180	66	1114		

表 6：轮机工程(海洋装备技术与管理) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 Course Core	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			4	1713018600	专业导论(轮机) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-2	
			5	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			6	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-2	课外学时 16
			7	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	

			8	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			9	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713030840	科技写作和文献检索 Technical Writing and Literature Retrieval	0.5	考查		拓展素养	8	8	0	3-1	
			13	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			14	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			15	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	金工实习（轮机海上）	必修	120	4	●
4	船舶认识实习（轮机工程）	必修	120	4	●
5	精通救生艇筏和救助艇	必修	28	1	●
6	船舶保安	必修	20	0.5	●
7	高级消防	必修	36	1	●
8	基本安全	必修	86	2.5	●
9	精通急救	必修	24	1	●
10	轮机课程设计	必修	30	1	●
11	船舶电气设备管理与工艺	必修	40	1	●
12	直升飞机模拟舱训练	必修	15	0.5	●
13	轮机综合实验	必修	30	1	●
14	船舶柴油机拆装	必修	30	1	●
15	液压设备拆装	必修	15	0.5	●
16	轮机/DP 模拟器训练	必修	30	1	●
17	机舱资源管理（双语）	必修	30	1	●
18	调速器、增压器拆装	必修	15	0.5	●
19	辅机综合训练	必修	45	1.5	●
20	大学物理实验	必修	48	2	●
21	思想道德与法治	必修	8	0.5	
22	计算机及程序设计（Python）	必修	24	1.5	●
23	中国近现代史纲要	必修	8	0.5	
24	创新思维与创新方法（轮机）	必修	10	0.625	●
25	人工智能通识（B）	必修	4	0.25	●

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	"工程实践与毕业设计"相关课程 Engineering Practice & Graduation Project
26	马克思主义基本原理	必修	8	0.5	
27	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
28	工程力学	必修	4	0.25	●
29	电工学	必修	8	0.5	●
30	机械设计基础	必修	2	0.125	●
31	工程流体力学	必修	2	0.125	●
32	热工基础	必修	8	0.5	●
33	工程材料基础（双语）	必修	3	0.1875	●
34	船舶电气设备及系统（双语）	必修	8	0.5	●
35	船舶柴油机	必修	6	0.375	●
36	海洋装备辅助设备	必修	8	0.5	●
37	单片机原理与应用	必修	6	0.375	●
38	船舶辅机	必修	4	0.25	●
39	轮机自动化基础	必修	6	0.375	●
40	锚泊及动力定位系统	必修	12	0.75	●
41	液压传动与控制	必修	6	0.375	●
42	轮机维护与修理	必修	2	0.125	●
43	船舶动力装置技术管理	必修	2	0.125	●
44	毕业实习及毕业论文	必修	360	12	●
合计 Total			1497	53.8125	44.8125

备注：（1）此表仅统计综合素养学分课程涉及的实践学时学分；（2）理论课中包含的实践学时，其对应的实践学分=实践学时/16

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements & Program Objectives Relationship Matrix

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
1.工程知识	毕业要求 1-1 **Graduation Requirements 1-1**		●		
	毕业要求 1-2 **Graduation Requirements 1-2**		●		
2.问题分析	毕业要求 2-1 **Graduation Requirements 2-1**		●		
	毕业要求 2-2 **Graduation Requirements 2-2**		●		
3.设计/开发解决方案	毕业要求 3-1 **Graduation Requirements 3-1**		●		●
	毕业要求 3-2 **Graduation Requirements 3-2**	●	●		
4.研究	毕业要求 4-1 **Graduation Requirements 4-1**		●		●
	毕业要求 4-2 **Graduation Requirements 4-2**		●		●
5.使用现代工具	毕业要求 5-1 **Graduation Requirements 5-1**		●		●
	毕业要求 5-2 **Graduation Requirements 5-2**		●		●
6.工程与可持续发展	毕业要求 6-1 **Graduation Requirements 6-1**	●			
	毕业要求 6-2 **Graduation Requirements 6-2**	●			
7.工程伦理和职业规范	毕业要求 7-1 **Graduation Requirements 7-1**	●			

毕业要求		培养目标 1：道德与修养 Program Objectives 1	培养目标 2：工程知识与实践能力 Program Objectives 2	培养目标 3：团队与管理 Program Objectives 3	培养目标 4：学习与发展 Program Objectives 4
	毕业要求 7-2 **Graduation Requirements 7-2**	●			
8.个人与团队	毕业要求 8-1 **Graduation Requirements 8-1**			●	
	毕业要求 8-2 **Graduation Requirements 8-2**			●	
9.沟通	毕业要求 9-1 **Graduation Requirements 9-1**			●	
	毕业要求 9-2 **Graduation Requirements 9-2**			●	
10.项目管理	毕业要求 10-1 **Graduation Requirements 10-1**			●	
	毕业要求 10-2 **Graduation Requirements 10-2**			●	
11.终身学习	毕业要求 11-1 **Graduation Requirements 11-1**				●
	毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses & Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
数学与自然科学类（必修）																							
1	高等数学	H		H																			
2	线性代数	H		H																			
3	复变函数与积分变换	H		H																			
4	概率论与数理统计	H		H																			
5	大学物理	H		M																			
6	大学物理实验	M	H		M				H														
7	大学化学	H		H																			
工程基础类（必修）																							
8	计算机及程序设计(Python)	M	H	M						H													
9	人工智能通识	M	H																			H	H
10	创新思维与创新方法(轮机）★												M									H	H
11	科技写作和文献检索							H											M			M	M
12	画法几何及机械制图	M		H														H					
13	机械设计基础			M	H	M	H																
14	工程力学	H		H																			
15	工程流体力学★	H	H	H	H																		
16	电工学★	H	H	H	H																		
17	热工基础★	H	H	H	H																		
18	工程材料基础★					H			H	M									M				
工程基础类（限选）																							
19	工程热力学			H	M																		
20	传热学及应用			H	M																		

序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
专业基础类（必修）																							
21	单片机原理与应用★		H			H																M	
22	专业导论（轮机）											M		H				M				M	M
专业基础类（限选）																							
23	造船大意					H						M											
24	航海概论											M		H		H							
25	船舶 PLC 及其网络技术		H					M		H	M												
专业方向类（必修）																							
26	船舶电气设备及系统★				H	H		M													M		
27	船舶柴油机★					M	H	H				M							M				
28	船舶辅机★					M	H	H											M				
29	轮机自动化★				H	H		M													M		
30	海洋装备辅助设备★				H	M		H															
31	锚泊及动力定位系统★			H		H		M															
32	液压传动与控制★	H		H				M															
33	船舶动力装置技术管理★						H					H	H	H						H	H		
34	轮机维护与修理★						H					H	H							H	H		
专业方向类（限选）																							
35	船舶防污染技术						M					H	H	M									
36	船舶及海上设施检验(海上)											H	H	M						M	M		
37	轮机英语													M				H	H				
38	海洋工程与技术概论							M				M		H									
39	海洋工程规范与法规			M		H								H									
40	海洋装备专业英语													M				H	H				
41	仪器仪表与检测技术					M			H	H													

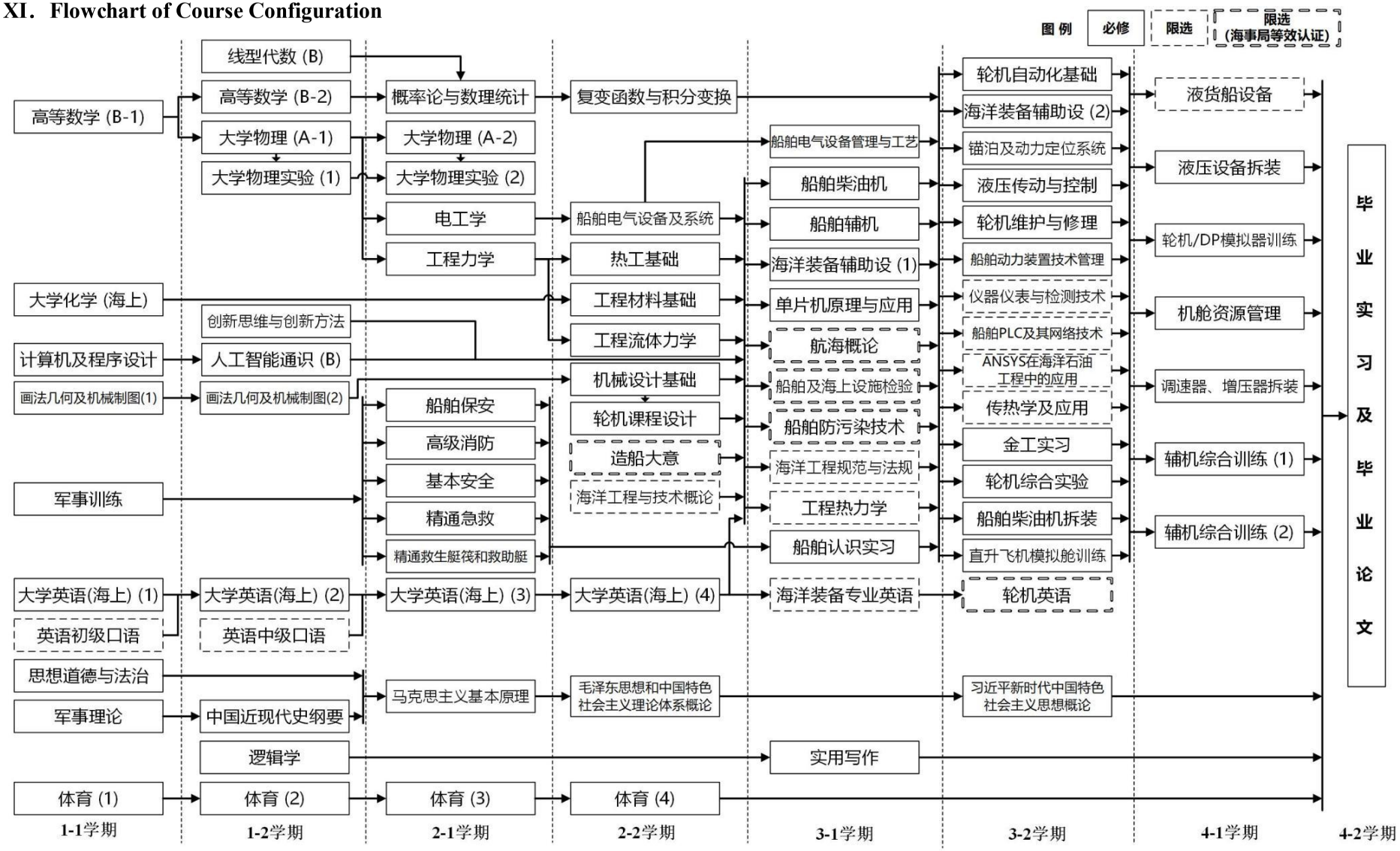
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
42	ANSYS 在海洋石油工程中的应用		M		M					H	H												
43	液货船设备					H		H				M											
工程实践类（必修）																							
44	基本安全													H	H		M						
45	精通急救													H	H		M						
46	精通救生艇筏和救助艇													M		H	H						
47	高级消防													M		H	H						
48	船舶保安													M		H							
49	轮机课程设计		H		H													H					
50	船舶认识实习(轮机工程)★													H	H	M	M	H					
51	金工实习(轮机海上)						H			M			M		H								
52	船舶电气设备管理与工艺★								H	H	M												
53	船舶柴油机拆装★								H	H	M					M							
54	调速器、增压器拆装								H	H	M					M							
55	辅机综合训练								H	H	M					M							
56	轮机综合实验★								M	H	H					H	H						
57	轮机/DP 模拟器训练★								M	H	H					H	H						
58	直升飞机模拟舱训练★									H				M	M	H	H						
59	液压设备拆装★								H	H	M					M							
60	机舱资源管理★														H	H	H	M	M				
61	毕业实习及毕业论文★							H	H									H	H			H	H
人文社科与通识类（必修）																							
62	思想道德与法治														H								
63	中国近现代史纲要														H								
64	马克思主义基本原理												M		H					M			

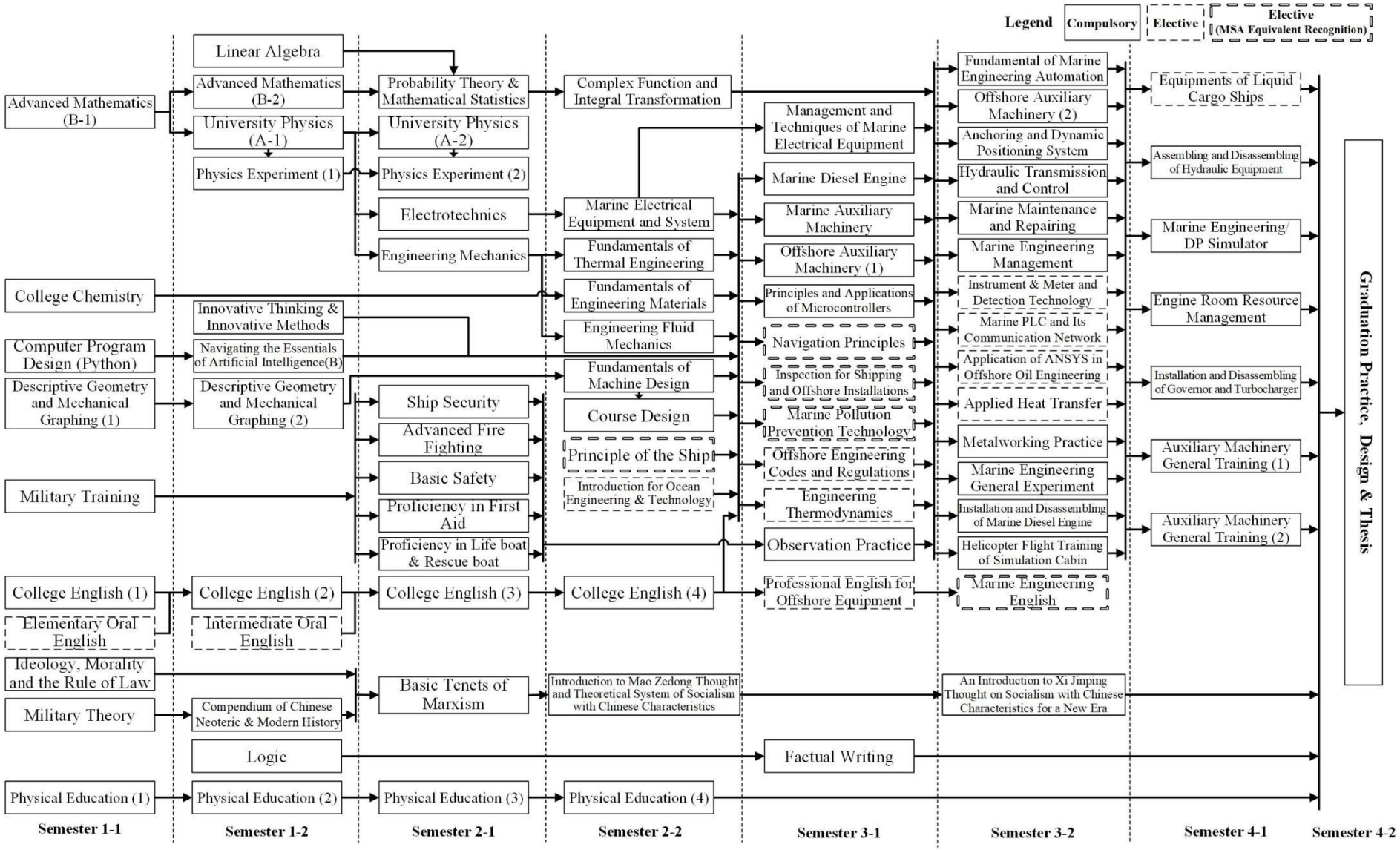
序号	课程名称	毕业要求 1		毕业要求 2		毕业要求 3		毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
65	毛泽东思想和中国特色社会主义理论体系概论												M		H					M			
66	习近平新时代中国特色社会主义思想概论												M		H					M			
67	形势与政策												M		H								
68	大学英语(海上)																		H				
69	体育														H	M	M						
70	军事理论														H								
71	军事训练														H	H	M						
72	劳动教育(理论)														H								
73	劳动教育(实践)														M	H	M						
74	逻辑学							M														H	H
75	实用写作																	H	H				
76	入学教育													H									
77	职业生涯规划													H								M	
78	大学生健康教育														H	M							
79	国家安全教育(轮机)														H								
80	就业指导														H								
人文社科与通识类（限选）																							
81	英语初级口语																	H	H				
82	英语中级口语																	H	H				

注：★表示该课程用于毕业要求达成评价；H 表示强支撑，M 表示中等支撑。

十一、课程配置流程图

XI. Flowchart of Course Configuration




Legend
Compulsory
Elective
Elective (MSA Equivalent Recognition)
Advanced Mathematics (B-1)
Linear Algebra
Advanced Mathematics (B-2)
University Physics (A-1)
Physics Experiment (1)
Probability Theory & Mathematical Statistics
University Physics (A-2)
Physics Experiment (2)
Electrotechnics
Engineering Mechanics
Complex Function and Integral Transformation
Marine Electrical Equipment and System
Fundamentals of Thermal Engineering
Fundamentals of Engineering Materials
Engineering Fluid Mechanics
Fundamentals of Machine Design
Course Design
Principle of the Ship
Introduction for Ocean Engineering & Technology
College Chemistry
Innovative Thinking & Innovative Methods
Computer Program Design (Python)
Navigating the Essentials of Artificial Intelligence(B)
Descriptive Geometry and Mechanical Graphing (1)
Descriptive Geometry and Mechanical Graphing (2)
Ship Security
Advanced Fire Fighting
Basic Safety
Proficiency in First Aid
Proficiency in Life boat & Rescue boat
Military Training
College English (1)
Elementary Oral English
College English (2)
Intermediate Oral English
College English (3)
College English (4)
Ideology, Morality and the Rule of Law
Military Theory
Compendium of Chinese Neoteric & Modern History
Basic Tenets of Marxism
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Logic
Physical Education (1)
Physical Education (2)
Physical Education (3)
Physical Education (4)
Management and Techniques of Marine Electrical Equipment
Marine Diesel Engine
Marine Auxiliary Machinery
Offshore Auxiliary Machinery (1)
Principles and Applications of Microcontrollers
Navigation Principles
Inspection for Shipping and Offshore Installations
Marine Pollution Prevention Technology
Offshore Engineering Codes and Regulations
Engineering Thermodynamics
Observation Practice
Professional English for Offshore Equipment
Factual Writing
Fundamental of Marine Engineering Automation
Offshore Auxiliary Machinery (2)
Anchoring and Dynamic Positioning System
Hydraulic Transmission and Control
Marine Maintenance and Repairing
Marine Engineering Management
Instrument & Meter and Detection Technology
Marine PLC and Its Communication Network
Application of ANSYS in Offshore Oil Engineering
Applied Heat Transfer
Metalworking Practice
Marine Engineering General Experiment
Installation and Disassembling of Marine Diesel Engine
Helicopter Flight Training of Simulation Cabin
Marine Engineering English
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Equipments of Liquid Cargo Ships
Assembling and Disassembling of Hydraulic Equipment
Marine Engineering/ DP Simulator
Engine Room Resource Management
Installation and Disassembling of Governor and Turbocharger
Auxiliary Machinery General Training (1)
Auxiliary Machinery General Training (2)
Graduation Practice, Design & Thesis
Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2

后 记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院 办：84729338

教学院长：84729351

教 务 处：84723005

轮机工程（海上）专业负责人：赵俊豪

轮机工程（海洋装备技术与管理）专业负责人：李文华

轮机工程学院本科教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Marine Engineering（Onshore）Major

[2025 级适用]

★轮机工程（陆上）（081804K）

大连海事大学教务处

2025 年 9 月

轮机工程（陆上）专业本科培养计划（2025 版）

Undergraduate Program for Marine Engineering （Onshore）Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养掌握轮机工程的基础理论和专业知识，能够从事轮机的设计、制造、运维等方面工作，具备解决轮机领域复杂工程问题的能力，并在工程实践中遵守职业道德和规范，具有创新、法律、环境意识、团队合作协调能力与国际视野的高级工程技术人才。学生在毕业后 5 年左右，预期成长为技术专家、业务骨干或管理人才。 The maritime engineering major aims to cultivate high quality engineering and technical talents who can master the basic theory and professional knowledge of the marine engineering, be engaged in design, manufacturing, operations and other works about marine, have the ability to solve the complex engineering problem, abide by the professional ethics and norms in the engineering practice, and possess the awareness of innovation, legal, environmental, the ability for teamwork and coordination and the international perspective. After 5 years around, the graduates are expected to	1.系统地掌握数学、自然科学、工程基础和专业知识与技能，能够从事轮机的设计、制造、运维等方面工作； 1.Students systematically master basic knowledge and skills of mathematics and natural sciences and professional, and engage in design, manufacturing, operations and other works about marine;
	2.具备独立分析和解决复杂工程问题的基本能力，能够成长为技术专家或管理人才； 2.Students have the basic ability to independently analyze and solve complex engineering problems and be able to become a professional and technical backbone in the field of work;
	3. 具备高度的社会责任感、职业道德和创新精神，能在工程实践中考虑和评价社会、健康、安全、法律、环境及可持续发展等方面的问题； 3.Students have a high sense of social responsibility, professional ethics and innovative spirit, and be able to consider and evaluate social, health, safety, legal, environmental and sustainable development issues in engineering practice;
	4. 具有较强的团队协作、人际交往、组织协调和跨文化合作交流能力；具备自主和终身学习能力，不断提升自我，以适应社会经济发展的需要。 4.Students have strong teamwork, interpersonal communication, organization and coordination and cross-cultural cooperation and communication skills; have the ability for autonomy and lifelong learning, and constantly improve themselves to meet the needs of social and economic development.

become technical experts, backbone or management talents.	

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.工程知识：具备将数学、自然科学、工程基础和专业知识应用于解决轮机工程领域复杂工程问题的能力。 **1.Engineering knowledge:** Be able to apply knowledge of mathematics, science, engineering fundamentals and professional knowledge to solve complex engineering problems in the field of marine engineering.	1-1 能够将数学、自然科学、工程基础和专业知识运用到轮机设备及系统设计、制造和运维问题。 1-1 Be able to apply basic mathematics, natural science, engineering and professional knowledge to marine equipment and system design, manufacturing and operation problems.
	1-2 能够将工程和专业知识用于轮机设备及系统设计、制造和运维问题。 1-2 Be able to apply engineering and professional knowledge to the design, manufacturing and operation of marine equipment and systems.
	1-3 熟悉轮机设备及系统设计、制造、维修和检测的基础知识，具备较好的工程思维和实践技能，并可应用于解决复杂轮机设备及系统设计、制造和运维领域内的工程问题。 1-3 Be familiar with the basic knowledge of design, manufacturing, maintenance and testing of marine equipment and systems, have good engineering thinking and practical skills, and can be applied to solve engineering problems in the field of design, manufacturing and operation of complex marine equipment and systems.
2.问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂轮机工程问题，以获得有效结论。 **2.Problem analysis:** Be able to apply the basic principles of mathematics, natural science and engineering science to mark, express and analyze sophisticated problems in the field of marine engineering by using of reference and obtain reasonable conclusions.	2-1 能够识别和判断轮机设备及系统设计、制造和运维问题的核心特征与关键环节。 2-1 Be able to identify and judge the core characteristics and key links of the design, manufacturing and operation of marine equipment and systems.
	2-2 能够正确表达解决复杂轮机设备及系统设计、制造和运维的基本技术路线。 2-2 Be able to correctly express the basic technical route to solve the design, manufacturing and operation of complex marine equipment and systems.
	2-3 能够运用基本原理和文献资料辅助改进和完善复杂工程问题的技术方案，证实解决方案的合理性。 2-3 Be able to use the basic principles and literature to help improve and complete the complex engineering problems of technical solutions to confirm the rationality of the solution.
3.设计/开发解决方案：能够设计针对复杂轮机工程问题的解决方案，设计满足特定需求	3-1 能够进行复杂工程问题的针对性调研，确定设计目标。 3-1 to be able to carry out complex engineering problems targeted research to determine the design goals.

的系统、单元或工艺流程，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。 **3.Design/provide solutions:** Be able to design and put forward solutions to complex engineering problems in the field of marine engineering, design systems, units or technological processes that meet specific requirements, and present the sense of innovation in the design process, taking into account factors of society, health, safety, legislation, culture and environment, etc..	3-2 能够在海洋环境、安全、法律、社会、经济等现实约束条件下，依照相关规则进行轮机设备及系统设计、制造和运维并进行优化，体现创新意识。 3-2 Be able to design, manufacture, operation and optimize marine equipment and systems in accordance with relevant rules under the realistic constraints of marine environment, safety, law, society and economy, so as to reflect the sense of innovation.
4.研究：能够基于科学原理并采用科学方法对复杂轮机工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 **4.Study and research:** Be able to study complex engineering problems in the field of marine engineering by means of scientific principles and scientific methods, such as experiments design, data analysis, and be able to draw reasonable and valid conclusions.	4-1 针对工程问题的技术验证，能够制定合理的研究方案，并设计实验。 4-1 Be able to develop a reasonable research program and design experiments for technical problems of engineering verification.
	4-2 能够基于专业理论，根据对象特征，选择研究路线，设计可行的实验方案，构建实验系统，安全开展工程相关实验。 4-2 Be able to select research route, design feasible experimental scheme, build experimental system and safely carry out engineering related experiments based on professional theory and object characteristics.
	4-3 能够正确采集、整理实验数据，对实验数据和实验结果进行分析与解释，获取合理有效的结论。 4-3 Be able to correctly collect and sort out the experimental data, analyze and interpret the experimental data and results, and obtain reasonable and effective conclusions.
5.使用现代工具：能够针对复杂轮机工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **5.Use of modern tools:** Be able to develop, select and apply appropriate technologies, resources, modern engineering tools and information technology for the complex marine engineering problems,	5-1 能够运用计算机辅助设计软件等工程技术手段，表达轮机设备及系统设计、制造、维修和检测问题的解决方案，能理解其局限性。 5-1 Be able to use engineering technical means such as computer-aided design software to express solutions to problems in design, manufacturing, maintenance and inspection of marine equipment and systems, and understand their limitations.
	5-2 能够运用专业前沿实验仪器、软件、先进测试方法与技术，进行轮机设备及系统设计、制造和运维问题的数据获取与状态识别，能理解其局限性。 5-2 Be able to use professional cutting-edge experimental instruments, software, advanced test methods and technologies to obtain data and identify status of marine equipment and system design, manufacturing and operation problems, and understand their limitations.

including prediction on and simulation of the problems, and understand the associated limitations.	5-3 能够运用文献检索工具，获取轮机设备及系统设计、制造和运维问题的相关信息与技术最新进展。 5-3 Be able to use literature search tools to obtain the latest information and technical progress on the design, manufacturing and operation of marine equipment and systems.
6.工程与社会：能够基于工程相关背景知识进行合理分析，评价专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。 **6.Use of modern tools:** Be able to develop, select and apply appropriate technologies, resources, modern engineering tools and information technology for the complex marine engineering problems, including prediction on and simulation of the problems, and understand the associated limitations.	6-1 具有工程实习和社会实践的经历。 6-1 Have the experience of engineering practice and social practice.
	6-2 能够识别和分析轮机设备及系统设计、制造和运维实践和复杂工程问题解决方案对社会、健康、安全、文化的影响。 6-2 Be able to identify and analyze the impact of marine equipment and system design, manufacturing and operation practices and solutions to complex engineering problems on society, health, safety and culture.
	6-3 熟悉了解复杂轮机设备及系统设计、制造和运维问题的解决中应遵循的法律法规和职业道德规范，明确承担的责任和义务。 6-3 Be familiar with the laws, regulations and professional ethics that should be followed in solving the problems of design, manufacturing and operation of complex marine equipment and systems, and clarify the responsibilities and obligations.
7.可持续发展：能够理解和评价针对复杂轮机工程问题的工程实践对环境、社会可持续发展的影响。 **7.Environment and sustainable development:** Be able to understand and evaluate the impact of marine engineering practice of complicated projects on the sustainable development of environment and Society in the field of marine engineering.	7-1 理解环境保护和社会可持续发展的内涵和意义，能够正确评价工程实践活动对环境的影响。 7-1 Understand the connotation and significance of environmental protection and social sustainable development, and be able to correctly evaluate the impact of engineering practice on the environment.
	7-2 能够在复杂工程问题解决方案中体现对节能和环境友好的要求，客观评价解决方案对社会可持续发展的影响。 7-2 Be able to reflect the requirements for energy conservation and environmental friendliness in the solutions to complex engineering problems, and objectively evaluate the impact of the solutions on social sustainable development.
8.职业规范：具有人文社会科学素养、社会责任感，能够在工程实践中理解并遵守工程职业道德和规范，履行责任。 **8.Professional norms:** With humanities and social science literacy and sense of social responsibility, be able to understand and abide by engineering professional ethics and norms in marine engineering practice, and fulfill	8-1 热爱社会主义祖国，拥护中国共产党领导，掌握马列主义、毛泽东思想和邓小平理论的基本原理，具有正确的人生观、价值观和世界观，了解国情，维护国家利益，具有推动民族复兴和社会进步的责任感。 8-1 Love the socialist motherland, support the leadership of the Communist Party of China, master the basic principles of Marxism Leninism, Mao Zedong Thought and Deng Xiaoping theory, have a correct outlook on life, values and world outlook, understand national conditions, safeguard national interests, and have a sense of responsibility to promote national rejuvenation and social progress.

the responsibilities.	8-2 愿意为社会主义现代化服务，为人民服务，为国家富强、民族昌盛而奋斗的志向，具有人文社会科学素养，具备履行社会职责的身心条件。 8-2 Be willing to serve the socialist modernization, serve the people, strive for the prosperity of the country and the nation, have humanistic and social science literacy, and have the physical and mental conditions to perform social responsibilities.
	8-3 理解轮机工程伦理的核心理念，具备敬业爱岗、艰苦奋斗、热爱劳动、遵纪守法、团结合作的品质，在工程实践中自觉遵守职业道德和规范，具有法律意识。 8-3 Understand the core concept of marine engineering ethics, have the qualities of dedication, hard work, love of labor, discipline and law-abiding, unity and cooperation, consciously abide by professional ethics and norms in engineering practice, and have legal awareness.
	8-4 具有较强的军事素质、政治素质和身心素质，能够履行建设和保卫国家的神圣义务。 8-4 Have strong military quality, political quality and physical and mental quality, they can fulfill the sacred obligation of building and defending the country.
9.个人和团队：能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。 **9.Individual role and teamwork:** Be able to play the role of individual, team member and leader in a team with multi-disciplinary background.	9-1 具有团队协作意识，具有一定的组织管理能力和较强的自我控制能力、人际交往能力。 9-1 Have a sense of teamwork, with a certain degree of organizational management and strong self-control, interpersonal skills.
	9-2 能够独立完成团队分配的工作，并与其他学科成员有效沟通，共享信息。 9-2 Be able to independently complete the work of team distribution, and other members of the effective communication and sharing of information.
	9-3 具有跨领域的综合能力，了解与本专业相关学科等领域的技术衔接，具备整合工程应用中所涉及相关学科的综合能力。 9-3 Have comprehensive ability across fields, understand the technical connection with relevant disciplines of the discipline, and have the comprehensive ability to integrate relevant disciplines involved in engineering application.
10.终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。 **10.Lifelong learning:** Have the consciousness of autonomous learning and lifelong learning, and have the ability of continuous learning and the capacity to develop.	10-1 具有自主学习和终身学习意识，具备终身学习的知识基础，掌握自主学习的方法，了解拓展知识和能力的途径。 10-1 Have the awareness of autonomous learning and lifelong learning, have the knowledge base of lifelong learning, master the methods of autonomous learning, and understand the ways to expand knowledge and ability.
	10-2 能针对个人或职业发展需求，采用合适的方法，自主学习，适应轮机工程领域的发展。 10-2 Be able to adopt appropriate methods and learn independently according to personal or professional

	development needs, and adapt to the development of marine engineering field.

三、专业核心课程

III．Core Courses

互换性与测量技术、船舶辅机、船舶柴油机、船舶推进系统振动、船机摩擦学设计、轮机制造智能化。

Exchangeability and Measurement Techniques, Marine Auxiliary Engine, Marine Diesel Engine, Marine Propulsion System Vibration, Marine Engine Tribology Design, Intelligent Technology of Marine Engine Manufacturing.

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
金属材料及工艺 Metal Materials and Technology	●					
船舶辅机 Marine Auxiliary Engine	●					
船舶柴油机 Marine Diesel Engine	●					
船舶动力装置设计 Marine Power Plant Design	●					
船舶推进系统振动 Marine Propulsion System Vibration	●					
船机摩擦学设计 Marine Engine Tribology Design	●					
轮机制造智能化 Intelligent Technology of Marine Engine Manufacturing	●		●			

船舶及海上设施检验 Inspection for Shipping and Offshore Installations	●					
轮机自动化 Marine Engineering Automation	●					
船舶电气设备及系统 Marine Electrical Equipment and System	●					

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts:Comprehensive Literacy Credits and Extended Literacy Credits.Students must fulfill the credit requirements for both parts To graduate.For specific credit calculation rules regarding major transfers, academic stream selection,scholarship assessments,and recommendation for admission to graduate programs and soon,please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory	15	33	/
	外语类 Foreign Languages	8		

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14"></td><td rowspan="2">数学与
自然科学类
Mathematics
and Natural
Sciences</td><td>数学类
Mathematics</td><td>15.5</td><td rowspan="14"></td><td rowspan="9"></td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and
Information Technology</td><td>2</td></tr>
<tr><td rowspan="7">通识类
General
Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication
and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational
Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and
Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and
Society</td></tr>
<tr><td>科学与技术
Science and
Technology</td></tr>
<tr><td>人文与艺术
Humanities and
Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>29</td><td rowspan="5"></td><td rowspan="6">/</td></tr>
<tr><td rowspan="2">专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized
course</td><td rowspan="2">13.5</td></tr>
<tr><td colspan="2">方向模块课
Directional Module Courses</td></tr>
<tr><td rowspan="4">集中实践
环节 Practical
&Training</td><td colspan="2">专业实践课
Specialized Practical Course</td><td>7</td><td rowspan="4">/</td></tr>
<tr><td colspan="2">军事实践课
Military Practical Course</td><td>3</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="2">其他实践课
Others</td><td>6</td></tr>
<tr><td colspan="3">合计：171
Total：171</td><td>130</td><td>33</td><td>8</td></tr>
</table>

拓展素养学分要求
Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	安全实践 Safety Practical &Training	1713027790	安全熟悉	1
	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000310	国家安全教育(轮机)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018610	专业导论(轮机陆上)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：9 Total：9				9

七、教学计划进度表

参见表 1～表 6
VII Curriculum Structure
Refer to Table1～Table6.

表 1：轮机工程(陆上)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（171 学分） In-class Teaching Courses （171 credits）			拓展素养（9 学分） Centralized Practicum （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	130	33	8	9	180

表 2：轮机工程(陆上)必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Course	必修-公共基础及通识教育课 Public basic and		1	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	

			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			10	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			11	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			12	1713027640	人工智能通识(A) Navigating the Essentials of Artificial Intelligence(A)	2	考试		综合素养	32	28	4	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			15	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	2-1	
			16	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	

			17	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			18	1713021170	创新思维与创新方法(轮机) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	2-1	
			19	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-1	
			20	1713027610	概率论与数理统计(B) Probability and Statistics(B)	3	考试		综合素养	48	48	0	2-1	
			21	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-2	
			24	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-1	
			26	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-2	

			27	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713014761	画法几何及机械制图(1) Descriptive Geometry and Mechanical Drawing	2.5	考试	√	综合素养	40	40	0	1-1	
			2	1713014762	画法几何及机械制图(2) Descriptive Geometry and Mechanical Drawing	2.5	考试	√	综合素养	40	40	0	1-2	
			3	1713026750	理论力学 Theoretical Mechanics	3	考试	√	综合素养	48	48	0	2-1	
			4	1713014130	机械原理 Fundamental of Machinery	3	考试	√	综合素养	48	48	0	2-2	
			5	1713026630	材料力学 Mechanics of Materials	2.5	考试	√	综合素养	40	36	4	2-2	
			6	1713026700	电工学 II Electrotechnics II	4	考试	√	综合素养	64	56	8	2-2	
			7	1713029540	金属材料及工艺 Metal Materials and Technology	3		√	综合素养	48	44	4	2-2	课外学时 16
			8	1713004100	机械设计 Mechanical Designing	2.5	考试	√	综合素养	40	40	0	3-1	
			9	1713013670	热工基础 Fundamentals of Thermal Engineering	4	考查	√	综合素养	64	56	8	3-1	
			10	1713014120	互换性与测量技术 Exchangeability and Measurement Techniques	2	考查	√	综合素养	32	28	4	3-1	

	必修-专业及方向课程 Stream Courses		1	1713026610	船舶柴油机 Marine Diesel Engine	2	考试	√	综合素养	32	30	2	3-1	
			2	1713026640	船舶辅机 Marine Auxiliary Machinery	2.5	考试	√	综合素养	40	36	4	3-1	
			3	1713013870	船舶动力装置设计 Design of Marine Engineering	2	考试	√	综合素养	32	32	0	3-2	
			4	1713026650	船舶推进系统振动 Vibration of propulsion system onboard	2.5	考试	√	综合素养	40	36	4	3-2	
			5	1713026660	船机摩擦学设计 Marine Engine Tribology Design	2	考试	√	综合素养	32	28	4	3-2	课外学时 16
			6	1713026670	轮机制造智能化 Marine Engine Manufacturing Intelligentization	2.5	考试	√	综合素养	40	36	4	4-1	
合计 Total						103				1728	1460	268		

表 3：轮机工程(陆上) 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restri	限选-公共基础及通识教育课		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	

			2	1713027660	计算机及程序设计(C) Computer Program Design (C)	3	考试		综合素养	48	24	24	1-1	
			3	1713027780	英语中级口语 Intermediate Oral English	1	考查		综合素养	32	32	0	1-2	
			4	1713017670	计算机硬件技术基础 Basis of Computer Hardware	2	考试		综合素养	32	26	6	2-1	
			5	1713014170	网络技术与应用 Network technology and application	2	考试		综合素养	32	22	10	2-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713013630	工程流体力学 Engineering Fluid Mechanics	2	考试		综合素养	32	30	2	2-2	
			2	1713014860	CAD/CAM/CAPP CAD/CAM/CAPP	2	考查		综合素养	32	24	8	2-2	
			3	1713013690	现代轮机监控基础 Foundation of Modern Marine Engineering Monitoring and Control	3	考试		综合素养	48	40	8	3-1	
			4	1713014830	船舶结构原理 Principles of Ship Structure	2	考查		综合素养	32	32	0	3-1	
			5	1713026720	优化设计与有限元 Optimal Design and Finite Element	2	考查		综合素养	32	4	28	3-1	
			6	1713014820	轮机自动化 Marine Engineering Automation	3	考查		综合素养	48	42	6	3-2	

			7	1713030280	轮机专业英语 English for Marine Engineering	2	考查		综合素养	32	32	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713013830	液货船设备 Equipments of Liquid Cargo Ships	2	考查		综合素养	32	26	6	3-2	
			2	1713013910	船舶及海上设施检验 Ships and Marine Facilities Inspection	2	考查		综合素养	32	32	0	3-2	
			3	1713014880	船舶电气设备及系统 Marine Electrical Equipment and System	5	考查		综合素养	80	70	10	3-2	
			4	1713014930	电工学新技术实践—PLC及其应用 New Technology. And Application of ElectrotechnicsNew Technology Practice of Electrotechnics-Application of PLC	2	考查		综合素养	32	32	0	3-2	
			5	1713026680	工程创新实践 Engineering Innovation Practice	2	考查		综合素养	32	10	22	3-2	
			6	1713026760	焊接技术 welding technology	2	考查		综合素养	32	32	0	3-2	
			7	1713013770	工程热力学 Engineering Thermodynamics	3	考查		综合素养	48	44	4	4-1	

			8	1713013970	船舶电气设备维修技术 Maintenance and Repair Techniques of Marine Electric Equipment	2	考查		综合素养	32	28	4	4-1	
			9	1713014790	船机制造工艺 Manufacture Techniques of Marine Machinery	3	考查		综合素养	48	48	0	4-1	
			10	1713014810	船机维修与再制造技术 Repairing and Remanufacturing Technology of Marine Machinery	2	考查		综合素养	32	28	4	4-1	
			11	1713014840	船体修造工艺 Shipping Build and Repair Techniques	2	考查		综合素养	32	32	0	4-1	
			12	1713014890	船舶液压设备及维修技术 Shipping Hydraulic Equipment and Its	2	考查		综合素养	32	22	10	4-1	
			13	1713014900	船舶修造安全与环保技术 Safety and Environmental Protection during Shipbuilding and Ship Repair	1	考查		综合素养	16	16	0	4-1	
			14	1713014910	船舶坞修工程 Ship docking engineering	1	考查		综合素养	16	16	0	4-1	
			15	1713026730	船舶工程管理 Marine Engineering Management	2	考查		综合素养	32	32	0	4-1	
合计 Total						58				960	808	152		

表 4：轮机工程(陆上)任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”,“science and technology courses”,“innovation and entrepreneurship courses ”and“other courses”. Among them, need to take at least 2 credits from“Humanities and art courses”,“national and social courses”,“science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：轮机工程(陆上) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	2113000530	金工实习 Metalworking Practice	4	考查	√	综合素养	120	0	120	2-1	
			3	1713014960	《机械原理》课程设计 Design in“Fundamental of Machinery”	2	考查		综合素养	60	0	60	2-2	

			4	1713026690	认识实习 cognitive practice	1	考查		综合素养	30	0	30	2-2	
			5	1713014970	《机械设计》课程设计 Course Design of “Machinery Design”	2	考查		综合素养	60	0	60	3-1	
			6	1713026202	船舶实习(工程) Ship Practice (Engineering)	2	考查		综合素养	60	0	60	3-1	
			7	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			8	1713014990	辅机拆装 AE Dismantle and Installation	1	考查		综合素养	30	0	30	3-2	
			9	1713026770	船舶柴油机拆装(陆上) Installation and Disassembling of Marine Diesel Engine (Onshore)	1	考查		综合素养	30	0	30	3-2	
			10	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			11	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						30				886	0	886		

表 6：轮机工程(陆上) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713000480	入学教育 Admission Orientations	0	考查		综合素养	16	16	0	1-1	
			2	1713018610	专业导论(轮机陆上) Introduction of Profession	1	考查		拓展素养	16	16	0	1-1	
			3	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000310	国家安全教育(轮机) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	

			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				144	144	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
	军事训练	必修	90	3	
	体育	必修	128	4	
	思想道德与法治	必修	8	0.5	
	大学物理实验（1）	必修	24	1	●
	中国近现代史纲要	必修	8	0.5	
	人工智能通识（A）	必修	4	0.25	●
	大学物理实验（2）	必修	24	1	●
	创新思维与创新方法（轮机）	必修	10	0.625	●
	马克思主义基本原理	必修	8	0.5	
	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
	材料力学	必修	4	0.25	●
	电工学 II	必修	8	0.5	●
	金属材料及工艺	必修	4	0.25	●
	热工基础	必修	8	0.5	●
	互换性与测量技术	必修	4	0.25	●
	船舶柴油机	必修	2	0.125	●
	船舶辅机	必修	4	0.25	●
	船舶推进系统振动	必修	4	0.25	●
	船机摩擦学设计	必修	4	0.25	●
	轮机制造智能化	必修	4	0.25	●
	金工实习	必修	120	4	●
	《机械原理》课程设计	必修	60	2	●
	认识实习	必修	30	1	
	《机械设计》课程设计	必修	60	2	●
	船舶实习（工程）	必修	60	2	●

	辅机拆装	必修	30	1	●
	船舶柴油机拆装	必修	30	1	●
	毕业设计及毕业论文	必修	360	12	●
合计 Total			1108	39.75	

九、毕业要求对培养目标的支撑关系矩阵

IX．Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**	●			
毕业要求 1-2 **Graduation Requirements 1-2**	●			
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 2-1 **Graduation Requirements 2-1**	●			
毕业要求 2-2 **Graduation Requirements 2-2**	●			
毕业要求 2-3 **Graduation Requirements 3-3**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 2-2**		●		
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 4-3 **Graduation Requirements 4-3**		●		
毕业要求 5-1 **Graduation Requirements 5-1**	●			
毕业要求 5-2 **Graduation**		●		

Requirements 5-2				
毕业要求 5-3 **Graduation Requirements 5-3**		●		
毕业要求 6-1 **Graduation Requirements 6-1**	●			
毕业要求 6-2 **Graduation Requirements 6-2**			●	
毕业要求 6-3 **Graduation Requirements 6-3**	●			
毕业要求 7-1 **Graduation Requirements 7-1**			●	
毕业要求 7-2 **Graduation Requirements 7-2**			●	
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 8-3 **Graduation Requirements 8-3**			●	
毕业要求 8-4 **Graduation Requirements 8-4**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 9-3 **Graduation Requirements 9-3**			●	

毕业要求 10-1 **Graduation Requirements 10-1**				●
毕业要求 10-2 **Graduation Requirements 10-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	毕业要求 / 课程名称	毕业要求 1 Graduation Requirements 1			毕业要求 2 Graduation Requirements 2			毕业要求 3 Graduation Requirements 3		毕业要求 4 Graduation Requirements 4			毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6			毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8				毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10	
		1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	4-1	4-2	4-3	5-1	5-2	5-3	6-1	6-2	6-3	7-1	7-2	8-1	8-2	8-3	8-4	9-1	9-2	9-3	10-1	10-2
1	思想道德与法治															M					H	H	H	H					
2	毛泽东思想和中国特色社会主义理论体系概论																				H	H	H	H					
3	习近平新时代中国特色社会主义思想概论																				H	H	H	H					
4	马克思主义基本原理																				H	H	H	H					
5	中国近现代史纲要																				H	H	H	H					
6	高等数学（A）	H			M																								
7	线性代数（A）	H			M																								
8	概率论与数理统计	M			H																								
9	大学物理（B）	H	H		M	M	M																						
10	大学物理实验				M	M	M			H	H	H																	
11	大学英语																												
12	军事理论																				M			H					
13	体育																							H	H				
14	逻辑学																												
15	实用写作																												
16	人工智能通识(A)	M	M		H	H	H																					H	H
17	画法几何及机械制图	H	H		M	M							M																
18	创新思维与创新方法(轮机工程专业）																											M	M
19	理论力学	H	H		H	H	H			M	M		H															M	M
20	材料力学	H	H		M	M	M			H	H		H															M	M
21	金属材料及工艺	H	H		M	M	M			H	H																		
22	互换性与测量技术	H	H		M	M	M			M	M	H																	
23	热工基础	H	H		H	H	H			M	M									H									
24	机械原理	H	H		H	H	H	H	H	M	M																		
25	机械设计	H	H		H	H	H			M	M																		
26	电工学 II	H	H		H	H	H			M	M																		
27	船机制造工艺	H	H		H	H	H			H	H																		
28	优化设计与有限元	H	H		H	H	H	H	H	H	H		H	H															
29	船机维修与再制造技术	H	H	H	H	H	H			H	H																		
30	船舶辅机	H	H	H	H	H	H			H	H																		
31	船舶柴油机	H	H	H	H	H	H			H	H																		

序号	毕业要求 / 课程名称	毕业要求 1 Graduation Requirements 1			毕业要求 2 Graduation Requirements 2			毕业要求 3 Graduation Requirements 3		毕业要求 4 Graduation Requirements 4			毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6			毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8				毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10	
		1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	4-1	4-2	4-3	5-1	5-2	5-3	6-1	6-2	6-3	7-1	7-2	8-1	8-2	8-3	8-4	9-1	9-2	9-3	10-1	10-2
32	船舶推进系统振动	H	H	H	H	H	H			H	H																		
33	船机摩擦学设计	H	H	H	H	H	H	H	H	H	H																		
34	轮机制造智能化	H	H	H	H	H	H			H	H																		
35	英语初级口语																												
36	计算机及程序设计(C)	H	H		M								M	M														M	M
37	英语中级口语																												
38	计算机硬件技术基础	H	H		M								M	M														M	M
39	网络技术与应用	H	H		M								M															M	M
40	工程流体力学	H	H		H	H	H			M	M																		
41	轮机自动化	H	H	H	H	H	H			H	H																		
42	现代轮机监控基础	H	H	H	H	H	H			H	H																		
43	船舶结构原理	H	H	H	H	H	H			H	H																		
44	船体修造工艺	H	H	H	M	M	M																						
45	轮机专业英语																												
46	船舶动力装置设计	H	H	H	H	H	H	H	H	H	H																		
47	CAD/CAM/CAPP	H	H										H	H															
48	工程创新实践	H	H	H	H	H	H	H	H	H	H																		
49	船舶电气设备及系统	H	H	H	H	H	H			H	H																		
50	船舶及海上设施检验	H	H	H	H	H	H									H	H		H	H			H						
51	船舶液压设备及维修技术	H	H	H	H	H	H																						
52	船舶修造安全与环保技术	H	H	H	H	H	H												H	H									
53	船舶坞修工程	H	H	H	H	H	H									H	H												
54	船舶工程管理															H	H												
55	工程热力学	H	H	H	H	H	H			H	H																		
56	电工学新技术实践—PLC及其应用	H	H	H	H	H	H			H	H		H	H															
57	液货船设备	H	H	H	H	H	H																						
58	船舶电气设备维修技术	H	H	H	H	H	H																						
59	焊接技术	H	H	H	H	H	H																						
60	军事训练																								H				
61	劳动教育																				H	H		H	H	H			
62	毕业实习及毕业论文	H	H		M	M	M			H	H	H	H	H							H	H	H				H	M	M
63	《机械设计》课程设计	H	H		M	M	M									M													
64	金工实习	H	H		M	M	M																		H	H			

序号	毕业要求 / 课程名称	毕业要求 1 Graduation Requirements 1			毕业要求 2 Graduation Requirements 2			毕业要求 3 Graduation Requirements 3		毕业要求 4 Graduation Requirements 4			毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6			毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8				毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10	
		1-1	1-2	1-3	2-1	2-2	2-3	3-1	3-2	4-1	4-2	4-3	5-1	5-2	5-3	6-1	6-2	6-3	7-1	7-2	8-1	8-2	8-3	8-4	9-1	9-2	9-3	10-1	10-2
65	船舶实习（工程）	H	H	H	M	M	M																						
66	《机械原理》课程设计	H	H	H	M	M	M									M													
67	船舶柴油机拆装（陆上）	H	H	H	H	H										M	M												
68	辅机拆装	H	H	H	H	H										M	M												
69	安全熟悉															H	H		H	H									
70	认识实习															H	H				H	H	H		H	H		M	M
71	形势与政策																				H	H	H						
72	大学生健康教育																							H				M	M
73	入学教育																				M	M	M	M				M	M
74	职业生涯规划																				H	H	H					H	H
75	就业指导																				H	H	H					H	H
76	专业导论（轮机陆上）															H	H	H										H	H
77	国家安全教育（轮机）																				H	H	H	H	H				

十一、课程配置流程图

XI. Flowchart of Course Configuration

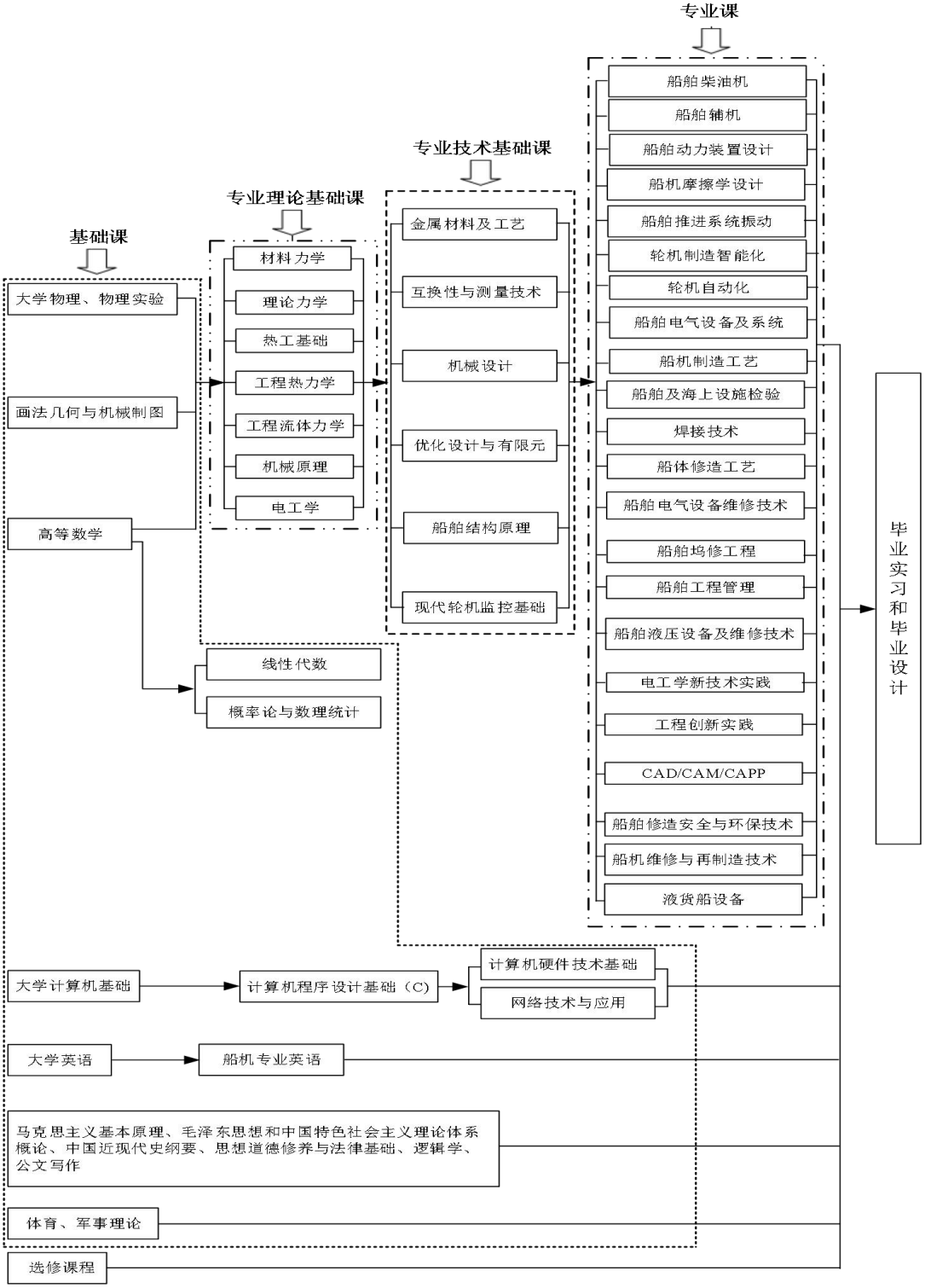


图 1 轮机工程（陆上）专业选课指导图

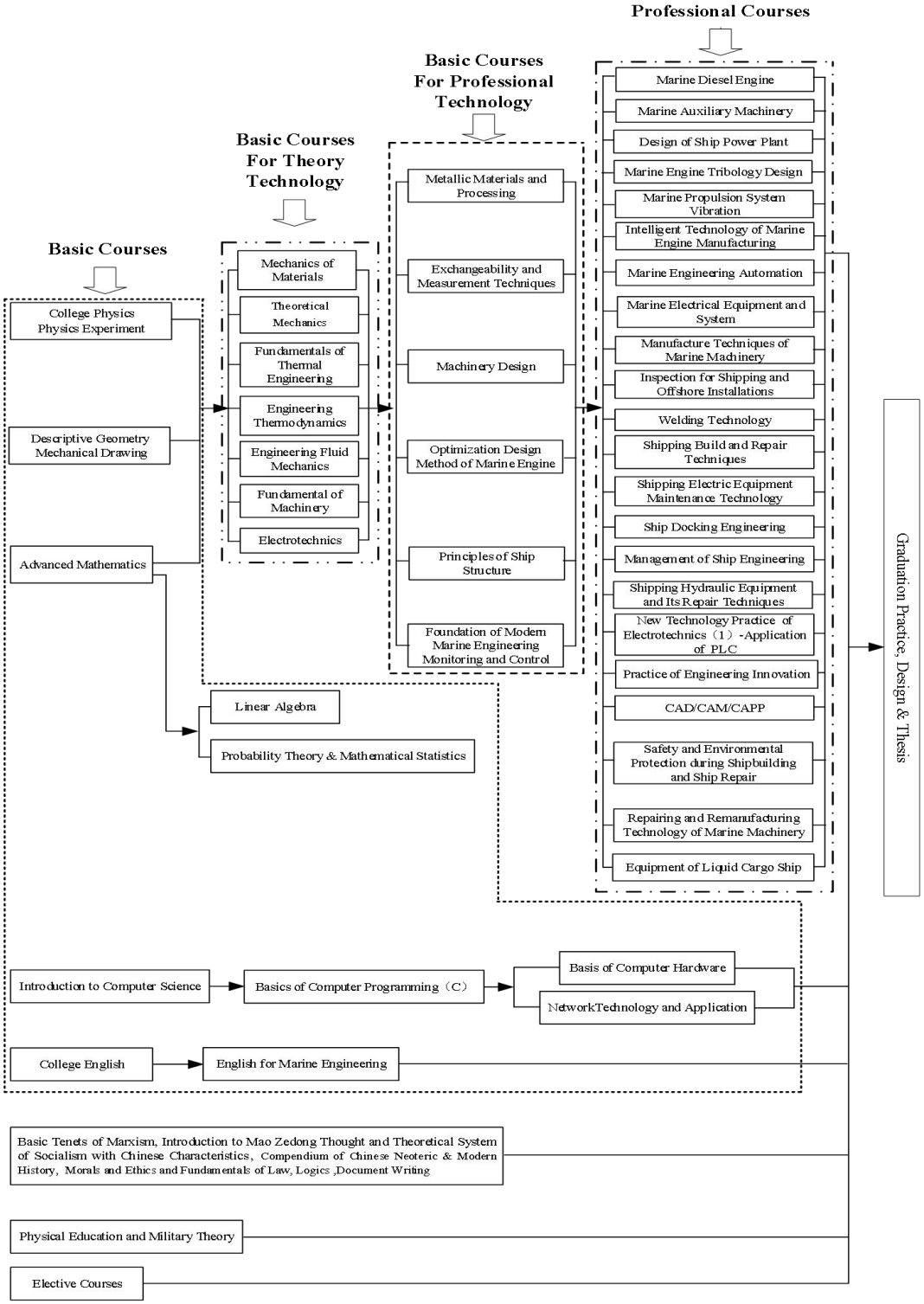


Fig.1 Courses Selection Guidance Chart for Marine Engineering（Onshore）Major

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84729338

教学院长：84729351

教 务 处：84723005

轮机工程（陆上）专业负责人：李国宾

轮机工程（陆上）教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Marine Electrical and Electronic Engineering Major

[2025 级适用]

★船舶电子电气工程专业（081808TK）

大连海事大学教务处

2025 年 9 月

船舶电子电气工程专业本科培养计划（2025 版）

Undergraduate Program for Marine Electrical and Electronic Engineering Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业致力于培养适应现代先进船舶自动化、信息化、智能化的要求以及社会、经济发展需要，具有扎实的自然科学理论基础、深厚的科学及人文素养、强健的身体素质，系统地掌握电路、电子技术、控制技术、人工智能等专业基础理论知识，具备在船舶电力及拖动系统、电子电气工程、电子电气设备自动化、智能化等方面的设计及应用技术开发能力和适应独立工作的工程素养及实践技能，满足国际海事组织 STCW 国际公约中规定的“电气、电子和控制工程”、“维护和修理”和“船舶操作控制和船上人员管理”等职能要求，富有全球视野和创新能力，能够在海事、工业、国防、民用等电子电气工程领域从事产品研发、工程设计、装备制造、设备维护修理、项目管理等工作并成为该领域的技术骨干或中坚力量，成为德、智、体、美、劳全面发展的社会主义建设者和接班人。 This program is committed to cultivating talents who meet the requirements of modern advanced ship automation, informatization and intelligentise as well as the needs of social and economic development. Graduates will possess a solid theoretical	1. 具有深厚的人文社会科学素养和社会责任感，有工程报国、为民造福的意识，践行工程伦理和职业规范，具备团队合作能力，能够在多样化、多学科、多语言、多文化背景下与不同团队、业界同行及社会公众进行有效沟通和交流，成为“通海事、强实践、宽视野、厚情怀、强体魄”的新时代“航海家型”人才； 1. The program aims to cultivate professionals with profound humanistic and social science literacy, strong social responsibility, and a commitment to serving the nation through engineering while benefiting society. Graduates will adhere to engineering ethics and professional standards, demonstrating excellent teamwork and cross-cultural communication skills. They will be capable of effective collaboration and communication with diverse teams, industry peers, and the public in multilingual, multicultural, and multidisciplinary contexts. The program strives to develop a new generation of “Navigator-Type” talents characterized by: “Maritime Expertise, Practical Competence, Global Perspective, Humanistic Spirit, Physical Fitness.”
	2. 具有扎实的自然科学与专业基础理论知识及较强的实践能力，具备综合运用学科基础知识与工程技术解决海事、工业、国防、民用等电子电气工程领域复杂工程问题的基础能力； 2. To equip students with a solid foundation in natural sciences and professional theoretical knowledge, along with strong practical capabilities, enabling them to comprehensively apply disciplinary fundamentals and engineering technologies to address complex engineering challenges in maritime, industrial, defense, and civil electrical and electronic engineering fields.
	3. 具有一定的科学思维、工程创新、思辨能力，在船舶电力及拖动系统、电子电气工程、电子电气设备自动化、智能化等方面的设计及应用技术开发能力；在设计、研究等实践中能够具备团队合作、沟通交流能力，在不同语言、文化背景下体现出包容性；

foundation in natural sciences, profound scientific and humanistic literacy, and robust physical fitness. They will systematically master fundamental professional theories in circuits, electronic technology, control technology, artificial intelligence and other related fields. The program equips students with design and applied technology development capabilities in ship power and propulsion systems, electrical and electronic engineering, automation and intelligent systems, along with the engineering literacy and practical skills required for independent work. Graduates will satisfy the functional requirements specified in the IMO STCW Convention, including “Electrical, Electronic and Control Engineering,” “Maintenance and Repair,” and “Control of Ship Operation and Care for Persons on Board.” With global vision and innovative capabilities, graduates will be qualified to engage in product research and development, engineering design, equipment manufacturing, maintenance and repair, project management and other professional activities in maritime, industrial, defense and civil electrical and electronic engineering fields. They will grow into technical backbones or key professionals in these domains, becoming well-rounded socialist builders and successors with all-round development in moral, intellectual, physical, aesthetic and labor education.	3. To develop students’ scientific thinking, engineering innovation, and critical analysis capabilities, equipping them with design and applied technological development competencies in shipboard power and propulsion systems, electrical and electronic engineering, as well as automation and intelligent systems. The program further aims to cultivate teamwork and communication skills through design and research practices, fostering inclusive collaboration across diverse linguistic and cultural contexts.
	4. 适应新技术变革，与时俱进，具有适应独立工作的工程素养及实践技能，满足国际海事组织 STCW 国际公约中规定的“电气、电子和控制工程”、“维护和修理”和“船舶操作控制和船上人员管理”等职能要求； 4. 4. To cultivate professionals capable of adapting to technological advancements while demonstrating independent engineering competence and practical skills that comply with the International Maritime Organization (IMO) STCW Convention's functional requirements, including: Electrical, Electronic and Control Engineering; Maintenance and Repair; Controlling the Operation of the Ship and Care for Persons On Board.
	5. 具有自主学习、终身学习和**批判性思维**的意识**和能力**，能够适应诸如人工智能等新技术变革，理解其对行业、工程以及社会的影响，富有全球视野和创新能力，借助于所掌握的工程管理原理与经济决策方法，能够在海事、工业、国防、民用等电子电气工程领域从事产品研发、工程设计、装备制造、设备维护修理、项目管理等工作并成为该领域的技术骨干或中坚力量。 5. To cultivate professionals with self-directed learning capabilities, lifelong learning awareness, and critical thinking skills, enabling them to adapt to technological transformations (e.g., artificial intelligence) and comprehend their impacts on industries, engineering practices, and society. Graduates will possess global vision and innovative competence, empowered by engineering management principles and economic decision-making methodologies. They shall be qualified to undertake product R&D, engineering design, equipment manufacturing, maintenance & repair, and project management in maritime, industrial, defense, and civil electrical/electronic engineering sectors, ultimately developing into technical leaders or core professionals in these fields.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
1. 工程知识：能够将数学、自然科学、**计算**、工程基础及电子电气工程专业知识用于解决交通运输、电子、电气工程、海事及跨学科相关领域的复杂工程问题。 1. **Engineering Knowledge:** The capability to apply mathematics, natural sciences, **computational methods**, fundamental engineering principles, and specialized expertise in electronic and electrical engineering to address complex engineering challenges in the fields of transportation, electronics, electrical systems, maritime engineering, and related interdisciplinary domains.	1-1 掌握自然科学、专业领域的工程、实践基础的**通用原理和最新知识**；能够准确地将数学、物理等自然科学语言和工程**术语**用于水运交通运输、电子、电气复杂工程问题的**表述**；能够灵活运用数学、物理等自然科学知识及工程基础知识，对于专业领域的工程问题进行符合逻辑的**计算、推导、证明、建模、分析**，并将该能力用于解决所属专业工程领域复杂工程问题。 1-1 To master the general principles and latest knowledge of natural sciences and professional engineering practices; to accurately apply mathematical, physical, and other natural science languages along with engineering terminology in describing complex engineering problems in water transport, electronics, and electrical engineering; and to skillfully utilize mathematics, physics, and other natural science knowledge as well as fundamental engineering principles to perform logical calculations, derivations, proofs, modeling, and analysis of engineering problems in the specialized field, ultimately applying these capabilities to solve complex engineering problems within the professional domain.
	1-2 能够结合工程应用理解算力、算法和数据对解决复杂工程问题的意义和基本方法，了解人工智能技术在水运交通运输、电子电气工程领域的应用方法，能够灵活运用所掌握的自然科学知识及工程基础知识，结合计算机软硬件相关知识，建立**“计算思维”**意识，具备运用计算机规范地进行**科学、工程领域的数值计算、数值分析、数据分析、数据统计等方面的程序设计能力**，用于解决本专业工程领域复杂工程问题。 1-2 To comprehend the significance and fundamental methodologies of computing power, algorithms, and data in addressing complex engineering challenges through practical applications; to understand application approaches of artificial intelligence technologies in water transport and electrical/electronic engineering fields; to flexibly apply acquired natural science knowledge and fundamental engineering principles combined with computer hardware/software expertise to develop “computational thinking” awareness; and to possess standardized programming capabilities for scientific and engineering computations including numerical calculations, numerical analysis, data analysis, and statistical processing - ultimately applying these competencies to solve complex engineering problems within the

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	professional domain.
2. 问题分析：能够应用数学、自然科学和电子电气工程原理和方法，识别、表达、并通过文献研究分析交通运输、电子、电气工程、海事及跨学科相关领域相关的复杂问题，**综合考虑可持续发展的要求**，以获得有效结论。 2. **Problem Analysis:** The ability to apply mathematical, natural scientific, and electronic/ electrical engineering principles and methodologies to identify, formulate, and analyze complex engineering problems in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. This includes conducting literature research and **integrating sustainable development considerations** to derive valid conclusions.	2-1 能够通过文献研究等方法，应用数学、自然科学和电子电气工程原理和方法对本专业、学科及跨学科等领域复杂工程问题进行有效**界定**，同时综合考虑**可持续发展**的要求，对该工程问题进行有效**识别和分解**，并能进行**定量分析和定性分析**，获得有效结论 2-1 To effectively define complex engineering problems within the discipline, interdisciplinary fields, and related domains through literature research and other methods by applying mathematical, natural scientific, and electrical/electronic engineering principles and methodologies; to comprehensively consider sustainable development requirements in identifying and deconstructing such engineering problems; and to conduct both quantitative and qualitative analyses to derive valid conclusions.
	2-2 能够通过文献研究等方法，应用数学、自然科学和电子电气工程原理和方法，在综合考虑**可持续发展**的要求的基础上，对本专业、学科及跨学科等领域复杂工程问题进行**表达、分析、求解、建模和仿真**，获得有效结论 2-2 To apply mathematical principles, natural sciences, and electrical/electronic engineering methodologies through literature research and other approaches to effectively formulate, analyze, solve, model, and simulate complex engineering problems within the discipline and interdisciplinary domains - while comprehensively incorporating sustainable development considerations - ultimately obtaining valid conclusions.
3.设计/开发解决问题：能够设计针对交通运输、电子、电气工程、海事及跨学科相关领域的复杂工程问题**设计和开发**解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，**体现创新性**，并从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度考虑可行性**。 3. **Design/Development of Solutions:** The capability to **devise and develop solutions** for complex engineering problems in the fields of transportation, electronics, electrical engineering, maritime,	3-1 能够针对本专业、学科及跨学科等领域的复杂工程问题，可借助仿真软件、AutoCAD 等现代工具提出满足特定需求的系统、单元（部件）或工艺流程的设计/开发解决方案，并能使用图纸、设计报告、设计作业、论文等形式呈现设计方案，在方案中能够体现基于工程原理的创造性应用、创新性或思辨能力，并能够从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度考虑或评价方案的可行性**。 3-1 To develop design/development solutions for complex engineering problems within the discipline and interdisciplinary fields by utilizing modern tools such as simulation software and AutoCAD to create systems, components or processes that meet specific requirements, presenting design proposals through technical drawings, design reports, project documentation and academic papers while demonstrating creative application of engineering principles with innovative and critical thinking, and conducting comprehensive feasibility evaluations considering health/safety/environmental impacts, life-cycle cost/net-zero

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and related interdisciplinary domains. This includes designing systems, components (units), or processes that meet specified requirements while **demonstrating innovation**. The solutions shall be evaluated for feasibility with due consideration to health, safety, environmental impact, **life-cycle cost and net-zero carbon requirements**, as well as legal, **ethical**, social, and cultural factors.	carbon requirements, legal/ethical compliance and socio-cultural factors.
	3-2 能够根据市场或技术需求，发现、选择、设计和评估完成实现该需求的复杂工程问题所需的方法和技术，可借助仿真软件、Auto CAD 等现代工具设计针对该问题的自主解决方案，并能使用图纸、设计报告、论文等形式呈现设计方案。在此过程中通过从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度**体现批判思维和思辨能力。 3-2 To identify, select, design and evaluate appropriate methodologies and technologies for addressing complex engineering problems based on market or technical requirements by utilizing modern tools such as simulation software and AutoCAD to develop autonomous solutions, presenting design proposals through technical drawings, design reports and research papers while demonstrating critical thinking through comprehensive considerations of health/safety/environmental impacts, life-cycle cost/net-zero carbon requirements, legal/ethical compliance and socio-cultural factors throughout the process.
	3-3 能够借助科学原理，通过文献调研、提取信息方法，针对本专业、学科及跨学科领域的复杂工程问题进行有效识别、分解，合理地评价针对现有的该复杂工程问题解决方案的有效性，并能综合运用所掌握的工程原理、方法以及技术等提出或改进或优化解决该复杂工程问题的设计方案；能够借助仿真软件等现代工具独立设计、创新算法或控制方法等，合理地实现设计方案所对应的电路或系统，并能够根据仿真的结果对设计方案的可行性、有效性进行相对客观的评价；依据仿真结果，等能够独立设计、搭建系统所对应的硬件电路或系统以及必要的软件系统，并能够通过物理实验的方式验证所提出设计的有效性和先进性，在此过程中能够合理地应用新型电力、电子元器件，使用 AI 智能技术，并能使用设计报告、论文等形式呈现上述完整的设计过程。最后能够从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度考虑或评价所提出方案的可行性**。 3-3 To effectively identify and decompose complex engineering problems within the discipline and interdisciplinary fields by applying scientific principles through literature research and information extraction methods, while reasonably evaluating the effectiveness of existing solutions, and to comprehensively utilize mastered engineering principles, methodologies, and technologies to propose, improve, or optimize design solutions for such complex problems; to independently develop innovative algorithms or control methods using modern tools such as simulation software,

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	rationally implementing corresponding circuits or systems for the proposed designs, and to objectively evaluate their feasibility and effectiveness based on simulation results; to independently design and construct corresponding hardware circuits/systems and necessary software systems according to simulation outcomes, and to validate the effectiveness and advancement of proposed designs through physical experiments, properly applying new power/electronic components and AI technologies during the process, while documenting the complete design process through design reports or research papers; and finally to assess the feasibility of proposed solutions from perspectives including health/safety/environmental impacts, life-cycle cost/net-zero carbon requirements, legal/ethical compliance, and socio-cultural considerations.
4.研究：能够基于科学原理并采用科学方法对交通运输、电子、电气工程、海事及跨学科相关领域相关的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 4. **Research:** The ability to conduct scientific investigations on complex engineering problems in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields by applying scientific principles and methodologies. This includes designing experiments, analyzing and interpreting data, and synthesizing information to derive valid and effective conclusions.	4-1 能够针对本专业、学科或跨学科等领域的复杂工程问题，可借助仿真软件、虚拟仿真等现代工具，通过文献调研、提取信息方法， v 设计物理实验或仿真研究，制定合理研究路线，设计可行实验测试及验证方案，分析和解释实验或仿真数据及结果发生的机理，并能够根据科学、工程原理和仿真结果对系统中的物理实验、仿真参数进行合理调整，获得在此条件下最佳的实验或仿真结果，通过信息综合得到合理有效结论，在此过程中能够体现批判思维。 4-1 To address complex engineering problems within the discipline or interdisciplinary fields by utilizing modern tools such as simulation software and virtual simulation, conducting literature research and information extraction to design physical experiments or simulation studies, developing appropriate research methodologies, formulating feasible experimental testing and validation plans, analyzing and interpreting experimental/simulation data and underlying mechanisms, and rationally adjusting physical experiments and simulation parameters based on scientific/engineering principles and simulation results to obtain optimal experimental/simulation outcomes under given conditions, ultimately deriving valid conclusions through information synthesis while demonstrating critical thinking throughout the entire process.
	4-2 能够针对本专业、学科或跨学科等领域的实验、虚拟仿真实验等课程实践中，对于相对复杂的电子、电气设备或系统的故障现象，通过分析、研究以及信息综合实现系统的故障诊断。 4-2 To diagnose faults in relatively complex electronic/electrical equipment or systems encountered during laboratory courses, virtual simulation experiments, and practical training within the

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	discipline or interdisciplinary fields by conducting systematic analysis, research, and information synthesis to achieve comprehensive system fault diagnosis.
	4-3 能够借助科学原理，通过文献调研、提取信息方法，针对本专业、学科及跨学科领域的复杂工程问题进行有效识别、分解，合理地评价针对现有的该复杂工程问题包括但不限于算法、控制方法的不足，能够借助仿真软件等现代工具独立设计、创新算法或控制方法等，制定合理研究路线，设计可行实验测试及验证方案，并能够通过实验、仿真等方法获取数据，综合所得到的信息分析、解释机理，验证所提算法、方法的有效性，在此过程中能够体现思辨能力。 4-3 To effectively identify and decompose complex engineering problems within the discipline and interdisciplinary fields by applying scientific principles through literature research and information extraction methods, reasonably evaluating the limitations of existing solutions including but not limited to algorithms and control methods; to independently design and innovate algorithms or control methods using modern tools such as simulation software, develop appropriate research methodologies, and formulate feasible experimental testing and validation plans; and to obtain data through experiments or simulations, comprehensively analyze the collected information to interpret underlying mechanisms, verify the effectiveness of proposed algorithms/methods, while demonstrating critical thinking throughout the entire process.
5.使用现代工具：能够针对交通运输、电子、电气工程、海事及跨学科相关领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，对其进行预测与模拟，并能够理解其局限性。 5. **Application of Modern Tools:** The capability to develop, select, and apply appropriate technologies, resources, contemporary engineering tools, and information technology tools to address complex engineering problems in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields.	5-1 能够运用现代工程工具现代工程工具和信息技术工具对本专业、学科及跨学科领域的复杂工程问题进行合理的描述、绘图、建模、仿真以及预测等，了解实际物理测量仪表、传感器等获取的实际数据与仿真系统得到数据差异的产生原因，理解在利用现代工具做工程设计以及科学研究过程中的局限性。 5-1 To apply modern engineering tools and information technology tools to properly describe, draft, model, simulate and predict complex engineering problems within the discipline and interdisciplinary fields; to understand the causes of discrepancies between actual data obtained from physical measurement instruments/sensors and simulation system data; and to recognize the limitations when utilizing modern tools for engineering design and scientific research.
	5-2 具有自主学习现代工程工具和信息技术工具使用方法的能力，具有该方面信息搜集、检索和分析能力，理解大数据、AI 人工智能大模型、算力、算法对解决复杂工程问题的意义和基本方法，并能在解决本专业、学科及跨学科领域的复杂工程问

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This includes the ability to perform predictions and simulations while recognizing and understanding the limitations of such tools.	题过程中合理利用这些方法，并理解目前采用这些方法的局限性。 5-2 To demonstrate self-directed learning capabilities in mastering modern engineering tools and information technology applications, including the ability to effectively gather, retrieve, and analyze relevant technical information; to comprehend the significance and fundamental methodologies of big data, AI large-scale models, computing power, and algorithms in addressing complex engineering challenges; to appropriately apply these approaches when solving complex problems within the discipline and interdisciplinary domains; and to recognize the current limitations inherent in employing these methodologies.
6.工程与可持续发展：**在解决复杂工程问题时，能够基于**交通运输、电子、电气工程、海事及跨学科相关领域**背景知识，分析和评价该领域工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。** 6. **Engineering and Sustainable Development:** The ability to analyze and evaluate the impacts of engineering practices in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields on health, safety, environment, legal compliance, as well as economic and social sustainability when addressing complex engineering problems. This includes demonstrating an understanding of professional responsibilities in the context of sustainable development principles.	6-1 能够针对本专业、学科或跨学科等领域解决复杂工程问题的过程中，基于专业的背景知识，能够了解、分析或评价本领域涉及的工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，在设计、研究过程中充分考虑此影响，以获取解决复杂工程问题的合理方案。 6-1 To analyze and evaluate the impacts of engineering practices on health, safety, environment, legal compliance, as well as economic and social sustainability when addressing complex engineering problems within the discipline or interdisciplinary fields, based on professional expertise; and to fully consider these factors during design and research processes to develop reasonable solutions for complex engineering challenges.
	6-2 具有船舶工程实习、工程实践和社会实践经历，在此实践过程中能够基于本专业、学科及跨学科相关领域的背景知识，了解诸如 MARPOL 国际公约、与受实践活动影响的健康、安全、环境、法律以及经济和社会可持续发展相关的技术标准、知识产权、产业政策和国内外法律法规，理解环境保护和社会可持续发展的内涵和意义，能够分析和评价这种影响并理解自身应承担的责任。 6-2 Graduates shall possess practical experience in ship engineering, engineering practice and social practice, during which they should demonstrate the ability to apply professional and interdisciplinary knowledge to understand relevant international conventions (including MARPOL), technical standards, intellectual property rights, industrial policies and domestic/foreign regulations pertaining to health, safety, environmental protection, legal compliance and socio-economic sustainability impacted by engineering activities, comprehend the principles and significance of environmental protection and sustainable development, and analyze/evaluate such impacts while acknowledging corresponding

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	professional responsibilities.
7.工程伦理和职业规范：**有工程报国、为民造福的意识**，具有人文社会科学素养和社会责任感，**能够理解和践行工程伦理**，在工程实践中遵守交通运输、电子、电气工程、海事及跨学科相关领域的职业道德、国际公约、规范和相关法律，履行责任。 7. **Engineering Ethics and Professional Standards:** Possess the consciousness of serving the nation through engineering and benefiting the people, demonstrate literacy in humanities and social sciences, and uphold social responsibility. Capable of comprehending and practicing engineering ethics, while adhering to professional conduct, international conventions, codes, and relevant laws in the fields of transportation, electronics, electrical engineering, maritime, and related interdisciplinary domains during engineering practice. Committed to fulfilling professional obligations with integrity.	7-1 能够理解、践行工程伦理，具有人文社会科学素养和社会责任感，有工程报国、为民造福的意识，成为“通海事、强实践、宽视野、厚情怀、强体魄”的新时代“航海家型”人才，在本专业、学科或跨学科等相关领域的工程实践中践行如下要求，履行自身责任： （1）价值引领与政策法制 具备社会主义核心价值观、家国情怀和政策法制意识； （2）品格塑造与人文素养 具备优秀的品格（包括具有奉献精神、社会公德、仁爱之心、自尊自强、谦虚谨慎等人文素养和性格等； （3）职业素养与发展理念 具有电子气工程技术人员的职业素养、职业道德、职业规范、职业责任、国际视野、团队沟通合作意识以及可持续发展与终身学习意识 ； （4）科学精神与创新实践 具有电子气工程技术人员的科学工程素养与创新实践意识；拥有求真务实、开拓进取、坚韧不拔、勤奋钻研、勇于创新、批判思维的科学精神以及正确的唯物主义史观、认识论和方法等； （5）社会责任与工程伦理 具有社会责任与专业伦理意识和正确的工程价值观、工程系统观、工程社会观、工程经济观、工程健康观、工程安全观、工程法律观、工程文化观、工程环境观、工程道德观等 。 7-1 To comprehend and practice engineering ethics while demonstrating humanistic and social science literacy, social responsibility, and the consciousness of serving the nation through engineering for public welfare, evolving into a new-era “Navigator-Type” professional characterized by maritime expertise, strong practical capabilities, broad vision, profound humanistic spirit, and robust physical constitution. In engineering practice within the discipline or interdisciplinary fields, graduates shall fulfill the following responsibilities: (1) Values Guidance & Policy Awareness: Uphold socialist core values, national pride, and policy/legal awareness. (2) Character Development & Humanistic Cultivation: Exhibit exemplary character (including dedication, social ethics, compassion, self-respect, humility) and humanistic qualities. (3) Professional Competence & Development Philosophy: Possess occupational norms, accountability, global perspective, teamwork/communication skills, and sustainability/lifelong learning awareness as electrical/electronic engineering

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	professionals. (4) Scientific Spirit & Innovative Practice: Develop scientific-engineering accomplishment and innovation praxis, embodying truth-seeking, perseverance, diligence, critical thinking, and dialectical materialism in methodology. (5) Social Responsibility & Engineering Ethics: Possess awareness of social responsibility and professional ethics, along with sound engineering perspectives including: systemic, societal, economic, health-related, safety-oriented, legal-compliant, culturally-adaptive, environmentally -conscious, and morally-grounded viewpoints in engineering practice.
	7-2 在本专业、学科或跨学科等相关领域工程实践及解决复杂工程问题的过程中，理解并遵循包括但不限于 STCW、SOLAS 以及 MARPOL 等国际公约和钢制海船入级规范等相关工程技术标准，以及知识产权、国家产业政策和国内外法律法规，理解电子电气工程师的职业道德和规范，践行工程伦理，具有人文社会科学素养和社会责任感，能够自主运用道德、规范、法律等武器抵制所见的不良风气，自觉履行责任。 7-2 In addressing complex engineering problems within the discipline and interdisciplinary fields, graduates shall understand and adhere to relevant international conventions (including but not limited to STCW, SOLAS, and MARPOL), classification rules for steel ships, technical standards, intellectual property regulations, national industrial policies, and domestic/foreign laws. They will demonstrate professional ethics and norms as electrical/electronic engineers, practice engineering ethics with humanistic and social science literacy, and exercise social responsibility. This includes proactively applying moral principles, professional standards, and legal knowledge to counteract unethical practices, while conscientiously fulfilling their professional obligations.
8. 个人和团队：能够在**多样化**、多学科背景下的团队中承担个体、团队成员以及负责人的角色 8. **Individual and Team Collaboration:** The ability to effectively fulfill roles as an individual professional, collaborative team member, and team leader within diverse, multidisciplinary working environments, demonstrating adaptability and organizational	8-1 在本专业、学科或跨学科等相关领域以团队形式参与的**多样化、多学科**背景下的工程实践（含与工程实践相关的各种活动）及解决复杂工程问题的过程中： （1）能够承担团队负责人的角色，具备较强的独立工作能力，履行负责人的责任，认真倾听他人意见，组织协调团队成员开展工作，完成团队任务，能够通过领导团队的方式共同思考解决团队合作中面对的主观及客观方面的问题，具有底线思维和应变突发情况的能力； **或** （2）能够担任团队成员角色的时候，履行团队成员的责任，能够服从团队负责人的领导，配合团队负责人及其他成员开展工作，主动承担艰苦任务，保时、保质、保量地完成分配给自己

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
competence.	的工作，具有底线思维和应变突发情况的能力； 8-1 In the context of engineering practice (including related activities) and solving complex engineering problems within their professional discipline or interdisciplinary fields involving diverse, multidisciplinary teams, graduates shall demonstrate the ability to: (1) assume the role of team leader by exercising strong independent working capabilities, fulfilling leadership responsibilities through active listening and effective coordination of team members to accomplish collective objectives, facilitating collaborative problem-solving to address both subjective and objective challenges encountered during teamwork, while maintaining fundamental principles awareness and demonstrating adaptability in emergency situations; (2) perform effectively as a team member by complying with leadership directives, cooperating with both team leaders and fellow members, proactively undertaking demanding tasks while ensuring timely delivery of quality outputs for assigned responsibilities, with equal commitment to upholding fundamental principles and responding to contingencies.
	8-2 在本专业、学科或跨学科等相关领域以团队形式参与的**多样化、多学科**背景下的工程实践（如研讨会、答辩会、学术交流活动）及解决复杂工程问题（如以团队形式撰写设计性报告/论文）的过程中，能够以线下或线上等多种形式与多学科、多元化团队成员进行有效、包容性地交流与合作，在担任团队负责人角色时，能领导、协调、合理分工团队成员，共同保时、保质、保量地完成工作任务；或在承担团队成员角色时，能与团队中及其他团队中多学科成员开展合作，分享信息与经验，主动为团队分忧，承担团队一员应承担的个体角色。 8-2 Graduates shall demonstrate the ability to effectively and inclusively communicate and collaborate with multidisciplinary and diverse team members through various offline and online formats during engineering practice (e.g., seminars, defense sessions, academic exchanges) and complex problem-solving activities (e.g., team-based design reports/papers) within their professional discipline or interdisciplinary fields. When assuming the role of team leader, they must effectively organize, coordinate, and delegate tasks to ensure timely, quality completion of team objectives. As team members, they shall actively cooperate with interdisciplinary colleagues within and across teams, share information and expertise, proactively address team challenges, and fulfill their individual responsibilities as contributing team participants.

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
9.沟通：能够就交通运输、电子、电气工程、海事及跨学科相关领域的复杂问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。能够在跨文化背景下进行沟通和交流，**理解、尊重语言和文化差异。** 9. **Communication:** Graduates will demonstrate effective communication competencies by engaging in professional discourse with industry peers and the general public regarding complex issues in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. This includes the ability to: Prepare technical reports and design documentation, deliver professional presentations, articulate concepts clearly and respond to instructions effectively. Furthermore, students will develop intercultural communication skills, enabling them to operate competently in cross-cultural environments while demonstrating understanding and respect for linguistic and cultural diversity.	9-1 能够就本专业、学科或跨学科等相关领域复杂工程问题与包括中国及国外业界同行及社会公众进行沟通、交流、研讨及答辩过程中，能够正确地使用中英文技术术语和对话语言进行申述发言、清晰表达或回答互动问题，理解、尊重语言和文化差异，体现有效和包容性沟通能力；（课堂、论文答辩） 9-1 Graduates shall demonstrate effective communication capabilities when addressing complex engineering problems within their discipline or interdisciplinary fields with both Chinese and international industry peers as well as the general public, including the proper use of Chinese and English technical terminology and conversational language during presentations, discussions, defenses, and Q&A sessions to clearly articulate positions and respond to inquiries, while demonstrating understanding and respect for linguistic and cultural differences to achieve inclusive and productive communication in various settings such as classroom instruction and thesis defenses.
	9-2 能够就本专业、学科或跨学科等相关领域复杂工程问题与包括中国及国外业界同行及社会公众进行沟通、交流、研讨及答辩过程中或在解决复杂工程问题的设计研究过程中，所撰写的论文、报告、设计文稿、演示文稿（如 PPT）中，能够正确地使用中英文技术术语，理解和尊重英语语言及文化与汉语语言及文化的差异。 9-2 Graduates shall demonstrate the ability to accurately employ both Chinese and English technical terminology when communicating complex engineering issues within their discipline or interdisciplinary fields to domestic and international industry peers and the general public, whether through oral exchanges (discussions, seminars, and defenses) or written deliverables (research papers, reports, design documentation, and presentations such as PPTs), while maintaining awareness and respect for the linguistic and cultural differences between English and Chinese contexts throughout the problem-solving and design research process.
10. 项目管理：理解并掌握交通运输、电子、电气工程、海事及跨学科相关领域中**与工程项目相关**的工程管理原理与经济决策方法，并能够在多学科环境中应用。 10. **Project Management:** Graduates will acquire comprehensive understanding and practical mastery of engineering	10-1 理解并掌握船舶工程项目与技术管理等相关的工程管理原理与经济决策方法，并能够把相关原理应用于电气、电子、控制、机械、交通运输、海事及人工智能等多学科环境中； 10-1 Graduates shall comprehend and master engineering management principles and economic decision-making methodologies related to ship engineering projects and technology management, with the capability to apply these principles in multidisciplinary environments encompassing electrical, electronic, control, mechanical, transportation, maritime

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
management principles and economic decision-making methodologies relevant to project implementation in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. They shall demonstrate the capability to effectively apply these competencies in multidisciplinary environments.	engineering, and artificial intelligence applications.
	10-2 理解并掌握 10-1 所学的工程管理原理与经济决策方法，知晓其在工程实践特别是多学科环境中管理与经济决策的重要性，并能够把相关原理应用于诸如课程设计、毕业设计等工程实践中； 10-2 Graduates shall understand and master the engineering management principles and economic decision-making methods covered in Section 10-1, recognizing their critical importance in engineering practice, particularly in multidisciplinary environments. They shall demonstrate the ability to apply these principles to practical engineering activities including but not limited to course projects and graduation theses.
11.终身学习：具有自主学习、终身学习和**批判性思维**的意识**和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。** 11. **Lifelong Learning:** Graduates will develop self-directed learning awareness and capabilities, along with lifelong learning competencies and critical thinking skills. They shall be able to comprehend the broad impacts of technological advancements on engineering practice and society, while maintaining adaptability to emerging technological transformations.	11-1 具备自主学习和终生学习的知识基础，了解自主拓展知识和能力的途径，能针对广泛的技术变革以及个人或职业发展的需求，持续自主更新特别是数据科学以及人工智能方面的知识，具有辩证地接受新事物、新概念的批判性思维能力，以适应新技术的变革； 11-1 Graduates shall possess the foundational knowledge for self-directed and lifelong learning, understand approaches for autonomous knowledge and skill expansion, and demonstrate the ability to continuously update their expertise—particularly in data science and artificial intelligence—in response to broad technological advancements and personal or professional development needs. They shall cultivate critical thinking skills to didactically evaluate emerging technologies and concepts, thereby maintaining adaptability to technological transformations.
	11-2 在本专业、学科或跨学科等相关领域解决复杂工程问题（诸如毕业设计/论文）的过程中，能够理解到诸如人工智能等**广泛的技术变革对工程和社会的影响，**认识到不断探索、自主学习、终身学习的必要性，能够在设计、研究过程中根据实际需求自主学习更新自身知识，同时对参考的文献及最新的研究成果有**批判性思维**的意识**和能力**，并应用到实践中去。 11-2 Graduates shall demonstrate the ability to comprehend the impacts of broad technological transformations (such as artificial intelligence) on engineering and society while addressing complex engineering problems (including graduation projects/theses) within their discipline or interdisciplinary fields. They shall recognize the necessity for continuous exploration, self-directed learning, and lifelong knowledge acquisition, proactively updating their expertise during design and research processes according to practical requirements. Furthermore, they must exhibit critical thinking awareness and capabilities when evaluating reference

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
	literature and cutting-edge research findings, effectively applying this discernment to their engineering practice.

三、专业核心课程

III．Core Courses

电路原理、模拟电子技术基础、数字电子技术基础、自动控制原理、嵌入式技术基础、电力电子学、电机学、船舶电力拖动系统、船舶电力系统与智能电站、智能船基础

Theory of Circuit, Fundamentals of Analog Electronics, Fundamentals of Digital Electronics, Principles of Automatic Control, Embedded Systems Technology Fundamentals, Power Electronics, Electrical Machinery, Marine Electric Propulsion Systems, Marine Power Systems & Intelligent Power Stations, and Intelligent Ship Fundamentals.

四、特色课程

IV．Feature Courses

电路原理（英）、船舶电力拖动系统、船舶电力系统与智能电站、船舶电子电气专业英语及会话、船舶概论、船舶管理、船舶辅助机械控制系统、船舶主机监测与控制系统、船舶机舱检测与报警系统、智能船基础、线性系统控制理论

Theory of Circuit, Marine Electric Drive System, Shipboard Power Systems and Smart Power Stations, Special English for Marine Electrical and Electronic Engineering, Introduction to Marine Engineering (Marine Electrical and Electronic), Marine Management (Marine Electrical and Electronic), Marine Auxiliary Control System, Monitoring and Control System for Marine Main Engine, Marine Monitoring and Alarm System, Intelligent ship Foundation, Linear Systems Control Theory

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
电路原理（英） Theory of Circuit	●	●				
船舶电力拖动系统 Marine Electric Drive System	●	●			●	●
船舶电力系统与智能电站 Shipboard Power Systems and Smart Power Stations	●		●			
船舶电子电气专业英语及会话 Special English for Marine Electrical and Electronic	●					

Engineering						
船舶概论（电子电气）Introduction to Marine Engineering (Marine Electrical and Electronic)	●					
船舶管理（电子电气）Marine Management (Marine Electrical and Electronic)	●	●			●	
船舶辅助机械控制系统 Marine Auxiliary Control System	●					●
船舶主机监测与控制系统 Monitoring and Control System for Marine Main Engine	●					●
船舶机舱监测与报警系统 Marine Monitoring and Alarm System	●	●				
智能船舶基础 Intelligent ship Foundation	●	●	●		●	
线性系统控制理论 Linear Systems Control Theory				●		

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分

学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">/</td><td rowspan="10">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>3</td></tr>
<tr><td rowspan="7">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="4">/</td><td rowspan="4">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
		其他 Others			
专业（类） 基础课 Disciplinary Courses	专业基础课 Discipline Courses		22	36.5	
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course		14.5		
集中实践 环节 Practical &Training	专业实践课 Specialized Practical Course		6	/	
	军事实践课 Military Practical Course		3		
	毕业实践课 Graduation Practice		12		
	其他实践课 Others		10		
合计：175.5 Total：175.5			131	36.5	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000320	国家安全教育(船电)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018440	专业导论(船电)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
合计：7.5 Total：7.5				7.5

七、教学计划进度表

参见表 1～表 5

VII Curriculum Structure

Refer to Table1～Table6.

表 1：船舶电子电气工程课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（175.5 学分） In-class Teaching Courses （175.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	131	36.5	8	7.5	183

表 2：船舶电子电气工程必修课程设置及进程

备注:

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-1	
			5	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			6	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			7	1713027660	计算机及程序设计(C) Computer Program Design (C)	3	考试	√	综合素养	48	24	24	1-1	
			8	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			9	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			10	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			11	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			12	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查		综合素养	48	40	8	1-2	
			14	1713021040	创新思维与创新方法(船电) Innovative Thinking and Innovative Methods(Automation Professional)	2	考查		综合素养	32	24	8	1-2	

			15	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			16	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			17	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-1	
			21	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-1	
			22	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			23	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			24	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			25	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-2	
			26	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	

			27	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-1	
			28	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713027980	电路原理 1(英) Theroy of Circuit Ⅰ	4.5	试内	√	综合素养	72	56	16	1-2	
			3	1713014180	模拟电子技术基础 Fundamental of Analog Electronics	4	考试	√	综合素养	64	52	12	2-1	
			4	1713019742	电路原理 2(英) Theroy of Circuit Ⅱ	1.5	考试	√	综合素养	24	24	0	2-1	
			5	1713014190	数字电子技术基础 Fundamental of Digital Electronics	3	考试	√	综合素养	48	38	10	2-2	
			6	1713015630	自动控制原理 Principle of Automatic Control	3	考试	√	综合素养	48	42	6	2-2	
			7	1713029280	嵌入式系统基础 Fundamental of Embedded System	4	考试		综合素养	64	46	18	2-2	
	必修-专业及方向课程 Stream Courses		1	1713023800	电机学(英) ELECTRIC MACHINERY (English)	4.5	考试	√	综合素养	72	64	8	2-2	
			2	1713015650	电力电子学 Power Electronics	3	考试	√	综合素养	48	42	6	3-1	

			3	1713015740	船舶电力拖动系统 Marine Electrical Drive System	3	考试	√	综合素养	48	42	6	3-1	
			4	1713029250	船舶电力系统与智能电站 Shipboard Power Systems and Smart Power	4	考试	√	综合素养	64	60	4	3-2	
合计 Total						**101**				**1696**	**1366**	**330**		

表 3：船舶电子电气工程 限选课程设置及进程

备注：为满足海事局等效认可要求，需修满海事局等效认可限选课程学分（30.5）学分，其他限选课程要求如下：
（1）专业基础限选课需在船舶电子电气技术基础、工程电磁场、船电基础专业英语、线性系统控制理论四门课中至少修满 4 学分；
（2）专业限选课需在机器学习与人工智能、高电压技术、电力系统分析、微特电机及其控制、船舶先进能源与控制技术、现代电力电子技术六门课中至少修满 2 学分；

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713015430	工程电磁场 Engineering Electromagnetics	2	考试		综合素养	32	24	8	2-1	
			2	1713029290	计算机数据分析及计算机网络 Computer-Aided Data Analysis and Computer Networking	2.5	考试		综合素养	40	36	4	2-1	海事局等效认可课程
			3	1713025690	船舶概论(电子电气) Introduction to Marine Engineering (Marine Electrical and Electronic)	2	考试		综合素养	32	32	0	2-2	海事局等效认可课程

			4	1713028640	线性系统控制理论 Linear Systems Control Theory	2	考试		综合素养	32	32	0	2-2	
			5	1713029240	船舶电子电气技术基础 Fundamentals of marine electronic and electrical technology	2	考试		综合素养	32	28	4	2-2	
			6	1713015670	交流变频调速 Alternating Current Speed-regulating System	2	考试		综合素养	32	30	2	3-1	海事局等效认可课程
			7	1713023700	船舶管理(电子电气) Marine Management (Marine Electrical and Electronic)	1.5	考查		综合素养	24	24	0	3-1	海事局等效认可课程
			8	1713025650	船舶电气系统仿真与设计 Marine Electrical System Simulation and	3	考试		综合素养	48	38	10	3-2	海事局等效认可课程
			9	1713025710	可编程序控制器及其通信网络 Communication and Network for Programmable Controller	3	考试		综合素养	48	38	10	3-2	海事局等效认可课程
			10	1713029230	船舶电子电气专业英语及会话 Professional English and Conversations for Marine Electrical and Electronic Engineering	3	考试		综合素养	48	48	0	3-2	海事局等效认可课程
	限选-专业及方向课程 Stream		1	1713030330	船舶辅助机械控制系统 Marine Auxiliary Control System	2	考试		综合素养	32	30	2	3-1	海事局等效认可课程

			2	1713015800	船舶机舱监测与报警系统 Marine Monitoring and Alarm System	2	考试		综合素养	32	28	4	3-2	海事局等效认可课程
			3	1713024341	船舶综合驾驶台系统(1) Marine Integrated Bridge System（1）	3	考试		综合素养	48	36	12	3-2	海事局等效认可课程
			4	1713023730	船舶主机监测与控制系统 Monitoring and Control System for Marine Main	2	考试		综合素养	32	30	2	4-1	海事局等效认可课程
			5	1713023810	智能船舶基础 Intelligent ship Foundation	2	考试		综合素养	32	32	0	4-1	海事局等效认可课程
			6	1713024342	船舶综合驾驶台系统(2) Marine Integrated Bridge System（2）	2.5	考试		综合素养	40	28	12	4-1	海事局等效认可课程
			7	1713024430	电力系统分析 Power System Analysis	3	考试		综合素养	48	42	6	4-1	
			8	1713024520	高电压技术 High Voltage Technique	2.5	考试		综合素养	40	36	4	4-1	
			9	1713028650	船舶先进能源与控制技术 Advanced Energy and control Technology for	2	考试		综合素养	32	32	0	4-1	
			10	1713029260	现代电力电子技术 Modern Power Electronics Technology	2	考试		综合素养	32	32	0	4-1	
			11	1713029270	微特电机及其控制 Small and Special Electric Machines and Control	2	考试		综合素养	32	26	6	4-1	
			12	1713029300	机器学习与人工智能 Machine Learning and Artificial Intelligence	2	考试		综合素养	32	32	0	4-1	
合计 Total						50				800	714	86		

表 4：船舶电子电气工程任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：船舶电子电气工程 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713015560	电机设计与实践 Design and Practice of Electrical Motor	1	考查		综合素养	30	0	30	2-2	
			4	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	

			5	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	
			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713023710	船舶认识实习(船舶电子电气工程) Ship Observation Practice (Marine Electrical and Electronic)	2	考查		综合素养	120	0	120	3-1	
			9	1713015810	船舶电子电气工艺 Technology of Ship Electric	2	考查		综合素养	60	0	60	3-2	
			10	1713030350	电子电气专题设计与实践 Design and Practice of Electrical and Electronics Specialty	2	考查		综合素养	60	0	60	3-2	
			11	2113000540	金工实习 Metalworking Practice	2	考查		综合素养	60	0	60	3-2	
			12	1713015820	船舶电气设备维护及检测 Maintenance and detection of marine	1	考查		综合素养	30	0	30	4-1	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**32**				**1020**	**66**	**954**		

表 6：船舶电子电气工程 讲座设置及进程
Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713018440	专业导论(船电) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000320	国家安全教育(船电) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	

			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						5.5				136	136	0		

八、实践学时学分
VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修		3	
2	体育	必修		4	
3	金工实习 Metalworking Practice（2）	必修		2	●
4	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	必修		1	●
5	精通急救 Proficiency in First Aid	必修		1	●
6	高级消防 Advanced Fire Fighting	必修		1	●
7	基本安全 Basic Safety	必修		1	●
8	船舶保安 Ship Security	必修		2.5	●
9	船舶电气设备维护及检测 Maintenance and detection of marine electrical equipment	必修		0.5	●
10	船舶电子电气工艺 Technology of Ship Electric	必修		2	●
11	电子电气专题设计与实践 Design and Practice of Electrical and Electronics Specialty	必修		2	●
12	电机设计与实践 Design and Practice of Electrical Motor	必修		1	●
13	船舶认识实习（船舶电子电气工程） Ship Observation Practice (Marine Electrical and Electronic)	必修		2	●
14	毕业设计（论文） Graduation Design& Thesis	必修		12	●
15	创新思维与创新方法(船电） Innovative Thinking and Innovative Methods (Automation Professional)	必修	8	0.5	
16	大学物理实验 Physics Experiment	必修		2	●
17	计算机及程序设计(C) Basics of Computer Programming(C)	必修	24	1.5	●

18	机械制图 Mechanical Graphing	必修	4	0.25	●
19	电路原理 1（英） Theory of Circuit I	必修	16	1	●
20	模拟电子技术基础 Fundamental of Analog Electronics	必修	12	0.75	●
21	数字电子技术基础 Fundamental of Digital Electronics	必修	10	0.625	●
22	自动控制原理 Principle of Automatic Control	必修	6	0.375	●
23	嵌入式系统技术基础 Fundamental of Embedded System	必修	16	1	●
24	船舶电气系统仿真与设计 Marine Electrical System Simulation and Design	必修	10	0.625	●
25	计算机数据分析及计算机网络 Computer Numerical Analysis and Computer Networks	必修	4	0.25	●
26	交流变频调速 Alternating Current Speed-regulating System	必修	2	0.125	●
27	可编程序控制器及其通信网络 Communication and Network for Programmable Controller	必修	10	0.625	●
28	电力电子学 Power Electronics	必修	6	0.375	●
29	电机学（英） Electric Machinery （English）	必修	8	0.5	●
30	船舶电力拖动系统 Marine Electric Drive System	必修	6	0.375	●
31	船舶电力系统与智能电站 Shipboard Power Systems and Smart Power Stations	必修	4	0.25	●
32	船舶辅助机械控制系统 Marine Auxiliary Control System	必修	4	0.25	●
33	船舶主机监测与控制系统 Monitoring and Control System for Marine Main Engine	必修	2	0.125	●
34	船舶机舱监测与报警系统 Marine Monitoring and Alarm System	必修	4	0.25	●
35	船舶综合驾驶台系统（1） Marine Integrated Bridge System（1）	必修	12	0.75	●
36	船舶综合驾驶台系统（2） Marine Integrated Bridge System（2）	必修	12	0.75	●
37	船舶电子电气技术基础 Fundamentals of marine electronic and electrical technology	限选 （4 选 2）		0	●
38	工程电磁场 Engineering Electromagnetics				●
39	船电基础专业英语 Basic professional English for marine electronics and electrical engineering				●

40	线性系统控制理论 Linear System Control Theory				●
41	机器学习与人工智能 Machine Learning and Artificial Intelligence	限选 （6 选 1）		0	●
42	高电压技术 High Voltage Technique				●
43	电力系统分析 Power System Analysis				●
	微特电机 Small & Special Electrical Machines				
	船舶先进能源与控制技术 Marine Advanced Energy and Control Technology				
	现代电力电子技术 Modern Power Electronics Technology				
合计 Total			180	48.25 41.25（去除体育、军事训练）	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**	培养目标 5 **Program Objectives 5**
毕业要求 1-1 **Graduation Requirements 1-1**		●			
毕业要求 1-2 **Graduation Requirements 1-2**		●			
毕业要求 2-1 **Graduation Requirements 2-1**		●			
毕业要求 2-2 **Graduation Requirements 2-2**		●			
毕业要求 3-1 **Graduation Requirements 3-1**			●	●	●
毕业要求 3-2 **Graduation Requirements 3-2**			●	●	●
毕业要求 3-3 **Graduation Requirements 3-3**			●	●	●
毕业要求 4-1 **Graduation Requirements 4-1**			●	●	●
毕业要求 4-2 **Graduation Requirements 4-2**			●	●	●
毕业要求 4-3 **Graduation Requirements 4-3**			●	●	●
毕业要求 5-1 **Graduation Requirements 5-1**		●		●	●
毕业要求 5-2 **Graduation Requirements 5-2**		●		●	●

毕业要求 6-1 **Graduation Requirements 6-1**	●			●	●
毕业要求 6-2 **Graduation Requirements 6-2**	●			●	●
毕业要求 7-1 **Graduation Requirements 7-1**	●			●	●
毕业要求 7-2 **Graduation Requirements 7-2**	●			●	●
毕业要求 8-1 **Graduation Requirements 8-1**	●		●	●	●
毕业要求 8-2 **Graduation Requirements 8-2**	●		●	●	●
毕业要求 9-1 **Graduation Requirements 9-1**			●	●	●
毕业要求 9-2 **Graduation Requirements 9-2**			●	●	●
毕业要求 10-1 **Graduation Requirements 10-1**				●	●
毕业要求 10-2 **Graduation Requirements10-2**				●	●
毕业要求 11-1 **Graduation Requirements 11-1**			●	●	●
毕业要求 11-2 **Graduation Requirements11-2**			●	●	●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	军事理论															M									
2	体育																	H							
3	高等数学	H		M																					
4	线性代数	H		M																					
5	逻辑学																			H					
6	思想道德与法治													M		H									
7	大学英语																			H					
8	大学生健康教育																	H		H					
9	劳动教育(理论)															H		H							
10	大学物理	H	M																						
11	大学物理实验		M						H																
12	中国近现代史纲要															H									
13	创新思维与创新方法(船电）			H										H											
14	国家安全教育													H		H									
15	概率论与数理统计	M		H																					
16	复变函数与积分变换	H		M																					
17	毛泽东思想和中国特															H									

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
	色社会主义理论体系概论																								
18	马克思主义基本原理															H									
19	习近平新时代中国特色社会主义思想概论															H									
20	实用写作																			H					
21	机械制图	H			H				M			H					M								
22	电路原理★	H	H	H	H																M				
23	模拟电子技术基础★	H	H	H	H																				
24	数字电子技术基础★	H	H	H	H	M																			
25	自动控制原理★	H	H	H	H							M				M									
26	嵌入式系统技术基础★		H		H	H						M				H									
27	电力电子学★		H		H	H			H																
28	电机学★	H	H	H	H											H		H							
29	船舶电力拖动系统★				M	H				H				M		M	M	H						H	
30	船舶电力系统与智能电站★			H					H					M		M	M								
31	计算机及程序设计(C)											H													
32	船电基础专业英语	H		H	H																M				
33	计算机数据分析及计算机网络★		H			M						M	H					H						H	

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
34	船舶电子电气技术基础		H	H	H											M									
35	工程电磁场		H	H	H											M									
36	船舶管理（电子电气）★													H		H		M				H	H		
37	船舶概论（电子电气）★	H		H					M						H	M	H								
38	线性系统控制理论		H	H	H											M									
39	交流变频调速★			H	H	M			M							M									
40	船舶电气系统仿真与设计★				H		H					H		H			H								
41	船舶电子电气专业英语及会话★															M				H	H				
42	可编程序控制器及其通信网络★	H			H	H												M						H	
43	机器学习与人工智能		H		H								H	H		M									
44	微特电机		H		H								H	H		M									
45	船舶辅助机械控制系统★	H			H	H			H																
46	船舶主机监测与控制系统★	H			H	H										M	M								
47	船舶机舱监测与报警系统★	H			H	H										M	M								

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48	电力系统分析		H		H								H	H		M									
49	高电压技术		H		H								H	H		M									
50	船舶先进能源与控制技术		H		H								H	H		M									
51	现代电力电子技术		H		H								H	H		M									
52	船舶综合驾驶台系统 1	M		H																					
53	船舶综合驾驶台系统 2	M		H																					
54	智能船舶基础★				H								H	H		M	H								
55	军事训练																	H							
56	精通救生艇筏和救助艇																H	H							
57	精通急救																H	H							
58	高级消防																H	H							
59	基本安全																H	H							
60	船舶保安																H	H							
61	电子电气专题设计与实践★						H					H		H		M		H					H		
62	电机设计与实践★						H									M	H	M					H		
63	船舶认识实习（船舶电子电气工程）★				H										H	M	H	H			H				
64	劳动教育（实践）																	H							
65	船舶电子电气工艺★						H			H							H	M	H						

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
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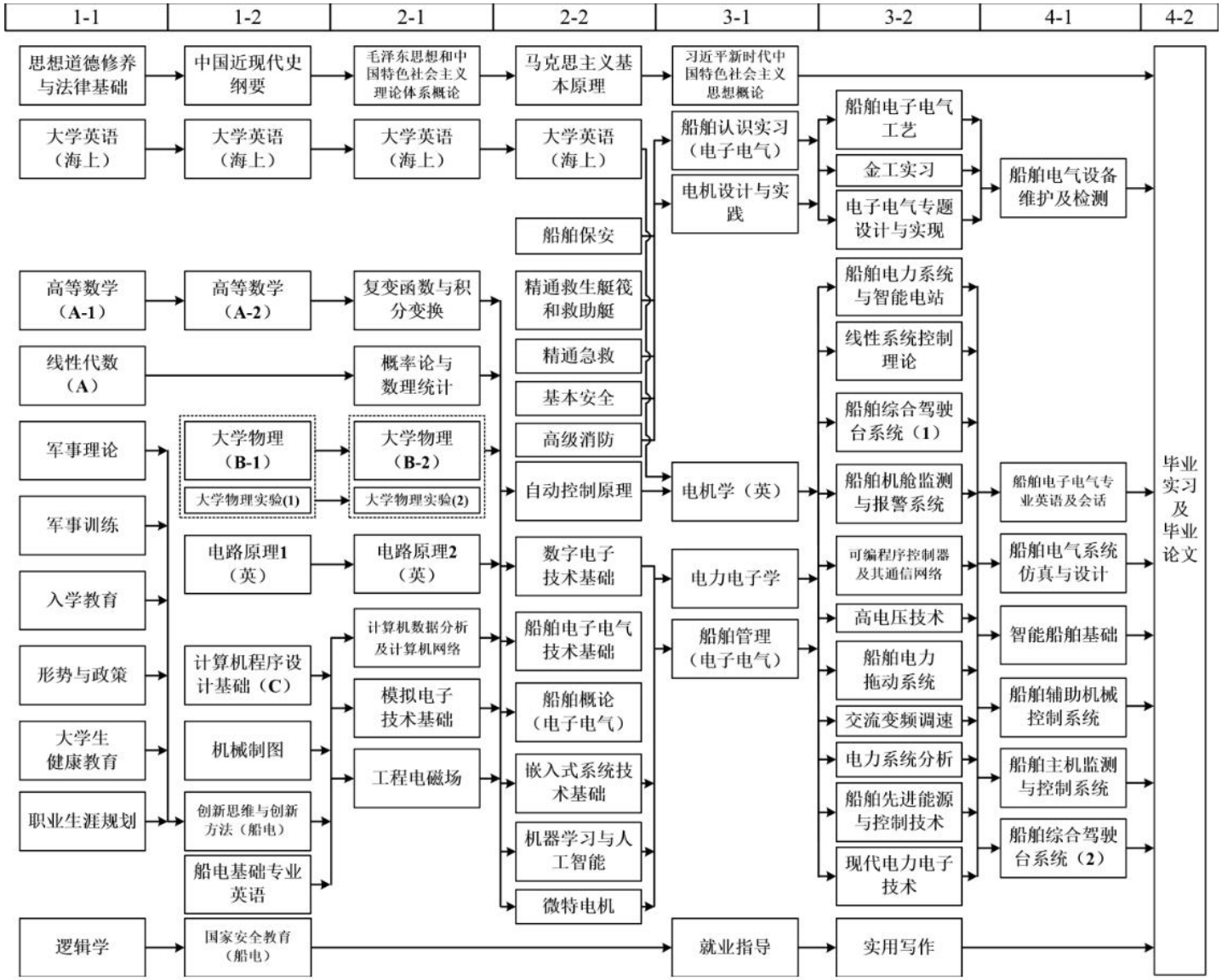
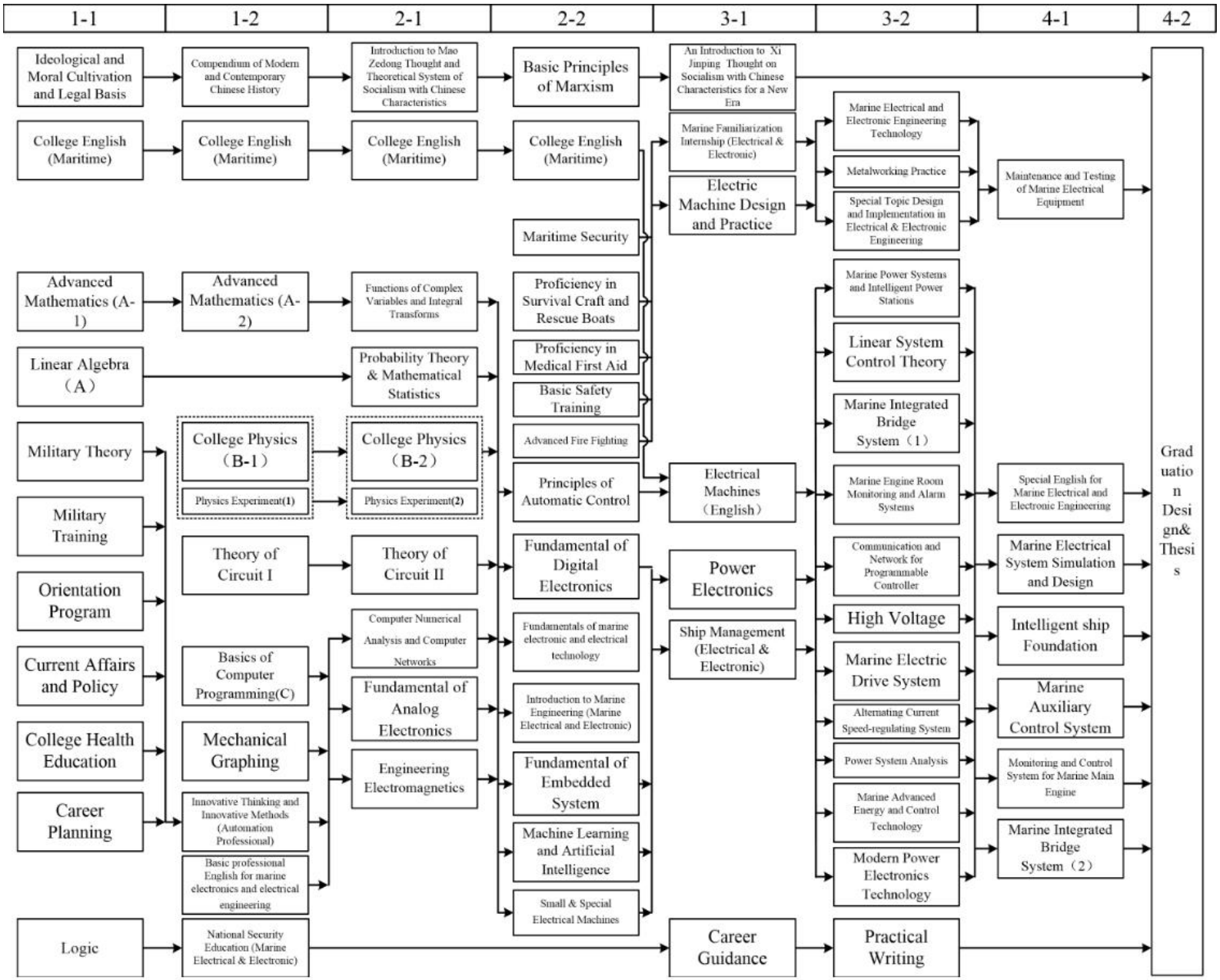
66	金工实习			M															M						
67	船舶电气设备维护及检测★						H			H							H	M	H						
68	毕业设计(论文) ★							H			H	H	H						M	H					H
69	形势与政策															H									
70	入学教育															H								H	
71	专业导论													M		M									
72	职业生涯规划															H									
73	就业指导															H									

十一、课程配置流程图

XI. Flowchart of Course Configuration




1-1
1-2
2-1
2-2
3-1
3-2
4-1
4-2
Ideological and Moral Cultivation and Legal Basis
Compendium of Modern and Contemporary Chinese History
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Basic Principles of Marxism
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
College English (Maritime)
College English (Maritime)
College English (Maritime)
College English (Maritime)
Marine Familiarization Internship (Electrical & Electronic)
Electric Machine Design and Practice
Marine Electrical and Electronic Engineering Technology
Metalworking Practice
Special Topic Design and Implementation in Electrical & Electronic Engineering
Maintenance and Testing of Marine Electrical Equipment
Maritime Security
Advanced Mathematics (A-1)
Advanced Mathematics (A-2)
Functions of Complex Variables and Integral Transforms
Proficiency in Survival Craft and Rescue Boats
Proficiency in Medical First Aid
Linear Algebra (A)
Probability Theory & Mathematical Statistics
Basic Safety Training
Advanced Fire Fighting
Military Theory
College Physics (B-1)
College Physics (B-2)
Physics Experiment(1)
Physics Experiment(2)
Principles of Automatic Control
Electrical Machines (English)
Marine Power Systems and Intelligent Power Stations
Linear System Control Theory
Marine Integrated Bridge System (1)
Marine Engine Room Monitoring and Alarm Systems
Special English for Marine Electrical and Electronic Engineering
Military Training
Theory of Circuit I
Theory of Circuit II
Fundamental of Digital Electronics
Power Electronics
Communication and Network for Programmable Controller
Marine Electrical System Simulation and Design
Orientation Program
Computer Numerical Analysis and Computer Networks
Fundamentals of marine electronic and electrical technology
Ship Management (Electrical & Electronic)
High Voltage
Intelligent ship Foundation
Current Affairs and Policy
Basics of Computer Programming(C)
Fundamental of Analog Electronics
Introduction to Marine Engineering (Marine Electrical and Electronic)
Marine Electric Drive System
Alternating Current Speed-regulating System
Marine Auxiliary Control System
College Health Education
Mechanical Graphing
Engineering Electromagnetics
Fundamental of Embedded System
Power System Analysis
Monitoring and Control System for Marine Main Engine
Career Planning
Innovative Thinking and Innovative Methods (Automation Professional)
Machine Learning and Artificial Intelligence
Marine Advanced Energy and Control Technology
Marine Integrated Bridge System (2)
Basic professional English for marine electronics and electrical engineering
Small & Special Electrical Machines
Modern Power Electronics Technology
Graduation Design& Thesis
Logic
National Security Education (Marine Electrical & Electronic)
Career Guidance
Practical Writing

船舶电子电气工程（卓越工程师）专业
本科培养计划（2025 版）
Undergraduate Program for Marine Electrical and Electronic Engineering [Excellent Engineer]Major

一、培养目标
I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业致力于培养适应现代先进船舶自动化、信息化、智能化的要求以及社会、经济发展需要，具有扎实的自然科学理论基础、深厚的科学及人文素养、强健的身体素质，系统地掌握电路、电子技术、控制技术、人工智能等专业基础理论知识，具备在船舶电力及拖动系统、电子电气工程、电子电气设备自动化、智能化等方面的设计及应用技术开发能力和适应独立工作的工程素养及实践技能，满足国际海事组织 STCW 国际公约中规定的“电气、电子和控制工程”、“维护和修理”和“船舶操作控制和船上人员管理”等职能要求，富有全球视野和创新能力，能够在海事、工业、国防、民用等电子电气工程领域从事产品研发、工程设计、装备制造、设备维护修理、项目管理等工作并成为该领域的技术骨干或中坚力量，成为德、智、体、美、劳全面发展的社会主义建设者和接班人。 This program is committed to cultivating talents who meet the requirements of modern	1. 具有深厚的人文社会科学素养和社会责任感，有工程报国、为民造福的意识，践行工程伦理和职业规范，具备团队合作能力，能够在多样化、多学科、多语言、多文化背景下与不同团队、业界同行及社会公众进行有效沟通和交流，成为“通海事、强实践、宽视野、厚情怀、强体魄”的新时代“航海家型”人才； 1. The program aims to cultivate professionals with profound humanistic and social science literacy, strong social responsibility, and a commitment to serving the nation through engineering while benefiting society. Graduates will adhere to engineering ethics and professional standards, demonstrating excellent teamwork and cross-cultural communication skills. They will be capable of effective collaboration and communication with diverse teams, industry peers, and the public in multilingual, multicultural, and multidisciplinary contexts. The program strives to develop a new generation of “Navigator-Type” talents characterized by: “Maritime Expertise, Practical Competence, Global Perspective, Humanistic Spirit, Physical Fitness.”
	2. 具有扎实的自然科学与专业基础理论知识及较强的实践能力，具备综合运用学科基础知识与工程技术解决海事、工业、国防、民用等电子电气工程领域复杂工程问题的基础能力； 2. To equip students with a solid foundation in natural sciences and professional theoretical knowledge, along with strong practical capabilities, enabling them to comprehensively apply disciplinary fundamentals and engineering technologies to address complex engineering challenges in maritime, industrial, defense, and civil electrical and electronic engineering fields.

advanced ship automation, informatization and intelligentise as well as the needs of social and economic development. Graduates will possess a solid theoretical foundation in natural sciences, profound scientific and humanistic literacy, and robust physical fitness. They will systematically master fundamental professional theories in circuits, electronic technology, control technology, artificial intelligence and other related fields. The program equips students with design and applied technology development capabilities in ship power and propulsion systems, electrical and electronic engineering, automation and intelligent systems, along with the engineering literacy and practical skills required for independent work. Graduates will satisfy the functional requirements specified in the IMO STCW Convention, including “Electrical, Electronic and Control Engineering,” “Maintenance and Repair,” and “Control of Ship Operation and Care for Persons on Board.” With global vision and innovative capabilities, graduates will be qualified to engage in product research and development, engineering design, equipment manufacturing, maintenance and repair, project management and other professional activities in maritime, industrial, defense	3. 具有一定的科学思维、工程创新、思辨能力，在船舶电力及拖动系统、电子电气工程、电子电气设备自动化、智能化等方面的设计及应用技术开发能力；在设计、研究等实践中能够具备团队合作、沟通交流能力，在不同语言、文化背景下体现出包容性； 3. To develop students’ scientific thinking, engineering innovation, and critical analysis capabilities, equipping them with design and applied technological development competencies in shipboard power and propulsion systems, electrical and electronic engineering, as well as automation and intelligent systems. The program further aims to cultivate teamwork and communication skills through design and research practices, fostering inclusive collaboration across diverse linguistic and cultural contexts.
	4. 适应新技术变革，与时俱进，具有适应独立工作的工程素养及实践技能，满足国际海事组织 STCW 国际公约中规定的“电气、电子和控制工程”、“维护和修理”和“船舶操作控制和船上人员管理”等职能要求； 4. 4. To cultivate professionals capable of adapting to technological advancements while demonstrating independent engineering competence and practical skills that comply with the International Maritime Organization (IMO) STCW Convention's functional requirements, including: Electrical, Electronic and Control Engineering; Maintenance and Repair; Controlling the Operation of the Ship and Care for Persons On Board.
	5. 具有自主学习、终身学习和**批判性思维**的意识**和能力**，能够适应诸如人工智能等新技术变革，理解其对行业、工程以及社会的影响，富有全球视野和创新能力，借助于所掌握的工程管理原理与经济决策方法，能够在海事、工业、国防、民用等电子电气工程领域从事产品研发、工程设计、装备制造、设备维护修理、项目管理等工作并成为该领域的技术骨干或中坚力量。 5. To cultivate professionals with self-directed learning capabilities, lifelong learning awareness, and critical thinking skills, enabling them to adapt to technological transformations (e.g., artificial intelligence) and comprehend their impacts on industries, engineering practices, and society. Graduates will possess global vision and innovative competence, empowered by engineering management principles and economic decision-making methodologies. They shall be qualified to undertake product R&D, engineering design, equipment manufacturing, maintenance & repair, and project management

and civil electrical and electronic engineering fields. They will grow into technical backbones or key professionals in these domains, becoming well-rounded socialist builders and successors with all-round development in moral, intellectual, physical, aesthetic and labor education.	in maritime, industrial, defense, and civil electrical/electronic engineering sectors, ultimately developing into technical leaders or core professionals in these fields.

二、毕业要求
II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
1. 工程知识：能够将数学、自然科学、**计算**、工程基础及电子电气工程专业知识用于解决交通运输、电子、电气工程、海事及跨学科相关领域的复杂工程问题。 1. **Engineering Knowledge:** The capability to apply mathematics, natural sciences, **computational methods**, fundamental engineering principles, and specialized expertise in electronic and electrical engineering to address complex engineering challenges in the fields of transportation, electronics, electrical systems, maritime engineering, and related interdisciplinary domains.	1-1 掌握自然科学、专业领域的工程、实践基础的**通用原理和最新知识**；能够准确地将数学、物理等自然科学语言和工程**术语**用于水运交通运输、电子、电气复杂工程问题的**表述；**能够灵活运用数学、物理等自然科学知识及工程基础知识，对于专业领域的工程问题进行符合逻辑的**计算、推导、证明、建模、分析**，并将该能力用于解决所属专业工程领域复杂工程问题。 1-1 To master the general principles and latest knowledge of natural sciences and professional engineering practices; to accurately apply mathematical, physical, and other natural science languages along with engineering terminology in describing complex engineering problems in water transport, electronics, and electrical engineering; and to skillfully utilize mathematics, physics, and other natural science knowledge as well as fundamental engineering principles to perform logical calculations, derivations, proofs, modeling, and analysis of engineering problems in the specialized field, ultimately applying these capabilities to solve complex engineering problems within the professional domain.
	1-2 能够结合工程应用理解算力、算法和数据对解决复杂工程问题的意义和基本方法，了解人工智能技术在水运交通运输、电子电气工程领域的应用方法，能够灵活运用所掌握的自然科学知识及工程基础知识，结合计算机软硬件相关知识，建立**“计算思维”**意识，具备运用计算机规范地进行**科学、工程领域的数值计算、数值分析、数据分析、数据统计等方面的程序设计能力**，用于解决本专业工程领域复杂工程问题。 1-2 To comprehend the significance and fundamental

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
	methodologies of computing power, algorithms, and data in addressing complex engineering challenges through practical applications; to understand application approaches of artificial intelligence technologies in water transport and electrical/electronic engineering fields; to flexibly apply acquired natural science knowledge and fundamental engineering principles combined with computer hardware/software expertise to develop "computational thinking" awareness; and to possess standardized programming capabilities for scientific and engineering computations including numerical calculations, numerical analysis, data analysis, and statistical processing - ultimately applying these competencies to solve complex engineering problems within the professional domain.
2. 问题分析：能够应用数学、自然科学和电子电气工程原理和方法，识别、表达、并通过文献研究分析交通运输、电子、电气工程、海事及跨学科相关领域相关的复杂问题，**综合考虑可持续发展的要求**，以获得有效结论。 2. **Problem Analysis:** The ability to apply mathematical, natural scientific, and electronic/ electrical engineering principles and methodologies to identify, formulate, and analyze complex engineering problems in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. This includes conducting literature research and **integrating sustainable development considerations** to derive valid conclusions.	2-1 能够通过文献研究等方法，应用数学、自然科学和电子电气工程原理和方法对本专业、学科及跨学科等领域复杂工程问题进行有效**界定**，同时综合考虑**可持续发展**的要求，对该工程问题进行有效**识别和分解**，并能进行**定量分析和定性分析**，获得有效结论 2-1 To effectively define complex engineering problems within the discipline, interdisciplinary fields, and related domains through literature research and other methods by applying mathematical, natural scientific, and electrical/electronic engineering principles and methodologies; to comprehensively consider sustainable development requirements in identifying and deconstructing such engineering problems; and to conduct both quantitative and qualitative analyses to derive valid conclusions.
	2-2 能够通过文献研究等方法，应用数学、自然科学和电子电气工程原理和方法，在综合考虑**可持续发展**的要求的基础上，对本专业、学科及跨学科等领域复杂工程问题进行**表达、分析、求解、建模和仿真**，获得有效结论 2-2 To apply mathematical principles, natural sciences, and electrical/electronic engineering methodologies through literature research and other approaches to effectively formulate, analyze, solve, model, and simulate complex engineering problems within the discipline and interdisciplinary domains - while comprehensively incorporating sustainable development considerations - ultimately obtaining valid conclusions.
3.设计/开发解决问题：能够设计针对交通运输、电子、电气工程、海事及跨学科相关领域的复杂工程问题**设计和开发**解决方案，设计满足特定需求的系统、单元	3-1 能够针对本专业、学科及跨学科等领域的复杂工程问题，可借助仿真软件、AutoCAD 等现代工具提出满足特定需求的系统、单元（部件）或工艺流程的设计/开发解决方案，并能使用图纸、设计报告、设计作业、论文等形式呈现设计方案，在方案中能够体现基于工程原理的创造性应用、创新性或思

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
（部件）或工艺流程，**体现创新性**，并从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度考虑可行性**。 3. **Design/Development of Solutions:** The capability to **devise and develop solutions** for complex engineering problems in the fields of transportation, electronics, electrical engineering, maritime, and related interdisciplinary domains. This includes designing systems, components (units), or processes that meet specified requirements while **demonstrating innovation**. The solutions shall be evaluated for feasibility with due consideration to health, safety, environmental impact, **life-cycle cost and net-zero carbon requirements**, as well as legal, **ethical**, social, and cultural factors.	辨能力，并能够从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度考虑或评价方案的可行性**。 3-1 To develop design/development solutions for complex engineering problems within the discipline and interdisciplinary fields by utilizing modern tools such as simulation software and AutoCAD to create systems, components or processes that meet specific requirements, presenting design proposals through technical drawings, design reports, project documentation and academic papers while demonstrating creative application of engineering principles with innovative and critical thinking, and conducting comprehensive feasibility evaluations considering health/safety/environmental impacts, life-cycle cost/net-zero carbon requirements, legal/ethical compliance and socio-cultural factors.
	3-2 能够根据市场或技术需求，发现、选择、设计和评估完成实现该需求的复杂工程问题所需的方法和技术，可借助仿真软件、Auto CAD 等现代工具设计针对该问题的自主解决方案，并能使用图纸、设计报告、论文等形式呈现设计方案。在此过程中通过从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度**体现批判思维和思辨能力。 3-2 To identify, select, design and evaluate appropriate methodologies and technologies for addressing complex engineering problems based on market or technical requirements by utilizing modern tools such as simulation software and AutoCAD to develop autonomous solutions, presenting design proposals through technical drawings, design reports and research papers while demonstrating critical thinking through comprehensive considerations of health/safety/environmental impacts, life-cycle cost/net-zero carbon requirements, legal/ethical compliance and socio-cultural factors throughout the process.
	3-3 能够借助科学原理，通过文献调研、提取信息方法，针对本专业、学科及跨学科领域的复杂工程问题进行有效识别、分解，合理地评价针对现有的该复杂工程问题解决方案的有效性，并能综合运用所掌握的工程原理、方法以及技术等提出或改进或优化解决该复杂工程问题的设计方案；能够借助仿真软件等现代工具独立设计、创新算法或控制方法等，合理地实现设计方案所对应的电路或系统，并能够根据仿真的结果对设计方案的可行性、有效性进行相对客观的评价；依据仿真结果，等能够独立设计、搭建系统所对应的硬件电路

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	或系统以及必要的软件系统，并能够通过物理实验的方式验证所提出设计的有效性和先进性，在此过程中能够合理地应用新型电力、电子元器件，使用 AI 智能技术，并能使用设计报告、论文等形式呈现上述完整的设计过程。最后能够从健康、安全与环境、**全生命周期成本与净零碳要求**、法律与**伦理**、社会与文化**等角度考虑或评价所提出方案的可行性**。 3-3 To effectively identify and decompose complex engineering problems within the discipline and interdisciplinary fields by applying scientific principles through literature research and information extraction methods, while reasonably evaluating the effectiveness of existing solutions, and to comprehensively utilize mastered engineering principles, methodologies, and technologies to propose, improve, or optimize design solutions for such complex problems; to independently develop innovative algorithms or control methods using modern tools such as simulation software, rationally implementing corresponding circuits or systems for the proposed designs, and to objectively evaluate their feasibility and effectiveness based on simulation results; to independently design and construct corresponding hardware circuits/systems and necessary software systems according to simulation outcomes, and to validate the effectiveness and advancement of proposed designs through physical experiments, properly applying new power/electronic components and AI technologies during the process, while documenting the complete design process through design reports or research papers; and finally to assess the feasibility of proposed solutions from perspectives including health/safety/environmental impacts, life-cycle cost/net-zero carbon requirements, legal/ethical compliance, and socio-cultural considerations.
4.研究：能够基于科学原理并采用科学方法对交通运输、电子、电气工程、海事及跨学科相关领域相关的复杂工程问题进行研究，包括设计实验、分析与解释数据，并通过信息综合得到合理有效的结论。 4. **Research:** The ability to conduct scientific investigations on complex engineering problems in transportation, electronics,	4-1 能够针对本专业、学科或跨学科等领域的复杂工程问题，可借助仿真软件、虚拟仿真等现代工具，通过文献调研、提取信息方法， v 设计物理实验或仿真研究，制定合理研究路线，设计可行实验测试及验证方案，分析和解释实验或仿真数据及结果发生的机理，并能够根据科学、工程原理和仿真结果对系统中的物理实验、仿真参数进行合理调整，获得在此条件下最佳的实验或仿真结果，通过信息综合得到合理有效结论，在此过程中能够体现批判思维。 4-1 To address complex engineering problems within the discipline or interdisciplinary fields by utilizing modern tools such as simulation software and virtual simulation, conducting literature research and information extraction to design physical

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electrical engineering, maritime, and related interdisciplinary fields by applying scientific principles and methodologies. This includes designing experiments, analyzing and interpreting data, and synthesizing information to derive valid and effective conclusions.	experiments or simulation studies, developing appropriate research methodologies, formulating feasible experimental testing and validation plans, analyzing and interpreting experimental/simulation data and underlying mechanisms, and rationally adjusting physical experiments and simulation parameters based on scientific/engineering principles and simulation results to obtain optimal experimental/simulation outcomes under given conditions, ultimately deriving valid conclusions through information synthesis while demonstrating critical thinking throughout the entire process.
	4-2 能够针对本专业、学科或跨学科等领域的实验、虚拟仿真实验等课程实践中，对于相对复杂的电子、电气设备或系统的故障现象，通过分析、研究以及信息综合实现系统的故障诊断。 4-2 To diagnose faults in relatively complex electronic/electrical equipment or systems encountered during laboratory courses, virtual simulation experiments, and practical training within the discipline or interdisciplinary fields by conducting systematic analysis, research, and information synthesis to achieve comprehensive system fault diagnosis.
	4-3 能够借助科学原理，通过文献调研、提取信息方法，针对本专业、学科及跨学科领域的复杂工程问题进行有效识别、分解，合理地评价针对现有的该复杂工程问题包括但不限于算法、控制方法的不足，能够借助仿真软件等现代工具独立设计、创新算法或控制方法等，制定合理研究路线，设计可行实验测试及验证方案，并能够通过实验、仿真等方法获取数据，综合所得到的信息分析、解释机理，验证所提算法、方法的有效性，在此过程中能够体现思辨能力。 4-3 To effectively identify and decompose complex engineering problems within the discipline and interdisciplinary fields by applying scientific principles through literature research and information extraction methods, reasonably evaluating the limitations of existing solutions including but not limited to algorithms and control methods; to independently design and innovate algorithms or control methods using modern tools such as simulation software, develop appropriate research methodologies, and formulate feasible experimental testing and validation plans; and to obtain data through experiments or simulations, comprehensively analyze the collected information to interpret underlying mechanisms, verify the effectiveness of proposed algorithms/methods, while demonstrating critical thinking throughout the entire process.

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5.使用现代工具：能够针对交通运输、电子、电气工程、海事及跨学科相关领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，对其进行预测与模拟，并能够理解其局限性。 5. **Application of Modern Tools:** The capability to develop, select, and apply appropriate technologies, resources, contemporary engineering tools, and information technology tools to address complex engineering problems in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. This includes the ability to perform predictions and simulations while recognizing and understanding the limitations of such tools.	5-1 能够运用现代工程工具现代工程工具和信息技术工具对本专业、学科及跨学科领域的复杂工程问题进行合理的描述、绘图、建模、仿真以及预测等，了解实际物理测量仪表、传感器等获取的实际数据与仿真系统得到数据差异的产生原因，理解在利用现代工具做工程设计以及科学研究过程中的局限性。 5-1 To apply modern engineering tools and information technology tools to properly describe, draft, model, simulate and predict complex engineering problems within the discipline and interdisciplinary fields; to understand the causes of discrepancies between actual data obtained from physical measurement instruments/sensors and simulation system data; and to recognize the limitations when utilizing modern tools for engineering design and scientific research.
	5-2 具有自主学习现代工程工具和信息技术工具使用方法的能力，具有该方面信息搜集、检索和分析能力，理解大数据、AI 人工智能大模型、算力、算法对解决复杂工程问题的意义和基本方法，并能在解决本专业、学科及跨学科领域的复杂工程问题过程中合理利用这些方法，并理解目前采用这些方法的局限性。 5-2 To demonstrate self-directed learning capabilities in mastering modern engineering tools and information technology applications, including the ability to effectively gather, retrieve, and analyze relevant technical information; to comprehend the significance and fundamental methodologies of big data, AI large-scale models, computing power, and algorithms in addressing complex engineering challenges; to appropriately apply these approaches when solving complex problems within the discipline and interdisciplinary domains; and to recognize the current limitations inherent in employing these methodologies.
6.工程与可持续发展：**在解决复杂工程问题时，能够基于**交通运输、电子、电气工程、海事及跨学科相关领域**背景知识，分析和评价该领域工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。** 6. **Engineering and Sustainable Development:** The ability to analyze and evaluate the impacts of	6-1 能够针对本专业、学科或跨学科等领域解决复杂工程问题的过程中，基于专业的背景知识，能够了解、分析或评价本领域涉及的工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，在设计、研究过程中充分考虑此影响，以获取解决复杂工程问题的合理方案。 6-1 To analyze and evaluate the impacts of engineering practices on health, safety, environment, legal compliance, as well as economic and social sustainability when addressing complex engineering problems within the discipline or interdisciplinary fields, based on professional expertise; and to fully consider these factors during design and research processes to develop reasonable solutions for complex engineering challenges.

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engineering practices in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields on health, safety, environment, legal compliance, as well as economic and social sustainability when addressing complex engineering problems. This includes demonstrating an understanding of professional responsibilities in the context of sustainable development principles.	6-2 具有船舶工程实习、工程实践和社会实践经历，在此实践过程中能够基于本专业、学科及跨学科相关领域的背景知识，了解诸如 MARPOL 国际公约、与受实践活动影响的健康、安全、环境、法律以及经济和社会可持续发展相关的技术标准、知识产权、产业政策和国内外法律法规，理解环境保护和社会可持续发展的内涵和意义，能够分析和评价这种影响并理解自身应承担的责任。 6-2 Graduates shall possess practical experience in ship engineering, engineering practice and social practice, during which they should demonstrate the ability to apply professional and interdisciplinary knowledge to understand relevant international conventions (including MARPOL), technical standards, intellectual property rights, industrial policies and domestic/foreign regulations pertaining to health, safety, environmental protection, legal compliance and socio-economic sustainability impacted by engineering activities, comprehend the principles and significance of environmental protection and sustainable development, and analyze/evaluate such impacts while acknowledging corresponding professional responsibilities.
7.工程伦理和职业规范：**有工程报国、为民造福的意识**，具有人文社会科学素养和社会责任感，**能够理解和践行工程伦理**，在工程实践中遵守交通运输、电子、电气工程、海事及跨学科相关领域的职业道德、国际公约、规范和相关法律，履行责任。 7. **Engineering Ethics and Professional Standards:** Possess the consciousness of serving the nation through engineering and benefiting the people, demonstrate literacy in humanities and social sciences, and uphold social responsibility. Capable of comprehending and practicing engineering ethics, while adhering to professional conduct, international conventions, codes, and relevant laws in the fields of transportation, electronics,	7-1 能够理解、践行工程伦理，具有人文社会科学素养和社会责任感，有工程报国、为民造福的意识，成为“通海事、强实践、宽视野、厚情怀、强体魄”的新时代“航海家型”人才，在本专业、学科或跨学科等相关领域的工程实践中践行如下要求，履行自身责任： （1）价值引领与政策法制 具备社会主义核心价值观、家国情怀和政策法制意识； （2）品格塑造与人文素养 具备优秀的品格（包括具有奉献精神、社会公德、仁爱之心、自尊自强、谦虚谨慎等人文素养和性格等； （3）职业素养与发展理念 具有电子气工程技术人员的职业素养、职业道德、职业规范、职业责任、国际视野、团队沟通合作意识以及可持续发展与终身学习意识 ； （4）科学精神与创新实践 具有电子气工程技术人员的科学工程素养与创新实践意识；拥有求真务实、开拓进取、坚韧不拔、勤奋钻研、勇于创新、批判思维的科学精神以及正确的唯物主义史观、认识论和方法等； （5）社会责任与工程伦理 具有社会责任与专业伦理意识和正确的工程价值观、工程系统观、工程社会观、工程经济观、工程健康观、工程安全观、工程法律观、工程文化观、工程环境观、工程道德观等 。

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electrical engineering, maritime, and related interdisciplinary domains during engineering practice. Committed to fulfilling professional obligations with integrity.	7-1 To comprehend and practice engineering ethics while demonstrating humanistic and social science literacy, social responsibility, and the consciousness of serving the nation through engineering for public welfare, evolving into a new-era "Navigator-Type" professional characterized by maritime expertise, strong practical capabilities, broad vision, profound humanistic spirit, and robust physical constitution. In engineering practice within the discipline or interdisciplinary fields, graduates shall fulfill the following responsibilities: (1) Values Guidance & Policy Awareness: Uphold socialist core values, national pride, and policy/legal awareness. (2) Character Development & Humanistic Cultivation: Exhibit exemplary character (including dedication, social ethics, compassion, self-respect, humility) and humanistic qualities. (3) Professional Competence & Development Philosophy: Possess occupational norms, accountability, global perspective, teamwork/communication skills, and sustainability/lifelong learning awareness as electrical/electronic engineering professionals. (4) Scientific Spirit & Innovative Practice: Develop scientific-engineering accomplishment and innovation praxis, embodying truth-seeking, perseverance, diligence, critical thinking, and dialectical materialism in methodology. (5) Social Responsibility & Engineering Ethics: Possess awareness of social responsibility and professional ethics, along with sound engineering perspectives including: systemic, societal, economic, health-related, safety-oriented, legal-compliant, culturally-adaptive, environmentally -conscious, and morally-grounded viewpoints in engineering practice.
	7-2 在本专业、学科或跨学科等相关领域工程实践及解决复杂工程问题的过程中，理解并遵循包括但不限于 STCW、SOLAS 以及 MARPOL 等国际公约和钢制海船入级规范等相关工程技术标准，以及知识产权、国家产业政策和国内外法律法规，理解电子电气工程师的职业道德和规范，践行工程伦理，具有人文社会科学素养和社会责任感，能够自主运用道德、规范、法律等武器抵制所见的不良风气，自觉履行责任。 7-2 In addressing complex engineering problems within the discipline and interdisciplinary fields, graduates shall understand and adhere to relevant international conventions (including but not limited to STCW, SOLAS, and MARPOL), classification rules for steel ships, technical standards, intellectual property

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	regulations, national industrial policies, and domestic/foreign laws. They will demonstrate professional ethics and norms as electrical/electronic engineers, practice engineering ethics with humanistic and social science literacy, and exercise social responsibility. This includes proactively applying moral principles, professional standards, and legal knowledge to counteract unethical practices, while conscientiously fulfilling their professional obligations.
8. 个人和团队：能够在**多样化**、多学科背景下的团队中承担个体、团队成员以及负责人的角色 8. **Individual and Team Collaboration:** The ability to effectively fulfill roles as an individual professional, collaborative team member, and team leader within diverse, multidisciplinary working environments, demonstrating adaptability and organizational competence.	8-1 在本专业、学科或跨学科等相关领域以团队形式参与的**多样化、多学科**背景下的工程实践（含与工程实践相关的各种活动）及解决复杂工程问题的过程中： （1）能够承担团队负责人的角色，具备较强的独立工作能力，履行负责人的责任，认真倾听他人意见，组织协调团队成员开展工作，完成团队任务，能够通过领导团队的方式共同思考解决团队合作中面对的主观及客观方面的问题，具有底线思维和应变突发情况的能力； **或** （2）能够担任团队成员角色的时候，履行团队成员的责任，能够服从团队负责人的领导，配合团队负责人及其他成员开展工作，主动承担艰苦任务，保时、保质、保量地完成分配给自己的工作，具有底线思维和应变突发情况的能力； 8-1 In the context of engineering practice (including related activities) and solving complex engineering problems within their professional discipline or interdisciplinary fields involving diverse, multidisciplinary teams, graduates shall demonstrate the ability to: (1) assume the role of team leader by exercising strong independent working capabilities, fulfilling leadership responsibilities through active listening and effective coordination of team members to accomplish collective objectives, facilitating collaborative problem-solving to address both subjective and objective challenges encountered during teamwork, while maintaining fundamental principles awareness and demonstrating adaptability in emergency situations; (2) perform effectively as a team member by complying with leadership directives, cooperating with both team leaders and fellow members, proactively undertaking demanding tasks while ensuring timely delivery of quality outputs for assigned responsibilities, with equal commitment to upholding fundamental principles and responding to contingencies.
	8-2 在本专业、学科或跨学科等相关领域以团队形式参与的**多样化、多学科**背景下的工程实践（如研讨会、答辩会、学术

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	交流活动）及解决复杂工程问题（如以团队形式撰写设计性报告/论文）的过程中，能够以线下或线上等多种形式与多学科、多元化团队成员进行有效、包容性地交流与合作，在担任团队负责人角色时，能领导、协调、合理分工团队成员，共同保时、保质、保量地完成工作任务；或在承担团队成员角色时，能与团队中及其他团队中多学科成员开展合作，分享信息与经验，主动为团队分忧，承担团队一员应承担的个体角色。 8-2 Graduates shall demonstrate the ability to effectively and inclusively communicate and collaborate with multidisciplinary and diverse team members through various offline and online formats during engineering practice (e.g., seminars, defense sessions, academic exchanges) and complex problem-solving activities (e.g., team-based design reports/papers) within their professional discipline or interdisciplinary fields. When assuming the role of team leader, they must effectively organize, coordinate, and delegate tasks to ensure timely, quality completion of team objectives. As team members, they shall actively cooperate with interdisciplinary colleagues within and across teams, share information and expertise, proactively address team challenges, and fulfill their individual responsibilities as contributing team participants.
9.沟通：能够就交通运输、电子、电气工程、海事及跨学科相关领域的复杂问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。能够在跨文化背景下进行沟通和交流，**理解、尊重语言和文化差异。** 9. **Communication:** Graduates will demonstrate effective communication competencies by engaging in professional discourse with industry peers and the general public regarding complex issues in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. This includes the ability to: Prepare technical reports and	9-1 能够就本专业、学科或跨学科等相关领域复杂工程问题与包括中国及国外业界同行及社会公众进行沟通、交流、研讨及答辩过程中，能够正确地使用中英文技术术语和对话语言进行申述发言、清晰表达或回答互动问题，理解、尊重语言和文化差异，体现有效和包容性沟通能力；（课堂、论文答辩） 9-1 Graduates shall demonstrate effective communication capabilities when addressing complex engineering problems within their discipline or interdisciplinary fields with both Chinese and international industry peers as well as the general public, including the proper use of Chinese and English technical terminology and conversational language during presentations, discussions, defenses, and Q&A sessions to clearly articulate positions and respond to inquiries, while demonstrating understanding and respect for linguistic and cultural differences to achieve inclusive and productive communication in various settings such as classroom instruction and thesis defenses.
	9-2 能够就本专业、学科或跨学科等相关领域复杂工程问题与包括中国及国外业界同行及社会公众进行沟通、交流、研讨及答辩过程中或在解决复杂工程问题的设计研究过程中，所

毕业要求 Graduation Requirements	毕业要求分解指标点/观测点 Observation Points
design documentation, deliver professional presentations, articulate concepts clearly and respond to instructions effectively. Furthermore, students will develop intercultural communication skills, enabling them to operate competently in cross-cultural environments while demonstrating understanding and respect for linguistic and cultural diversity.	撰写的论文、报告、设计文稿、演示文稿（如 PPT）中，能够正确地使用中英文技术术语，理解和尊重英语语言及文化与汉语语言及文化的差异。 9-2 Graduates shall demonstrate the ability to accurately employ both Chinese and English technical terminology when communicating complex engineering issues within their discipline or interdisciplinary fields to domestic and international industry peers and the general public, whether through oral exchanges (discussions, seminars, and defenses) or written deliverables (research papers, reports, design documentation, and presentations such as PPTs), while maintaining awareness and respect for the linguistic and cultural differences between English and Chinese contexts throughout the problem-solving and design research process.
10. 项目管理：理解并掌握交通运输、电子、电气工程、海事及跨学科相关领域中**与工程项目相关**的工程管理原理与经济决策方法，并能够在多学科环境中应用。 10. **Project Management:** Graduates will acquire comprehensive understanding and practical mastery of engineering management principles and economic decision-making methodologies relevant to project implementation in transportation, electronics, electrical engineering, maritime, and related interdisciplinary fields. They shall demonstrate the capability to effectively apply these competencies in multidisciplinary environments.	10-1 理解并掌握船舶工程项目与技术管理等相关的工程管理原理与经济决策方法，并能够把相关原理应用于电气、电子、控制、机械、交通运输、海事及人工智能等多学科环境中； 10-1 Graduates shall comprehend and master engineering management principles and economic decision-making methodologies related to ship engineering projects and technology management, with the capability to apply these principles in multidisciplinary environments encompassing electrical, electronic, control, mechanical, transportation, maritime engineering, and artificial intelligence applications.
	10-2 理解并掌握 10-1 所学的工程管理原理与经济决策方法，知晓其在工程实践特别是多学科环境中管理与经济决策的重要性，并能够把相关原理应用于诸如课程设计、毕业设计等工程实践中； 10-2 Graduates shall understand and master the engineering management principles and economic decision-making methods covered in Section 10-1, recognizing their critical importance in engineering practice, particularly in multidisciplinary environments. They shall demonstrate the ability to apply these principles to practical engineering activities including but not limited to course projects and graduation theses.
11.终身学习：具有自主学习、终身学习和**批判性思维**的意识**和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。** 11. **Lifelong Learning:**	11-1 具备自主学习和终生学习的知识基础，了解自主拓展知识和能力的途径，能针对广泛的技术变革以及个人或职业发展的需求，持续自主更新特别是数据科学以及人工智能方面的知识，具有辩证地接受新事物、新概念的批判性思维能力，以适应新技术的变革； 11-1 Graduates shall possess the foundational knowledge for

毕业要求 **Graduation Requirements**	毕业要求分解指标点/观测点 **Observation Points**
Graduates will develop self-directed learning awareness and capabilities, along with lifelong learning competencies and critical thinking skills. They shall be able to comprehend the broad impacts of technological advancements on engineering practice and society, while maintaining adaptability to emerging technological transformations.	self-directed and lifelong learning, understand approaches for autonomous knowledge and skill expansion, and demonstrate the ability to continuously update their expertise—particularly in data science and artificial intelligence—in response to broad technological advancements and personal or professional development needs. They shall cultivate critical thinking skills to dialectically evaluate emerging technologies and concepts, thereby maintaining adaptability to technological transformations.
	11-2 在本专业、学科或跨学科等相关领域解决复杂工程问题（诸如毕业设计/论文）的过程中，能够理解到诸如人工智能等**广泛的技术变革对工程和社会的影响，**认识到不断探索、自主学习、终身学习的必要性，能够在设计、研究过程中根据实际需求自主学习更新自身知识，同时对参考的文献及最新的研究成果有**批判性思维**的意识**和能力**，并应用到实践中去。 11-2 Graduates shall demonstrate the ability to comprehend the impacts of broad technological transformations (such as artificial intelligence) on engineering and society while addressing complex engineering problems (including graduation projects/theses) within their discipline or interdisciplinary fields. They shall recognize the necessity for continuous exploration, self-directed learning, and lifelong knowledge acquisition, proactively updating their expertise during design and research processes according to practical requirements. Furthermore, they must exhibit critical thinking awareness and capabilities when evaluating reference literature and cutting-edge research findings, effectively applying this discernment to their engineering practice.

三、专业核心课程

III．Core Courses

电路原理、模拟电子技术基础、数字电子技术基础、自动控制原理、嵌入式技术基础、电力电子学、电机学、船舶电力拖动系统、船舶电力系统与智能电站、智能船基础

Theory of Circuit, Fundamentals of Analog Electronics, Fundamentals of Digital Electronics, Principles of Automatic Control, Embedded Systems Technology Fundamentals, Power Electronics, Electrical Machinery, Marine Electric Propulsion Systems, Marine Power Systems & Intelligent Power Stations, and Intelligent Ship Fundamentals.

四、特色课程

IV．Feature Courses

电路原理（英）、船舶电力拖动系统、船舶电力系统与智能电站、船舶电子电气专业英语及会话、船舶概论、船舶管理、船舶辅助机械控制系统、船舶主机监测与控制系统、船舶机舱检测与报警系统、智能船基础、线性系统控制理论

Theory of Circuit, Marine Electric Drive System, Shipboard Power Systems and Smart Power Stations, Special English for Marine Electrical and Electronic Engineering, Introduction to Marine Engineering (Marine Electrical and Electronic), Marine Management (Marine Electrical and Electronic), Marine Auxiliary Control System, Monitoring and Control System for Marine Main Engine, Marine Monitoring and Alarm System, Intelligent ship Foundation, Linear Systems Control Theory

课程名称 Name	**交通海事 Transport/ Maritime**	**学科交叉 Cross-Disciplinary**	**智能+ Intelligent+**	**本研贯通 UG-Grad Integration**	**专创融合 Specialty& innovation**	**行业共建 industry collaboration**
电路原理（英）Theory of Circuit	●	●				
船舶电力拖动系统 Marine Electric Drive System	●	●			●	●
船舶电力系统与智能电站 Shipboard Power Systems and Smart Power Stations	●		●			
船舶电子电气专业英语及会话 Special English for Marine Electrical and Electronic Engineering	●					
船舶概论（电子电气）Introduction to Marine Engineering (Marine Electrical and Electronic)	●					
船舶管理（电子电气）Marine Management (Marine Electrical and Electronic)	●	●			●	
船舶辅助机械控制系统 Marine Auxiliary Control System	●					●
船舶主机监测与控制系统 Monitoring and Control System for Marine Main Engine	●					●
船舶机舱监测与报警系统	●	●				

Marine Monitoring and Alarm System						
智能船舶基础 Intelligent ship Foundation	●	●	●		●	
线性系统控制理论 Linear Systems Control Theory				●		

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课 Public basic and general education courses	思政理论 Ideological and Political Theory		15	/	/
	外语类 Foreign Languages		8		
	数学与自然科学类 Mathematics and Natural Sciences	数学类 Mathematics	18.5		
		物理类 Physics	9		
	计算思维及信息技术 Computational Thinking and Information Technology		3		
	通识类 General	军事素养 Military Literacy	2		

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit 必修 Compulsory	限选 Elective	任选 Option
	Courses	体育素质 Physical Literacy	4		
		沟通写作 Communication and Writing	2		
		创新思维 Invitational Thinking	2		
		创新与创业 Innovation and Entrepreneurship	/		8
		国家与社会 Nation and Society			
		科学与技术 Science and Technology			
		人文与艺术 Humanities and Art			
		其他 Others			
专业及方向课 Stream Courses	专业基础课 Discipline Courses		22	36.5	
	专业课 Stream Courses Specialized course		14.5		
集中实践环节 Practical &Training	军事实践课 Military Practical Course		3	/	
	专业实践课 Specialized Practical Course		6		
	毕业实践课 Graduation Practice		12		
	其他实践课 Others		10		
合计：175.5 Total：175.5			131	36.5	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000320	国家安全教育（船电）	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018440	专业导论（船电）	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：7.5 Total：7.5				7.5

表 1：船舶电子电气工程(卓越工程师)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（175.5 学分） In-class Teaching Courses （175.5 credits）			拓展素养（7.5 学分） Centralized Practicum （7.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	131	36.5	8	7.5	183

表 2：船舶电子电气工程(卓越工程师)必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-1	
			5	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			6	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			7	1713027660	计算机及程序设计(C) Computer Program Design (C)	3	考试	√	综合素养	48	24	24	1-1	
			8	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			9	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			10	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			11	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			12	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			13	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查		综合素养	48	40	8	1-2	
			14	1713021040	创新思维与创新方法(船电) Innovative Thinking and Innovative Methods(Automation Professional)	2	考查		综合素养	32	24	8	1-2	
			15	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			16	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			17	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	

			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-1	
			21	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-1	
			22	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			23	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			24	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			25	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-2	
			26	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			27	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-1	
			28	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-2	
			2	1713027980	电路原理 1(英) Theroy of Circuit Ⅰ	4.5	试内	√	综合素养	72	56	16	1-2	
			3	1713014180	模拟电子技术基础 Fundamental of Analog Electronics	4	考试	√	综合素养	64	52	12	2-1	
			4	1713019742	电路原理 2(英) Theroy of Circuit Ⅱ	1.5	考试	√	综合素养	24	24	0	2-1	
			5	1713014190	数字电子技术基础 Fundamental of Digital Electronics	3	考试	√	综合素养	48	38	10	2-2	
			6	1713015630	自动控制原理 Principle of Automatic Control	3	考试	√	综合素养	48	42	6	2-2	
			7	1713029280	嵌入式系统基础 Fundamental of Embedded System	4	考试		综合素养	64	46	18	2-2	
	必修-专业及方向课程 Stream Courses		1	1713015640	电机学 Electrical Machine	4.5	考试	√	综合素养	72	64	8	2-2	
			2	1713015650	电力电子学 Power Electronics	3	考试	√	综合素养	48	42	6	3-1	
			3	1713015740	船舶电力拖动系统 Marine Electrical Drive System	3	考试	√	综合素养	48	42	6	3-2	
			4	1713029250	船舶电力系统与智能电站 Shipboard Power Systems and Smart Power	4	考试	√	综合素养	64	60	4	3-2	
合计 Total						**101**				**1696**	**1366**	**330**		

表 3：船舶电子电气工程(卓越工程师) 限选课程设置及进程

备注:（一）为满足海事局等效认可要求，需修满海事局等效认可限选课程学分（30.5）学分，其他限选课程要求如下：
（1）专业基础限选课需在船舶电子电气技术基础、工程电磁场、船电基础专业英语、线性系统控制理论四门课中至少修满 4 学分；
（2）专业限选课需在机器学习与人工智能、高电压技术、电力系统分析、微特电机及其控制、船舶先进能源与控制技术、现代电力电子技术六门课中至少修满 2 学分；
（二）卓越工程师本版培养计划第 3-1 学期如下课程需在实习船上执行，执行时间为 12 周：
（1）理论课：船舶管理（电子电气）、船舶概论（电子电气）、船舶辅助机械控制系统、船舶主机监测与控制系统、船舶机舱监测与报警系统。
（2）实践课：船舶电子电气工艺、船舶电气设备维护及检测。
（三）由于实习船的船期等不确定因素，可能会导致在船学生在第 5 学期的四六级大学英语考试无法参加。

Table3: Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours 合计 Total	讲课 Lectures	实践 Practicum	上课学期 Semesters	备注 Notes
限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713015430	工程电磁场 Engineering Electromagnetics	2	考试		综合素养	32	24	8	2-1	
			2	1713029290	计算机数据分析及计算机网络 Computer-Aided Data Analysis and Computer Networking	2.5	考试		综合素养	40	36	4	2-1	海事局等效认可课程
			3	1713028640	线性系统控制理论 Linear Systems Control Theory	2	考试		综合素养	32	32	0	2-2	
			4	1713029240	船舶电子电气技术基础 Fundamentals of marine electronic and electrical technology	2	考试		综合素养	32	28	4	2-2	
			5	1713023700	船舶管理(电子电气) Marine Management (Marine Electrical and Electronic)	1.5	考试		综合素养	24	24	0	3-1	海事局等效认可课程
			6	1713025690	船舶概论(电子电气) Introduction to Marine Engineering (Marine Electrical and Electronic)	2	考试		综合素养	32	32	0	3-1	海事局等效认可课程
			7	1713015670	交流变频调速 Alternating Current Speed-regulating System	2	考试		综合素养	32	30	2	3-2	海事局等效认可课程
			8	1713025650	船舶电气系统仿真与设计 Marine Electrical System Simulation and	3	考试		综合素养	48	38	10	3-2	海事局等效认可课程
			9	1713025710	可编程序控制器及其通信网络 Communication and Network for Programmable Controller	3	考试		综合素养	48	38	10	3-2	海事局等效认可课程
			10	1713029230	船舶电子电气专业英语及会话 Professional English and Conversations for Marine Electrical and Electronic Engineering	3	考试		综合素养	48	48	0	3-2	海事局等效认可课程
	限选-专业及方向课程 Stream Courses		1	1713015800	船舶机舱监测与报警系统 Marine Monitoring and Alarm System	2	考试		综合素养	32	28	4	3-1	海事局等效认可课程
			2	1713023730	船舶主机监测与控制系统 Monitoring and Control System for Marine Main	2	考试		综合素养	32	30	2	3-1	海事局等效认可课程
			3	1713030330	船舶辅助机械控制系统 Marine Auxiliary Control System	2	考试		综合素养	32	30	2	3-1	海事局等效认可课程
			4	1713024341	船舶综合驾驶台系统(1) Marine Integrated Bridge System（1）	3	考试		综合素养	48	36	12	3-2	海事局等效认可课程

			5	1713023810	智能船舶基础 Intelligent ship Foundation	2	考试		综合素养	32	32	0	4-1	海事局等效认可课程
			6	1713024342	船舶综合驾驶台系统(2) Marine Integrated Bridge System（2）	2.5	考试		综合素养	40	28	12	4-1	海事局等效认可课程
			7	1713024430	电力系统分析 Power System Analysis	3	考试		综合素养	48	42	6	4-1	
			8	1713024520	高电压技术 High Voltage Technique	2.5	考试		综合素养	40	36	4	4-1	
			9	1713028650	船舶先进能源与控制技术 Advanced Energy and control Technology for	2	考试		综合素养	32	32	0	4-1	
			10	1713029260	现代电力电子技术 Modern Power Electronics Technology	2	考试		综合素养	32	32	0	4-1	
			11	1713029270	微特电机及其控制 Small and Special Electric Machines and Control	2	考试		综合素养	32	26	6	4-1	
			12	1713029300	机器学习与人工智能 Machine Learning and Artificial Intelligence	2	考试		综合素养	32	32	0	4-1	
合计 Total						**50**				**800**	**714**	**86**		

表 4：船舶电子电气工程(卓越工程师)任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：船舶电子电气工程(卓越工程师) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713004710	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	1	考查		综合素养	28	0	28	2-2	
			3	1713015560	电机设计与实践 Design and Practice of Electrical Motor	1	考查		综合素养	30	0	30	2-2	
			4	1713016190	船舶保安 Ship Security	0.5	考查		综合素养	20	0	20	2-2	
			5	1713017530	高级消防 Advanced Fire Fighting	1	考查		综合素养	36	0	36	2-2	
			6	1713026090	基本安全 Basic Safety	2.5	考查		综合素养	86	54	32	2-2	
			7	1713027810	精通急救 Proficiency in First Aid	1	考查		综合素养	24	12	12	2-2	
			8	1713015810	船舶电子电气工艺 Technology of Ship Electric	2	考查		综合素养	60	0	60	3-1	
			9	1713015820	船舶电气设备维护及检测 Maintenance and detection of marine	1	考查		综合素养	30	0	30	3-1	

			10	1713023710	船舶认识实习(船舶电子电气工程) Ship Observation Practice (Marine Electrical and Electronic)	2	考查		综合素养	120	0	120	3-1	
			11	1713030350	电子电气专题设计与实践 Design and Practice of Electrical and Electronics Specialty	2	考查		综合素养	60	0	60	3-2	
			12	2113000540	金工实习 Metalworking Practice	2	考查		综合素养	60	0	60	3-2	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			14	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**32**				**1020**	**66**	**954**		

表 6：船舶电子电气工程(卓越工程师) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713018440	专业导论(船电) Introduction of Profession	0.5	考查		拓展素养	8	8	0	1-1	
			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000320	国家安全教育(船电) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**5.5**				**136**	**136**	**0**		

九、实践学时学分
IX. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修		3	
2	体育	必修		4	
3	金工实习 Metalworking Practice（2）	必修		2	●
4	精通救生艇筏和救助艇 Proficiency in Life boat & Rescue boat	必修		1	●
5	精通急救 Proficiency in First Aid	必修		1	●
6	高级消防 Advanced Fire Fighting	必修		1	●
7	基本安全 Basic Safety	必修		1	●
8	船舶保安 Ship Security	必修		2.5	●
9	船舶电气设备维护及检测 Maintenance and detection of marine electrical equipment	必修		0.5	●
10	船舶电子电气工艺 Technology of Ship Electric	必修		2	●
11	电子电气专题设计与实践 Design and Practice of Electrical and Electronics Specialty	必修		2	●
12	电机设计与实践 Design and Practice of Electrical Motor	必修		1	●
13	船舶认识实习（船舶电子电气工程） Ship Observation Practice (Marine Electrical and Electronic)	必修		2	●
14	毕业设计（论文） Graduation Design& Thesis	必修		12	●
15	创新思维与创新方法(船电） Innovative Thinking and Innovative Methods (Automation Professional)	必修	8	0.5	
16	大学物理实验 Physics Experiment	必修		2	●
17	计算机及程序设计(C) Basics of Computer Programming(C)	必修	24	1.5	●

18	机械制图 Mechanical Graphing	必修	4	0.25	●
19	电路原理 1（英） Theory of Circuit I	必修	16	1	●
20	模拟电子技术基础 Fundamental of Analog Electronics	必修	12	0.75	●
21	数字电子技术基础 Fundamental of Digital Electronics	必修	10	0.625	●
22	自动控制原理 Principle of Automatic Control	必修	6	0.375	●
23	嵌入式系统技术基础 Fundamental of Embedded System	必修	16	1	●
24	船舶电气系统仿真与设计 Marine Electrical System Simulation and Design	必修	10	0.625	●
25	计算机数据分析及计算机网络 Computer Numerical Analysis and Computer Networks	必修	4	0.25	●
26	交流变频调速 Alternating Current Speed-regulating System	必修	2	0.125	●
27	可编程序控制器及其通信网络 Communication and Network for Programmable Controller	必修	10	0.625	●
28	电力电子学 Power Electronics	必修	6	0.375	●
29	电机学 Electric Machinery	必修	8	0.5	●
30	船舶电力拖动系统 Marine Electric Drive System	必修	6	0.375	●
31	船舶电力系统与智能电站 Shipboard Power Systems and Smart Power Stations	必修	4	0.25	●
32	船舶辅助机械控制系统 Marine Auxiliary Control System	必修	4	0.25	●
33	船舶主机监测与控制系统 Monitoring and Control System for Marine Main Engine	必修	2	0.125	●
34	船舶机舱监测与报警系统 Marine Monitoring and Alarm System	必修	4	0.25	●
35	船舶综合驾驶台系统（1） Marine Integrated Bridge System（1）	必修	12	0.75	●
36	船舶综合驾驶台系统（2） Marine Integrated Bridge System（2）	必修	12	0.75	●
37	船舶电子电气技术基础 Fundamentals of marine electronic and electrical technology	限选 （4 选 2）		0	●
38	工程电磁场 Engineering Electromagnetics				●
39	船电基础专业英语 Basic professional English for marine electronics and electrical engineering				●

40	线性系统控制理论 Linear System Control Theory				●
41	机器学习与人工智能 Machine Learning and Artificial Intelligence	限选 （6 选 1）		0	●
42	高电压技术 High Voltage Technique				●
43	电力系统分析 Power System Analysis				●
	微特电机 Small & Special Electrical Machines				
	船舶先进能源与控制技术 Marine Advanced Energy and Control Technology				
	现代电力电子技术 Modern Power Electronics Technology				
合计 Total			180	48.25 41.25（去除体育、军事训练）	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**	培养目标 5 **Program Objectives 5**
毕业要求 1-1 **Graduation Requirements 1-1**		●			
毕业要求 1-2 **Graduation Requirements 1-2**		●			
毕业要求 2-1 **Graduation Requirements 2-1**		●			
毕业要求 2-2 **Graduation Requirements 2-2**		●			
毕业要求 3-1 **Graduation Requirements 3-1**			●	●	●
毕业要求 3-2 **Graduation Requirements 3-2**			●	●	●
毕业要求 3-3 **Graduation Requirements 3-3**			●	●	●
毕业要求 4-1 **Graduation Requirements 4-1**			●	●	●
毕业要求 4-2 **Graduation Requirements 4-2**			●	●	●
毕业要求 4-3 **Graduation Requirements 4-3**			●	●	●
毕业要求 5-1 **Graduation Requirements 5-1**		●		●	●
毕业要求 5-2 **Graduation Requirements 5-2**		●		●	●

毕业要求 6-1 **Graduation Requirements 6-1**	●			●	●
毕业要求 6-2 **Graduation Requirements 6-2**	●			●	●
毕业要求 7-1 **Graduation Requirements 7-1**	●			●	●
毕业要求 7-2 **Graduation Requirements 7-2**	●			●	●
毕业要求 8-1 **Graduation Requirements 8-1**	●		●	●	●
毕业要求 8-2 **Graduation Requirements 8-2**	●		●	●	●
毕业要求 9-1 **Graduation Requirements 9-1**			●	●	●
毕业要求 9-2 **Graduation Requirements 9-2**			●	●	●
毕业要求 10-1 **Graduation Requirements 10-1**				●	●
毕业要求 10-2 **Graduation Requirements10-2**				●	●
毕业要求 11-1 **Graduation Requirements 11-1**			●	●	●
毕业要求 11-2 **Graduation Requirements11-2**			●	●	●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	军事理论															M									
2	体育																	H							
3	高等数学	H		M																					
4	线性代数	H		M																					
5	逻辑学																			H					
6	思想道德与法治													M		H									
7	大学英语																			H					
8	大学生健康教育																	H		H					
9	劳动教育(理论)															H		H							
10	大学物理	H	M																						
11	大学物理实验		M						H																
12	中国近现代史纲要															H									
13	创新思维与创新方法(船电）			H										H											
14	国家安全教育													H		H									
15	概率论与数理统计	M		H																					
16	复变函数与积分变换	H		M																					
17	毛泽东思想和中国特															H									

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
	色社会主义理论体系概论																								
18	马克思主义基本原理															H									
19	习近平新时代中国特色社会主义思想概论															H									
20	实用写作																			H					
21	机械制图	H			H				M			H					M								
22	电路原理★	H	H	H	H																M				
23	模拟电子技术基础★	H	H	H	H																				
24	数字电子技术基础★	H	H	H	H	M																			
25	自动控制原理★	H	H	H	H							M				M									
26	嵌入式系统技术基础★		H		H	H						M				H									
27	电力电子学★		H		H	H			H																
28	电机学★	H	H	H	H											H		H							
29	船舶电力拖动系统★3				M	H				H				M		M	M	H						H	
30	船舶电力系统与智能电站★			H					H					M		M	M								
31	计算机及程序设计(C)											H													
32	船电基础专业英语	H		H	H																M				
33	计算机数据分析及计算机网络★		H			M						M	H					H						H	

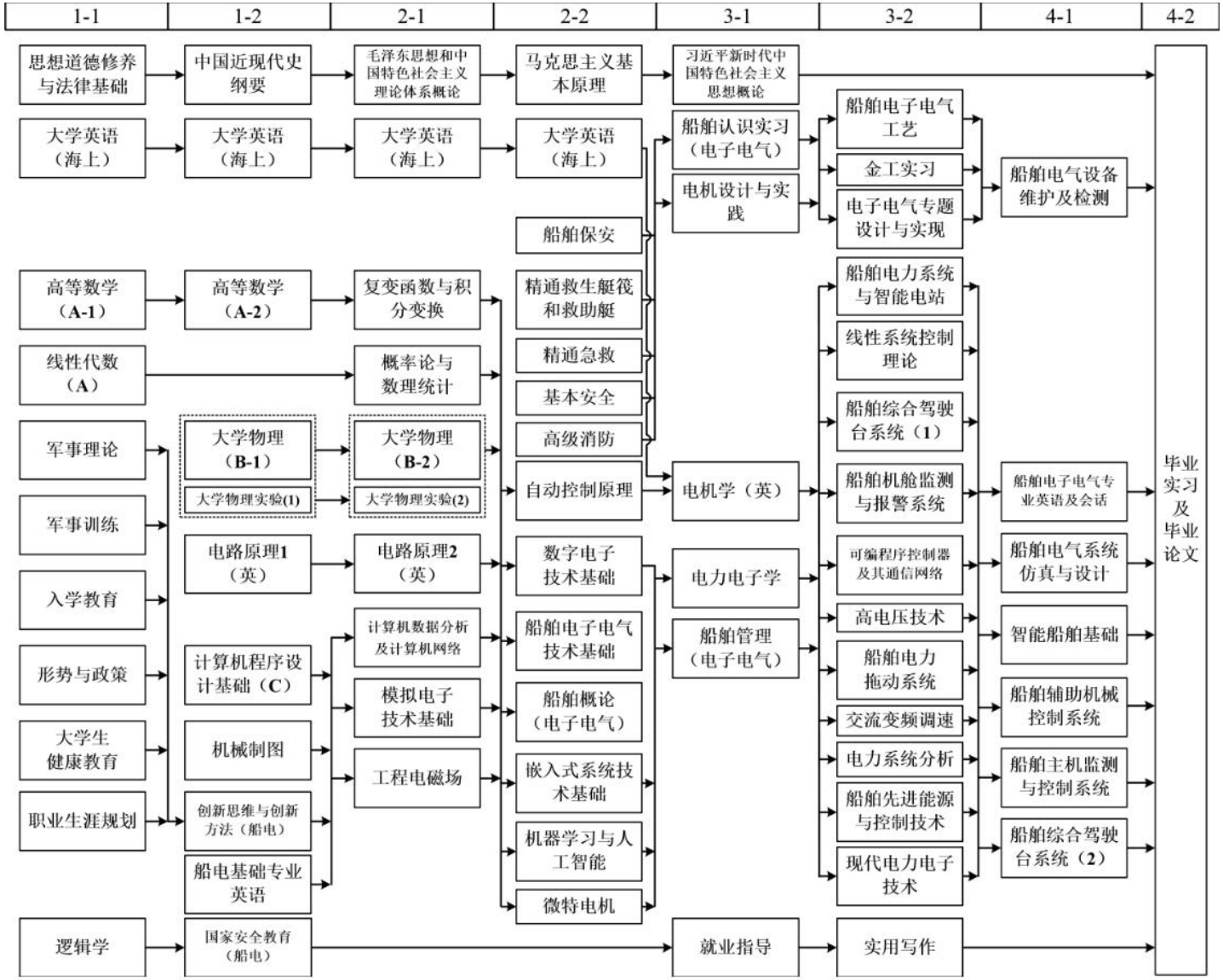
序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
34	船舶电子电气技术基础		H	H	H											M									
35	工程电磁场		H	H	H											M									
36	船舶管理（电子电气）★													H		H		M				H	H		
37	船舶概论（电子电气）★	H		H					M						H	M	H								
38	线性系统控制理论		H	H	H											M									
39	交流变频调速★			H	H	M			M							M									
40	船舶电气系统仿真与设计★				H		H					H		H			H								
41	船舶电子电气专业英语及会话★															M				H	H				
42	可编程序控制器及其通信网络★	H			H	H												M						H	
43	机器学习与人工智能		H		H								H	H		M									
44	微特电机		H		H								H	H		M									
45	船舶辅助机械控制系统★	H			H	H			H																
46	船舶主机监测与控制系统★	H			H	H										M	M								
47	船舶机舱监测与报警系统★	H			H	H										M	M								
48	电力系统分析		H		H								H	H		M									

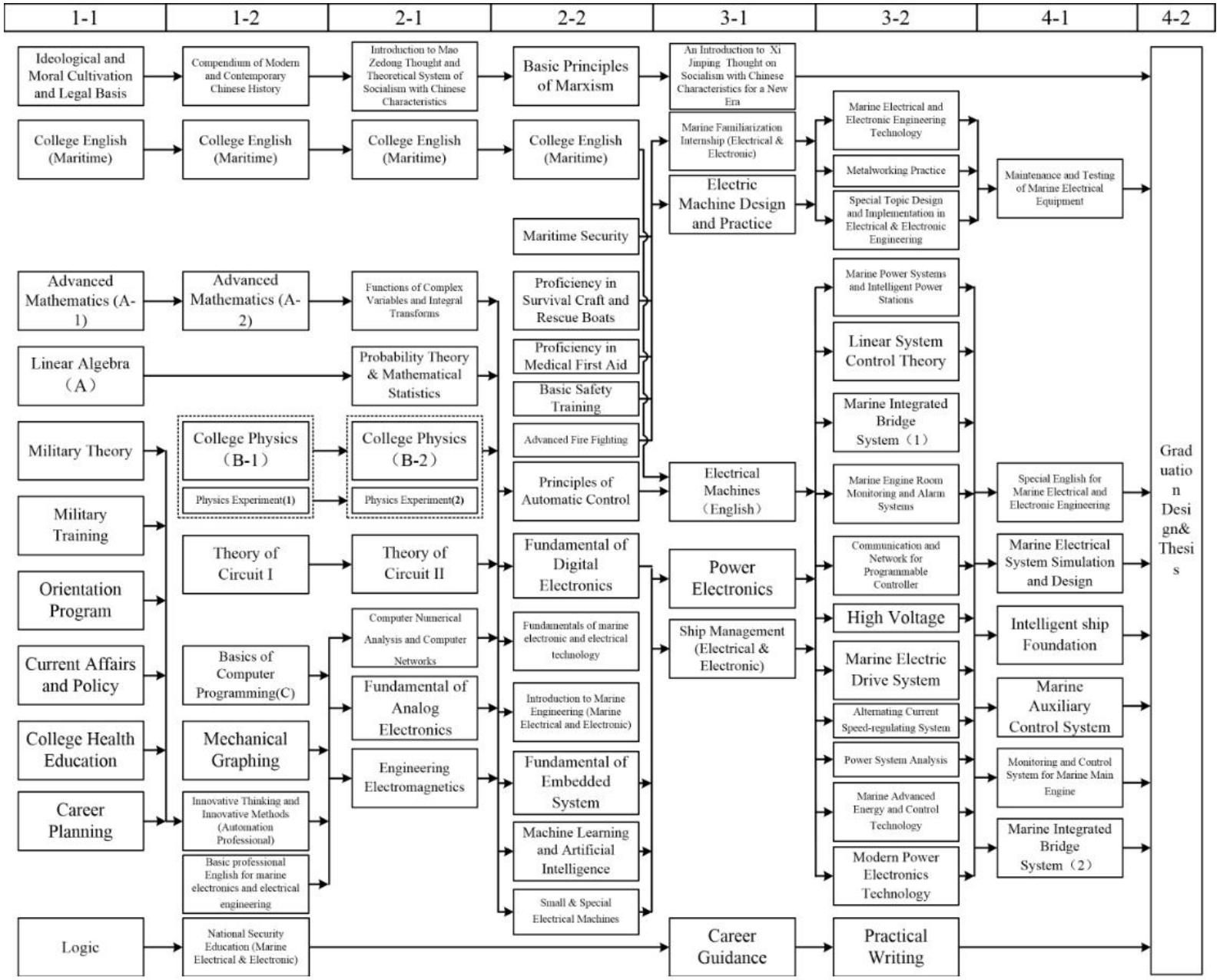
序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
49	高电压技术		H		H								H	H		M									
50	船舶先进能源与控制技术		H		H								H	H		M									
51	现代电力电子技术		H		H								H	H		M									
52	船舶综合驾驶台系统 1	M		H																					
53	船舶综合驾驶台系统 2	M		H																					
54	智能船舶基础★				H								H	H		M	H								
55	军事训练																	H							
56	精通救生艇筏和救助艇																H	H							
57	精通急救																H	H							
58	高级消防																H	H							
59	基本安全																H	H							
60	船舶保安																H	H							
61	电子电气专题设计与实践★						H					H		H		M		H					H		
62	电机设计与实践★						H									M	H	M					H		
63	船舶认识实习（船舶电子电气工程）★				H										H	M	H	H			H				
64	劳动教育（实践）																	H							
65	船舶电子电气工艺★						H			H							H	M	H						
66	金工实习			M															M						

序号	毕业要求指标点 / 课程名称	1 工程知识		2 问题分析		3 设计/开发解决问题			4 研究			5 使用现代工具		6 工程与可持续发展		7 工程伦理与职业规范		8 个人和团队		9 沟通		10 项目管理		11 终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
67	船舶电气设备维护及检测★						H			H							H	M	H						
68	毕业设计(论文) ★							H			H	H	H						M	H					H
69	形势与政策															H									
70	入学教育															H								H	
71	专业导论													M		M									
72	职业生涯规划															H									
73	就业指导															H									

十一、课程配置流程图

XI．Flowchart of Course Configuration




1-1
1-2
2-1
2-2
3-1
3-2
4-1
4-2
Ideological and Moral Cultivation and Legal Basis
Compendium of Modern and Contemporary Chinese History
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Basic Principles of Marxism
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
College English (Maritime)
College English (Maritime)
College English (Maritime)
College English (Maritime)
Marine Familiarization Internship (Electrical & Electronic)
Electric Machine Design and Practice
Marine Electrical and Electronic Engineering Technology
Metalworking Practice
Special Topic Design and Implementation in Electrical & Electronic Engineering
Maintenance and Testing of Marine Electrical Equipment
Maritime Security
Advanced Mathematics (A-1)
Advanced Mathematics (A-2)
Functions of Complex Variables and Integral Transforms
Proficiency in Survival Craft and Rescue Boats
Proficiency in Medical First Aid
Basic Safety Training
Advanced Fire Fighting
Linear Algebra (A)
Probability Theory & Mathematical Statistics
Marine Power Systems and Intelligent Power Stations
Linear System Control Theory
Marine Integrated Bridge System (1)
Military Theory
College Physics (B-1)
College Physics (B-2)
Physics Experiment(1)
Physics Experiment(2)
Principles of Automatic Control
Electrical Machines (English)
Marine Engine Room Monitoring and Alarm Systems
Special English for Marine Electrical and Electronic Engineering
Military Training
Theory of Circuit I
Theory of Circuit II
Fundamental of Digital Electronics
Power Electronics
Communication and Network for Programmable Controller
Marine Electrical System Simulation and Design
Orientation Program
Computer Numerical Analysis and Computer Networks
Fundamentals of marine electronic and electrical technology
Ship Management (Electrical & Electronic)
High Voltage
Intelligent ship Foundation
Current Affairs and Policy
Basics of Computer Programming(C)
Fundamental of Analog Electronics
Introduction to Marine Engineering (Marine Electrical and Electronic)
Marine Electric Drive System
Marine Auxiliary Control System
College Health Education
Mechanical Graphing
Engineering Electromagnetics
Fundamental of Embedded System
Alternating Current Speed-regulating System
Power System Analysis
Monitoring and Control System for Marine Main Engine
Career Planning
Innovative Thinking and Innovative Methods (Automation Professional)
Machine Learning and Artificial Intelligence
Marine Advanced Energy and Control Technology
Marine Integrated Bridge System (2)
Basic professional English for marine electronics and electrical engineering
Small & Special Electrical Machines
Modern Power Electronics Technology
Graduation Design& Thesis
Logic
National Security Education (Marine Electrical & Electronic)
Career Guidance
Practical Writing

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

院　　办：84728250 84725100

教学院长：84728210

教 务 处：84723005

船舶电子电气工程专业负责人：薛征宇

船舶电子电气工程教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Automation Major

[2025 级适用]

★自动化（080801）

大连海事大学教务处

2025 年 9 月

自动化专业本科培养计划（2025 版）

Undergraduate Program for Automation Major

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业主要以船舶、航运及海洋工程为背景，培养在控制科学与自动化工程技术领域从事研究开发、工程设计、运行管理等工作，具有创新精神和国际视野，德智体美劳全面发展，能够成为新时代社会主义合格建设者和可靠接班人的高级工程技术人才。 本专业学生毕业后，经过 5 年左右实际工作锻炼，将达成以下目标： This major mainly takes ship, shipping and marine engineering as the background, cultivating senior engineering and technical talents who engage in research development, engineering design, operation management and other work in the field of control science and automation engineering technology, possess innovative spirit and international vision, develop comprehensively in morality, intelligence, physique, aesthetics and labor, and are able to become qualified builders and reliable successors of socialism with Chinese characteristics in the new era. Our graduates from this program, after about five years of practical works, will achieve the following objectives:	1.具有家国情怀与社会责任感，爱国敬业，身心健康，遵守法律法规、职业道德、行业标准和规范； 1. Possess feelings to family and national and sense of social responsibility, patriotic dedication and professional devotion, physical and mental well-being, and abide by laws and regulations, professional ethics, industry standards, and norms.
	2.能够综合运用数理、工程和专业知识，解决运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题，并能综合考虑和评价工程对环境与社会各方面的影响； 2. Be able to comprehensively applying mathematical, engineering and professional knowledge to solve complex engineering problems in automation fields related to motion control systems, process control systems, ship automation systems, and robot control systems, and be able to comprehensively consider and evaluate the impacts of engineering on the environment and various aspects of society.
	3. 具备良好的沟通、交流与管理能力，能在团队中发挥有效作用； 3. Possess good communication, exchange and management skills, and can play an effective role in the team.
	4. 具有全球化视野，洞悉相关领域自动化系统的发展动态和前沿技术，具有终身学习和一定的创新能力，以适应社会发展。 4. With a global perspective, insight into the development dynamics and cutting-edge technologies of automation systems in related fields, possess lifelong learning and certain innovative capabilities to adapt to social development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.工程知识：具有从事自动化工程所需的数学、自然科学、工程基础和专业知识，并能够综合应用这些知识解决运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题。 1.Engineering knowledge: Have the mathematics, natural science, engineering foundation and professional knowledge required for automation engineering, and be able to comprehensively apply these knowledge to solve complex engineering problems in automation fields related to motion control systems, process control systems, ship automation systems and robot control systems.	1-1 具有数学和自然科学知识，并能将其应用于工程问题的恰当表述中。 1-1 Have knowledge of mathematics and natural sciences, and be able to apply it to the appropriate formulation of engineering problems.
	1-2 具有工程基础知识，并能够应用其基本概念、基本理论描述和解释实际工程问题的运行规律。 1-2 Have the basic knowledge of engineering, and can apply its basic concepts and theories to describe and explain the operation laws of practical engineering problems.
	1-3 具有自动化工程领域的专业基础知识，并能针对实际自动化工程问题建立恰当的数学模型并求解。 1-3 Have the basic knowledge in the field of automation engineering and be able to establish appropriate mathematical models and solutions for practical automation engineering problems.
	1-4 具有自动化工程领域的专业知识，并能将相关知识应用于自动化工程问题的复杂性判别和自动化系统的设计、优化。 1-4 Have professional knowledge in the field of automation engineering, and can apply relevant knowledge to the complexity discrimination of automation engineering problems and the design and optimization of automation systems.
2.问题分析：能够应用数学、自然科学和工程科学的基本原理，对运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题进行识别、表达，并通过文献研究分析复杂工程问题，以获得有效结论。 2. Problem analysis: Be able to apply the basic principles of mathematics, natural sciences and engineering sciences to identify and express complex engineering problems in automation fields related to motion control systems, process control systems, ship automation systems and robot control systems, and analyze complex engineering problems through literature research to obtain effective conclusions.	2-1 能识别和判断自动化领域复杂工程问题的关键环节。 2-1 Be able to identify and judge the key links of complex engineering problems in automation field.
	2-2 能基于相关科学原理和数学模型，正确表达复杂工程问题，并分析其特性。 2-2 Be able to correctly express complex engineering problems and analyze their characteristics based on relevant scientific principles and mathematical models.
	2-3 能认识到解决复杂工程问题有多种方案，并能通过文献研究比较不同解决方案的特性，确定最佳方案。 2-3 Be able to recognize that there are multiple solutions to complex engineering problems, and be able to compare the characteristics of different solutions through literature research to determine the best solution.
	2-4 能运用相关基本原理，借助文献研究，分析复杂工程问题解决过程中的影响因素，获得有效结论。 2-4 Be able to use relevant basic principles, with the help of literature research, analyze the influencing factors in the

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	process of solving complex engineering problems, and obtain effective conclusions.
3.设计/开发解决方案：能够针对运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题，设计解决方案，设计满足需求的系统、单元或模块，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。 3. Design/Develop solutions: Be able to design solutions for complex engineering problems in automation fields related to motion control systems, process control systems, ship automation systems and robot control systems, design systems, units or modules that meet requirements, and demonstrate innovation awareness in the design process, taking into account social, health, safety, legal, cultural and environmental factors.	3-1 掌握工程设计和产品开发全周期、全流程的基本设计/开发方法和技术。 3-1 Master the basic design and development methods and technologies of the whole cycle and process of engineering design and product development.
	3-2 能根据自动化领域复杂工程问题的需求，设计合理的解决方案，从中体现创新意识。 3-2 Be able to design reasonable solutions according to the needs of complex engineering problems in the field of automation, reflecting innovative consciousness.
	3-3 能根据工艺要求，设计满足需求的系统、单元或模块。 3-3 Be able to design systems, units or modules that meet the requirements of the process.
	3-4 能在设计中综合考虑安全、健康、法律、文化及环境因素的约束，并评价解决方案的可行性。 3-4 Be able to consider the constraints of safety, health, legal, cultural and environmental factors in the design, and evaluate the feasibility of solutions.
4.研究：能够基于科学原理对运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题进行研究，采用科学方法设计实验方案、分析与解释数据，并综合相关信息给出合理有效的结论。 4. Research: Be able to study complex engineering problems in automation fields related to motion control systems, process control systems, ship automation systems and robot control systems based on scientific principles, design experimental schemes, analyze and interpret data by using scientific methods, and give reasonable and effective conclusions based on relevant information.	4-1 能基于科学原理对自动化领域复杂工程问题的解决方案进行调研和分析。 4-1 Be able to investigate and analyze solutions to complex engineering problems in the field of automation based on scientific principles.
	4-2 能够基于专业知识，选择研究路线并设计实验方案，确定需要的材料、器件和系统。 4-2 Be able to select research routes and design experimental schemes based on professional knowledge, and determine the required materials, devices and systems.
	4-3 能够根据实验方案，实施实验并获取实验理数据。 4-3 Be able to carry out experiments and obtain experimental data according to the experimental scheme.
	4-4 能正确处理实验数据，对实验结果进行关联、分析和解释，获取合理有效的结论。 4-4 Be able to correctly process the experimental data, correlate, analyze and interpret the experimental results, and obtain reasonable and effective conclusions.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
5.使用现代工具：能够针对运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题，开发、选择与使用控制系统设计与仿真、计算机工程制图、电子电路设计与仿真等工具，包括对复杂工程问题的模拟与预测，并能够理解其局限性。 5. Use modern tools: Be able to develop, select and use tools for control system design and simulation, computer engineering drawing, electronic circuit design and simulation, etc. for complex engineering problems in automation fields related to motion control systems, process control systems, ship automation systems and robot control systems, including the simulation and prediction of complex engineering problems, and understand their limitations.	5-1 了解自动化专业常用的控制系统设计与仿真、计算机工程制图、电子电路设计与仿真等工具的使用原理和方法，并理解其局限性。 5-1 Understand the principles and methods of using tools commonly used in automation, such as control system design and simulation, computer engineering drawing, electronic circuit design and simulation, and understand their limitations.
	5-2 能选择与使用恰当的控制系统设计与仿真、计算机工程制图、电子电路设计与仿真等工具，用于自动化领域复杂工程问题的分析、计算与设计。 5-2 Be able to select and use appropriate control system design and simulation, computer engineering drawing, electronic circuit design and simulation tools for the analysis, calculation and design of complex engineering problems in the field of automation.
	5-3 能针对实际自动化工程问题，开发或选用现代工具，对其进行模拟和预测，并在实践中分析其局限性。 5-3 Be able to develop or select modern tools for the simulation and prediction of practical automation engineering problems, and analyze their limitations in practice.
6.工程与可持续发展：能够基于自动化工程相关背景知识进行合理分析，评价专业工程实践和自动化领域复杂工程问题解决方案对社会、健康、安全、法律、文化、环境、经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Society: Be able to conduct reasoned analysis and evaluate the impacts of professional engineering practices and solutions to complex engineering problems in automation — considering societal, health, safety, legal, cultural, environmental, economic, and sustainable development factors — based on relevant automation engineering knowledge, and to understand the corresponding responsibilities.	6-1 具有工程实习和社会实践的经历，了解自动化领域的技术标准体系、知识产权、产业政策和法律法规。 6-1 Have engineering internship and social practice experience, understand the technical standard system, intellectual property rights, industrial policies and laws and regulations in the field of automation.
	6-2 能够客观分析和评价专业工程实践和复杂工程问题解决方案社会、健康、安全、法律、文化、环境、经济和社会可持续发展的影响，以及这些制约因素对项目实施的影响，并理解应承担的责任。 6-2 Be able to objectively analyze and evaluate the societal, health, safety, legal, cultural, environmental, economic, and sustainable development impacts of professional engineering practices and solutions to complex engineering problems, as well as the effects of these constraints on project implementation, while understanding the responsibilities

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	involved.
7.工程伦理与职业规范：具有人文社会科学素养、社会责任感，理解和践行工程伦理，能够在自动化工程实践中理解并遵守工程职业道德和规范，履行责任。 7. Professional standards: Have humanistic and social science literacy, sense of social responsibility. Comprehend and adhere to engineering ethics. Be able to understand and abide by engineering professional ethics and norms in the practice of automation engineering, and fulfill responsibilities.	7-1 具有正确价值观，理解个人与社会的关系，了解中国国情。 7-1 Have correct values, understand the relationship between individual and society, understand China's national conditions.
	7-2 理解诚实公正、诚信守则的工程职业道德和规范，并能在工程实践中自觉遵守。 7-2 Understand the engineering professional ethics and norms of honesty, justice and integrity, and consciously abide by them in engineering practice.
	7-3 理解工程师对公众的安全、健康和福祉，以及环境保护的社会责任，能够在工程实践中自觉履行责任。 7-3 Understand the social responsibility of engineers to the safety, health and well-being of the public and environmental protection, and be able to consciously fulfill their responsibilities in engineering practice.
8.个人和团队：能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and Team: Be able to take on individual, team member and leader roles in a multidisciplinary team.	8-1 能与其他学科的成员有效沟通，合作共事。 8-1 Be able to communicate effectively and work together with members of other disciplines.
	8-2 能主动与其他团队成员合作或独立开展工作。 8-2 Be able to work with other team members or work independently.9-2 Be able to work with other team members or work independently.
	8-3 能够组织、协调和指挥团队开展工作。 8-3 Ability to organize, coordinate and direct a team in their work.
9.沟通：能够就运动控制系统、过程控制系统、船舶自动化系统、机器人控制系统等相关的自动化领域复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文档、陈述发言、情绪表达或回应指令。并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。 9. Communication: Be able to effectively communicate and exchange with industry peers and the public on complex engineering issues in automation fields related to motion control systems, process control systems, ship automation systems and robot control systems, including writing reports and design documents, making presentations, expressing emotions or responding to instructions. Have a certain international vision and be able to communicate and exchange in cross-cultural backgrounds.	9-1 能针对自动化领域的复杂工程问题，通过撰写报告、陈述发言等形式与业界同行及社会公众进行有效沟通和交流。 9-1 Be able to effectively communicate and exchange with industry peers and the public through writing reports, making presentations and other forms for complex engineering problems in the field of automation.
	9-2 了解自动化专业领域的国际发展趋势、研究热点，理解世界不同文化的差异性和多样性。 9-2 Understand the international development trend and research hotspots in the field of automation, and understand the differences and diversity of different cultures in the world.
	9-3 具备较流利的英语听说读写能力，能针对自动化专业问题，运用英语较准确地进行口头和书面交流。 9-3 Have relatively fluent English listening, speaking, reading and writing skills, and can use English to

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	communicate accurately in oral and written communication for automation related issues.
10.项目管理：理解并掌握工程管理原理与经济决策方法，并能在多学科环境中应用。 10. Project management: understand and master engineering management principles and economic decision-making methods, and be able to apply them in a multidisciplinary environment.	10-1 理解并掌握工程项目中涉及到的管理原理与经济决策方法。 10-1 Understand and master the management principles and economic decision-making methods involved in engineering projects.
	10-2 了解工程及产品全周期、全流程的成本构成，理解其中涉及的工程管理与经济决策问题。 10-2 Understand the cost composition of the whole cycle and process of engineering and products, and understand the engineering management and economic decision-making involved.
11.终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。 11. Lifelong learning: Have the awareness of independent learning and lifelong learning, and have the ability to keep learning and adapt to development.	11-1 理解社会和科学技术发展的必然性，清楚终身学习的重要性，具有自主学习和终身学习的意识。 11-1 Understand the necessity of social and scientific and technological development, understand the importance of lifelong learning, and have the consciousness of autonomous learning and lifelong learning.
	11-2 能根据自身条件和职业发展需求，具有自主学习和适应社会发展的能力。 11-2 Be able to learn independently and adapt to social development according to one's own conditions and career development needs.

三、专业核心课程

III．Core Courses

自动控制理论（1）、自动控制理论（2）、最优控制、系统辨识、控制系统数字仿真、计算机控制技术、自动检测技术、过程控制系统、电机与拖动基础、功率电子技术、运动控制系统、微控制器原理与应用

Automatic Control Theory (1)、Automatic Control Theory (2)、Optimal Control、System Identification、Digital Simulation of Control Systems、Computer Control Technology、Automatic Detection Technology、Process Control Systems、Fundamentals of Electric Machines and Drives、Power Electronics Technology、Motion Control Systems、Principles and Applications of Micro-controllers

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent +	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船舶运动控制 Ship Maneuver Control	●	●		●		

船舶自动化系统 Ship Automation System	●	●				●
船舶电力控制系统 Ship Electric Power Control System	●	●				●
船舶机舱控制系统 Ship Engine Room Control System	●	●				●
港口物流自动化系统 Port Logistics Automation Systems	●	●				●
机器人控制 Robot Control		●	●			
智能控制 Intelligent Control		●	●	●		
先进 PID 控制 Advanced PID Control			●			
智能优化方法与应用 Intelligent optimization method and application		●	●			

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering degree

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及
通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="14">/</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与
自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>4</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5"></td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td rowspan="2">专业（类）
基础课
Disciplinary Courses</td><td colspan="2">大类基础课
Major Group Courses</td><td>4.5</td><td rowspan="3">32</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">专业基础课
Discipline Courses</td><td>27.5</td></tr>
<tr><td>专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>9</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
集中实践环节 Practical &Training	军事实践课 Military Practical Course	3	/	
	专业实践课 Specialized Practical Course	8.5		
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	2		
合计：171 Total：171		131	32	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	安全实践 Safety Practical &Training	1713027790	安全熟悉	1
	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000320	国家安全教育(船电)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000140	专业导论（自动化类）	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：9 Total：9				9

七、教学计划进度表

参见表 1～表 5

VII Curriculum Structure

Refer to Table1～Table6.

表 1：自动化课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（171 学分） In-class Teaching Courses （171 credits）			拓展素养（9 学分） Centralized Practicum （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	131	32	8	9	180

表 2：自动化必修课程设置及进程

备注:

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-1	
			5	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			6	1713021040	创新思维与创新方法(船电) Innovative Thinking and Innovative Methods(Automation Professional)	2	考查		综合素养	32	24	8	1-1	
			7	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	

			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-2	

			24	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-1	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713011080	C/C++程序设计 C/C++ Programming	3	考试		综合素养	48	48	0	1-2	
			2	1713011090	C/C++程序设计上机实践 C/C++ Programming Practice	1	考查		综合素养	24	0	24	1-2	
			3	1713028010	电路原理(1) Principles of Electric Circuits(1)	4.5	考试	√	综合素养	72	58	14	1-2	
			4	1713010970	计算机软件基础 Fundamentals of computer software	2	考查		综合素养	32	28	4	2-1	
			5	1713014180	模拟电子技术基础 Fundamental of Analog Electronics	4	考试	√	综合素养	64	52	12	2-1	
			6	1713021050	电路原理(2) Theory of Circuit (B)	1.5	考试	√	综合素养	24	24	0	2-1	

			7	1713011041	自动控制理论(1) Automatic Control Theory	3	考试	√	综合素养	48	48	0	2-2	
			8	1713011051	自动控制理论(1)实验 Experiment in Automatic Control Theory（1）	0.5	考查		综合素养	12	0	12	2-2	
			9	1713012780	大学生创新创业基础 Innovation and Entrepreneurship for College Students	1.5	考查		综合素养	24	24	0	2-2	
			10	1713014190	数字电子技术基础 Fundamental of Digital Electronics	3	考试	√	综合素养	48	38	10	2-2	
			11	1713024550	微控制器原理及应用 Principle of Microcontroller and its Application	4	考试		综合素养	64	48	16	2-2	
			12	1713011042	自动控制理论(2) Automatic Control Theory	3	考试	√	综合素养	48	48	0	3-1	
			13	1713011052	自动控制理论(2)实验 Experiment in Automatic Control Theory（2）	0.5	考查		综合素养	12	0	12	3-1	
			14	1713012790	功率电子技术 Power Electronics Technology	2.5	考试	√	综合素养	40	34	6	3-1	

			15	1713012810	控制系统数字仿真与设计 Control System Digital Simulation and Design	2	考试	√	综合素养	32	24	8	3-2	
	必修-专业及方向课程 Stream Courses		1	1713011060	计算机控制系统 Computer Controlled Systems	2	考试	√	综合素养	32	28	4	3-2	
			2	1713012800	自动检测技术 Automatic Measurement Technology	2	考试	√	综合素养	32	26	6	3-2	
			3	1713012820	运动控制系统 Motion Control System	2.5	考试	√	综合素养	40	34	6	3-2	
			4	1713012830	过程控制系统 Process control system	2.5	考试	√	综合素养	40	36	4	4-1	
合计 Total						106.5				1800	1446	354		

表 3：自动化 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			2	1713011130	机器人技术基础 Fundamentals of Robot Technology	2	考查		综合素养	32	28	4	2-1	
			3	1713012980	信号与系统分析 Analysis of Signal and System	2	考试		综合素养	32	26	6	2-2	
			4	1713019430	Matlab 语言 Matlab Language	2	考查		综合素养	32	22	10	2-2	
			5	1713012840	自动化专业英语 Special Language for Automation	2	考查		综合素养	32	32	0	3-1	
			6	1713012930	科技文献检索与论文写作 Scientific Literature Retrieval and Paper Writing	1	考查		综合素养	16	16	0	3-2	
			7	1713013540	嵌入式系统实践 Embedded System Practical	0.5	考查		综合素养	12	0	12	3-2	
			8	1713024160	PLC 原理与应用 Principle and Application of PLC	2	考查		综合素养	32	20	12	3-2	
			9	1713021070	机器人控制 Robot Control	2	考查		综合素养	32	28	4	4-1	

	限选-专业及方向课程 Stream Courses		1	1713012850	电机与拖动基础 Electric Machines and Drive Foundation	2	考试		综合素养	32	28	4	3-1	
			2	1713012860	船舶机舱控制系统 Ship Engine Room Control System	2	考查		综合素养	32	28	4	3-1	
			3	1713012900	系统辨识 System Identification	2	考试		综合素养	32	24	8	3-1	
			4	1713012910	电子CAD技术 Electronics CAD Technology	1.5	考查		综合素养	24	24	0	3-1	
			5	1713012920	电子CAD技术上机实践 Electronics CAD Technology Practice	0.5	考查		综合素养	12	0	12	3-1	
			6	1713023930	先进PID控制 Advanced PID control	2	考查		综合素养	32	26	6	3-1	
			7	1713012940	最优控制 Optimal control	2	考试		综合素养	32	28	4	3-2	
			8	1713012960	船舶运动控制 Ship Maneuver Control	2	考查		综合素养	32	26	6	3-2	
			9	1713012970	船舶电力控制系统 Ship Electric Power Control System	2	考查		综合素养	32	30	2	3-2	
			10	1713013530	嵌入式系统 Embedded System	2	考查		综合素养	32	32	0	3-2	

			11	1713023940	人工智能导论 Introduction to Artificial Intelligence	2	考查		综合素养	32	32	0	3-2	
			12	1713024320	工业网络 Industrial Networks	1.5	考查		综合素养	24	18	6	3-2	
			13	1713028550	智能优化方法与应用 Intelligent optimization method and application	2	考查		综合素养	32	32	0	3-2	
			14	1713011140	航海仪器基础 Fundamentals of Marine Instrument	2	考查		综合素养	32	22	10	4-1	
			15	1713011150	智能控制 Intelligent control	2	考查		综合素养	32	28	4	4-1	
			16	1713011160	船舶自动化系统 Ship Automation System	2	考查		综合素养	32	28	4	4-1	
			17	1713012990	港口物流自动化系统 Port Logistics Automation Systems	2	考查		综合素养	32	32	0	4-1	
			18	1713029900	虚拟仪器与控制程序设计 Virtual instrument and control program design	2	考查		综合素养	32	22	10	4-1	
合计 Total						**49**				**792**	**660**	**132**		

表 4：自动化任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：自动化 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713013000	大学生创业实训 College Students Entrepreneurship Training	0.5	考查		综合素养	15	0	15	2-2	
			3	1713029910	课程设计与实践(基础) Course Design and Practice(Fundamentals)	2	考查		综合素养	60	0	60	2-2	

			4	1713013020	控制工程软件课程设计 Subject Design of Control Engineering Sofware	2	考查		综合素养	60	0	60	3-1	
			5	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			6	2113000550	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	3-1	
			7	1713013030	课程设计与实践(专业) Subject Design and Practice	2	考查		综合素养	60	0	60	3-2	
			8	1713026201	船舶实习(工程) Ship Practice (Engineering)	1	考查		综合素养	30	0	30	3-2	
			9	1713013040	系统综合设计 System Synthetic Design	2	考查		综合素养	60	0	60	4-1	
			10	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			11	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						27.5				811	0	811		

表 6：自动化 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000140	专业导论(自动化类) Introduction to Profession	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000320	国家安全教育(船电) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	

			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				144	144	0		

八、实践学时学分
IX. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	大学生创业实训	必修	15	0.5	
4	课程设计与实践（基础）	必修	60	2	●
5	控制工程软件课程设计	必修	60	2	●
6	安全熟悉	必修	30	0	
7	金工实习	必修	30	1	●
8	课程设计与实践（专业）	必修	60	2	●
9	船舶实习（工程）	必修	30	1	●
10	系统综合设计	必修	60	2	●
11	毕业实习	必修	60	2	
12	毕业设计（论文）	必修	360	12	●
13	大学物理实验	必修	48	2	●
14	电路原理(1)	必修	14	1	●
15	模拟电子技术基础	必修	12	0.5	●
16	微控制器原理及应用	必修	16	1	●
17	数字电子技术基础	必修	12	0.5	●
18	自动控制理论（1）实验	必修	12	0.5	●
19	自动控制理论（2）实验	必修	12	0.5	●
20	MATLAB 语言	必修	10	0.5	●
21	C/C++程序设计上机实践	必修	24	1	●
22	PLC 原理与应用	必修	12	1	●
23	嵌入式系统实践	必修	12	0.5	●

24	电子 CAD 技术上机实践	必修	12	0.5	●
25	计算机控制系统	必修	4	0.25	●
26	自动检测技术	必修	6	0.375	●
27	运动控制系统	必修	6	0.375	●
28	过程控制系统	必修	4	0.25	●
29	控制系统数字仿真与设计	必修	8	0.5	●
30	功率电子技术	必修	6	0.375	●
合计 Total			1085	43.125	

九、毕业要求对培养目标的支撑关系矩阵

X. Graduation Requirements &Program Objectives Relationship Matrix

本专业的毕业要求	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 Graduation Requirements 1-1		●		
毕业要求 1-2 Graduation Requirements 1-2		●		
毕业要求 1-3 Graduation Requirements 1-3		●		
毕业要求 1-4 Graduation Requirements 1-4		●		
毕业要求 2-1 Graduation Requirements 2-1		●		●
毕业要求 2-2 Graduation Requirements 2-2		●		●
毕业要求 2-3 Graduation Requirements 2-3		●		●
毕业要求 2-4 Graduation Requirements 2-4		●		●
毕业要求 3-1 Graduation Requirements 3-1		●		●
毕业要求 3-2 Graduation Requirements 3-2		●		●
毕业要求 3-3 Graduation Requirements 3-3		●		●
毕业要求 3-4 Graduation Requirements 3-4		●		●
毕业要求 4-1 Graduation		●		●

Requirements 4-1				
毕业要求 4-2 Graduation Requirements 4-2		●		●
毕业要求 4-3 Graduation Requirements 4-3		●		●
毕业要求 4-4 Graduation Requirements 4-4		●		●
毕业要求 5-1 Graduation Requirements 5-1		●		
毕业要求 5-2 Graduation Requirements 5-2		●		
毕业要求 5-3 Graduation Requirements 5-3		●		
毕业要求 6-1 Graduation Requirements 6-1	●			
毕业要求 6-2 Graduation Requirements 6-2	●			
毕业要求 7-1 Graduation Requirements 7-1	●			
毕业要求 7-2 Graduation Requirements 7-2	●			
毕业要求 7-3 Graduation Requirements 7-3	●			
毕业要求 8-1 Graduation Requirements 8-1	●		●	
毕业要求 8-2 Graduation Requirements 8-2	●		●	
毕业要求 8-3 Graduation Requirements 8-3	●		●	

毕业要求 9-1 Graduation Requirements 9-1	●		●	●
毕业要求 9-2 Graduation Requirements 9-2	●		●	●
毕业要求 9-3 Graduation Requirements 9-3	●		●	●
毕业要求 9-1 Graduation Requirements 9-1	●		●	●
毕业要求 10-1 Graduation Requirements 10-1			●	●
毕业要求 10-2 Graduation Requirements 10-2			●	●
毕业要求 10-3 Graduation Requirements 10-3			●	●
毕业要求 11-1 Graduation Requirements 11-1	●			●
毕业要求 11-2 Graduation Requirements 11-2	●			●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

		毕业要求 1 **Graduation Requirements 1**				毕业要求 2 **Graduation Requirements 2**				毕业要求 3 **Graduation Requirements 3**				毕业要求 4 **Graduation Requirements 4**				毕业要求 5 **Graduation Requirements 5**			毕业要求 6 **Graduation Requirements 6**		毕业要求 7 **Graduation Requirements 7**			毕业要求 8 **Graduation Requirements 8**			毕业要求 9 **Graduation Requirements 9**			毕业要求 10 **Graduation Requirements 10**			毕业要求 11 **Graduation Requirements 11**	
		1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	9-3	10-1	10-2	10-3	11-1	11-2
1	马克思主义基本原理																						H													
2	中国近现代史纲要																							H												
3	思想道德与法治																				H		H													
4	毛泽东思想和中国特色社会主义理论体系概论												M								M		H													
5	习近平新时代中国特色社会主义思想概论																							H												
6	大学英语（B）																														H					
7	体育																										H									
8	形势与政策																							H												
9	健康教育																							H		H										
10	职业生涯规划																								H											
11	入学教育																								H											
12	国家安全教育(船电）																				H		H													
13	就业指导																								H											
14	军事理论																						M													
15	计算机软件基础		H															H																		
16	高等数学			H			M																													
17	大学物理		H					M																												
18	大学物理实验							M							H																					
19	概率论与数理统计				H				M																											
20	复变函数与积分变换				H	M																														
21	线性代数	H				M																														

22	逻辑学																											H								
23	实用写作																													H						
24	创新思维与创新方法(自动化类）					H														M																
25	电路原理				H	M						M																								
26	模拟电子技术基础		H				M						M																							
27	数字电子技术基础	H					M			M																										
28	微控制器原理与应用		H										H				H	H																		
29	控制系统数字仿真与设计				H														H																	
30	自动控制理论			H		H		H			H						H																			
31	自动控制理论实验				H				H	H							H																			
32	功率电子技术	H					M					M		M																						
33	专业导论（自动化类）				H																				M											H
34	大学生创新创业基础			M						H																								M	H	
35	运动控制系统	H				H							H	H																						
36	过程控制系统				H			H					H			H																				
37	自动检测技术				H				M									H																		
38	计算机控制系统		H						H	H						H																				
39	机械制图			H	H															H																
40	C/C++程序设计	H			H													H																		
41	C/C++程序设计上机实践	H			H												M		H																	
42	自动化专业英语	M																		M																
43	科技文献检索与论文写作	M																H																		
44	最优控制	H				M																														
45	MATLAB 语言				H															H																
46	信号与系统分析	H				M								M																						
47	PLC 原理与应用				H					H						M																				
48	工业网络				H																															

49	船舶运动控制	H			H		M					M				M																					
50	嵌入式系统			H						H				M					M																		
51	嵌入式系统实践										H			M						M																	
52	机器人技术基础				H				M		M			M																							
53	机器人控制		H					M				M				M																					
54	电机与拖动基础				H				M																												
55	船舶电力控制系统		H			M				M							M																				
56	船舶机舱控制系统				H		M						M																								
57	港口物流自动化系统				H			M					M																								
58	智能控制		H					M																													
59	船舶自动化系统	H							M	M				M																							
60	系统辨识				H				H							M																					
61	电子 CAD 技术				H															H																	
62	电子 CAD 技术上机实践	H												M						H																	
63	先进 PID 控制	H				H							H																								
64	人工智能导论				H	H										M																					
65	军事训练																									H											
66	公益劳动																							H													M
67	大学生创业实训									M															H			M		H		M					
68	毕业设计（论文）	H							H		H				H					H	H				M			H			H	H			H		
69	课程设计与实践（专业）				H			H				H				H			H			M				M			H			M					
70	课程设计与实践（基础）			H				M					H																M								
71	系统综合设计		H			H				H						H				H	M							H			H	M					
72	金工实习		M																									M	H								
73	控制工程软件课程设计	H									H																	M	H								
74	智能优化方法与应用				H	H										M																					
75	虚拟仪器与控制程序设计										H			M						M																	

76	航海仪器基础	H																																	

备注：

1.不同学期的同一门课程只需要填写一次，如大学英语（一）和大学英语（二）按“大学英语”填写即可。

2.所有的课程和教学活动都要列入表格，包括集中实践性环节。

3.表格要清晰展示每门课程对毕业要求（指标点）的支撑程度，支撑度强的用“H”表示，支撑度中等的用“M”表示。支撑度中等的情况应尽可能少，不建议标注支撑度弱的情况。

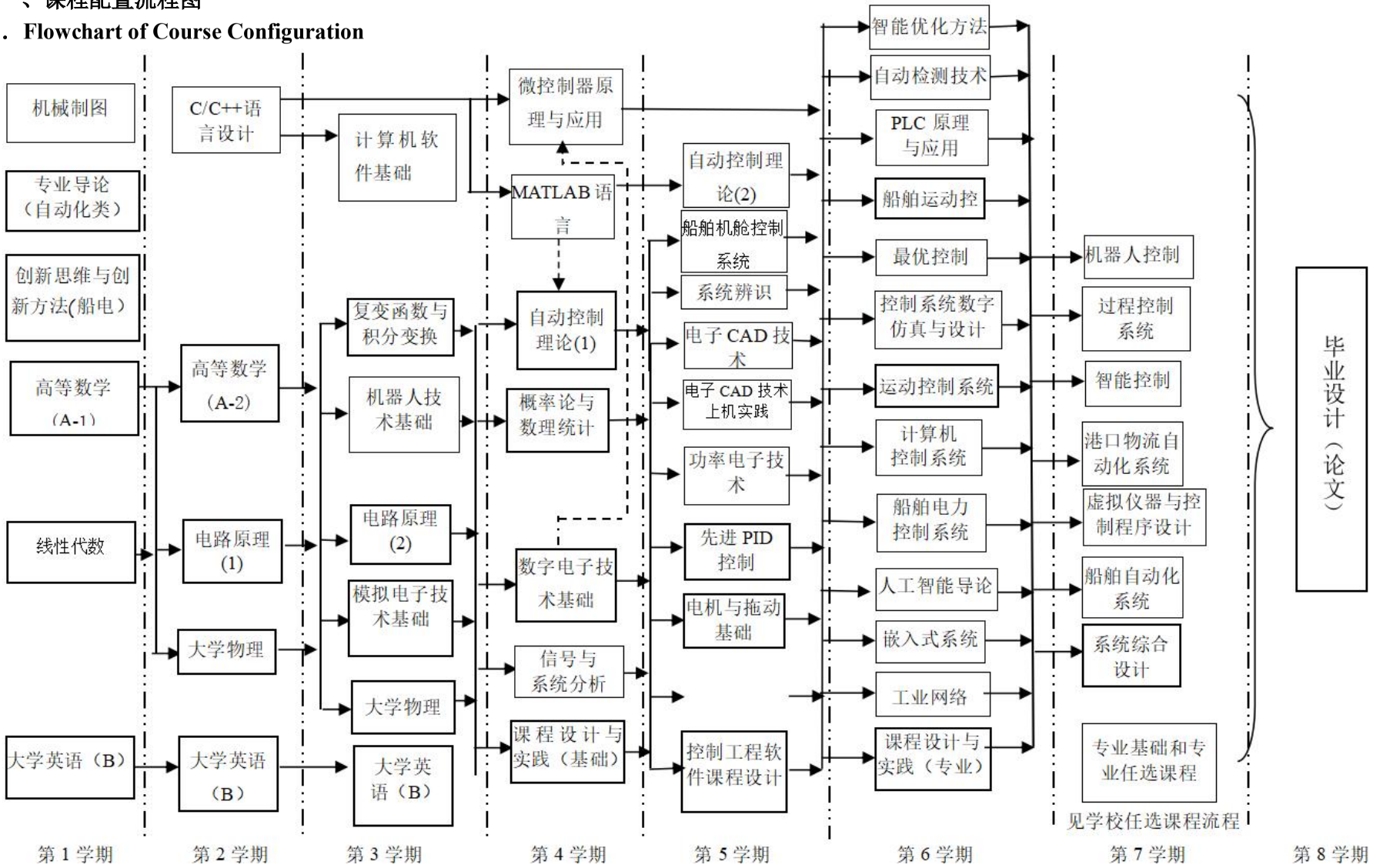
4.用于毕业要求（指标点）达成度评价计算的课程，在课程后面加★（如：航海模拟器★）。用于支撑毕业要求（指标点）的课程较多，可选取其中比较重要的一部分课程（包括但不限于专业核心课）用于达成度评价。原则上，每一个毕业要求（指标点）应至少有一门专业（类）基础课或专业方向课来支撑。

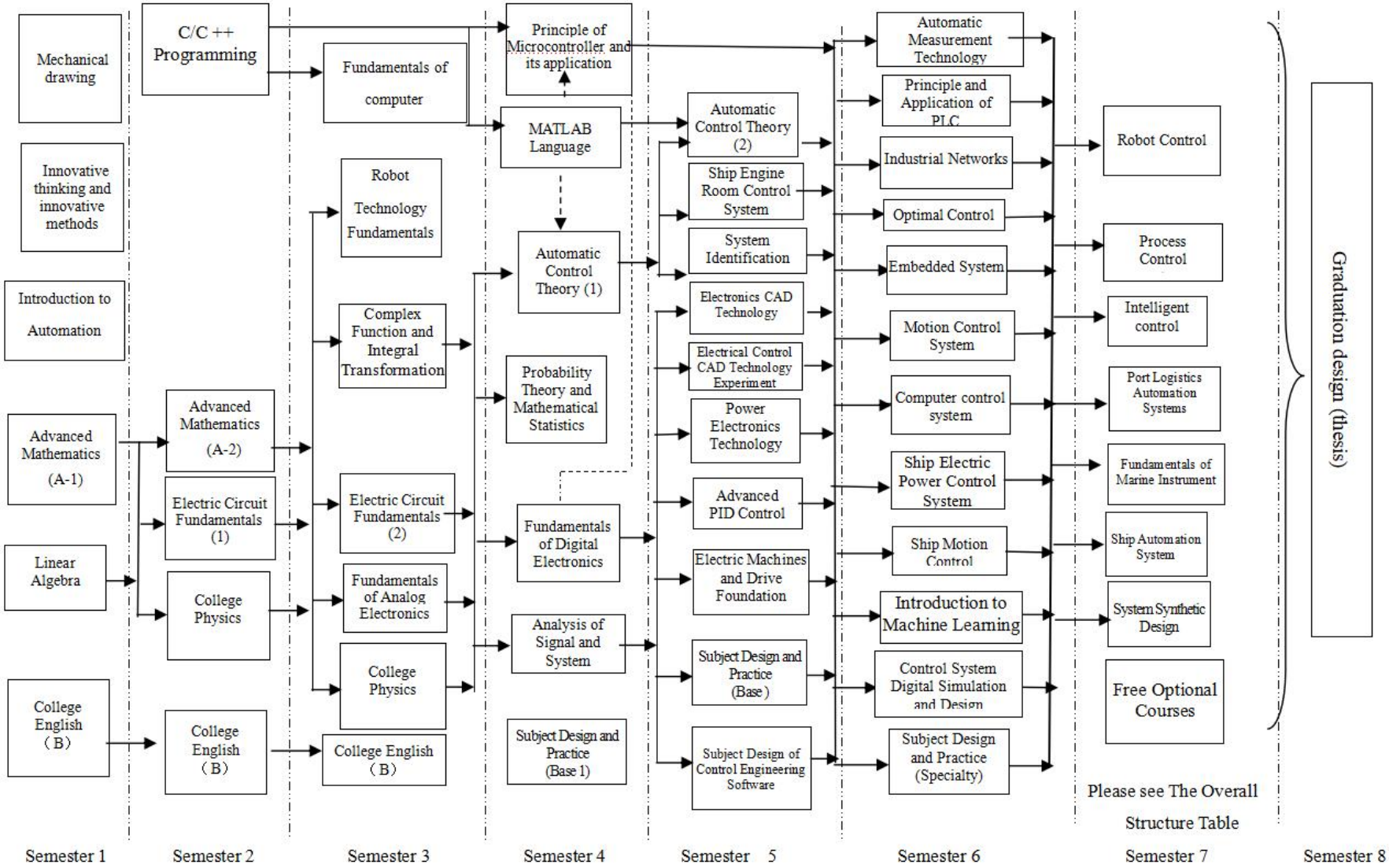
5.一门课程支撑的毕业要求（指标点）不宜过多，以3-5个为宜；每个毕业要求（指标点）对应的支撑课程数应当均衡。

6.课程目标相似的限选课组或任选课组，应共同支撑同一个毕业要求（指标点）。

十一、课程配置流程图

XI. Flowchart of Course Configuration




Mechanical drawing
Innovative thinking and innovative methods
Introduction to Automation
Advanced Mathematics (A-1)
Linear Algebra
College English (B)
C/C ++ Programming
Advanced Mathematics (A-2)
Electric Circuit Fundamentals (1)
College Physics
College English (B)
Fundamentals of computer
Robot Technology Fundamentals
Complex Function and Integral Transformation
Electric Circuit Fundamentals (2)
Fundamentals of Analog Electronics
College Physics
College English (B)
Principle of Microcontroller and its application
MATLAB Language
Automatic Control Theory (1)
Probability Theory and Mathematical Statistics
Fundamentals of Digital Electronics
Analysis of Signal and System
Subject Design and Practice (Base 1)
Automatic Control Theory (2)
Ship Engine Room Control System
System Identification
Electronics CAD Technology
Electrical Control CAD Technology Experiment
Power Electronics Technology
Advanced PID Control
Electric Machines and Drive Foundation
Subject Design and Practice (Base)
Subject Design of Control Engineering Software
Automatic Measurement Technology
Principle and Application of PLC
Industrial Networks
Optimal Control
Embedded System
Motion Control System
Computer control system
Ship Electric Power Control System
Ship Motion Control
Introduction to Machine Learning
Control System Digital Simulation and Design
Subject Design and Practice (Specialty)
Robot Control
Process Control
Intelligent control
Port Logistics Automation Systems
Fundamentals of Marine Instrument
Ship Automation System
System Synthetic Design
Free Optional Courses
Please see The Overall Structure Table
Graduation design (thesis)
Semester 1
Semester 2
Semester 3
Semester 4
Semester 5
Semester 6
Semester 7
Semester 8

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84728250 84725100
教学院长：84728210
教 务 处：84723005

自动化专业负责人:沈智鹏
自动化专业建设委员会
大连海事大学教务处
2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Electrical Engineering and Automation Major

[2025 级适用]

★电气工程及其自动化（080601）

大连海事大学教务处

2025 年 9 月

电气工程及其自动化专业本科培养计划（2025 版）

Undergraduate Program for Electrical Engineering and Automation

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业培养德智体美劳全面发展的社会主义建设者和接班人，具有人文科学素养、责任担当、全球视野和创新精神，掌握宽厚的基础理论和电气工程领域的前沿知识及专业技能，能够在船舶、港口及其它领域从事与电气工程相关的科研、研发、规划、设计、运行或管理等工作的高级工程技术人才。 This major aims to cultivate well-rounded socialist builders and successors in terms of morality, intelligence, physical fitness, aesthetics, and labor. They should possess humanistic and scientific literacy, a sense of responsibility, a global perspective, and an innovative spirit. They should master a solid foundation of basic theories as well as cutting-edge knowledge and professional skills in the field of electrical engineering. Senior engineering and technical talents who can engage in scientific research, development, planning, design, operation or management related to electrical engineering in the fields of ships, ports and others.	1.具有扎实的自然科学基础知识和良好的人文社会科学素养，具有社会责任感和工程职业道德 1. Have a solid foundation in natural sciences and good humanities and social science literacy, possessing a sense of social responsibility and engineering professional ethics
	2.系统掌握电气工程及其自动化基础理论和专业知识 2. Systematically master the basic theories and professional knowledge of electrical engineering and automation
	3.能在船舶、港口及其它领域从事与电气工程相关的科研、研发、规划、设计、运行或管理等工作 3. Be able to engage in scientific research, development, planning, design, operation or management related to electrical engineering in the fields of ships, ports and others
	4.具有跨领域、跨文化背景下的交流、协调能力，能够承担个体、团队成员和负责人的角色，体现出良好的团队协作能力 4. Be able to communicate and coordinate across domains and cultural backgrounds. Be able to assume roles as individuals, team members, and leaders, demonstrating excellent teamwork skills
	5. 主动适应国家、社会和行业需求，成为具备可持续发展理念和国际化视野，德智体美劳全面发展的社会主义合格建设者和可靠接班人 5. Actively adapt to the demands of the country, society and the industry, and become a qualified socialist builder and reliable successor with a sustainable development concept and an international perspective, as well as all-round

	development in morality, intelligence, physical fitness, aesthetics and labor.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识。能够将数学、自然科学、计算、工程基础和专业知识用于解决复杂电气工程问题。 1. Engineering knowledge. Be able to use mathematics, natural science, basic engineering and professional knowledge of electrical engineering to solve complex engineering problems in the field of electrical engineering.	1-1 掌握解决复杂电气工程问题所需的数学、自然科学、计算及工程基础知识 1-1 Master the basic knowledge of mathematics, natural science, computing and engineering required to solve complex electrical engineering problems
	1-2 掌握解决复杂电气工程问题所需的专业基础知识 1-2 Master the professional basic knowledge required to solve complex electrical engineering problems
	1-3 掌握解决复杂电气工程问题所需的专业知识 1-3 Master the professional knowledge required to solve complex electrical engineering problems
2. 问题分析。能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析电气工程复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 2.Be able to use mathematics, natural science and electrical engineering principles and methods to identify, express, and analyze the complex issues related to electrical engineering through the literature, in order to obtain effective conclusions.	2-1 能够对复杂电气工程问题进行识别和分解 2-1 Be able to identify and decompose complex electrical engineering problems
	2-2 能够应用数学、自然科学和工程科学知识对复杂电气工程问题进行表达和建模 2-2 Be able to express and model complex electrical engineering problems by applying knowledge of mathematics, natural science and engineering science
	2-3 能够通过文献研究对复杂电气工程问题进行求解和分析，并综合考虑可持续发展的要求，获得有效结论 2-3 Be able to solve and analyze complex electrical engineering problems through literature research, and comprehensively consider the requirements of sustainable development to obtain effective conclusions
3. 设计/开发解决方案。能够针对复杂电气工程问题设计和开发解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. Design/develop solutions. Be	3-1 能够针对电气自动控制系统领域问题设计/开发解决方案 3-1 Be able to design/develop solutions for problems in the field of electrical automatic control systems
	3-2 能够针对电气传动工程领域问题设计/开发解决方案 3-2 Be able to design/develop solutions for problems in the field of electrical transmission engineering

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**
capable of designing and developing solutions for complex electrical engineering problems, designing systems, units (components) or processes that meet specific requirements, demonstrating innovation, and considering feasibility from the perspectives of health, safety and environment, full life cycle cost and net-zero carbon requirements, law and ethics, society and culture.	3-3 能够针对电力系统领域问题设计/开发解决方案 3-32 Be able to design/develop solutions for problems in the field of power systems
	3-4 能够在解决方案中体现创新意识，并适当考虑公共健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等因素 3-4 Innovative consciousness can be reflected in the solution, and factors such as public health, safety and the environment, full life cycle costs and net-zero carbon requirements, laws and ethics, society and culture should be appropriately considered
4. 研究。能够基于科学原理并采用科学方法对复杂电气工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 4. Research. Be capable of conducting research on complex electrical engineering problems based on scientific principles and using scientific methods, including designing experiments, analyzing and interpreting data, and drawing reasonable and effective conclusions through information synthesis.	4-1 能够基于科学原理，通过文献调研、提取信息方法，分析获取解决电气工程学科相关复杂工程问题的解决方案 4-1 Be able to analyze and obtain solutions to complex engineering problems related to electrical engineering through literature research and information extraction methods based on scientific principles
	4-2 能够根据电气设备及系统特性，制定合理研究路线，设计可行实验测试及验证方案 4-2 Be able to develop a reasonable research route, design feasible experimental testing and verification plans based on the characteristics of electronic and electrical equipment and systems
	4-3 能够基于实验方案搭建电气实验系统，安全开展完整操作 4-3 Be able to build an electronic and electrical experimental system based on the experimental plan, and safely carry out complete operations
	4-4 能够理解并解释实验结果及意义，处理并归纳实验数据，比较理论模型数据与实验数据并分析差别产生原因，通过信息综合归纳总结并获取合理有效结论 4-4 Be able to understand and interpret experimental results and their significance, process and summarize experimental data, compare theoretical model data with experimental data and analyze the reasons for differences, summarize and obtain reasonable and effective conclusions through information synthesis
5. 使用现代工具。能够针对复杂电气工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复	5-1 能够运用现代工程工具对电气工程设计问题进行描述，并理解其局限性 5-1 Be able to use modern engineering tools to describe electrical engineering design problems and understand their limitations

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**
杂工程问题的预测与模拟，并能够理解其局限性。 5. Use modern tools. Be capable of developing, selecting and applying appropriate technologies, resources, modern engineering tools and information technology tools for complex electrical engineering problems, including the prediction and simulation of complex engineering problems, and be able to understand their limitations.	5-2 能够使用仿真工具，进行电气及其控制系统建模与仿真分析，并理解其局限性 5-2 Be able to use simulation tools to model and analyze electrical and control systems, and understand their limitations
	5-3 能够使用电气测量仪器仪表观察和分析电气设备及系统特性，并理解其局限性 5-3 Be able to use electrical measuring instruments to observe and analyze the characteristics of electrical equipment and systems, and understand their limitations
	5-4 能够掌握信息技术工具，具有信息搜集、检索、阅读分析能力 5-4 Be able to master information technology tools and possess abilities in information collection, retrieval, reading, and analysis
6. 工程与可持续发展。在解决复杂电气工程问题时，能够基于工程相关背景知识，分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6 Engineering and Sustainable Development. When solving complex engineering problems, one should be able to analyze and evaluate the impact of engineering practices on health, safety, the environment, law, as well as sustainable economic and social development based on relevant background knowledge of engineering, and understand the responsibilities that should be assumed	6-1 认识电气专业领域及环境保护和可持续发展等方面相关技术标准、知识产权、产业政策和法律法规。 6-1 Understand the relevant technical standards, intellectual property rights, industrial policies and laws and regulations in the field of electrical engineering, environmental protection and sustainable development.
	6-2 能够合理分析电气工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响。 6-2 Be capable of reasonably analyzing the impact of electrical engineering practices on health, safety, the environment, law, as well as sustainable economic and social development.
	6-3 能够客观评价电气工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6-3 Be capable of objectively evaluating the impact of electrical engineering practices on health, safety, the environment, law, and sustainable economic and social development, and understand the responsibilities that should be assumed.
7 工程伦理和职业规范。有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在工程实践中遵守电气工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms. Have the awareness of serving the country through engineering and benefiting the people, possess humanistic and social science literacy and a sense of social responsibility, be able to	7-1 理解并具有工程报国、为民造福的意识、正确的世界观、人生观和价值观，具有人文知识和科学精神 7-1 Understand and possess the awareness of serving the country through engineering and benefiting the people, a correct world outlook, outlook on life and values, as well as humanistic knowledge and scientific spirit
	7-2 了解国情，理解社会主义核心价值观和中国可持续发展的科学道路，具有推动民族复兴和社会进步的责任感 7-2 Understand the national conditions, comprehend the socialist core values and the scientific path of sustainable development in China, and have a sense of responsibility to promote national rejuvenation and social progress

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**
understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in engineering practice, and fulfill responsibilities.	7-3 理解职业道德含义，明确电气工程师的职业性质和责任，理解电气工程师的核心工程伦理，在工程实践中能自觉遵守职业道德和规范，具有法律意识 7-3 Understand the meaning of professional ethics, clarify the professional nature and responsibilities of electrical engineers, comprehend the core engineering ethics of electrical engineers, consciously abide by professional ethics and norms in engineering practice, and have legal awareness
8. 个人与团队。能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individuals and teams. Be able to take on the role of individual, team members and leaders in a multidisciplinary team.	8-1 能够与其他学科成员开展合作，分享信息与经验，胜任团队成员的角色 8-1 Be able to collaborate with members from other disciplines, share information and experience, and fulfill the role of a team member
	8-2 具备较强的独立工作能力，能完成团队分配的任务 8-2 Have the Strong independent work ability, and be able to complete tasks assigned by the team
	8-3 能够胜任团队负责人，履行责任，认真倾听他人意见，组织协调团队成员开展工作，完成团队任务，能够思考解决团队合作中面对的突发情况 8-3 Be able to serve as a team leader, fulfill responsibilities, listen carefully to others' opinions, organize and coordinate team members to carry out work, complete team tasks, and think and solve unexpected situations faced in team cooperation
9. 沟通。能够就复杂电气工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication. Be able to communicate effectively with industry peers and the public for the complex problems in the field of electrical engineering, including report writing and presentation design, statement, commands express or respond. With an international perspective and be	9-1 能够通过口头表达、书面报告、实物等形式与业界同行及社会公众进行有效沟通和交流，合理的选择图、表等辅助工具规范地表达数据及复杂工程问题 9-1 Be able to effectively communicate and exchange data and complex engineering problems with industry peers and the general public through oral expression, written reports, physical objects, and other forms. Be able to reasonably select auxiliary tools such as graphs and tables to express data and complex engineering problems in a standardized manner
	9-2 具有较强的外语运用能力，能在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异 9-2 Have the strong foreign language proficiency, and be able to communicate and interact in cross-cultural contexts, understand and respect language and cultural differences

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**
able to communicate and exchange ideas under the condition of diverse cultures.	9-3 了解电气工程领域现状、发展趋势和当前研究热点 9-3 Understand the current situation, development trends, and current research hotspots in the field of electrical engineering
10. 项目管理。理解并掌握与电气工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. Project Management. Understanding and mastering the principles of engineering management and the methods of economic decision and applying them in multiple disciplines.	10-1 理解电气工程实践中管理与经济决策的重要性 10-1 Understanding the importance of management and economic decision-making in electrical engineering practice
	10-2 掌握工程项目中涉及的管理原理与经济决策方法 10-2 Master the management principles and economic decision-making methods involved in engineering projects
	10-3 能够将管理原理、经济决策方法应用于电气工程项目设计、实施及维护等过程中 10-3 Be able to apply management principles and economic decision-making methods to the design, implementation, and maintenance processes of electrical engineering projects
11. 终身学习。具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11. Lifelong learning. Having the awareness of independent learning and lifelong learning, and having the ability to learn continuously and adapt the development of social and economic.	11-1 能够认识不断探索和学习的必要性，具有自主学习和终身学习意识和能力 11-1 Be able to recognize the necessity of continuous exploration and learning, and have the awareness of self-directed and lifelong learning
	11-2 理解自主学习的方法，具备终生学习的知识基础，了解拓展知识和能力的途径 11-2 Understand the methods of self-directed learning, possess a knowledge foundation for lifelong learning, and understand ways to expand knowledge and abilities
	11-3 能够针对个人或职业发展的需求，自主学习，持续更新核心知识，适应新技术变革，具有接受新事实或新概念的批判性思维能力 11-3 Be able to self-study in response to personal or professional development needs, continuously update core knowledge, adapt to new technological changes, and possess critical thinking abilities to accept new facts or concepts

三、专业核心课程

III．Core Courses

工程电磁场、电机学、电力电子技术、电力系统分析、高电压技术、交流调速控制系统、电气与电子智能测量技术、PLC 及工业控制网络、港口供电系统、船舶电站及其自动装置。

Engineering Electromagnetic Fields, Electrical Machinery, Power Electronics Technology, Power System Analysis, High Voltage Technology, AC Speed Control Systems, Electrical and Electronic Intelligent Measurement Technology, PLC and Industrial Control Networks, Port

Power Supply Systems, Ship Power Stations and Automatic Devices.

四、特色课程
IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
船舶电站及其自动装置 Ship Power Stations and Automatic Devices	●		●			●
船舶局域网技术及应用 Ship Local Area Network technology and Application	●	●				
电气与电子智能测量技术 Electrical and Electronic Intelligent Measurement Technology		●	●			
船舶机械电气控制系统 Ship Mechanical and Electrical Control System	●					●
港口供电系统 Port Power Supply system	●					●
船舶先进能源与控制技术 Advanced Energy and control Technology for Ships	●	●		●	●	
船舶电气系统设计 Design of Ship Electrical System	●					●
交流调速控制系统 AC Speed Control System		●				

电机设计与实践 Motor Design and Practice					●	
船舶认知实习 Ship Cognition Internship	●					●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="8">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="8">/</td><td rowspan="8"></td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>4</td></tr>
<tr><td rowspan="2">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
		沟通写作 Communication and Writing	2		
		创新思维 Invitational Thinking	2		
		创新与创业 Innovation and Entrepreneurship	/		10
		国家与社会 Nation and Society			
		科学与技术 Science and Technology			
		人文与艺术 Humanities and Art			
		其他 Others			
专业（类）基础课 Disciplinary Courses	大类基础课 Major Group Courses		4.5	32	/
	专业基础课 Discipline Courses		14.5		
专业及方向课 Stream Courses	专业课 Stream Courses Specialized course		16		
集中实践环节 Practical &Training	军事实践课 Military Practical Course		3	/	
	专业实践课 Specialized Practical Course		11		
	毕业实践课 Graduation Practice		14		
	其他实践课 Others		3		
合计：172.5 Total：172.5			130.5	32	10

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
集中实践环节 Practical &Training	安全实践 Safety Practical &Training	1713027790	安全熟悉	1
	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000320	国家安全教育(船电)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000140	专业导论（自动化类）	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：9 Total：9				9

七、教学计划进度表

参见表 1～表 5

VII Curriculum Structure

Refer to Table1～Table5.

表 1：电气工程及其自动化课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（172.5 学分） In-class Teaching Courses （172.5 credits）			拓展素养（9 学分） Centralized Practicum （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	130.5	32	10	9	181.5

表 2：电气工程及其自动化必修课程设置及进程

备注:

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-1	
			5	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			6	1713021040	创新思维与创新方法(船电) Innovative Thinking and Innovative Methods(Automation Professional)	2	考查		综合素养	32	24	8	1-1	
			7	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	

			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试	√	综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-2	

			24	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-1	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713011080	C/C++程序设计 C/C++ Programming	3	考试		综合素养	48	48	0	1-2	
			2	1713011090	C/C++程序设计上机实践 C/C++ Programming Practice	1	考查		综合素养	24	0	24	1-2	
			3	1713028010	电路原理(1) Principles of Electric Circuits(1)	4.5	考试	√	综合素养	72	58	14	1-2	
			4	1713014180	模拟电子技术基础 Fundamental of Analog Electronics	4	考试	√	综合素养	64	52	12	2-1	
			5	1713021050	电路原理(2) Theory of Circuit (B)	1.5	考查	√	综合素养	24	24	0	2-1	
			6	1713014190	数字电子技术基础 Fundamental of Digital Electronics	3	考试	√	综合素养	48	38	10	2-2	

			7	1713024461	自动控制理论(1) Automatic Control Theory Ⅰ	3	考试	√	综合素养	48	42	6	2-2	
			8	1713024410	嵌入式系统技术基础 Fundamental of Embedded System	3	考试	√	综合素养	48	38	10	3-1	
	必修-专业及方向课程 Stream Courses		1	1713015370	电力电子技术 Power Electronic	3	考试	√	综合素养	48	42	6	3-1	
			2	1713015380	电机学 Electrical Machinery	4	考试	√	综合素养	64	56	8	3-1	
			3	1713015510	高电压技术 High Voltage Technique	3	考试	√	综合素养	48	44	4	3-2	
			4	1713024430	电力系统分析 Power System Analysis	3	考试	√	综合素养	48	42	6	3-2	
			5	1713024470	船舶电站及其自动装置 Marine Power Station and Automatic Control System	3	考试	√	综合素养	48	42	6	4-1	
合计 Total						100.5				1696	1374	322		

表 3：电气工程及其自动化 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000430	大学化学 College Chemistry	2	考试		综合素养	32	32	0	4-1	
	限选-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			2	1713015440	电气系统仿真基础 Fundamentals of Electrical System Simulation	2	考试		综合素养	32	22	10	2-1	
			3	1713015460	船舶局域网技术及应用 Shipboard Local Area Network Technology and Application	2	考试		综合素养	32	28	4	2-2	
			4	1713028630	电气工程新技术前沿与进展 New Technology Frontier and Progress of Electrical Engineering	1	考查		综合素养	16	16	0	2-2	
			5	1713015450	信号与系统 Signal and System	2	考查		综合素养	32	22	10	2-2	

			6	1713017700	嵌入式系统接口设计 Interface Design of Embedded System	1.5	考试		综合素养	24	18	6	3-1	
			7	1713024462	自动控制理论(2) Principle of Automatic Control Ⅱ	2	考试		综合素养	32	30	2	3-1	
	限选-专业及方向课程 Stream Courses		1	1713024540	电气专业英语 Special English in Electric	1	考查		综合素养	16	16	0	2-1	
			2	1713015430	工程电磁场 Engineering Electromagnetics	2	考查		综合素养	32	24	8	2-2	
			3	1713024450	PLC 及工业控制网络 PLC & Industrial Control Network	3.5	考试		综合素养	56	44	12	3-1	
			4	1713024510	人工智能与机器学习 Artificial Intelligence and Machine Learning	2	考试		综合素养	32	32	0	3-1	
			5	1713028620	电气与电子智能测量技术 Electrical and Electronic Intelligent Measurement Technology	3	考试		综合素养	48	38	10	3-1	
			6	1713015410	港口供电系统 Port Power Systerm	3	考试		综合素养	48	46	2	3-2	
			7	1713015520	船舶机械电气控制系统 Electrical Control Systems for Marine Machinery	2.5	考试		综合素养	40	34	6	3-2	

			8	1713015540	微特电机 Small & Special Electrical Machines	1.5	考查		综合素养	24	20	4	3-2	
			9	1713019930	直流调速控制系统 DC Electrical Drive Control Systems	1.5	考查		综合素养	24	20	4	3-2	
			10	1713024490	交流调速控制系统 AC Electrical Drive Control Systems	3	考试		综合素养	48	46	2	3-2	
			11	1713028640	线性系统控制理论 Linear Systems Control Theory	2	考试		综合素养	32	32	0	3-2	
			12	1713028650	船舶先进能源与控制技术 Advanced Energy and control Technology for	2	考查		综合素养	32	32	0	3-2	
			13	1713015530	船舶电气系统设计 Ship Electrical System Design	2	考查		综合素养	32	26	6	4-1	
			14	1713018170	电气科技英语 Special English in Electric	1	考查		综合素养	16	16	0	4-1	
			15	1713018180	电气工程管理导论 Introduction to Electrical Engineering management	2	考查		综合素养	32	32	0	4-1	
			16	1713023810	智能船舶基础 Intelligent ship Foundation	2	考查		综合素养	32	32	0	4-1	
合计 Total						48.5				776	686	90		

表 4：电气工程及其自动化任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 10。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 10 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：电气工程及其自动化 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713015590	仪表设计与实践 Design and Practice of Electric Instrument	1	考查		综合素养	30	0	30	2-1	

			3	1713015550	电子技术设计与实践 Design and Practice of Electronic	2	考查		综合素养	60	0	60	2-2	
			4	1713015560	电机设计与实践 Design and Practice of Electrical Motor	1	考查		综合素养	30	0	30	3-1	
			5	1713015610	电气系统建模与仿真 Modeling and Simulation of Electrical Systems	1	考查		综合素养	30	0	30	3-1	
			6	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			7	1713015580	电气大型专题设计与实践 Design and Practice of Electrical Specialty	2	考查		综合素养	60	0	60	3-2	
			8	1713024500	嵌入式系统开发与设计 Development and Design of Embedded System	1	考查		综合素养	30	0	30	3-2	
			9	1713026201	船舶实习(工程) Ship Practice (Engineering)	1	考查		综合素养	30	0	30	3-2	
			10	2113000540	金工实习 Metalworking Practice	2	考查		综合素养	60	0	60	3-2	
			11	1713015600	电气工艺 Electrical Technology	2	考查		综合素养	60	0	60	4-1	
			12	1713024480	电力电子技术课程设计与实践 Course design and practice of power electronics	1	考查		综合素养	30	0	30	4-1	
			13	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			14	1713024440	专业实习 Specialized Practice in Electric	2	考查		综合素养	60	0	60	4-2	
			15	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						33				976	0	976		

表 6：电气工程及其自动化 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000140	专业导论(自动化类) Introduction to Profession	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	

			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000320	国家安全教育(船电) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				144	144	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	大学物理实验	必修	48	2	●
2	C/C++程序设计上机实践	必修	24	1	●
3	体育	必修	128	4	
4	创新思维与创新方法（船电）	必修	8	0.5	●
5	电路原理(1)	必修	14	0.875	●
6	模拟电子技术基础	必修	12	0.75	●
7	数字电子技术基础	必修	10	0.625	●
8	自动控制理论(1)	必修	6	0.375	●
9	嵌入式系统技术基础	必修	10	0.625	●
10	电力电子技术	必修	6	0.375	●
11	电机学	必修	8	0.5	●
12	电力系统分析	必修	6	0.375	●
13	高电压技术	必修	4	0.25	●
14	船舶电站及其自动装置	必修	6	0.375	●
15	仪表设计与实践	必修	30	1	●
16	电子技术设计与实践	必修	60	2	●
17	电机设计与实践	必修	30	1	●
18	电气系统建模与仿真	必修	30	1	●
19	电气大型专题设计与实践	必修	60	2	●
20	电力电子技术课程设计与实践	必修	30	1	●
21	嵌入式系统开发与设计	必修	30	1	●
22	电气工艺	必修	60	2	●
23	毕业设计（论文）	必修	360	12	●

24	专业实习	必修	60	2	●
25	金工实习	必修	60	2	●
26	船舶实习	必修	30	1	●
27	军事训练	必修	90	3	
合计 Total			1220	43.625	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**	培养目标 5 **Program Objectives 5**
毕业要求 1-1 **Graduation Requirements 1-1**	●	●			
毕业要求 1-2 **Graduation Requirements 1-2**	●	●			
毕业要求 1-3 **Graduation Requirements 1-2**	●	●			
毕业要求 2-1 **Graduation Requirements 2-1**		●	●		
毕业要求 2-2 **Graduation Requirements 2-2**		●	●		
毕业要求 2-3 **Graduation Requirements 2-3**		●	●		
毕业要求 3-1 **Graduation Requirements 3-1**		●	●		
毕业要求 3-2 **Graduation Requirements 3-2**		●	●		
毕业要求 3-3 **Graduation Requirements 3-3**		●	●		

毕业要求 3-4 **Graduation Requirements 3-4**		●	●		
毕业要求 4-1 **Graduation Requirements 4-1**			●		
毕业要求 4-2 **Graduation Requirements 4-2**			●		
毕业要求 4-3 **Graduation Requirements 4-3**			●		
毕业要求 4-4 **Graduation Requirements 4-4**			●		
毕业要求 5-1 **Graduation Requirements 5-1**		●	●		
毕业要求 5-2 **Graduation Requirements 5-2**		●	●		
毕业要求 5-3 **Graduation Requirements 5-3**		●	●		
毕业要求 5-4 **Graduation Requirements 5-4**		●	●		
毕业要求 6-1 **Graduation Requirements 6-1**	●		●		●
毕业要求 6-2 **Graduation Requirements 6-2**	●		●		●
毕业要求 6-3 **Graduation Requirements 6-3**	●		●		●
毕业要求 7-1 **Graduation Requirements 7-1**	●			●	
毕业要求 7-2 **Graduation Requirements 7-2**	●			●	

毕业要求 7-3 **Graduation Requirements 7-3**	●			●	
毕业要求 8-1 **Graduation Requirements 8-1**				●	
毕业要求 8-2 **Graduation Requirements 8-2**				●	
毕业要求 8-3 **Graduation Requirements 8-3**				●	
毕业要求 9-1 **Graduation Requirements 9-1**				●	●
毕业要求 9-2 **Graduation Requirements 10-2**				●	●
毕业要求 9-3 **Graduation Requirements 9-3**				●	●
毕业要求 10-1 **Graduation Requirements 10-1**			●	●	
毕业要求 10-2 **Graduation Requirements 10-2**			●	●	
毕业要求 10-3 **Graduation Requirements 10-3**			●	●	
毕业要求 11-1 **Graduation Requirements 11-1**			●		●
毕业要求 11-2 **Graduation Requirements 11-2**			●		●
毕业要求 11-3 **Graduation Requirements 11-3**			●		●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	毕业要求及指标点 / 课程名称	1 工程知识			2 问题分析			3 设计				4 研究				5 现代工具				6 工程与发展			7 伦理&职业			8 个人与团队			9 沟通			10 项目管理			11 终身学习		
		1	2	3	1	2	3	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1	军事理论																							H												H	
2	体育																									H	H	H									
3	思想道德修养与法律基础																			H			H	H	H												
4	中国近现代史纲要																						H	H												H	
5	马克思主义基本原理																						H	H												H	
6	毛泽东思想和中国特色社会主义理论体系概论																						H	H												H	
7	习近平新时代中国特色社会主义思想概论																						H	H												H	
8	高等数学	H																																			
9	线性代数	H																																			
10	复变函数与积分变换	H																																			
11	大学物理	H																																			
12	大学物理实验	H																																			
13	大学英语																												H	H							
14	创新思维与创新方法(船电)																			H															H	H	
15	逻辑学																												H							H	
16	实用写作																												H							H	
17	模拟电子技术基础★		H		H	H																															
18	数字电子技术基础★		H		H	H																															
19	电路原理★		H		H	H																															

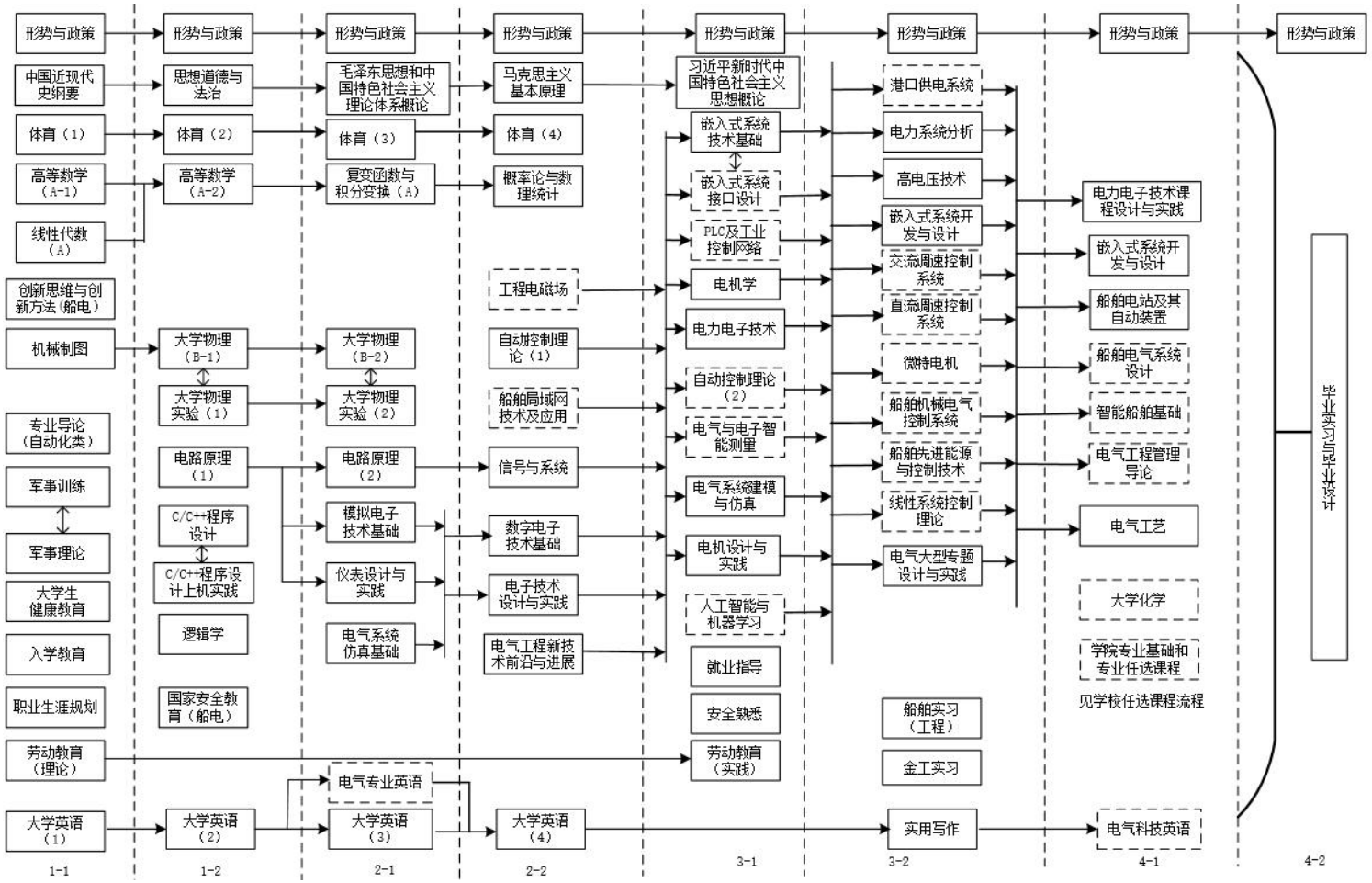
20	自动控制理论★		H		H	H																															
21	嵌入式系统技术基础★		H		H	H										H	H																				
22	电力电子技术★		H		H	H		H			H																										
23	电机学★		H		H	H			H		H																										
24	PMC及工业控制网络★			H	H	H		H			H					H	H																				
25	交流调速控制系统★			H	H	H	H		H		H																										
26	直流调速控制系统			H	H	H	H		H		H																										
27	港口供电系统★			H	H	H				H	H									H	H	H															
28	船舶电站及其自动装置★			H	H	H				H	H									H	H	H															
29	概率论与数理统计	H																																			
30	大学化学	H																																			
31	C/C++程序设计	H																																			
32	C/C++程序设计上机实践	H															H																				
33	机械制图	H																																			
34	嵌入式系统接口设计							H			H					H	H																				
35	工程电磁场		H		H	H										H	H																				
36	电气系统仿真基础		H													H	H																				
37	信号与系统		H																																		
38	船舶局域网技术及应用		H		H	H										H		H		H	H																
39	电气专业英语																														H	H					
40	电气科技英语																			H											H	H					
41	电力系统分析★			H			H			H	H									H	H	H															
42	电气与电子智能测量★		H		H	H										H		H																			
43	高电压技术★			H			H			H	H							H	H	H	H	H															
44	船舶机械电气控制系统			H	H	H		H			H																										

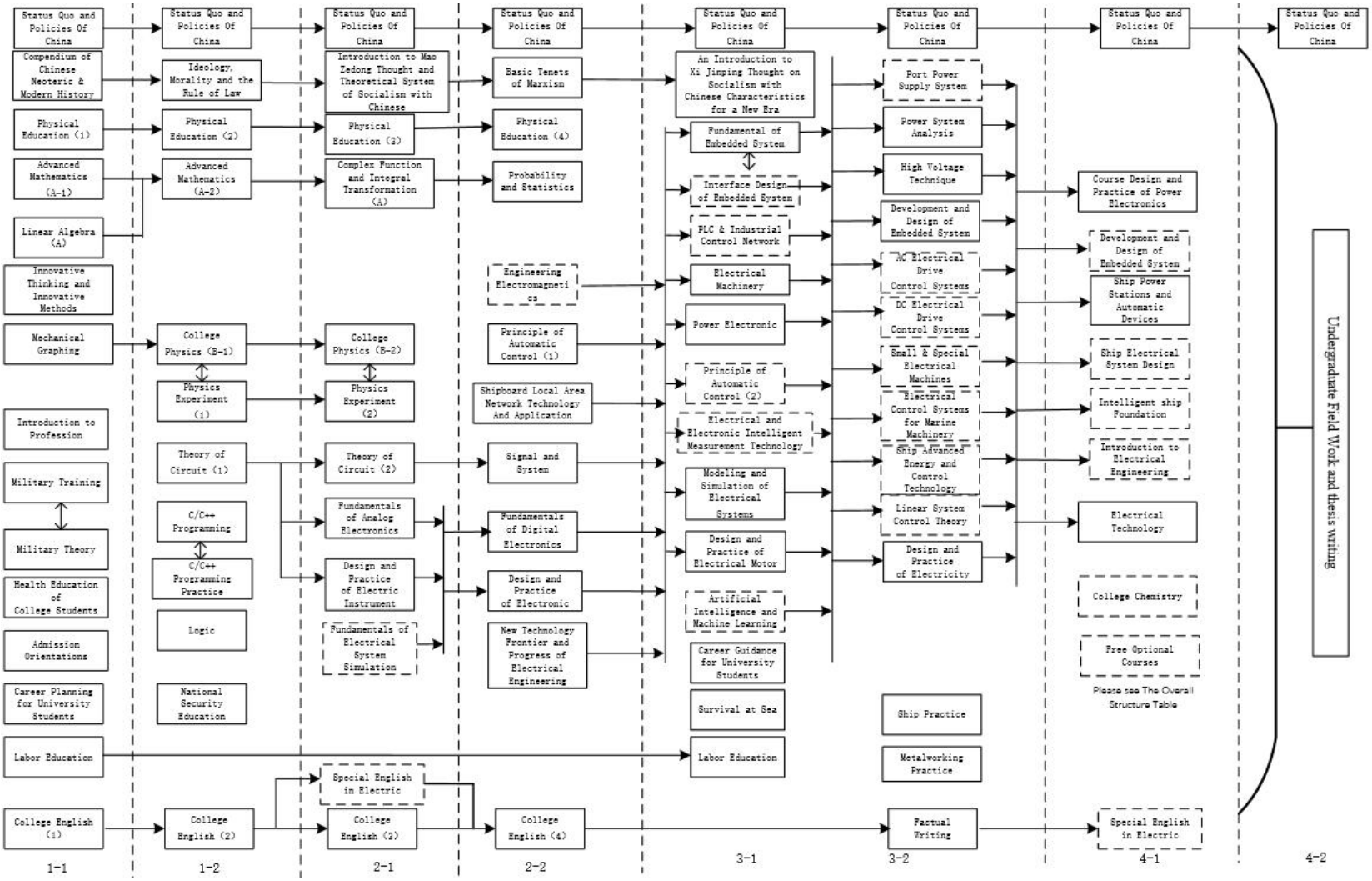
45	船舶电气系统设计							H			H					H	H		H																		
46	微特电机			H	H	H			H		H																										
47	人工智能与机器学习★		H		H	H										H	H								H												
48	电气工程管理导论★																			H	H	H	H		H						H	H	H	H			
49	电气工程新技术前沿与进展																			H			H						M		H				H	H	
50	船舶先进能源与控制技术			H			H			H	H									H	H	H	H														
51	线性系统控制理论			H	H	H																															
52	智能船舶基础			H	H	H														H	H	H	H														
53	军事训练																							H		H	H	H									
54	公益劳动																							H			H	H									
55	毕业设计（论文）★											H	H	H	H	H	H	H	H	H	H	H							H	H	H	H	H	H	H	H	H
57	专业实习★																			H			H	H	H		H	H	H		H	H	H				
58	电子技术设计与实践						H	H			H							H	H							H	H										
59	电机设计与实践								H		H							H	H						H		H	H									
60	金工实习																			H					H		H	H									
61	电气大型专题设计与实践★							H	H	H	H	H	H	H	H	H	H	H	H								H	H	H		H	H	H		H	H	H
62	仪表设计与实践						H	H			H							H	H							H	H										
63	电气工艺										H									H	H	H					H	H									
64	电气系统建模与仿真★							H	H		H	H	H	M	M	H	H		H								H	H									
65	电力电子技术课程设计与实践							H			H	H	H	M	M	H	H	H	H								H	H									
66	嵌入式系统开发与设计							H			H	H	H	M	M	H	H		H								H	H									
67	船舶认知实习																			H	H				H	H											
68	安全熟悉																								H												
69	入学教育																							H													
70	形势与政策																							H													

71	专业导论(自动化类)																			M	M	M	H		H												
72	大学生健康教育																							H													
73	国家安全教育(船电)																							H													
74	职业生涯规划																							H										H	H	H
75	就业指导																							H													

十一、课程配置流程图

XI. Flowchart of Course Configuration




Status Quo and Policies Of China
Compendium of Chinese Neoteric & Modern History
Physical Education (1)
Advanced Mathematics (A-1)
Linear Algebra (A)
Innovative Thinking and Innovative Methods
Mechanical Graphing
Introduction to Profession
Military Training
Military Theory
Health Education of College Students
Admission Orientations
Career Planning for University Students
Labor Education
College English (1)
1-1
Status Quo and Policies Of China
Ideology, Morality and the Rule of Law
Physical Education (2)
Advanced Mathematics (A-2)
College Physics (B-1)
Physics Experiment (1)
Theory of Circuit (1)
C/C++ Programming
C/C++ Programming Practice
Logic
National Security Education
College English (2)
1-2
Status Quo and Policies Of China
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese
Physical Education (3)
Complex Function and Integral Transformation (A)
College Physics (B-2)
Physics Experiment (2)
Theory of Circuit (2)
Fundamentals of Analog Electronics
Design and Practice of Electric Instrument
Fundamentals of Electrical System Simulation
Special English in Electric
College English (3)
2-1
Status Quo and Policies Of China
Basic Tenets of Marxism
Physical Education (4)
Probability and Statistics
Engineering Electromagnetics
Principle of Automatic Control (1)
Shipboard Local Area Network Technology And Application
Signal and System
Fundamentals of Digital Electronics
Design and Practice of Electronic
New Technology Frontier and Progress of Electrical Engineering
College English (4)
2-2
Status Quo and Policies Of China
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Fundamental of Embedded System
Interface Design of Embedded System
PLC & Industrial Control Network
Electrical Machinery
Power Electronic
Principle of Automatic Control (2)
Electrical and Electronic Intelligent Measurement Technology
Modeling and Simulation of Electrical Systems
Design and Practice of Electrical Motor
Artificial Intelligence and Machine Learning
Career Guidance for University Students
Survival at Sea
Labor Education
3-1
Status Quo and Policies Of China
Port Power Supply System
Power System Analysis
High Voltage Technique
Development and Design of Embedded System
AC Electrical Drive Control Systems
DC Electrical Drive Control Systems
Small & Special Electrical Machines
Electrical Control Systems for Marine Machinery
Ship Advanced Energy and Control Technology
Linear System Control Theory
Design and Practice of Electricity
Ship Practice
Metalworking Practice
Factual Writing
3-2
Status Quo and Policies Of China
Course Design and Practice of Power Electronics
Development and Design of Embedded System
Ship Power Stations and Automatic Devices
Ship Electrical System Design
Intelligent ship Foundation
Introduction to Electrical Engineering
Electrical Technology
College Chemistry
Free Optional Courses
Please see The Overall Structure Table
Special English in Electric
4-1
Status Quo and Policies Of China
Undergraduate Field Work and thesis writing
4-2

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》(DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84728250 84725100

教学院长：84728210

教 务 处：84723005

电气工程及其自动化专业负责人：郑忠玖

电气工程及其自动化教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Measurement Control Technology and Instruments Major

[2025 级适用]

★测控技术与仪器（080301）

大连海事大学教务处

2025 年 9 月

测控技术与仪器专业本科培养计划（2025 版）

Undergraduate Program for Measurement Control Technology and Instruments Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具备扎实的自然科学基础知识和测控技术与仪器专业知识，适应社会发展，能够在智能测控，电子信息，港航仪器等领域从事智能感知、自主控制、仪器仪表等研究开发、工程设计、运行管理等工作，具有创新精神和国际视野，德智体美劳全面发展，能够成为社会主义合格建设者和可靠接班人的工程技术人才。 This major cultivates engineering and technical talents with solid knowledge of natural sciences and specialized knowledge of measurement and control technology and instruments. They are able to adapt to social development and engage in research and development, engineering design, operation management, and other work related to intelligent perception, autonomous control, and instrumentation in fields such as intelligent measurement and control, electronic information,and port-shipping instruments. At the same time, they have an innovative spirit and international perspective, with comprehensive development in morality, intelligence, physical fitness, aesthetics, and labor skills, and can become qualified builders of socialism and reliable engineering and technical talents for succession.	1. 具有家国情怀与社会责任感，爱国敬业，身心健康，遵守法律法规、职业道德、行业标准和规范。 1. Have family and country feelings and a sense of social responsibility, patriotism and dedication, physical and mental health, abide by laws and regulations, professional ethics, industry standards and norms.
	2. 能够综合运用工程知识解决智能测控，电子信息，港航仪器等相关的复杂工程问题，并能综合考虑和评价工程对环境与社会各方面的影响。 2. Be able to comprehensively use engineering knowledge to solve complex engineering problems related to intelligent measurement and control, electronic information and Port-shipping instruments, and to comprehensively consider and evaluate the impact of the project on the environment and society.
	3. 能有效沟通和交流，在团队中发挥有效作用； 3. Be able to communicate effectively and play an effective role in the team.
	4. 具有创新思维和国际视野，能够跟踪本领域新技术，能不断学习提高并适应社会发展。 4. Possess strong ability of innovation and international vision, be able to track new technologies and continuously learn to improve and adapt to social development.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：能够将数学、自然科学知识、工程基础用于解决智能测控，电子信息，港航仪器相关的复杂工程问题。 **1. Engineering Knowledge**: Apply mathematics, natural sciences, and engineering fundamentals to solve complex engineering problems in intelligent measurement and control, electronic information,and port-shipping instruments .	1-1 具有数学和自然科学知识并能应用其基本概念、理论和方法描述和解释客观世界的基本规律。 1-1 Have knowledge of mathematics and natural sciences, and be able to apply their fundamental concepts, theories, and methods to describe and explain the basic laws governing the objective world.
	1-2 具有工程基础知识并能够将其基本概念、基本理论和基本方法用于实际工程问题的建模与求解。 1-2 Have fundamental engineering knowledge with the capability to apply core concepts, theories, and methodologies to model and solve practical engineering problems.
	1-3 具有智能测控，电子信息，港航仪器相关的专业基础知识，能针对专业领域的实际工程问题进行推演与分析。 1-3 Have professional knowledge in intelligent measurement and control, electronic information, and port-shipping instruments, with the capability to perform deduction and analysis on practical engineering problems within these domains.
	1-4 具有智能测控，电子信息，港航仪器相关的专业知识，并能应用专业知识综合和优化，获得合理的解决方案。 1-4 Have specialized knowledge in intelligent measurement and control, electronic information, and port-shipping instruments, with demonstrated capability to synthesize and optimize solutions through interdisciplinary integration.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，对智能测控、电子信息、港航仪器相关的复杂工程问题进行识别、表达，并通过文献，研究分析复杂工程问题，并能获得有效结论。 **2. Problem Analysis**: Apply mathematical, natural science, and engineering principles to identify, formulate, and analyze complex engineering problems in intelligent measurement and control, electronic information and port-shipping instruments, with demonstrated capability to conduct literature-based research and derive valid conclusions through systematic methodologies.	2-1 能运用数学、自然科学和工程科学的基本原理，识别智能测控、电子信息、港航仪器相关的复杂工程问题的关键环节和参数。 2-1 Be able to use mathematical, natural science, and engineering principles to identify critical components and parameters in complex engineering problems involving intelligent measurement and control, electronic information and port-shipping instruments, with demonstrated capability to analyze their interdependencies and impacts on system performance.
	2-2 能认识到解决问题有多种方案可选择，并能通过文献研究分析不同方案的工作原理和特点，寻求合理的替代方案。 2-2 Be able to recognize that there are multiple solutions to solve problems, and be able to analyze the working principles and characteristics of different solutions through literature research, seeking reasonable alternative solutions.
	2-3 能对复杂工程问题进行研究，建立复杂工程问题的模型并进行仿真分析，正确描述其特性和规律。 2-3 Be able to study complex engineering problems, establish models of complex engineering problems, and conduct simulation analysis to accurately describe their characteristics and laws.
	2-4 能运用基本原理，借助文献研究分析复杂工程问题解决过程的影响因素，获得有效结论。 2-4 Be able to apply basic principles and analyze the influencing factors of complex engineering problem solving process through literature research, and obtain effective conclusions.
3. 设计/开发解决方案：能够设计智能测控、电子信息、港航仪器相关复杂工程问题的解决方案，能够设计开发满足特定需求的测控系统、单元部件，并能够在设计环节中体现创新意识，同时考虑社会、健康、安全、法律文化以及环境等因素。	3-1 能运用专业领域工程设计开发的基本方法和技术，能通过对复杂工程问题的分析，提出设计目标。 3-1 Be able to apply basic methods and techniques in professional engineering design and development, and propose design goals

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**
3. Designation/Development of Solutions: It is capable of designing solutions for complex engineering problems in intelligent measurement and control, electronic information and Port-shipping instruments; developing measurement and control systems or unit components to meet specific requirements; incorporating innovation methodologies throughout the design process; while comprehensively considering societal, health, safety, legal, cultural, and environmental factors.	through analysis of complex engineering problems.
	3-2 能够针对复杂工程问题的特定需求提出合理的实现方案，并进行系统或工艺流程设计，体现创新意识。 3-2 Be able to propose reasonable implementation solutions for specific requirements of complex engineering problems, capable of conducting system or process design, and demonstrate innovative thinking.
	3-3 评价不同方案的新颖性，并能综合考虑社会、健康、安全、法律、文化及全生命周期成本与净零碳要求等制约因素，确定最佳方案。 3-3 Evaluate the novelty of different solutions and comprehensively consider the constraints of social, health, safety, legal, cultural, and lifecycle cost, and net zero carbon requirements in design to determine the best solution.
	3-4 能够针对复杂工程问题的系统或单元、模块进行软件设计。 3-4 Capable of software design for systems, units, and modules that address complex engineering problems.
	3-5 能够针对复杂工程问题的系统或单元、模块进行硬件设计。 3-5 Capable of hardware design for systems, units, and modules that address complex engineering problems.

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**
4. 研究：能够基于科学原理并采用科学方法对智能测控、电子信息、港航仪器中的复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 **4. Research:** Ability to conduct research on complex engineering problems in the field of intelligent measurement and control, electronic information, and Port-shipping instruments based on scientific principles and using scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.	4-1 能够基于科学原理，通过文献研究和相关方法，调研和分析复杂工程问题，采用科学分析方法和仿真等技术手段对智能测控、电子信息、港航仪器相关的复杂工程问题的解决方案进行分析和研究。 4-1 Be able to investigate and analyze solutions to complex engineering problems based on scientific principles, adopt scientific analysis methods and simulation techniques to analyze and research solutions to complex engineering problems related to intelligent measurement and control, electronic information and Port-shipping Instruments.
	4-2 能够基于科学理论和专业知识，针对复杂工程问题的解决方案，设计仿真或实物实验，确定需要的实验器件、单元、软件和系统平台。 4-2 Be able to design simulation or physical experiments based on scientific theories and professional knowledge to solve complex engineering problems, and determine the required experimental devices, units, software, and system platforms.
	4-3 能够搭建实物或仿真实验系统，设定参数，实施实验并科学地采集数据。 4-3 Capable of building physical or simulation experimental systems, setting parameters, conducting experiments, and scientifically collecting data.
	4-4 能够根据实验结果，对实验中出现的问题和现象进行分析、解释，得出合理有效的结论。 4-4 Be able to analyze and explain the problems and phenomena that arise in the experiment based on the experimental results, and draw reasonable and effective conclusions.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
5. 使用现代工具：能够针对智能测控、电子信息、港航仪器相关的复杂工程问题，开发、选择或使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 **5. Using Modern Tools:** Be able to develop, select and apply appropriate technologies, resources, modern engineering tools and IT tools to address complex engineering problems in intelligent measurement and control, electronic information systems, smart shipping, and port-shipping instruments, including the prediction and simulation of such problems while understanding the limitations of these tools.	5-1 能使用机械工程、电子电路、控制系统等仿真和辅助设计工具，并理解其适用范围。 5-1 Be able to use appropriate technology, resources, modern engineering tools, and information technology tools, and understand their scope of application.
	5-2 能运用计算机仿真和辅助设计工具，对复杂工程问题的关键部分或整体进行仿真、模拟、分析，并理解其局限性。 5-2 Being able to apply computer simulation and computer-aided design tools to simulate, model, and analyze the key components or the entire system of a complex engineering problem, while recognizing the limitations of these approaches.
	5-3 能运用网络和文献检索工具，获取专业领域理论与技术的文献和资料用于专业复杂工程问题的分析。 5-3 Be able to use online and literature search tools to obtain theoretical and technical literature and materials in professional fields for the analysis of complex engineering problems.
6. 工程与可持续发展：能够基于智能测控、电子信息、港航仪器等相关背景知识，分析和评价专业工程实践和复杂工程问题的解决方案对社会、健康、安全、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 **6. Engineering and Sustainable Development:** Be able to analyze and evaluate the impacts of professional engineering practices and solutions to complex engineering problems on society, health, safety, legal matters, and economic/social sustainable development, leveraging expertise in intelligent measurement and control, electronics and information and port-shipping instruments, while understanding corresponding responsibilities.	6-1 具有工程实习和社会实践的经历，了解智能测控，电子信息，港航仪器相关的技术标准、知识产权、法律法规和行业政策。 6-1 Having experience in engineering internships and social practice, understanding technical standards, intellectual property, laws and regulations, and industry policies related to intelligent measurement and control, electronic information and port-shipping instruments.
	6-2 熟悉国家可持续发展的相关政策法规，理解可持续发展的重要性。 6-2 Be familiar with relevant national policies and regulations on sustainable development, and understand the importance of sustainable development.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	6-3 具有健康、安全、法律与可持续发展意识，能够客观评价智能测控、电子信息、港航仪器相关领域实践和解决方案对社会、健康、安全、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6-3 Have awareness of health, safety, law, and sustainable development, able to objectively evaluate the impact of practices and solutions in the fields of intelligent measurement and control, electronic information, and port-shipping instruments on society, health, safety, law, as well as economic and social sustainable development, and understand the responsibilities that should be undertaken.
7. 工程伦理和职业规范：有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，能够在专业相关的工程实践中遵守工程职业道德、规范和相关法律，履行责任。 **7. Engineering Ethics and Professional Standards**: Possess the awareness of serving the country and benefiting the people through engineering, possess humanities and social science literacy, and a sense of social responsibility. Able to understand and practice engineering ethics, abide by engineering professional ethics, standards, and relevant laws in professional engineering practice, and fulfill responsibilities.	7-1 具有人文社会科学素养和社会责任感，树立社会主义核心价值观，具有工程报国和为民造福意识，以及诚实公正、诚信守则的职业操守，并在工程实践中自觉遵守。 7-1 Have humanities and social science literacy and a sense of social responsibility, establishing socialist core values, having a sense of engineering for the country and benefiting the people, as well as professional ethics of honesty, justice, and integrity, and consciously abiding by them in engineering practice.
	7-2 能理解和践行工程伦理，能够在智能测控、电子信息、港航仪器相关领域的工程实践中遵守工程职业道德、规范和相关法律，自觉履行责任。 7-2 Be able to understand and practice engineering ethics, abide by engineering professional ethics, norms, and relevant laws in the fields of intelligent measurement and control, electronic information, and port-shipping instruments, and consciously fulfill responsibilities.
8. **个人与团队：**能够在多样化学科背景下的团队中承担个体、团队成员以及负责人的角色。 **8. Individual and Team:** Be able to assume the roles of individual, team member, and leader in a team with diverse disciplinary backgrounds.	8-1 能在多学科背景下的团队中开展工作，主动与其他成员沟通进行有效沟通，开展合作。 8-1 Ability to work in a multidisciplinary team, proactively communicate effectively with other members, and collaborate effectively.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	8-2 能够在团队中承担个体、团队成员以及负责人的角色，具备良好的团队合作精神。 8-2 Be able to take on the roles of individual, team member, and team leader, possessing a strong sense of teamwork.
9. 沟通：能够就智能测控、电子信息、港航仪器相关领域的工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。具备国际视野，并能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 **9. Communication**: Be able to effectively communicate and exchange ideas on engineering issues related to intelligent measurement and control, electronic information, and port-shipping instruments with industry peers and the public. This includes the ability to write reports and design drafts,deliver presentations, and clearly express or respond to instructions. Additionally,demonstrate an international perspective and cross-cultural communication skills, along with an understanding and respect for linguistic and cultural differences.	9-1 具备较流利的英语听说读写能力，能够就相关领域的专业问题以书面或口头方式与国际同行沟通和交流。 9-1 Proficient in English listening, speaking, reading, and writing, able to communicate and interact with international peers in written or oral form on professional issues related to the field.
	9-2 了解专业相关领域的国内外发展状况，能够从全球观点出发，就智能测控、电子信息、港航仪器相关的工程问题以报告、论文、图表或口头方式与业界同行或公众交流，回应质疑。 9-2 Understand the domestic and international development status of professional related fields, and be able to communicate with industry peers or the public from a global perspective on engineering issues related to intelligent measurement and control, electronic information, and Port-shipping instruments, through reports, papers, charts, or oral communication, and respond to questions.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
10. 项目管理：理解并掌握与工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 **10. Project Management:** Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 理解工程项目中涉及的管理原理与经济决策方法，了解工程项目及产品开发过程中的管理与决策问题，并能在多学科环境中应用。 10-1 Understand the management principles and economic decision-making methods involved in engineering projects, understand the management and decision-making issues in engineering projects and product development processes, and be able to apply them in a multidisciplinary environment.
	10-2 能够将工程管理原理与经济决策方法应用于智能测控、电子信息、港航仪器的开发、设计。 10-2 Be able to apply engineering management principles and economic decision-making methods to the development and design of intelligent measurement and control, electronic information, and Port-shipping instruments.
11. 终身学习：具有自主学习、终身学习和批判性思维的意识，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 **11. Lifelong Learning:** Possess awareness of self-directed learning, lifelong learning, and critical thinking, with the ability to comprehend the impact of broad technological changes on engineering and society, and adapt to new technological transformations	11-1 能够理解广泛的技术变革对工程和社会的影响，能接受和应对新技术、新事物和新问题带来的挑战，具有自主学习和终身学习的意识。 11-1 Be able to understand the impact of extensive technological changes on engineering and society, be able to accept and respond to challenges brought by new technologies, new things, and new problems, and have the awareness of self-learning and lifelong learning.
	11-2 具备批判性思维能力，能独立思考，逻辑推理，理性判断，阐述观点和说服他人 11-2 Have the capacity for critical thinking, independent thought, logical reasoning, rational judgment, articulate expression of viewpoints, and persuasive skills.

三、专业核心课程

III．Core Courses

信号与系统分析基础、自动控制理论、测控电路设计、误差分析与数据处理、智能仪器、传感器与检测技术、光电技术

Fundamentals of signal and system analysis、Automatic Control Theory、Measurement and

Control Circuit Design、Error Analysis and Data Processing、Intelligent Instrument、Sensor and Measurement Technology、photoelectric technology

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	专创融合 Specialty& innovation	行业共建 industry collaboration
无人船感知与控制技术 USV sensing and control technology	●		●		
海洋探测与仿生机器人 Ocean exploration and bionic robots		●			
人工智能与机器学习 Artificial intelligence and machine learning			●		
工程项目管理实践 Project management practice		●		●	
图像感知技术 Image perception technology			●		
航海仪器基础 Fundamentals of Marine Instrument	●				
港口物流自动化系统 Port Logistics Automation Systems	●				
船舶自动化系统 Ship Automation System	●				
船舶实习（工程） Ship practice (Engineering)	●				
嵌入式系统课程设计 Embedded system course design				●	
专业实习 Major practice					●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years
授予学位：工学学士学位
Degree conferred: Bachelor of Engineering

六、学分修读要求
VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求
Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="14">/</td><td rowspan="13">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td colspan="2">计算思维及信息技术
Computational Thinking and Information Technology</td><td>4</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>3</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="2">/</td><td rowspan="2">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit 必修 Compulsory	限选 Elective	任选 Option
		科学与技术 Science and Technology			
		人文与艺术 Humanities and Art			
		其他 Others			
专业（类）基础课 Disciplinary Courses	大类基础课 Major Group Courses		13.5	30	/
	专业基础课 Discipline Courses		12.5		
专业及方向课 Stream Courses	专业课 Stream Courses Specialized course		9.5		
集中实践环节 Practical &Training	专业实践课 Specialized Practical Course		7.5	/	
	毕业实践课 Graduation Practice		14		
	军事实践课 Military Practice		3		
	其他实践课 Others		2		
合计 Total：165.5			127.5	30	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	安全实践 Safety Practical &Training	1713027790	安全熟悉	1
	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000320	国家安全教育(船电)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000140	专业导论（自动化类）	1
		1713000520	职业生涯规划	0.5

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
		1713000530	就业指导	0.5
合计 Total：9				9

七、教学计划进度表

参见表 1～表 6
X. Curriculum Structure
Refer to Table1～Table6.

表 1：测控技术与仪器课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（165.5 学分） Comprehensive Quality （165.5 credits）			拓展素养（9 学分） Expand Quality （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	127.5	30	8	9	174.5

表 2：测控技术与仪器必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组	必修-公共基础及通识		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4

			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-1	
			5	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			6	1713021040	创新思维与创新方法(船电) Innovative Thinking and Innovative Methods(Automation Professional)	2	考查		综合素养	32	24	8	1-1	
			7	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			8	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			9	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	
			13	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	

			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-2	
			24	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-1	

			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713011080	C/C++程序设计 C/C++ Programming	3	考试		综合素养	48	48	0	1-2	
			2	1713011090	C/C++程序设计上机实践 C/C++ Programming Practice	1	考查		综合素养	24	0	24	1-2	
			3	1713028010	电路原理(1) Principles of Electric Circuits(1)	4.5	考试	√	综合素养	72	58	14	1-2	
			4	1713014180	模拟电子技术基础 Fundamental of Analog Electronics	4	考试		综合素养	64	52	12	2-1	
			5	1713017660	计算机软件技术基础 Fundamentals of Computer Software Technology	2	考查		综合素养	32	26	6	2-1	
			6	1713014190	数字电子技术基础 Fundamental of Digital Electronics	3	考试	√	综合素养	48	38	10	2-2	
			7	1713018540	信号与系统分析基础 Fundamentals of Signal and System Analysis	2	考试	√	综合素养	32	32	0	2-2	
			8	1713024040	微型计算机原理与应用 Principle and Application of Microcomputer	4	考试	√	综合素养	64	48	16	2-2	
			9	1713024050	自动控制理论 Automatic control theory	3.5	考试	√	综合素养	56	46	10	2-2	
			10	1713024110	测控电路设计 Measurement and Control Circuit Design	3	考试		综合素养	48	38	10	3-1	

	必修-专业及方向课程 Stream Courses		1	1713013070	误差分析与数据处理 Measurement Error Analysis and Data Processing	2	考试	√	综合素养	32	32	0	3-1	
			2	1713013080	智能仪器 Intelligent Instrument	2	考试	√	综合素养	32	24	8	3-1	
			3	1713023880	传感器与检测技术 Experiment in Sensor and Measurement Technology	3.5	考试	√	综合素养	56	44	12	3-1	
			4	1713028520	光电技术 Photoelectric technology	2	考试	√	综合素养	32	32	0	3-2	
			5	1713029440	科技检索与写作 Technology Retrieval and Writing	1	考查		综合素养	16	16	0	4-1	
合计 Total						**102**				**1720**	**1382**	**338**		

表 3：测控技术与仪器 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Course	限选-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			2	1713029890	科学计算与仿真 Scientific computation and simulation	2	考查		综合素养	32	20	12	2-1	

			3	1713013130	专业英语与写作 Specialty English and Writing	2	考查		综合素养	32	32	0	3-1	
			4	1713029840	现代控制理论 Modern Control Theory	2	考查		综合素养	32	32	0	3-1	
	限选-专业及方向课程 Stream Courses		1	1713024100	可编程逻辑器件 Programmable logic Device	2	考查		综合素养	32	20	12	2-2	
			2	1713023890	面向对象的软件设计 Object-oriented software design	2	考查		综合素养	32	20	12	3-1	
			3	1713028540	电子测量技术 Electronic Measurement Technology	2	考查		综合素养	32	32	0	3-1	
			4	1713029880	电子设计 CAD 技术 Electrical design CAD technology	2	考查		综合素养	32	16	16	3-1	
			5	1713013180	嵌入式系统基础 Fundamentals of Embedded System	2	考查		综合素养	32	24	8	3-2	
			6	1713013220	仪表与过程控制 Instrument And Process Control	2	考查		综合素养	32	26	6	3-2	
			7	1713018490	人工智能与机器学习 Artificial Intelligence and Machine Learning	2	考查		综合素养	32	32	0	3-2	
			8	1713029860	工业网络通信技术 Industrial network communication technology	2	考查		综合素养	32	24	8	3-2	
			9	1713029870	图像感知技术 Image perception technology	2	考查		综合素养	32	32	0	3-2	
			10	1713011140	航海仪器基础 Fundamentals of Marine Instrument	2	考查		综合素养	32	22	10	4-1	

			11	1713011160	船舶自动化系统 Ship Automation System	2	考查		综合素养	32	28	4	4-1	
			12	1713012990	港口物流自动化系统 Port Logistics Automation Systems	2	考查		综合素养	32	32	0	4-1	
			13	1713013160	电机拖动与控制 Motor Drive and Control	2	考查		综合素养	32	26	6	4-1	
			14	1713022280	无人船感知与控制技术 USV sensing and control technology	2	考查		综合素养	32	22	10	4-1	
			15	1713024070	自动测试与虚拟仪器 Automatic Test and Virtual Instrument	2	考查		综合素养	32	18	14	4-1	
			16	1713027030	机器人学基础 Fundamentals of Robotics	2	考查		综合素养	32	32	0	4-1	
			17	1713027890	海洋探测与仿生机器人 Ocean Exploration and Bionic Robots	2	考查		综合素养	32	32	0	4-1	
			18	1713029850	精密机械与仪器设计 Precision Mechanism and Instrument Design	2	考查		综合素养	32	32	0	4-1	
合计 Total						**44**				**704**	**582**	**122**		

表 4：测控技术与仪器任选课程设置及进程
Table4： Free Electives System

1. 全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：测控技术与仪器 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713028530	电子技术设计实践 Electric Technology Design and Practice	1	考查		综合素养	30	0	30	2-2	
			3	1713013290	智能仪表综合设计 Intelligent Instrument Project Design	2	考查		综合素养	60	0	60	3-1	
			4	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			5	2113000550	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	3-1	

			6	1713013300	测控系统综合设计 Measurement and Control System Subject design	2	考查		综合素养	60	0	60	3-2	
			7	1713013600	嵌入式系统课程设计 Embedded System Project Design	2	考查		综合素养	60	0	60	3-2	
			8	1713018470	工程项目管理实践 Project Management Practice	0.5	考查		综合素养	12	0	12	3-2	
			9	1713026201	船舶实习(工程) Ship Practice (Engineering)	1	考查		综合素养	30	0	30	3-2	
			10	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			11	1713024140	专业实习 Major practice	2	考查		综合素养	60	0	60	4-2	
			12	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						28.5				838	0	838		

表 6：测控技术与仪器 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	

			3	2113000140	专业导论(自动化类) Introduction to Profession	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000320	国家安全教育(船电) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				144	144	0		

八、实践学时学分
VIII．Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	创新思维与创新方法	必修	8	0.5	●
5	大学物理实验(1)	必修	24	1	●
6	思想道德与法治	必修	8	0.5	
7	电路原理(1)	必修	14	0.875	●
8	C/C++程序设计上机实践	必修	24	1	●
9	大学物理实验(2)	必修	24	1	●
10	模拟电子技术基础	必修	12	0.75	●
11	计算机软件技术基础	必修	6	0.375	●
12	马克思主义基本原理	必修	8	0.5	
13	微型计算机原理与应用	必修	16	1	●
14	数字电子技术基础	必修	10	0.625	●
15	自动控制理论	必修	10	0.625	●
16	电子技术设计与实践	必修	30	1	●
17	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
18	测控电路设计	必修	10	0.625	●
19	传感器与检测技术	必修	10	0.75	●
20	智能仪器	必修	8	0.5	●
21	智能仪表综合设计	必修	60	2	●
22	金工实习	必修	30	1	●

23	嵌入式系统课程设计	必修	60	2	●
24	工程项目管理实践	必修	12	0.5	●
25	测控系统综合设计	必修	60	2	●
26	船舶实习（工程）	必修	30	1	●
27	专业实习	必修	60	2	●
28	毕业设计（论文）	必修	360	12	●
合计 Total			1128	42.125	33.125

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 1-4 **Graduation Requirements 1-4**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 2-3 **Graduation Requirements 2-3**		●		
毕业要求 2-4 **Graduation Requirements 2-4**		●		
毕业要求 3-1 **Graduation**		●		

Requirements 3-1				
毕业要求 3-2 **Graduation Requirements 3-2**		●		
毕业要求 3-3 **Graduation Requirements 3-3**	●			
毕业要求 3-4 **Graduation Requirements 3-4**		●		
毕业要求 3-5 **Graduation Requirements 3-5**		●		
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 4-3 **Graduation Requirements 4-3**		●		
毕业要求 4-4 **Graduation Requirements 4-4**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 5-3 **Graduation Requirements 5-3**		●		
毕业要求 6-1 **Graduation Requirements 6-1**	●			
毕业要求 6-2 **Graduation Requirements 6-2**	●			
毕业要求 6-3 **Graduation**	●			

Requirements 6-3				
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 9-1 **Graduation Requirements 9-1**				●
毕业要求 9-2 **Graduation Requirements 9-2**				●
毕业要求 10-1 **Graduation Requirements 10-1**			●	
毕业要求 10-2 **Graduation Requirements 10-2**			●	
毕业要求 11-1 **Graduation Requirements 11-1**				●
毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

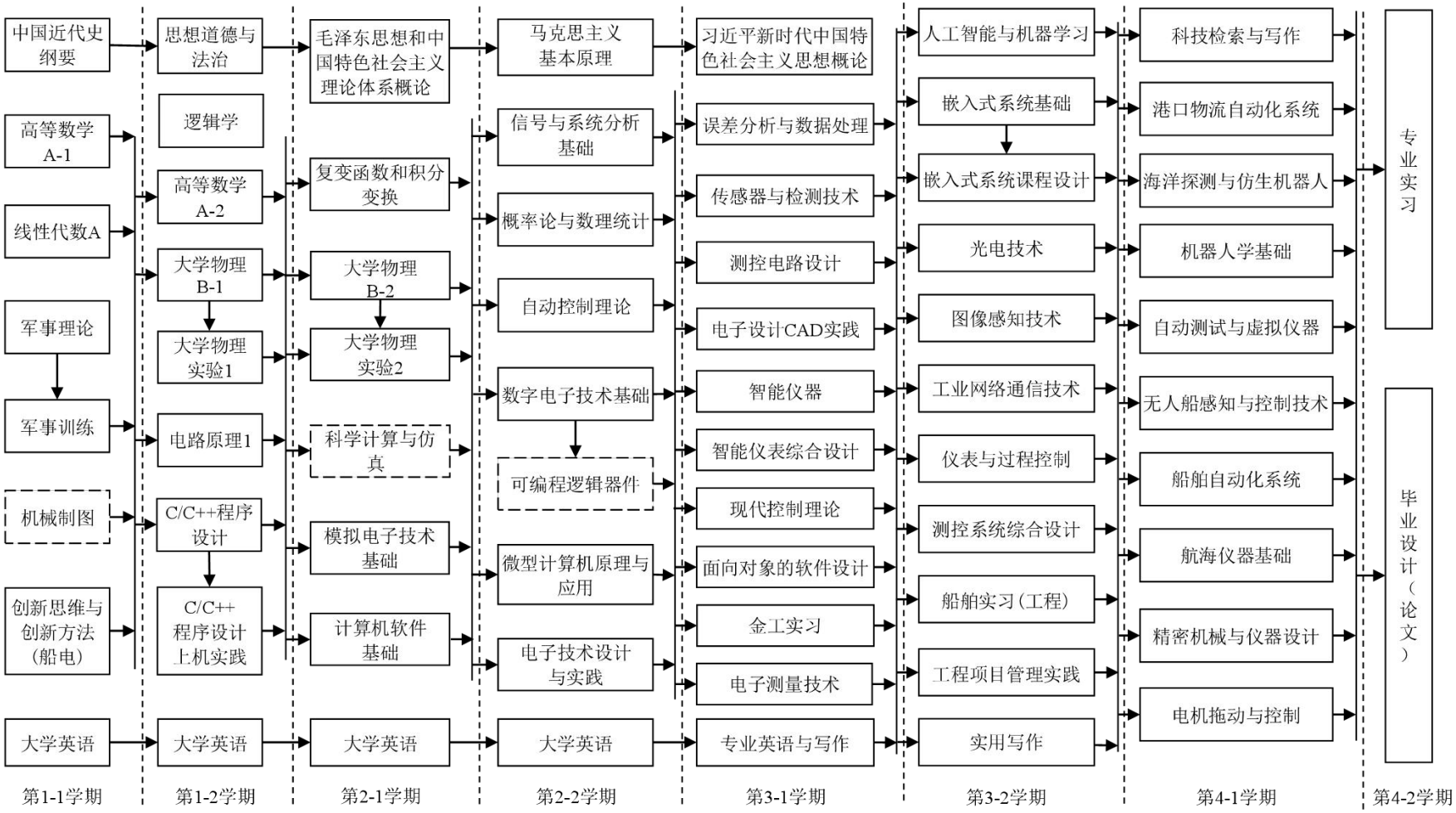
		毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3					毕业要求 4 Graduation Requirements 4				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6			毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9		毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	3-5	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	6-3	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	军事理论																								H									
2	体育																										H							
3	中国近现代史纲要																						H		H									
4	创新思维与创新方法(船电)										H													H										H
5	大学英语																												H					
6	C/C++程序设计				H						H		H																					
7	思想道德与法治																					H		H	H									
8	C/C++程序设计上机实践												H			H										H								
9	复变函数与积分变换	H				H																												
10	大学物理	H																																H
11	大学物理实验														H																			
12	毛泽东思想和中国特色社会主义理论体系概论																						H		H									
13	习近平新时代中国特色社会主义思想概论																						H		H									
14	马克思主义基本原理																								H									
15	逻辑学																													H				

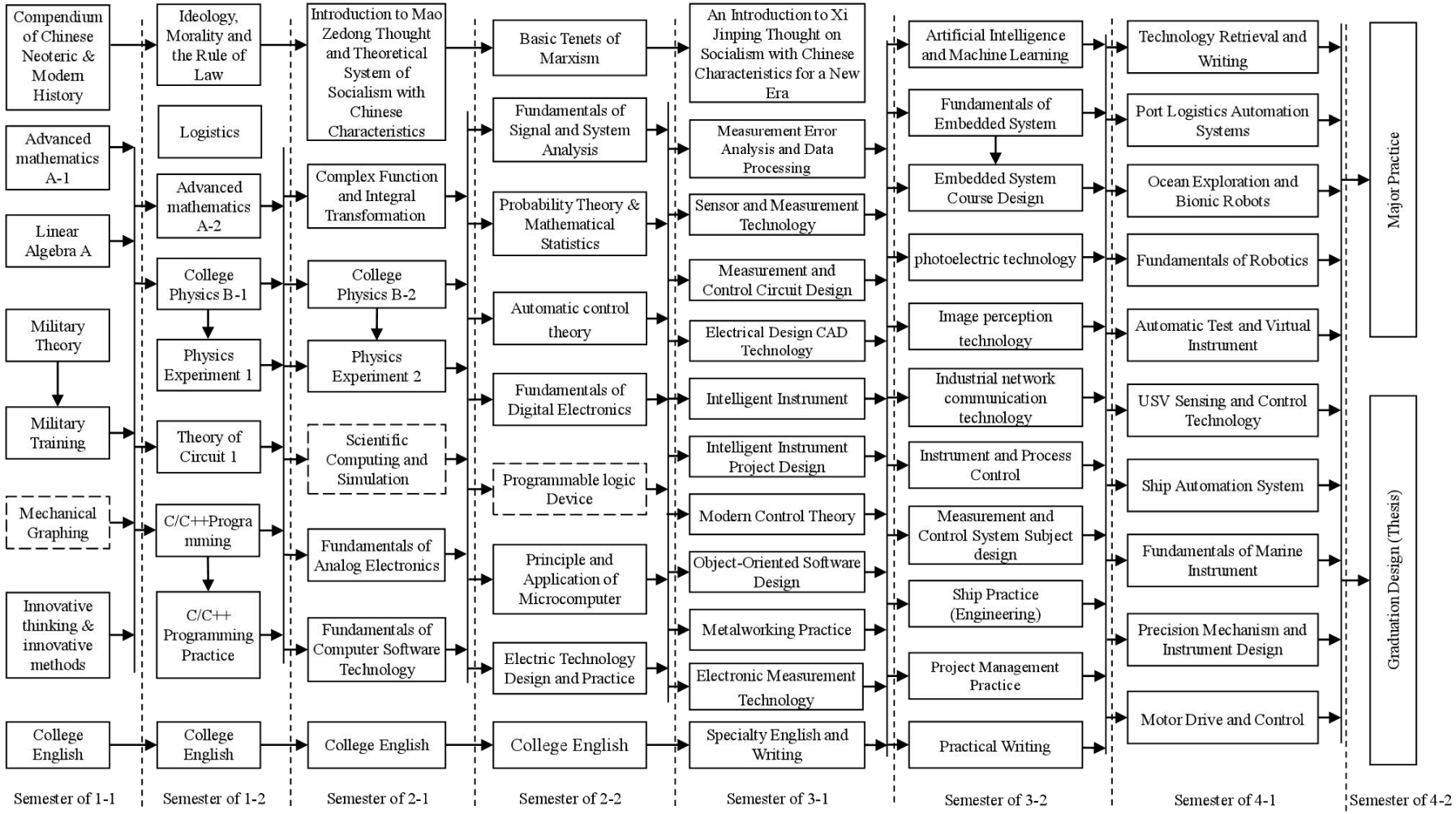
16	概率论与数理统计	H				H																													
17	高等数学	H																																	H
18	实用写作																													H					
19	科技检索与写作																				H	H								H					H
20	线性代数	H																																	
21	电路原理(1)		H			H				H					H		H																		H
22	模拟电子技术基础		H	H		H				H					H																				
23	计算机软件技术基础			H							H		H					H																	
24	数字电子技术基础		H	H		H				H					H																				
25	信号与系统分析基础		H	H				H							H					H															
26	微型计算机原理与应用			H									H	H		H																			H
27	智能仪器				H		H		H	H	H								H																
28	自动控制理论		H	H				H							H					H															H
29	测控电路设计			H										H	H	H	H		H																
30	误差分析与数据处理			H		H				H								H																	
31	传感器与检测技术					H			H	H					H		H	H			H														
32	光电技术					H	H							H																					
33	军事训练																										H								
34	电子技术设计实践						H					H		H		H		H	H							H					H	H			
35	智能仪表综合设计						H					H										H					H	H		H	H	H			
36	金工实习																					H													
37	嵌入式系统课程设计										H	H				H										H	H	H				H	H		
38	测控系统综合设计							H				H												H			H	H		H	H	H			
39	工程项目管理实践																						H	H			H	H			H	H			
40	船舶实习（工程）																					H				H	H								

41	专业实习																					H	H	H	H	H			H			H		
42	毕业设计（论文）						H		H		H						H							H					H	H	H		H	
43	科学计算与仿真							H											H	H														
44	可编程逻辑器件													H			H																	
45	电子设计CAD技术													H					H	H		H												
46	面向对象的软件设计												H																					
47	机械制图																		H															
48	专业英语与写作																												H	H				
49	现代控制理论			H	H			H												H														
50	电子测量技术											H		H	H																			
51	仪表与过程控制				H		H		H	H	H						H	H																
52	人工智能与机器学习								H									H		H	H												H	
53	图像感知技术				H				H			H									H													
54	工业网络通信技术				H	H			H												H													
55	嵌入式系统基础												H		H						H													
56	海洋探测与仿生机器人											H									H												H	
57	航海仪器基础				H									H																				
58	船舶自动化系统									H														H										
59	港口物流自动化系统				H					H																								
60	自动测试与虚拟仪器												H				H																	
61	电机拖动与控制													H						H														
62	机器人学基础							H																										
63	精密机械与仪器设计						H							H																				
64	无人船感知与控制技术				H			H																H									H	

十一、课程配置流程图

XI. Flowchart of Course Configuration




Compendium of Chinese Neoteric & Modern History
Advanced mathematics A-1
Linear Algebra A
Military Theory
Military Training
Mechanical Graphing
Innovative thinking & innovative methods
College English
Ideology, Morality and the Rule of Law
Logistics
Advanced mathematics A-2
College Physics B-1
Physics Experiment 1
Theory of Circuit 1
C/C++Programming
C/C++ Programming Practice
College English
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Complex Function and Integral Transformation
College Physics B-2
Physics Experiment 2
Scientific Computing and Simulation
Fundamentals of Analog Electronics
Fundamentals of Computer Software Technology
College English
Basic Tenets of Marxism
Fundamentals of Signal and System Analysis
Probability Theory & Mathematical Statistics
Automatic control theory
Fundamentals of Digital Electronics
Programmable logic Device
Principle and Application of Microcomputer
Electric Technology Design and Practice
College English
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Measurement Error Analysis and Data Processing
Sensor and Measurement Technology
Measurement and Control Circuit Design
Electrical Design CAD Technology
Intelligent Instrument
Intelligent Instrument Project Design
Modern Control Theory
Object-Oriented Software Design
Metalworking Practice
Electronic Measurement Technology
Specialty English and Writing
Artificial Intelligence and Machine Learning
Fundamentals of Embedded System
Embedded System Course Design
photoelectric technology
Image perception technology
Industrial network communication technology
Instrument and Process Control
Measurement and Control System Subject design
Ship Practice (Engineering)
Project Management Practice
Practical Writing
Technology Retrieval and Writing
Port Logistics Automation Systems
Ocean Exploration and Bionic Robots
Fundamentals of Robotics
Automatic Test and Virtual Instrument
USV Sensing and Control Technology
Ship Automation System
Fundamentals of Marine Instrument
Precision Mechanism and Instrument Design
Motor Drive and Control
Major Practice
Graduation Design (Thesis)
Semester of 1-1
Semester of 1-2
Semester of 2-1
Semester of 2-2
Semester of 3-1
Semester of 3-2
Semester of 4-1
Semester of 4-2

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84728250 84725100

教学院长：84728210

教 务 处：84723005

测控技术与仪器专业负责人：王勇

测控技术与仪器教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Internet of Things Engineering Major

[2025 级适用]

★物联网工程专业（080905）

大连海事大学教务处

2025 年 9 月

物联网工程专业本科培养计划（2025 版）

Undergraduate Program for Internet of Things Engineering

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业适应国家战略性新兴产业发展需求，培养学生德、智、体、美，劳全面发展，知识、能力、素质兼备。具有较高的道德文化修养和科学素质，良好的沟通与团队协作能力，较强的社会责任感和终身学习能力；具有物联网工程领域的专业知识及较强的实践能力和创新意识。能在物联网工程（尤其是交通相关领域）从事系统设计、研发、维护和管理的高素质复合型专门人才。 This major adapts to the development needs of national strategic emerging industries, cultivating students' comprehensive development in morality, intelligence, physical fitness, aesthetics, and labor, with knowledge, abilities, and qualities. Having high moral and cultural cultivation, scientific literacy, good communication and teamwork skills, strong sense of social responsibility, and lifelong learning ability; Having professional knowledge in the field of IoT engineering, strong practical ability, and innovative consciousness. Highly qualified composite professionals who can engage in system design, research and development, maintenance, and management in IoT engineering, especially in the field of transportation.	1，具有高尚的职业道德、社会责任感和行业使命感，坚守工程伦理，政治坚定，身心健康，德智体美劳全面发展。 1，Having noble professional ethics, a sense of social responsibility, and a sense of industry mission, adhering to engineering ethics, being politically firm, maintaining physical and mental health, and developing comprehensively in morality, intelligence, physical fitness, aesthetics, and labor.
	2，掌握物联网工程相关领域的专业知识和计算知识，具备将知识应用于项目分析、设计、开发等实际应用的实践能力，并能够体现出创新意识。 2,Mastering professional and computational knowledge in the field of IoT engineering, possess practical abilities to apply knowledge to project analysis, design, development, and other practical applications, and demonstrate innovative thinking.
	3，具有良好的沟通和团队协作能力，具备组织和实施物联网相关领域（尤其是交通运输）项目的能力。 3，Bearing good communication and teamwork skills, with the ability to organize and implement projects in the field of IoT, especially in transportation.
	4, 具有终身学习的能力和追求，具有国际视野（尤其是海事方面），能够持续适应不断变化的自然环境和社会环境。 4，Bearing the ability and pursuit of lifelong learning, with an international perspective (especially in the maritime field), able to continuously adapt to the constantly changing natural and social environment.

二、毕业要求
II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求描述 Graduation Requirements Description	毕业要求分解指标点 Observation Points
1，工程知识 1，Engineering Knowledge	能够将数学、自然科学知识、计算以及相关的工程基础和专业知识用于解决物联网工程领域相关的复杂工程问题。 Be able to apply mathematical, natural science knowledge, computing, and related engineering foundations and professional knowledge to solve complex engineering problems in the field of IoT engineering.	1-1 具有数学和自然科学知识并能应用其基本概念、理论和方法描述和解释客观世界的基本规律。 1-1 Having knowledge of mathematics and natural sciences and being able to apply their basic concepts, theories, and methods to describe and explain the fundamental laws of the objective world.
		1-2 具有工程基础知识并能够应用其基本概念、基本理论和基本方法解决工程实际问题。 1-2 Having basic knowledge of engineering and being able to apply its fundamental concepts, theories, and methods to solve practical engineering problems.
		1-3 具有物联网工程领域的专业基础知识，能综合应用专业知识解决物联网相关领域的复杂工程问题。 1-3 Having professional basic knowledge in the field of IoT engineering, able to comprehensively apply professional knowledge to solve complex engineering problems in IoT related fields.
2，问题分析 2，Problem Analysis	能够应用数学、自然科学和工程科学的基本原理，对物联网工程领域的复杂工程问题进行识别、表达，并通过文献研究分析复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 Be able to apply the basic principles of mathematics, natural sciences, and engineering sciences to identify and express complex engineering problems in the field of Internet of	2-1 具有能够识别物联网工程领域复杂工程问题的关键环节和参数的能力。 2-1 Having ability to identify key links and parameters of complex engineering problems in the field of IoT engineering.
		2-2 具有能够运用物联网相关的基础知识和通过文献研究，深入分析复杂问题工程原理的能力。 2-2 Having ability to apply basic knowledge related to the Internet of Things and conduct in-depth analysis of complex engineering principles through literature research.

毕业要求 Graduation Requirements	毕业要求描述 Graduation Requirements Description	毕业要求分解指标点 Observation Points
	Things engineering, and analyze complex engineering problems through literature research, comprehensively considering the requirements of sustainable development, in order to obtain effective conclusions.	2-3 具备在问题分析过程中，综合考虑可持续发展相关要求的能力。 2-3 Having ability to comprehensively consider the requirements of sustainable development in the process of problem analysis.
3，设计/开发解决方案 **3, Solution Design/ Development**	能够针对物联网工程领域的复杂工程问题，设计和开发解决方案，设计满足物联网工程行业需求的系统、单元（部件）或工艺流程，体现创新性，并从健康与安全、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 Be able to design and develop solutions to complex engineering problems in the field of IoT engineering, designing systems, units (components) or process flows that meet the needs of the IoT engineering industry, demonstrating innovation, and considering feasibility from the perspectives of health and safety, full lifecycle cost and net zero carbon requirements, legal and ethical, social and cultural factors.	3-1 具备针对物联网领域复杂工程问题进行解决方案的开发与设计能力。 3-1 Having ability to develop and design solutions for complex engineering problems in the field of the Internet of Things
		3-2 具备针对物联网领域相关的特定需求的系统、单元、模板进行软硬件设计能力，并体现创新性。 3-2 Having ability to design software and hardware for systems, units, and templates that meet specific requirements in the field of the Internet of Things, and demonstrate innovation.
		3-3 具备从健康与安全、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度对解决方案可行性进行评估的能力。 3-3 Having ability to evaluate the feasibility of solutions from the perspectives of health and safety, full lifecycle cost and net zero carbon requirements, legal and ethical, social and cultural factors.
4，研究 **4，Research**	能够基于科学原理并采用科学方法对物联网工程领域的复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 Be able to conduct research on complex engineering problems in the field of Internet of Things engineering based on scientific principles and using scientific methods, including designing	4-1 能够针对物联网工程领域的复杂工程问题，提出科学实验方法。 4-1 Be able to propose scientific experimental methods for complex engineering problems in the field of IoT engineering.
		4-2 能对实验结果进行分析和解释，并通过信息综合得到合理有效的结论。 4-2 Be able to analyze and interpret experimental results, and obtain reasonable and effective conclusions through information synthesis.

毕业要求 Graduation Requirements	毕业要求描述 Graduation Requirements Description	毕业要求分解指标点 Observation Points
	experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.	
5，使用现代工具 5，Using Modern Tools	能够针对物联网工程领域的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 Be able to develop, select, and use appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the field of IoT engineering, including prediction and simulation of complex engineering problems, and understand their limitations.	5-1 能运用计算机软、硬件仿真工具，对复杂工程问题的关键部分和整体进行辅助设计、仿真、模拟、分析，并理解其局限性。 5-1 Be able to use computer software and hardware simulation tools to assist in the design, simulation, simulation, and analysis of key parts and overall complex engineering problems, and understand their limitations.
		5-2 能运用网络、大语言模型和文献检索工具，获取物联网工程领域理论与技术的文献和资料。 5-2 Be able to use the internet, big language models, and literature search tools to obtain literature and materials on theories and technologies in the field of IoT engineering.
6，工程与可持续发展 6，Engineering and Sustainable Development	在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 Be able to analyze and evaluate the impact of engineering practices on health, environment, law, and sustainable economic and social development based on relevant engineering background knowledge, and understand the responsibilities that should be undertaken.	6-1 了解物联网领域相关的技术标准、环境保护以及人文社会相关的法律法规，理解社会可持续发展的重要性。 6-1 Understand the technical standards related to IoT fields, environmental protection, and laws and regulations related to human society, and comprehend the importance of sustainable social development.
		6-2 能够客观评价物联网系统工程实践和解决方案对社会、健康、环境、法律以及社会的影响，并理解应承担的责任。 6-2 Be able to objectively evaluate the impact of IoT system engineering practices and solutions on society, health, environment, law, and society, and understand the responsibilities that should be undertaken.

毕业要求 Graduation Requirements	毕业要求描述 Graduation Requirements Description	毕业要求分解指标点 Observation Points
7，工程伦理和职业规范 **7，Engineering Ethics and Professional Specification**	有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在工程实践中遵守工程职业道德、规范和相关法律，履行责任。 Have the awareness of serving the country and benefiting the people through engineering, possess humanities and social science literacy and a sense of social responsibility, understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in engineering practice, and fulfill responsibilities.	7-1 具有人文社会科学素养和社会责任感，并具有工程报国、为民造福的意识。 7-1 Having humanities and social science literacy and a sense of social responsibility, as well as a consciousness of engineering to serve the country and benefit the people.
		7-2 能够在物联网系统工程实践中理解和践行工程伦理，遵守工程职业道德和相关法律法规。 7-2 Be able to understand and practice engineering ethics, comply with engineering professional ethics and relevant laws and regulations in the practice of IoT system engineering.
8，个人和团队 **8，Individual and Team**	能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 Be able to take on the roles of individual, team member, and leader in a diverse and multidisciplinary team.	8-1 了解团队的构成以及不同角色成员的职责，能主动与不同学科背景的其他团队成员合作开展工作。 8-1 Understand the composition of the team and the responsibilities of members in different roles, and be able to actively collaborate with other team members from different disciplinary backgrounds to carry out work.
		8-2 能够在团队中承担个体、团队成员以及负责人的角色，具备良好的团队合作精神。 8-2 Capable of taking on the roles of individual, team member, and leader within a team, possessing a strong sense of teamwork.
9，沟通 **9，Communication**	能够就复杂物联网工程问题与业界同行及社会公众进行书面和口头的有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；并具备一定的国际视野，	9-1 了解物联网工程专业科技文档的基本构成以及要求，具备科技文档的写作能力。 9-1 Understand the basic composition and requirements of technical documents in the field of IoT engineering, and possess the ability to write technical documents.

毕业要求 Graduation Requirements	毕业要求描述 Graduation Requirements Description	毕业要求分解指标点 Observation Points
	能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 Capable of effectively communicating and exchanging written and oral information with industry peers and the general public on complex IoT engineering issues, including writing reports and design drafts, presenting speeches, and clearly expressing or responding to instructions，and possess a certain international perspective, able to communicate and exchange in cross-cultural contexts, understand and respect language and cultural differences.	9-2 具备良好的口头表达能力，能够就复杂物联网工程问题与业界同行及社会公众进行有效交流。 9-2 Having good oral communication skills, able to effectively communicate with industry peers and the public on complex IoT engineering issues.
		9-3 具备较流利的英语听说读写能力，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9-3 Have fluent English listening, speaking, reading, and writing abilities, able to communicate and interact in cross-cultural contexts, understand and respect language and cultural differences.
10，项目管理 10，Project Management	理解并掌握与工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 理解并掌握工程管理原理与经济决策方法。 10-1 Understand and master the principles of engineering management and economic decision-making methods.
		10-2 能够将工程管理原理与经济决策方法应用于物联网系统的设计、运行及管理等多学科环境中。 10-2 Be able to apply engineering management principles and economic decision-making methods to multidisciplinary environments such as the design, operation, and management of IoT systems.
11，终身学习 11，Lifelong Learning	具有自主学习和终身学习的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革，具有批判性思维能力。 Having the awareness and ability of self-learning and lifelong learning, being able to understand the impact of extensive technological changes on engineering and society, adapting to new technological changes, and possessing critical thinking skills.	11-1 理解社会和科学技术发展与变革的必然性，清楚终身学习的重要性。 11-1 Understand the inevitability of social and scientific technological development and change, understand the importance of lifelong learning, and have the awareness and ability of self-directed and lifelong learning.
		11-2 能够采用适当的方式，通过学习发展自身能力，具有自主学习、终身学习和批判性思维的意识和能力。

毕业要求 Graduation Requirements	毕业要求描述 Graduation Requirements Description	毕业要求分解指标点 Observation Points
		11-2 Being able to adopt appropriate methods to develop one's own abilities through learning, possessing awareness and ability for self-directed learning, lifelong learning, and critical thinking.

三、专业核心课程

III．Core Courses

信号分析与处理，计算机网络基础，单片机原理与接口技术，数据结构与算法，控制原理与设计，传感器原理与技术，数字通信基础，RFID 原理与应用，无线网络技术，物联网安全技术。

Signal Analysis and Processing，Fundamentals of Computers Network，MCU Principle and Interfacing Technique， Data Structure and Algorithm，Fundamentals of Control Principle and Design，Sensor Principle and Technology， Principle of Digital Communication, RFID Principle and Application，Wireless Network Technology，Security Technology for Internet of Things.

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
航运物联网技术导论 Introduction to shipping IOT Technology	●	●				
船舶通导概论 Introduction of Ship Communication and Navigation	●	●				
物联网专业社会实践 Social Practice of Internet of Things						●
机器学习 Machine Learning			●			
鸿蒙应用开发技术 HarmonyOS Application Development Technology		●			●	
电子工程制图 Electronic		●			●	

Engineering Drawing						
智联网综合设计 Smart Internet Synthetic Design		●	●		●	
物联网安全技术 Security technology for internet of things		●				
物联网操作系统 Internet of Things Operating System		●				

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">32</td><td rowspan="11">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="9">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">专业基础课
Discipline Courses</td><td>19.5</td><td>/</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course	22		
集中实践 环节 Practical &Training	专业实践课 Specialized Practical Course	11	/	
	军事实践课 Military Practical Cours	3		
	毕业实践课 Graduation Practice	12		
	合计：168 Total：168	128	32	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000320	国家安全教育(船电)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018410	专业导论（物联网工程）	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计 Total：8				8

七、教学计划进度表

参见表 1～表 5

VII Curriculum Structure

Refer to Table1～Table6.

表 1：物联网工程课程设置及学分安排

Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（168 学分） In-class Teaching Courses （168 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	128	32	8	8	176

表 2：物联网工程必修课程设置及进程

备注:

Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		

必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1		√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-1	
			5	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			10	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			11	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-2	

			12	1713021040	创新思维与创新方法(船电) Innovative Thinking and Innovative Methods(Automation Professional)	2	考查		综合素养	32	24	8	1-2	
			13	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-1	
			21	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			22	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			23	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	

			24	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713026270	C 语言程序设计基础 Fundamentals of C Language Programming	3	考试		综合素养	48	40	8	1-1	
			2	1713022350	电路基础 Fundamentals of circuit	2.5	试内	√	综合素养	40	30	10	1-2	
			3	1713026280	离散数学(物联网工程) Discrete Mathematics（Internet of Thing）	2.5	考试	√	综合素养	40	40	0	1-2	
			4	1713014180	模拟电子技术基础 Fundamental of Analog Electronics	4	考试	√	综合素养	64	52	12	2-1	

			5	1713011180	信号分析与处理 Signal Analysis and Processing	2	考试	√	综合素养	32	28	4	2-2	
			6	1713014190	数字电子技术基础 Fundamental of Digital Electronics	3	考试	√	综合素养	48	38	10	2-2	
			7	1713025540	计算机网络基础 Fundamentals of Computers Network	2.5	考试	√	综合素养	40	34	6	2-2	
	必修-专业及方向课程 Stream Courses		1	1713026530	数据结构与算法 Data Structure and Algorithm	3	考试	√	综合素养	48	40	8	2-1	
			2	1713023980	单片机原理与接口技术 MCU Principle and Interfacing Technique	4	考试	√	综合素养	64	40	24	2-2	
			3	1713024360	控制原理与设计 Fundamentals of Control Principle and Design	3.5	考试	√	综合素养	56	48	8	3-1	
			4	1713026560	传感器原理与技术 Sensor Principle and Technology	2.5	考试	√	综合素养	40	32	8	3-1	
			5	1713013370	数字通信基础 Principle of Digital Communication	3	考试	√	综合素养	48	40	8	3-2	
			6	1713013380	RFID 原理与应用 RFID Principle and Application	2	考试	√	综合素养	32	26	6	3-2	
			7	1713013400	无线网络技术 Wireless Network Technology	2	考查	√	综合素养	32	26	6	3-2	

			8	1713024350	物联网安全技术 Security technology for internet of things	2	考查	√	综合素养	32	28	4	4-1	
合计 Total						103				1728	1390	338		

表 3：物联网工程 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713013550	文献检索与写作 Literature retrieval and writing	1	考查		综合素养	16	16	0	3-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713026390	C++语言程序设计 C++ Language Programming	2	考查		综合素养	32	24	8	2-1	
			2	1713024010	电子工程制图 Electronic engineering drawing	1	考查		综合素养	16	8	8	2-2	

			3	1713025530	MATLAB 语言与仿真基础(双语) MATLAB Programming Language and Simulation Basics（Bilingual）	2	考查		综合素养	32	22	10	2-2	
			4	1713030170	鸿蒙应用开发技术 HarmonyOS application development technology	2.5	考查		综合素养	40	22	18	2-2	
			5	1713013410	数据采集与处理技术 Data Collection and Processing Technology	2	考查		综合素养	32	28	4	3-1	
			6	1713013450	数据库原理 Database Principle	3	考查		综合素养	48	36	12	3-1	
			7	1713013460	高频电子电路基础 Fundamentals of High-Frequency Electronic Circuits	2.5	考试		综合素养	40	36	4	3-1	
			8	1713013510	专业英语(物联网工程) Special English for Internet of Things Engineering	2	考查		综合素养	32	32	0	3-1	
			9	1713023870	Python 语言程序设计 Python Programming	2	考查		综合素养	32	20	12	3-1	
			10	1713023990	嵌入式系统 Embedded System	3	考查		综合素养	48	32	16	3-1	
			11	1713026470	物联网操作系统 Internet Of Things Operating System	2.5	考查		综合素养	40	40	0	3-1	
			12	1713011060	计算机控制系统 Computer Controlled Systems	2	考试		综合素养	32	28	4	3-2	

			13	1713013520	工业网络技术 Industrial Network Technology	1.5	考查		综合素养	24	18	6	3-2	
			14	1713013570	机器学习 Machine Learning	3	考查		综合素养	48	42	6	3-2	
			15	1713023900	网络控制系统 Networked Control Systems	2	考查		综合素养	32	26	6	3-2	
			16	1713024170	图像分析与模式识别技术 image analysis and pattern recognition	3	考查		综合素养	48	34	14	3-2	
			17	1713026460	Java 与 Web 开发技术 Java And Web Development Technology	3	考查		综合素养	48	36	12	3-2	
			18	1713013560	现代通讯技术 Modern Communication Technology	2.5	考查		综合素养	40	34	6	4-1	
			19	1713024310	航运物联网技术导论 Introduction to shipping IOT Technology	1	考查		综合素养	16	16	0	4-1	
			20	1713024380	船舶通导概论 Introduction of Ship Communication and Navigation	2.5	考查		综合素养	40	34	6	4-1	
			21	1713024390	信息融合技术基础 Introduction to Information Fusion	2	考查		综合素养	32	32	0	4-1	
合计 Total						**48**				**768**	**616**	**152**		

表 4：物联网工程任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：物联网工程 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713026380	C/C++程序设计实践 C/C++ Programming Practice	1	考查		综合素养	24	0	24	1-1	
			3	1713024370	电子工艺课程设计 Electric Project Design	2	考查		综合素养	60	0	60	2-2	

			4	1713013590	传感技术课程设计 Sensor Technology Project Design	2	考查		综合素养	60	0	60	3-1	
			5	1713024210	物联网编程课程设计 Internet of Things Programming Project Design	2	考查		综合素养	60	0	60	3-2	
			6	1713024220	智联网综合设计 Smart Internet Synthetic Design	2	考查		综合素养	60	0	60	4-1	
			7	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			8	1713024300	物联网专业社会实践 Social Practice of Internet of Things	2	考查		综合素养	60	0	60	4-2	
			9	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**27**				**790**	**0**	**790**		

表 6：物联网工程 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compul	必修-讲座 Lectures and Seminar		1	1713018410	专业导论(物联网工程) Introduction of Profession	1	考查		拓展素养	16	16	0	1-1	

			2	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			3	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5			拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	2113000320	国家安全教育(船电) National Security Education	1	考查		拓展素养	16	16	0	1-2	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	

			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	体育（1）	必修	26	1	
2	中国近现代史纲要	必修	8	0.5	
3	体育（2）	必修	34	1	
4	大学物理实验（1）	必修	24	1	●
5	创新思维与创新方法(船电）	必修	8	0.5	●
6	思想道德与法治	必修	8	0.5	
7	体育(3)	必修	34	1	
8	马克思主义基本原理	必修	8	0.5	
9	大学物理实验（2）	必修	24	1	●
10	体育（4）	必修	34	1	
11	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
12	C 语言程序设计基础	必修	8	0.5	●
13	电路基础	必修	10	0.625	●
14	模拟电子技术基础	必修	12	0.75	●
15	数字电子技术基础	必修	10	0.625	●
16	信号分析与处理	必修	4	0.25	●
17	计算机网络基础	必修	6	0.375	●
18	数据结构与算法	必修	8	0.5	●
19	单片机原理与接口技术	必修	24	1.5	●
20	控制原理与设计	必修	8	0.5	●
21	传感器原理与技术	必修	8	0.5	●
22	数字通信基础	必修	8	0.5	●
23	RFID 原理与应用	必修	6	0.375	●

24	无线网络技术	必修	6	0.375	●
25	物联网安全技术	必修	4	0.25	●
26	军事训练	必修	90	3	
27	C/C++程序设计实践	必修	24	1	●
28	电子工艺课程设计	必修	60	2	●
29	传感技术课程设计	必修	60	2	●
30	物联网编程课程设计	必修	60	2	●
31	智联网综合设计	必修	60	2	●
32	物联网专业社会实践	必修	60	2	●
33	毕业设计（论文）	必修	360	12	●
34	C++语言程序设计	限选	8	0.5	●
35	Python 语言程序设计				
36	Java 与 Web 开发技术				
37	MATLAB 语言与仿真基础（双语）				
38	机器学习	限选	6	0.375	●
39	图像分析与模式识别技术				
合计 Total			1126	43	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		

毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 2-3 **Graduation Requirements 2-3**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**		●		
毕业要求 3-3 **Graduation Requirements 3-3**	●	●		
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**				●
毕业要求 6-1 **Graduation Requirements 3-1**	●			●
毕业要求 6-2 **Graduation Requirements 6-2**	●			●
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			●

毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 9-3 **Graduation Requirements 9-3**			●	
毕业要求 10-1 **Graduation Requirements 10-1**			●	
毕业要求 10-2 **Graduation Requirements 10-2**	●			
毕业要求 11-1 **Graduation Requirements 11-1**				●
毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

		毕业要求 1			毕业要求 2			毕业要求 3			毕业要求 4		毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9			毕业要求 10		毕业要求 11	
		1	2	3	1	2	3	1	2	3	1	2	1	2	1	2	1	2	1	2	1	2	3	1	2	1	2
1	军事理论																M										
2	体育																		M	H							
3	高等数学	H			M																						
4	线性代数（A）	H			M																						
5	中国近现代史纲要																H									H	H
6	大学英语																				H	H	H				
7	大学物理	H			M																						
8	大学物理实验					H						H															
9	逻辑学						H														M	M					
10	创新思维与创新方法(船电）				H	H			M									H									
11	思想道德与法治																H	M									
12	劳动教育(理论)														M		H			M							
13	马克思主义基本原理																H							M		H	H

14	概率论与数理统计(A)	H	H																								
15	复变函数与积分变换(A)	H	H																								
16	毛泽东思想和中国特色社会主义理论体系概论																H							M		H	H
17	习近平新时代中国特色社会主义思想概论																H							M		H	H
18	实用写作																				H						
19	C 语言程序设计基础		H						H				H														
20	电路基础		H						H																		
21	离散数学（物联网工程）		H			M								M													
22	模拟电子技术基础		H		M				H																		
23	模拟电子技术基础实验		H		M				H			M															
24	数字电子技术基础		H		M				H																		
25	数字电子技术基础实验		H		M				H			M															

26	信号分析与处理		H			H						H															
27	计算机网络基础		H	M	M							H	H														
28	数据结构与算法		H			H			M																		
29	单片机原理与接口技术			H			M	H	H																		
30	控制原理与设计			H		H		H				M															
31	传感器原理与技术			H				H			H		H														
32	数字通信基础			H		H		H				M															
33	RFID 原理与应用			H				H			H		H														
34	无线网络技术			H						M	H																
35	物联网安全技术			H						H	H							M									
36	军事训练																		M	H							
37	C/C++程序设计实践	H			M			M																			
38	电子工艺课程设计							H	H										M	H	H	M			M		
39	传感技术课程							H	H										M	H	H	M			M		

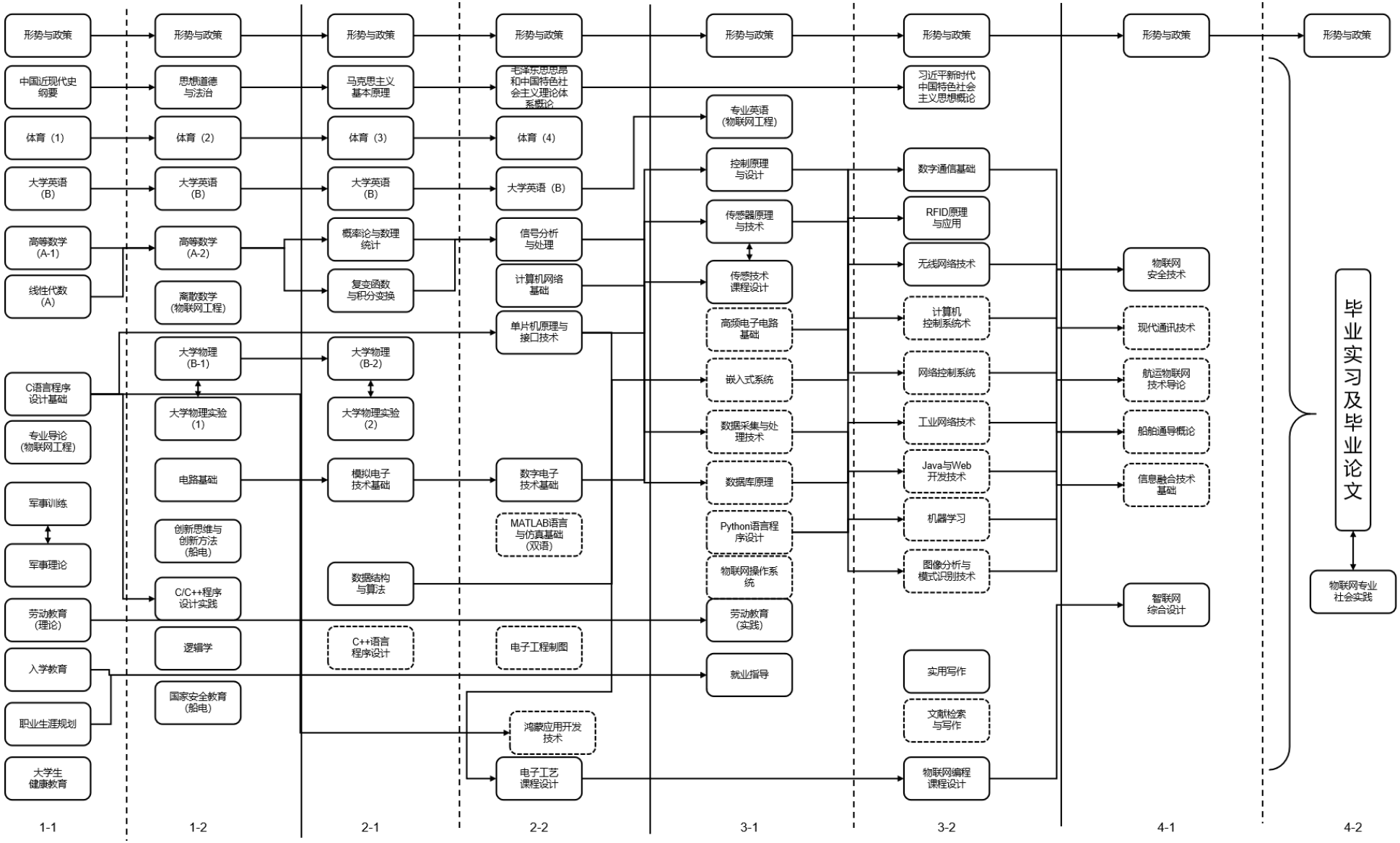
	设计																									
40	物联网编程课程设计							H	H										M	H	H	M			M		
41	智联网综合设计							H	H										M	H	H	H			M		
42	劳动教育(实践)															H	H		H	H							
43	物联网专业社会实践							H	H										M	H	H	H					
44	毕业实习及毕业论文			H		H	H	H	H	H	H	H	H	H	M			H			H	M		H	H	H	H
45	专业导论（物联网工程）													H	H	M	H	H									M
46	形势与政策														H	H	H	H									
47	入学教育														H	H	H	H								H	
48	大学生健康教育																H	M	M								
49	职业生涯规划																H	H								M	H
50	国家安全教育(船电)																H	H									
51	就业指导																H	H								H	H
52	文献检索与写作													M							H		M				

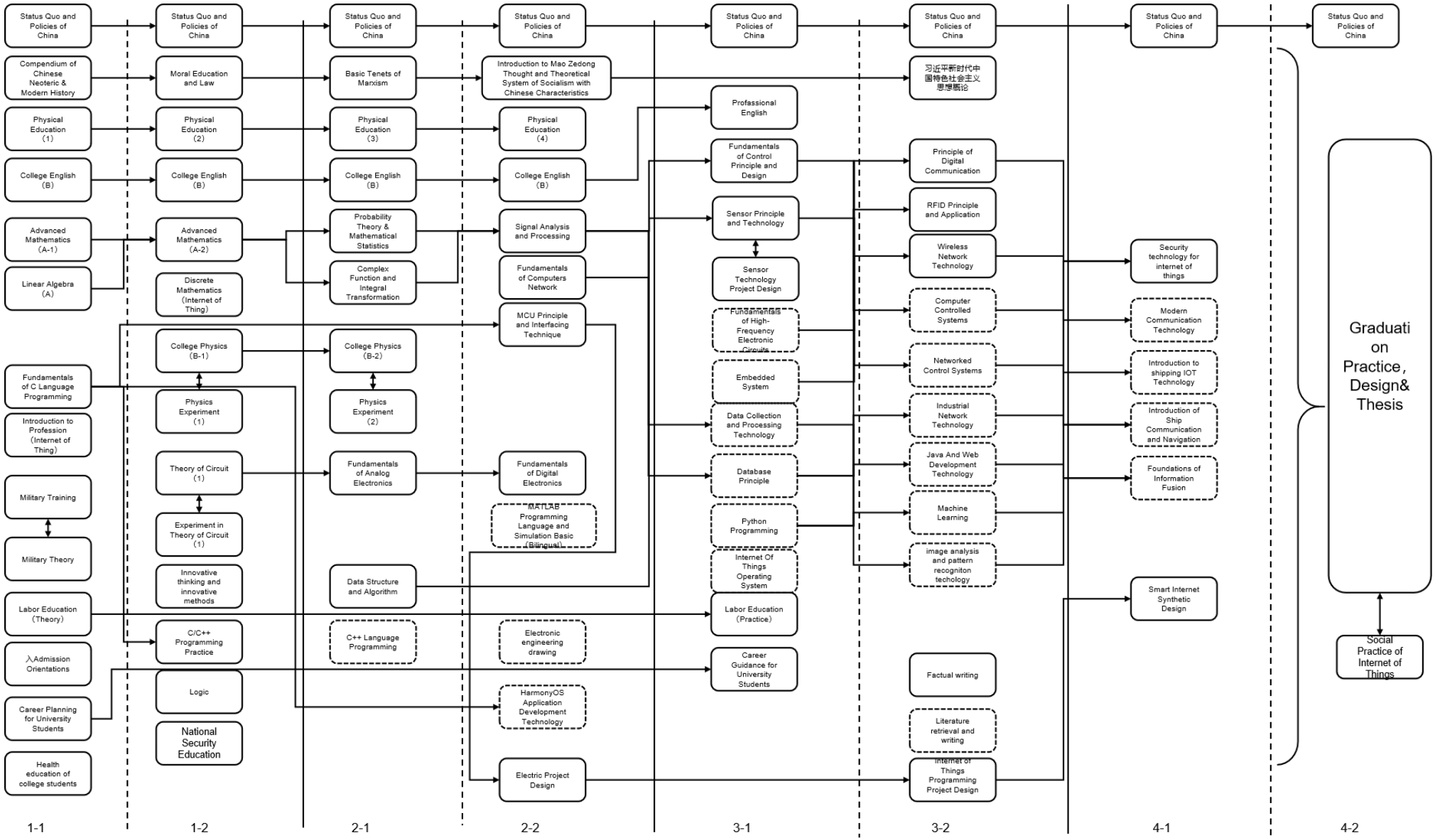
53	C++语言程序设计		H						H				H														
54	电子工程制图		H						H				H														
55	MATLAB 语言与仿真基础（双语）		H						H				H														
56	鸿蒙应用开发技术								H	H			H	H													
57	物联网操作系统		H				H						H														
58	数据采集与处理技术				H				H			H															
59	数据库原理		H					H					H														
60	高频电子电路基础		H		H								H														
61	专业英语（物联网工程）														H			M			H		H				
62	Python 语言程序设计		H						H				H														
63	嵌入式系统		H						H				H														
64	计算机控制系统		H					H			M		M														
65	工业网络技术		H					H			M		M														
66	机器学习		H			H		H		M			H														

67	网络控制系统		H					H			M		M														
68	图像分析与模式识别技术		H			H		H		M			H														
69	Java 与 Web 开发技术		H						H				H														
70	现代通讯技术			H				H						M		M											
71	航运物联网技术导论			H						H				M		M											
72	船舶通导概论			H				H						M		M											
73	信息融合技术基础			H				H																			

十一、课程配置流程图

XI. Flowchart of Course Configuration




Status Quo and Policies of China
Compendium of Chinese Neoteric & Modern History
Physical Education (1)
College English (B)
Advanced Mathematics (A-1)
Linear Algebra (A)
Fundamentals of C Language Programming
Introduction to Profession (Internet of Thing)
Military Training
Military Theory
Labor Education (Theory)
入Admission Orientations
Career Planning for University Students
Health education of college students
Status Quo and Policies of China
Moral Education and Law
Physical Education (2)
College English (B)
Advanced Mathematics (A-2)
Discrete Mathematics (Internet of Thing)
College Physics (B-1)
Physics Experiment (1)
Theory of Circuit (1)
Experiment in Theory of Circuit (1)
Innovative thinking and innovative methods
C/C++ Programming Practice
Logic
National Security Education
Status Quo and Policies of China
Basic Tenets of Marxism
Physical Education (3)
College English (B)
Probability Theory & Mathematical Statistics
Complex Function and Integral Transformation
College Physics (B-2)
Physics Experiment (2)
Fundamentals of Analog Electronics
Data Structure and Algorithm
C++ Language Programming
Status Quo and Policies of China
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Physical Education (4)
College English (B)
Signal Analysis and Processing
Fundamentals of Computers Network
MCU Principle and Interfacing Technique
Fundamentals of Digital Electronics
MATLAB Programming Language and Simulation Basic (Bilingual)
Electronic engineering drawing
HarmonyOS Application Development Technology
Electric Project Design
Status Quo and Policies of China
Profassional English
Fundamentals of Control Principle and Design
Sensor Principle and Technology
Sensor Technology Project Design
Fundamentals of High-Frequency Electronic Circuits
Embedded System
Data Collection and Processing Technology
Database Principle
Python Programming
Internet Of Things Operating System
Labor Education (Practice)
Career Guidance for University Students
Status Quo and Policies of China
习近平新时代中国特色社会主义思想概论
Principle of Digital Communication
RFID Principle and Application
Wireless Network Technology
Computer Controlled Systems
Networked Control Systems
Industrial Network Technology
Java And Web Development Technology
Machine Learning
image analysis and pattern recognition techology
Factual writing
Literature retrieval and writing
Internet of Things Programming Project Design
Status Quo and Policies of China
Security technology for internet of things
Modern Communication Technology
Introduction to shipping IOT Technology
Introduction of Ship Communication and Navigation
Foundations of Information Fusion
Smart Internet Synthetic Design
Status Quo and Policies of China
Graduation Practice, Design& Thesis
Social Practice of Internet of Things
1-1
1-2
2-1
2-2
3-1
3-2
4-1
4-2

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系要求，本年度培养计划进行了全面大修。在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮着的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84728250 84725100

教学院长：84728210

教 务 处：84723005

物联网专业负责人：申丽然

物联网教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Computer Science and Technology Major

[2025 级适用]

★计算机科学与技术（080901）

大连海事大学教务处

2025 年 9 月

计算机科学与技术专业本科培养计划（2025 版）

Undergraduate Program for Computer Science and Technology Major

一、培养目标

I. Program Objectives

大连海事大学计算机科学与技术专业坚持“以成果为导向、学生为中心，持续改进”的办学理念，秉承“学汇百川，德济四海”的教学理念，以通海事、强实践、宽视野、厚情怀、强体魄”等核心素养养成为人才培养目标，致力于国家与地方经济建设和行业发展，使学生掌握计算机科学与技术专业基础理论、基础知识、基本技能与方法，掌握综合运用数学、自然科学、计算机科学与软硬件系统知识的能力，掌握分析与解决现代计算系统复杂工程问题能力，成为具有远大理想、家国情怀、创新精神、实践能力、国际视野的计算机领域高素质复合型人才。

经过五年左右的工作实践，本专业培养的学生应满足合格的计算机系统工程师的基本要求，能独立承担复杂工程项目任务，成为项目团队的核心成员或团队负责人。培养目标可以具体归纳为以下几条：

培养目标 Program Objectives	培养目标分解指标点 Observation Points
大连海事大学计算机科学与技术专业坚持“以成果为导向、学生为中心，持续改进”的办学理念，秉承“学汇百川，德济四海”的教学理念，以通海事、强实践、宽视野、厚情怀、强体魄”等核心素养养成为人才培养目标，致力于国家与地方经济建设和行业发展，使学生掌握计算机科学与技术专业基础理论、基础知识、基本技能与方法，掌握综合运用数学、自然科学、计算机科学与软硬件系统知识的能力，掌握分析与解决现代计算系统复杂工程问题能力，成为具有远大理想、家国情怀、创新精神、实践能力、国际视野的计算机领域高素质复合型人才。 经过五年左右的工作实践，本专业培养的学生应满足合格的计算机系统工程师的基本要求，能独立承担复杂工程项目任务，成为项目团队的核心成员或团队负责人。培养目标可以具体归纳为以下几	1.具备良好的人文社会科学素养、社会责任感与职业道德，身心健康，诚实守信，遵守法律法规、行业标准和规范, 在相应技术工作中承担起社会责任。 1.With good humanities and social science literacy, social responsibility and professional ethics, physical and mental health, honesty and trustworthiness, abide by laws and regulations, industry standards and norms，and taking on social responsibility in relevant technical work.
	2. 具有扎实的数理基础，良好的科学素养与系统的专业知识，精通岗位业务，能够成为相应岗位合格的工程师；工程实践能力强，分析和解决问题能力强，能够在计算机相关领域的复杂工程项目中独立承担任务。 2. With a solid mathematical and physical

条： Dalian Maritime University's Computer Science and Technology program adheres to the educational philosophy of "outcome-oriented, student-centered, and continuous improvement", and upholds the teaching philosophy of "learning from all sources, virtue benefiting the world". With the cultivation of core competencies such as "maritime proficiency, strong practical ability, broad vision, profound sentiment, and robust physique" as its talent development goal, the program is committed to national and local economic construction and industry development. It aims to enable students to master the basic theories, knowledge, skills, and methods of computer science and technology, as well as the ability to comprehensively apply mathematics, natural sciences, and computer science and software/hardware system knowledge. Students will also acquire the capability to analyze and solve complex engineering problems in modern computing systems, becoming high-quality composite talents in the computer field with lofty ideals, patriotism, innovative spirit, practical ability, and an international vision. After approximately five years of work practice, graduates from this program are expected to meet the basic requirements of qualified computer system engineers, independently undertake complex engineering project tasks, and become core members or team leaders of project teams. The specific training objectives can be summarized as follows:	foundation, good scientific literacy, and systematic professional knowledge, proficient in job-related business, and capable of becoming a qualified engineer for the corresponding position; strong engineering practice ability, strong analytical and problem-solving skills, and able to independently undertake tasks in complex engineering projects in computer-related fields.
	3. 具有良好的团队合作精神及沟通协调、组织管理能力，能够在多学科背景的工程项目中成为项目团队的核心成员或团队负责人。 3. With good teamwork spirit and organizational, coordination and management abilities, capable of becoming core members or team leaders in multi-disciplinary engineering projects. 4. 具有终身学习的精神和能力，能够将计算机行业出现的新技术、新思想和新方法创造性地应用于解决复杂计算机工程问题的过程中。 4. With the spirit and ability of lifelong learning, they can creatively apply new technologies, ideas and methods emerging in the computer industry to solve complex computer engineering problems.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.能够运用数学、自然科学、计算、工程基础和计算机专业知识，解决计算	1-1 能够能够运用数学、自然科学、信息科学基础和计算机专业知识表述复杂计算机工程。

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
机领域的复杂工程问题。 1. Be able to apply knowledge of mathematics, natural sciences, computing, engineering fundamentals, and computer science to solve complex engineering problems in the field of computer science.	1-1 Ability to apply fundamental theories such as mathematics, discrete structures, probability statistics, etc. to model and analyze complex engineering problems in the field of computer science.
	1-2 能够针对具体的对象建立数学模型，并根据模型进行计算机复杂工程问题的求解。 1-2 Able to establish mathematical models for specific objects and solve complex computer engineering problems based on the models.
	1-3 掌握计算知识的基本原理与方法，建立大数据和 AI 思维，用于推演、分析复杂计算机工程问题。 1-3 Master the basic principles and methods of computational knowledge, establish big data and AI thinking, and use them to deduce and analyze complex computer engineering problems.
	1-4 能够综合运用数学、工程基础和专业知识对计算机领域复杂工程问题的解决方案进行比较与评估。 1-4 Able to comprehensively use mathematics, engineering fundamentals, and professional knowledge to compare and evaluate solutions to complex engineering problems in the field of computer science.
2.能够应用数学、自然科学和计算机科学的基本原理，对复杂计算系统问题进行分析和建模，通过文献研究和工程技术方法识别关键问题，综合考虑性能、安全、经济和社会可持续发展等因素，提出有效的解决方案。 2. Be capable of analyzing and modeling complex computing system problems by applying the basic principles of mathematics, natural sciences, and computer science. Identify key issues through literature research and engineering techniques, and propose	2-1 能够运用数学、自然科学和计算机科学的基本原理，识别复杂计算系统问题的关键要素，并建立适当的抽象模型进行分析。 2-1 Able to apply the basic principles of mathematics, natural sciences, and computer science to identify the key elements of complex computing system problems and establish appropriate abstract models for analysis.
	2-2 能够通过文献研究和技术调研，获取相关领域的最新进展，分析现有方法的优缺点，并评估其对当前问题的适用性。 2-2 Able to obtain the latest progress in relevant fields through literature research and technical investigations, analyze the advantages and disadvantages of existing methods, and evaluate their applicability to the current problem.
	2-3 在分析复杂计算系统问题时，能够综合考虑性能、安全性、

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
effective solutions by comprehensively considering factors such as performance, safety, economy, and social sustainability.	可靠性、经济性以及社会可持续发展等因素，权衡不同方案的可行性。 2-3 When analyzing complex computing system problems, it is necessary to comprehensively consider factors such as performance, security, reliability, economy, and social sustainable development, and weigh the feasibility of different solutions.
	2-4 能够基于理论分析和实验验证，提出合理的解决方案，并通过仿真、测试或逻辑推理等方法验证其有效性。 2-4 Based on theoretical analysis and experimental verification, propose reasonable solutions and validate their effectiveness through simulation, testing, logical reasoning, etc.
3.能够针对复杂计算系统问题设计和开发解决方案，构建满足特定需求的算法、软件、硬件或系统架构，体现创新性，并从健康、安全与环境、可靠性、可维护性、法律与伦理、可持续发展等角度综合考虑可行性。 3. Be able to design and develop solutions for complex computing system problems, construct algorithms, software, hardware, or system architectures that meet specific requirements, demonstrate innovation, and comprehensively evaluate feasibility from aspects such as health, safety and the environment, reliability, maintainability, law and ethics, and sustainable development.	3-1 能够分析用户或系统的需求，明确功能性和非功能性约束（如性能、安全、可靠性等），并设计合理的软件、算法或硬件架构方案。 3-1 Analyze user or system requirements, clarify functional and non-functional constraints (e.g., performance, security, reliability), and design reasonable software, algorithm, or hardware architecture solutions.
	3-2 能够运用计算机科学理论和技术（如数据结构、计算方法及应用，人工智能、深度强化学习等）开发创新性解决方案，并通过编程、仿真或实验验证其可行性。 3-2 Apply computer science theories and technologies (e.g., data structures, computational methods and applications, artificial intelligence, deep reinforcement learning) to develop innovative solutions, and verify their feasibility through programming, simulation, or experiments.
	3-3 能够在设计过程中考虑计算效率、资源占用、可扩展性、可维护性等因素，优化系统性能，并采用工程化方法（如版本控制、自动化测试、DevOps 等）确保方案的健壮性。 3-3 Consider factors such as computational efficiency, resource usage, scalability, and maintainability during design to optimize system performance, and adopt engineering methods (e.g., version control, automated testing, DevOps) to ensure solution robustness.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	3-4 能够评估技术方案对社会、法律、隐私、安全及环境的影响，确保符合伦理规范（如数据合规、AI 伦理），并考虑绿色计算（如能效优化、低碳算法）等可持续发展要求。 3-4 Evaluate the impact of technical solutions on society, law, privacy, security, and the environment to ensure compliance with ethical norms (e.g., data compliance, AI ethics), and consider sustainable development requirements such as green computing (e.g., energy efficiency optimization, low-carbon algorithms).
4.能够基于计算机科学理论和方法，对复杂计算问题开展系统性研究，包括设计实验或仿真方案、采集与分析数据、优化算法或系统，并通过科学论证与信息综合得出创新性结论。 4. Be able to conduct systematic research on complex computational problems based on computer science theories and methods, including designing experimental or simulation schemes, collecting and analyzing data, optimizing algorithms or systems, and drawing innovative conclusions through scientific demonstration and information integration.	4-1 能够基于科学原理，通过文献研究或计算机科学的基本方法，调研和分析复杂计算机工程问题的解决方案。 4-1 Based on scientific principles, through literature research or the basic methods of computer science, investigate and analyze solutions to complex computer engineering problems.
	4-2 能够根据研究对象和问题的特征，进行研究路线的选择和实验方案的设计。 4-2 According to the characteristics of the research object and the problem, select the research route and design the experimental plan.
	4-3 能够根据实验方案构建实验系统开展实验，正确地采集和处理实验数据。 4-3 Construct an experimental system according to the experimental plan to conduct experiments, and correctly collect and process experimental data.
	4-4 能够对实验结果进行分析与解释，并通过信息综合得到合理有效的结论。 4-4 Analyze and interpret the experimental results, and obtain reasonable and effective conclusions through information integration.
5.能够针对复杂计算机工程问题，开发、选择与使用恰当的技术、资源、现代工程工具、软硬件开发工具，能够对复杂计算机工程问题进行预测与模拟，能够理解不同开发技术与工具的应用场合及其局限性。 5. Be able to develop, select, and use appropriate technologies, resources, modern engineering tools, and software/hardware development tools for complex computer engineering problems. Be able to predict and simulate complex computer engineering	5-1 了解软硬件设计与开发、系统设计分析等过程所需要的软硬件开发环境与工具的最新发展现状，并掌握不同开发环境与工具的性能与特点。 5-1 Understand the latest development status of software and hardware development environments and tools required for processes such as software and hardware design and development, and system design and analysis, and master the performance and characteristics of different development environments and tools.
	5-2 能够选择与使用恰当的仪器、信息资源、计算机工程工具和专业模拟软件，对复杂计算机工程问题进行分析、计算与设计开发。 5-2Be able to select and use appropriate instruments, information resources, computer engineering tools, and professional simulation

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
problems, and understand the application scenarios and limitations of different development technologies and tools.	software to analyze, calculate, design, and develop complex computer engineering problems.
	5-3 能够针对具体的研究对象，开发或选用满足特定需求的现代工具，模拟和预测专业问题，并能够分析其局限性。 5-3 For specific research objects, develop or select modern tools that meet specific needs to simulate and predict professional problems, and be able to analyze their limitations.
6.能够基于工程相关背景知识进行合理分析，评价计算机专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Be able to conduct reasonable analysis based on engineering - related background knowledge, evaluate the impacts of computer engineering practices and solutions to complex engineering problems on society, health, safety, law, as well as economic and social sustainability, and understand the responsibilities to be assumed.	6-1 了解计算机专业领域的技术标准体系、知识产权、产业政策和法律法规，理解不同社会文化对计算机工程活动的影响。 6-1 Understand the technical standard systems, intellectual property rights, industrial policies, and laws and regulations in the computer professional field, and comprehend the impact of different social cultures on computer engineering activities.
	6-2 能够分析和评价计算机专业工程实践对社会、健康、安全、法律以及文化的影响，以及这些制约因素对项目实施的影响，并理解应承担的责任。 6-2 Analyze and evaluate the impacts of computer professional engineering practices on society, health, safety, law, and culture, as well as the effects of these constraints on project implementation, and understand the responsibilities to be undertaken.
7.具有科技报国、为民造福的使命感，具有人文社会科学素养和社会责任感，能够在计算机工程实践中理解并遵守工程职业伦理道德和规范，履行责任。 7. Have the mission of serving the country through science and technology and benefiting the people, possess humanistic and social science literacy and a sense of social responsibility, understand and abide by engineering professional ethics and norms in	7-1 具备基本的人文素养，具备正确的人生观和价值观，有工程报国、为民造福的意识，理解计算机工程师对公众的安全、健康和福祉，以及环境保护的社会责任。 7-1 Possess basic humanistic literacy and correct outlook on life and values, have the awareness of serving the country through engineering and benefiting the people, and understand the social responsibilities of computer engineers for public safety, health, well-being, and environmental protection.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
computer engineering practice, and fulfill responsibilities..	7-2 能够在计算机工程实践中自觉履行责任，理解计算机行业及相关领域工作岗位的职业道德和职业规范，并能够在计算机工程实践中自觉遵守。 7-2 Consciously fulfill responsibilities in computer engineering practices, understand the professional ethics and norms of jobs in the computer industry and related fields, and consciously abide by them in practice.
8. 能够适应多样化、多学科背景下的团队合作方式，并能在团队中承担个体、团队成员以及负责人的角色。 8. Be able to adapt to diverse teamwork models in a multidisciplinary context and assume roles as an individual, team member, and team leader.	8-1 能够在多学科背景下的团队中，与团队中其他学科成员有效沟通，合作共事。 8-1 Effectively communicate and collaborate with members from other disciplines in multidisciplinary teams.
	8-2 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色，能够组织、协调和指挥团队开展工作。 8-2 Assume roles as an individual, team member, and leader in multidisciplinary teams, and be capable of organizing, coordinating, and directing team activities.
9.能够就计算机复杂工程问题与业界同行及社会进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。具备基本的英语交流水平，能够在跨文化背景下进行沟通和交流，准确表达自己的观点、回应质疑，并理解、尊重语言和文化差异。 9. Be able to effectively communicate and exchange ideas about complex computer engineering problems with	9-1 能够针对计算机专业问题，采用口头和书面方式，准确表达自己的观点、回应质疑，并理解与业界同行和公众交流的差异性。 9-1Accurately express ideas and respond to queries verbally and in writing regarding computer professional issues, and understand the differences in communication with industry peers and the public.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
industry peers and the public, including writing reports and design documents, making presentations, expressing opinions clearly, and responding to instructions. Have basic English communication skills, be able to communicate in cross - cultural settings, accurately express viewpoints, respond to questions, and understand and respect language and cultural differences.	9-2 了解计算机专业领域的国际发展趋势、研究热点，理解和尊重世界不同文化的差异性和多样性。 9-2 Keep abreast of international development trends and research hotspots in the computer professional field, and understand and respect the diversity of cultures worldwide.
	9-3 具备基本的英语交流和书面表达能力，能够在跨文化背景下进行计算机专业问题基本沟通和交流。 9-3 Have basic English communication and written expression skills to conduct fundamental communication on computer professional issues in cross-cultural contexts.
10.理解并掌握计算机工程实践项目管理的原理与经济决策方法，并能在多学科环境中加以应用。 10. Understand and master the principles of computer engineering project management and economic decision - making methods, and be able to apply them in a multidisciplinary environment.	10-1 掌握计算机工程项目的管理与经济决策方法，了解计算机工程及产品的全周期、全流程的成本构成，理解其中涉及的工程管理与经济决策问题。 10-1 Master the management and economic decision - making methods for computer engineering projects, understand the cost composition of the full - cycle and full - process of computer engineering and products, and comprehend the engineering management and economic decision - making issues involved.
	10-2 能够在多学科环境下（包括模拟环境），在设计开发复杂计算机工程问题解决方案过程中，运用工程管理与经济决策方法。 Be able to apply engineering management and economic decision - making methods in the process of designing and developing solutions to complex computer engineering problems in a multi - disciplinary environment (including simulated environments).

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
11.具备自主学习、终身学习能力，持续跟踪计算机领域的前沿发展，通过批判性思维评估新技术价值，并主动更新知识体系以适应新技术变革。 11. Have the ability for autonomous and lifelong learning, continuously track the forefront of developments in the field of computer science, evaluate the value of new technologies through critical thinking, and proactively update the knowledge system to adapt to new technological changes.	11-1 具有自主学习、终身学习和批判性思维的意识，能在技术快速更迭、学科专业交叉融合的社会发展大背景下认识到自主学习和终身学习的必要性。 11-1 Have the awareness of self - learning, lifelong learning, and critical thinking, and be able to recognize the necessity of self - learning and lifelong learning in the context of rapid technological changes and the integration of disciplines and specializations.
	11-2 具备自主学习、终身学习和批判性思维的知识基础，能根据自身条件和职业发展需求，通过开源社区（GitHub）、技术论坛（Stack Overflow）、在线课程（MOOCs）等渠道自主学习新技术，能够分析新兴技术（如量子计算、AI 大模型）对计算机行业的影响，理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11-2 Possess the knowledge base for self - learning, lifelong learning, and critical thinking. Be able to independently learn new technologies through channels such as open - source communities (GitHub), technical forums (Stack Overflow), and online courses (MOOCs) according to personal conditions and career development needs. Be able to analyze the impact of emerging technologies (such as quantum computing, AI large models) on the computer industry, understand the impact of extensive technological changes on engineering and society, and adapt to new technological changes.

三、专业核心课程

III．Core Courses

离散数学、C 语言程序设计、数据结构、计算机组成原理、操作系统、计算机网络、数据库原理、算法设计与分析、软件工程、计算机系统结构。

Discrete Mathematics, C language programming, Data Structure, Principle of Computer Organization, Operating System, Computer Network, Database Principle, Algorithm Design and Analysis, Software Engineering, Computer Architecture .

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
人工智能 Artificial Intelligence		●	●	●		
计算机视觉 Computer Vision		●	●	●		

机器人学导论（双语） Introduction to Robotics (Bilingual)	•	•	•	•		
强化学习 Reinforcement Learning			•	•		
大数据分析技术 Big data analysis technology				•		
网络信息安全 Network Information Security			•	•		
计算机系统综合设计 Distributed Computing			•		•	
嵌入式系统开发实践 Embedded System Development Practice			•		•	

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirement

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
公共基础及通识教育课	思政理论 Ideological and Political Theory	15		/

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="13">Public basic and general education courses</td><td colspan="2">外语类
Foreign Languages</td><td>8</td><td rowspan="13"></td><td rowspan="5"></td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="8">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">大类基础课
Major Group Courses
专业基础课
Discipline Courses</td><td>32.5</td><td rowspan="2">28</td><td rowspan="5">/</td></tr>
<tr><td>专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>11</td></tr>
<tr><td rowspan="3">集中实践环节 Practical &Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>14</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="3">合计：166
Total：166</td><td>130</td><td>28</td><td>8</td></tr>
</table>

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018280	专业导论(计算机)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：计算机科学与技术课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（166 学分） In-class Teaching Courses （166 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	130	28	8	8	174

表 2：计算机科学与技术必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	

			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考试		综合素养	24	0	24	2-1	
			19	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	

			20	1713030460	创新思维与创新方法(计算机类) Innovative minds and approaches（computer class）	2	考查		综合素养	32	24	8	2-1	
			21	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			22	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			23	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010430	离散数学 Discrete Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			2	1713010630	C 语言程序设计 C language programming	3	考试	√	综合素养	48	48	0	1-1	
			3	1713022350	电路基础 Fundamentals of circuit	2.5	考试	√	综合素养	40	30	10	1-2	
			4	1713010460	数据结构 Data Structure	3	考试	√	综合素养	48	48	0	2-1	

			5	1713010470	数据结构实验 Data Structure Experiments	1	考查		综合素养	24	0	24	2-1	
			6	1713030310	电路与电子技术(双语) Circuit and Electronic Technology (Bilingual)	4	考试	√	综合素养	64	56	8	2-1	
			7	1713010440	计算机组成原理 Principle of Computer Organization	3.5	考试	√	综合素养	56	56	0	2-2	
			8	1713010450	计算机组成原理实验 Principle of Computer Organization Experiments	0.5	考查		综合素养	12	0	12	2-2	
			9	1713010550	数据库原理 Database Principle	3	考试	√	综合素养	48	48	0	2-2	
			10	1713010560	数据库原理实验 Database Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			11	1713010530	操作系统 Operating System	3	考试	√	综合素养	48	48	0	3-1	
			12	1713010540	操作系统实验 Operating System Experiments	1	考查		综合素养	24	0	24	3-1	
			13	1713010610	编译原理 Compiler Principle	2	考试	√	综合素养	32	32	0	3-1	
			14	1713010620	编译原理实验 Compiler Principle Experiments	1	考查		综合素养	24	0	24	3-1	
	必修-专业及方向课程 Stream Courses		1	1713030440	微机原理与汇编语言 Microcomputer principles and assemble language Programming	5	考试	√	综合素养	80	60	20	3-1	
			2	1713010510	计算机系统结构 Computer Architecture	2.5	考试		综合素养	40	40	0	3-2	

			3	1713010520	计算机系统结构实验 Computer Architecture Experiments	0.5	考查		综合素养	12	0	12	3-2	
			4	1713010590	计算机网络 Computer Network	2.5	考试	√	综合素养	40	40	0	3-2	
			5	1713010600	计算机网络实验 Computer Network Experiments	0.5	考查		综合素养	12	0	12	3-2	
合计 Total						**102**				**1756**	**1370**	**386**		

表 3：计算机科学与技术 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	**课程类别 Course Categories**	**类别备注 Course Categories Remark**	**序号 No.**	**课程编号 Course Code**	**课程名称 Course Name**	**学分 Credits**	**考核方式 Testing method**	**是否学位课 Degree Course**	**综合/拓展素养课程 COURSE CORE**	**学时 Teaching Hours**			**上课学期 Semesters**	**备注 Notes**
										合计 Total	**讲课 Lectures**	**实践 Practicum**		
限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713010690	Java 语言程序设计 Java Programming Design	2	考试		综合素养	32	32	0	1-2	
			2	1713010700	Java 语言程序设计实验 Java Programming Design Experiments	1	考查		综合素养	24	0	24	1-2	
			3	1713011990	面向对象程序设计(C++) Object oriented programming (C++)	2	考查		综合素养	32	32	0	2-1	
			4	1713030380	计算方法与应用 Computational method and application	3	考试		综合素养	48	32	16	2-1	
			5	1713010750	算法设计与分析 Algorithms Design and Analysis	2	考查		综合素养	32	24	8	2-2	

			6	1713030470	鸿蒙应用开发基础 HarmonyOS application development foundation	2	考查		综合素养	32	22	10	3-1	
			7	1713019350	工程项目管理(计算机) Project Management	1	考查		综合素养	16	16	0	3-2	
	限选-专业及方向课程 Stream Courses		1	1713010830	软件工程 Software Engineering	2	考试		综合素养	32	32	0	2-2	
			2	1713010840	多媒体技术 Multimedia Technology	3	考试		综合素养	48	40	8	2-2	
			3	1713030290	计算机视觉 Computer Vision	2.5	考查		综合素养	40	32	8	2-2	
			4	1713010670	人工智能 Artificial Intelligence	2.5	考试		综合素养	40	32	8	3-1	
			5	1713030300	机器人学导论(双语) Introduction to Robotics (Bilingual)	2	考查		综合素养	32	20	12	3-1	
			6	1713030420	强化学习 Reinforcement Learning	2.5	考查		综合素养	40	32	8	3-1	
			7	1713010680	大数据分析技术 Big Data Analysis Technigue	2	考查		综合素养	32	32	0	3-2	
			8	1713010850	Unix/Linux 体系及编程 Unix/Linux Architecture and Programming	3	考试		综合素养	48	32	16	3-2	
			9	1713030560	Web 应用程序开发 Web Application Development	3	考查		综合素养	48	32	16	3-2	
			10	1713010770	网络信息安全 Network Information Security	2	考试		综合素养	32	32	0	4-1	
合计 Total						**37.5**				**608**	**474**	**134**		

表 4：计算机科学与技术任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses”, At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：计算机科学与技术 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010880	程序设计实训 Programming Practical Training	2	考查		综合素养	60	0	60	1-2	
			3	1713010860	计算机组成原理课程实践 Practicum of Computer Organization Course Design Principles	2	考查		综合素养	60	0	60	2-2	
			4	1713010870	操作系统课程实践 Practicum of Operating System Course Design	2	考查		综合素养	60	0	60	3-1	
			5	1713030530	数据库设计实践 Database Design Practice	2	考查		综合素养	60	0	60	3-1	

			6	1713019360	计算机系统综合设计 Comprehensive Design of Computer System	2	考查		综合素养	60	0	60	3-2	
			7	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			8	1713030390	嵌入式系统设计实践 Practice of Embedded System Design	2	考查		综合素养	60	0	60	4-1	
			9	1713030450	专业综合实习(计算机) Professional Comprehensive Internship (Computer Science and Technology)	2	考查		综合素养	60	0	60	4-1	
			10	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**30**				**886**	**0**	**886**		

表 6：计算机科学与技术 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16

			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	1713018280	专业导论(计算机) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				144	144	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	144	4	
3	思想道德与法治	必修	8	0.5	
4	大学物理实验	必修	48	2	
5	中国近现代史纲要	必修	8	0.5	
6	马克思主义基本原理	必修	8	0.5	
7	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
8	数据结构实验	必修	24	1	●
9	计算机组成原理实验	必修	12	0.5	●
10	数据库原理实验	必修	24	1	●
11	操作系统实验	必修	24	1	●
12	编译原理实验	必修	24	1	●
13	计算机网络实验	必修	12	0.5	●
14	微机原理与汇编语言实验	必修	20	1.25	●
15	计算机系统结构实验	必修	12	0.5	●
16	计算机组成原理课程实践	必修	60	2	●
17	计算机视觉	限选	8	0.5	●
18	计算方法及应用	限选	16	1	●
19	算法设计与分析	限选	8	0.5	●
20	电路与电子技术	限选	8	0.5	●
21	强化学习	限选	8	0.5	●
22	机器人学导论 (双语)	限选	12	0.75	●
23	Web 应用 程序开发	限选	16	1	●

24	鸿蒙应用开发基础	限选	10	0.625	●
25	多媒体技术	限选	8	0.5	●
26	Java 语言程序设计实验	限选	24	1	●
27	Unix/Linux 体系及编程	限选	16	1	●
28	创新思维与创新方法（计算机类）	必修	8	0.5	●
29	程序设计实训	必修	60	2	●
30	电路基础	必修	10	0.625	●
31	人工智能	限选	8	0.5	●
32	劳动教育(实践)	必修	16	1	●
33	操作系统课程实践	必修	60	2	●
34	计算机系统综合设计	必修	60	2	●
35	数据库设计实践	必修	60	2	●
36	嵌入式系统设计实践	必修	60	2	●
37	专业综合实习(计算机)	必修	60	2	●
38	毕业实习及毕业论文	必修	360	12	●
合计 Total			1422	54.25	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	人文 法律法规	知识	沟通合作	创新发展
	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●		
毕业要求 1-3 **Graduation Requirements 1-3**		●		
毕业要求 1-4 **Graduation Requirements 1-4**		●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		

毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 2-3 **Graduation Requirements 2-3**	●			
毕业要求 2-4 **Graduation Requirements 2-4**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**				●
毕业要求 3-3 **Graduation Requirements 3-3**		●		
毕业要求 3-4 **Graduation Requirements 3-4**	●			
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 4-3 **Graduation Requirements 4-3**		●		
毕业要求 4-4 **Graduation Requirements 4-4**		●		
毕业要求 5-1 **Graduation Requirements 5-1**				●
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 5-3 **Graduation Requirements 5-3**		●		
毕业要求 6-1 **Graduation Requirements 6-1**	●			
毕业要求 6-2 **Graduation Requirements 6-2**	●			
毕业要求 7-1 **Graduation Requirements 7-1**	●			
毕业要求 7-2 **Graduation Requirements 7-2**	●			
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	

毕业要求 9-1 **Graduation Requirements 9-1**				●
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 9-3 **Graduation Requirements 9-3**			●	
毕业要求 10-1 **Graduation Requirements10-1**		●		
毕业要求 10-2 **Graduation Requirements10-2**		●		
毕业要求 11-1 **Graduation Requirements11-1**				●
毕业要求 11-2 **Graduation Requirements11-2**				●

Objectives Relationship Matrix

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

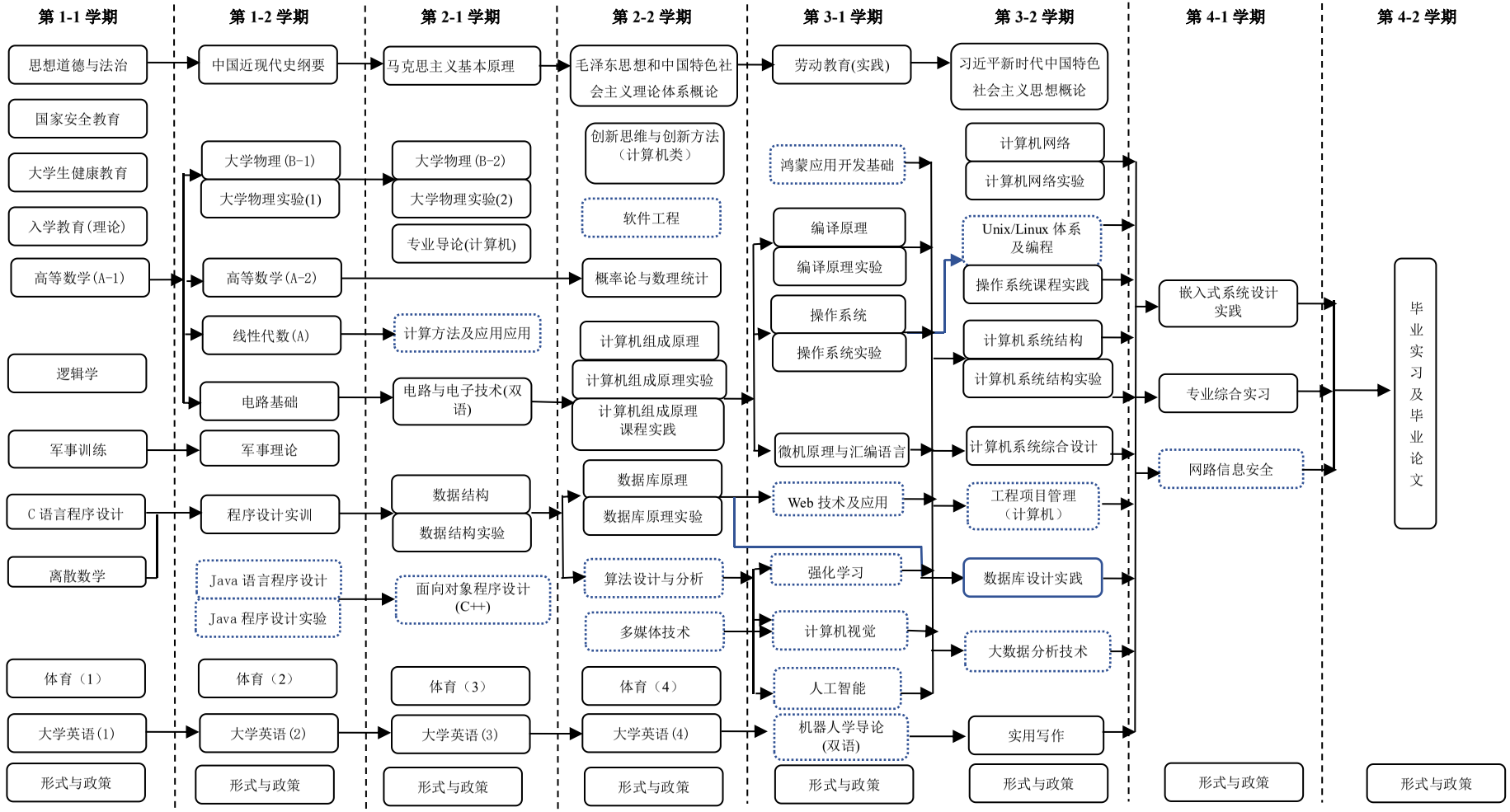
序号	课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 4				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
1	中国近代史纲要																							H									
2	马克思主义基本原理																						H	M									
3	毛泽东思想和中国特色社会主义理论体系概论																					H		H									
4	习近平新时代中国特色社会主义思想概论																					H											
5	思想道德与法治												H									H											
6	逻辑学																H																
7	劳动教育(理论)																							M									
8	劳动教育(实践)																							M									
9	军事理论																								M								
10	军事训练																									M							
11	体育																								H	H						M	M
12	形式与政策																							H									
13	国家安全教育																							H									
14	大学生健康教育																															M	M
15	职业生涯规划																							H									
16	入学教育																															M	
17	就业指导																							H									
18	高等数学	H																															
19	线性代数	H																															
20	概率论与数理统计	H			H	H																											
21	大学物理	H																															
22	大学物理实验														H																		

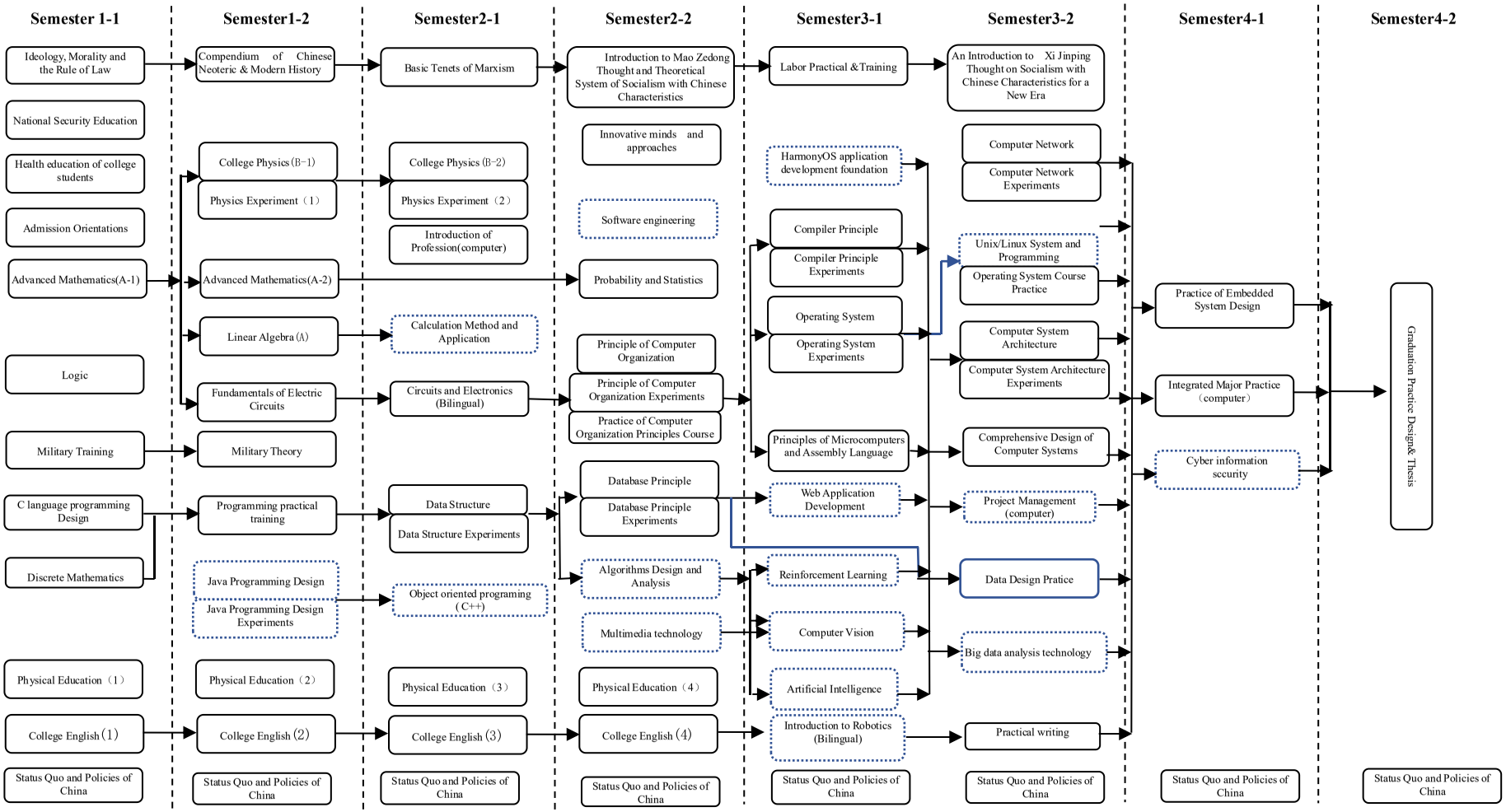
23	大学英语																											H					
24	实用写作																										H						
25	创新思维与创新方法(计算机类)																															H	H
26	电路与电子技术	M		H																									M				
27	离散数学	H																															
28	C 语言程序设计																	H	H														
29	大模型实训																								H							H	
30	数据结构		H	H							H			H																			
31	数据结构实验														H																		
32	计算机组成原理		H																														
33	计算机组成原理实验														H																		
34	计算机组成原理课程实践																															H	
35	操作系统		H									H																					
36	操作系统实验														H																		
37	操作系统课程实践																															H	
38	计算机网络		H												H																		
39	计算机网络实验																	H	H														
40	数据库原理					H						H																					
41	数据库原理实验											H																					
42	数据库设计实践					H						H																					
43	编译原理			H																													
44	编译原理实验																		H														
45	软件工程			H	H					H																							
46	微机原理与汇编语言																	H	H														
47	计算机系统结构				H			H				H																					
48	计算机系统结构实验														H																		
49	计算机系统综合设计					H			H												H										H		
50	嵌入式系统设计								H																							H	
51	专业综合实习(计算机)					H															H										H		

52	机器人学导论(双语)																												H				
53	计算方法及应用															H		H															
54	算法设计与分析			H		H					H					H																	
55	Java 语言程序设计																		H						H								
56	Java 语言程序设计实验																		H						H								
57	网络信息安全																						H										
58	多媒体技术																		H														
59	人工智能										H						H						H										
60	软件工程												H																	H	H		
61	面向对象程序设计(C++)		H							H																							
62	Web 应用程序开发											H								H													
63	鸿蒙应用开发基础									H																							
64	Unix/Linux 体系及编程									H										H													
65	大数据分析技术															H																	H
66	计算机视觉						H				H																						H
67	强化学习						H													H													H
68	专业导论(计算机)																						H										
69	工程项目管理(计算机)							H		H											H					H				H	H		
70	毕业实习及毕业论文							H													H						H						

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester1-2
Semester2-1
Semester2-2
Semester3-1
Semester3-2
Semester4-1
Semester4-2
Ideology, Morality and the Rule of Law
National Security Education
Health education of college students
Admission Orientations
Advanced Mathematics(A-1)
Logic
Military Training
C language programming Design
Discrete Mathematics
Physical Education（1）
College English(1)
Status Quo and Policies of China
Compendium of Chinese Neoteric & Modern History
College Physics(B-1)
Physics Experiment（1）
Advanced Mathematics(A-2)
Linear Algebra(A)
Fundamentals of Electric Circuits
Military Theory
Programming practical training
Java Programming Design
Java Programming Design Experiments
Physical Education（2）
College English(2)
Status Quo and Policies of China
Basic Tenets of Marxism
College Physics(B-2)
Physics Experiment（2）
Introduction of Profession(computer)
Calculation Method and Application
Circuits and Electronics (Bilingual)
Data Structure
Data Structure Experiments
Object oriented programing (C++)
Physical Education（3）
College English(3)
Status Quo and Policies of China
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Innovative minds and approaches
Software engineering
Probability and Statistics
Principle of Computer Organization
Principle of Computer Organization Experiments
Practice of Computer Organization Principles Course
Database Principle
Database Principle Experiments
Algorithms Design and Analysis
Multimedia technology
Physical Education（4）
College English(4)
Status Quo and Policies of China
Labor Practical &Training
HarmonyOS application development foundation
Compiler Principle
Compiler Principle Experiments
Operating System
Operating System Experiments
Principles of Microcomputers and Assembly Language
Web Application Development
Reinforcement Learning
Computer Vision
Artificial Intelligence
Introduction to Robotics (Bilingual)
Status Quo and Policies of China
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Computer Network
Computer Network Experiments
Unix/Linux System and Programming
Operating System Course Practice
Computer System Architecture
Computer System Architecture Experiments
Comprehensive Design of Computer Systems
Project Management (computer)
Data Design Pratice
Big data analysis technology
Practical writing
Status Quo and Policies of China
Practice of Embedded System Design
Integrated Major Practice（computer）
Cyber information security
Status Quo and Policies of China
Graduation Practice Design& Thesis
Status Quo and Policies of China

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》(DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

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计算机科学与技术教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Computer Science and Technology (Top notch Experimental Class) Major

[2025 级适用]

★计算机科学与技术（080901）

大连海事大学教务处

2025 年 9 月

计算机科学与技术专业(拔尖实验班)本科培养计划（2025 版）

Undergraduate Program for Computer Science and Technology (Top notch Experimental Class)（Version 2025）

一、培养目标

I. Program Objectives

拔尖学生培养基地对标国内一流大学先进人才培养模式，着力培养立志于投身计算机基础科学研究的德智体美劳全面发展的创新型人才。该基地依托学校交通运输工程双一流建设学科，瞄准国家及辽宁重大战略需求、围绕海洋强国、交通强国建设需求，汇聚学校优势资源，着力培养具备复杂计算机软硬件系统的设计开发能力和解决复杂工程实践问题的能力，具有良好的人文素养、科学精神和创新能力的德才兼备的新时代经世致用领军人才。

The outstanding student cultivation base aims to benchmark against advanced talent cultivation models of first-class domestic universities, focusing on fostering innovative talents who are committed to scientific research field of computer science and are well-rounded in terms of morals, intelligence, physical, aesthetics, and labor education. Relying on the distinct characteristics in maritime and the “double world-class project” construction of transportation engineering discipline, the base targets the major strategic needs of the country and Liaoning province, and matches the requirements of building a powerful country in maritime and transportation. By gathering the advantageous resources of the university, the base strives to cultivate leading talents who are capable of designing and developing software and hardware of complex computer systems, solving complex engineering practical problems, possessing a good humanistic quality, moral and intellectual integrity, scientific spirit, and innovation ability.

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业对标国内一流大学先进人才培养模式，着力培养立志于投身计算机基础科学研究的德智体美劳全面发展的创新型人才。该基地依托学校交通运输工程双一流建设学科，瞄准国家及辽宁重大战略需求、围绕海洋强国、交通强国建设需求，汇聚学校优势资源，着力培养具备复杂计算机软硬件系统的设计开发能力和解决复杂工程实践问题的能	1.具备良好的人文素养、职业道德和社会责任感，能够在团队中发挥领导作用，有效沟通协调，促进团队协作，同时具备跨学科合作与交流的能力，推动技术与社会发展的融合。 1.Having good humanistic literacy, professional ethics, and social responsibility, able to play a leadership role in the team, effectively communicate and coordinate, promote team collaboration, and possess interdisciplinary cooperation and communication skills, promoting the integration of technology and social development.
	2.能够独立或主导开展计算机基础科学研究，具备提出创新性研究课题、设计实验方案、解决科学问题的能力，并在国

力，具有良好的人文素养、科学精神和创新能力的德才兼备的新时代经世致用领军人才。 The program aims to benchmark against advanced talent cultivation models of first-class domestic universities, focusing on fostering innovative talents who are committed to scientific research field of computer science and are well-rounded in terms of morals, intelligence, physical, aesthetics, and labor education. Relying on the distinct characteristics in maritime and the "double world-class project" construction of transportation engineering discipline, the base targets the major strategic needs of the country and Liaoning province, and matches the requirements of building a powerful country in maritime and transportation. By gathering the advantageous resources of the university, the base strives to cultivate leading talents who are capable of designing and developing software and hardware of complex computer systems, solving complex engineering practical problems, possessing a good humanistic quality, moral and intellectual integrity, scientific spirit, and innovation ability.	内外权威学术期刊或会议上发表高质量论文，或取得具有行业影响力的研究成果。 2.Capable of independently or leading research in computer basic science, possessing the ability to propose innovative research topics, design experimental plans, solve scientific problems, and publish high-quality papers in authoritative academic journals or conferences at home and abroad, or achieve research results with industry influence.
	3.能够胜任复杂计算机软硬件系统的设计、开发与优化工作，具备从需求分析、系统架构设计、算法实现到系统测试与维护的全流程能力，能够解决实际工程中的复杂技术问题。 3.Capable of designing, developing, and optimizing complex computer software and hardware systems, possessing full process capabilities from requirement analysis, system architecture design, algorithm implementation to system testing and maintenance, and able to solve complex technical problems in practical engineering.
	4.能够紧密围绕国家及辽宁重大战略需求，特别是在海洋强国、交通强国建设领域，提供技术解决方案，具备快速响应市场需求、解决复杂工程实践问题的能力，推动技术创新与产业升级。 4.Being able to closely focus on the major strategic needs of the country and Liaoning, especially in the fields of building a maritime and transportation power, providing technical solutions, possessing the ability to quickly respond to market demand and solve complex engineering practice problems, and promoting technological innovation and industrial upgrading.
	5.具备持续学习的习惯和能力，能够紧跟计算机科学与技术领域的发展趋势，不断更新知识体系，适应快速变化的技术环境，具备在职业生涯中不断成长与进步的能力。 5.Having the habit and ability of continuous learning, being able to keep up with the development trends in the field of computer science and technology, constantly updating the knowledge system, adapting to rapidly changing technological environments, and possessing the ability to continuously grow and progress in one's career.

二、毕业要求

II．Graduation Requirements

依据拔尖学生培养目标定位，确立了“小规模、高质量、精英化”的培养理念，毕业要求具体包括：

Based on the objective orientation of cultivating outstanding students, the base establishes "small-scale, high-quality, and elite" cultivation concept. The specific graduation requirements include:

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.能够将数学、自然科学、计算理论、工程基础和计算机专业知识用于解决计算机领域的复杂工程问题。 1.Ability to apply knowledge of mathematics, natural sciences, computing theory, engineering fundamentals, and computer expertise to solve complex engineering problems in the computing field.	1-1 能够应用数学、离散结构、概率统计等基础理论对计算机领域的复杂工程问题进行建模和分析。 1-1 Ability to apply fundamental theories such as mathematics, discrete structures, probability statistics, etc. to model and analyze complex engineering problems in the field of computer science.
	1-2 能够运用计算机组成原理、操作系统、计算机网络等工程基础知识分析和解决计算机系统的复杂问题。 1-2 Ability to apply basic engineering knowledge such as computer composition principles, operating systems, and computer networks to analyze and solve complex problems in computer systems.
	1-3 能够将数据结构、算法设计、软件工程等专业知识用于计算机系统的设计、开发和优化。 1-3 Ability to apply professional knowledge such as data structures, algorithm design, software engineering, etc. to the design, development, and optimization of computer systems.
	1-4 能够综合运用数学、工程基础和专业知识对计算机领域复杂工程问题的解决方案进行比较与评估。 1-4 Ability to comprehensively apply mathematics, engineering fundamentals, and professional knowledge to compare and evaluate solutions to complex engineering problems in the field of computer science.
2.能够应用数学、自然科学和计算机科学的基本原理，对复杂计算系统问题进行分析和建模，通过文献研究和工程技术方法识别关键问题，综合考虑性能、安全、经济和社会可持续发展等因素，提出有效的解决方案。 2.Ability to apply fundamental principles of mathematics, natural sciences, and computer science to analyze and model	2-1 能够运用数学、自然科学和计算机科学的基本原理，识别复杂计算系统问题的关键要素，并建立适当的抽象模型进行分析。 2-1 Ability to apply the fundamental principles of mathematics, natural sciences, and computer science to identify the key elements of complex computing system problems and establish appropriate abstract models for analysis.
	2-2 能够通过文献研究和技术调研，获取相关领域的最新进展，分析现有方法的优缺点，并评估其对当前问题的适用性。 2-2 Ability to obtain the latest developments in relevant fields through literature research and technical investigation, analyze the advantages and disadvantages of existing methods, and

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
complex computing system problems; identify critical issues through literature research and engineering methodologies; and develop effective solutions with comprehensive consideration of performance, security, economic viability, and socio-sustainable development factors.	evaluate their applicability to current problems.
	2-3 在分析复杂计算系统问题时，能够综合考虑性能、安全性、可靠性、经济性以及社会可持续发展等因素，权衡不同方案的可行性。 2-3 Ability to comprehensively consider factors such as performance, security, reliability, economy, and social sustainability, and weigh the feasibility of different solutions when analyzing complex computing system problems.
	2-4 能够基于理论分析和实验验证，提出合理的解决方案，并通过仿真、测试或逻辑推理等方法验证其有效性。 2-4 Ability to propose reasonable solutions based on theoretical analysis and experimental verification, and verify their effectiveness through simulation, testing, or logical reasoning methods.
3.能够针对复杂计算系统问题设计和开发解决方案，构建满足特定需求的软件、算法、硬件或系统架构，体现创新性，并从安全性、可靠性、性能、可维护性、法律与伦理、可持续发展等角度综合考虑可行性。 3.Ability to design and develop solutions for complex computing system problems by constructing software, algorithms, hardware or system architectures that meet specified requirements, demonstrating innovation while comprehensively evaluating feasibility from perspectives of security, reliability, performance, maintainability, legal/ethical compliance, and sustainability.	3-1 能够分析用户或系统的需求，明确功能性和非功能性约束（如性能、安全、可靠性等），并设计合理的软件、算法或硬件架构方案。 3-1 Ability to analyze user or system requirements, clarify functional and non functional constraints (such as performance, security, reliability, etc.), and design reasonable software, algorithm, or hardware architecture solutions.
	3-2 能够运用计算机科学理论和技术（如数据结构、算法优化、人工智能、并行计算等）开发创新性解决方案，并通过编程、仿真或实验验证其可行性。 3-2 Ability to apply computer science theories and technologies (such as data structures, algorithm optimization, artificial intelligence, parallel computing, etc.) to develop innovative solutions, and verify their feasibility through programming, simulation, or experimentation.
	3-3 能够在设计过程中考虑计算效率、资源占用、可扩展性、可维护性等因素，优化系统性能，并采用工程化方法（如版本控制、自动化测试、DevOps 等）确保方案的健壮性。 3-3 Ability to consider factors such as computational efficiency, resource utilization, scalability, maintainability, etc. during the design process, optimize system performance, and adopt engineering methods (such as version control, automated testing, DevOps, etc.) to ensure the robustness of the solution.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	3-4 能够评估技术方案对社会、法律、隐私、安全及环境的影响，确保符合伦理规范（如数据合规、AI 伦理），并考虑绿色计算（如能效优化、低碳算法）等可持续发展要求。 3-4 Capable of evaluating the impact of technological solutions on society, law, privacy, security, and the environment, ensuring compliance with ethical standards (such as data compliance, AI ethics), and considering sustainable development requirements such as green computing (such as energy efficiency optimization, low-carbon algorithms).
4.能够基于计算机科学理论和方法，对复杂计算问题开展系统性研究，包括设计实验或仿真方案、采集与分析数据、优化算法或系统，并通过科学论证与信息综合得出创新性结论。 4.Ability to conduct systematic research on complex computing problems using computer science theories and methodologies, including designing experiments or simulation schemes, collecting and analyzing data, optimizing algorithms or systems, and deriving innovative conclusions through scientific reasoning and information synthesis.	4-1 能够运用计算机科学理论（如计算复杂性、机器学习、分布式系统等）对研究问题进行抽象建模，并选择适当的理论分析、实验验证或仿真模拟方法。 4-1 Ability to apply computer science theories (such as computational complexity, machine learning, distributed systems, etc.) to abstractly model research problems and select appropriate theoretical analysis, experimental verification, or simulation methods.
	4-2 能设计合理的实验方案或仿真环境，采集有效数据（如算法性能指标、系统吞吐量、用户行为日志等），并确保实验的可重复性和数据可靠性。 4-2 Capable of designing reasonable experimental plans or simulation environments, collecting effective data (such as algorithm performance indicators, system throughput, user behavior logs, etc.), and ensuring the reproducibility and reliability of experiments.
	4-3 能运用统计分析、可视化工具或机器学习方法处理数据，发现规律或瓶颈，并优化算法、架构或参数配置以提高系统性能。 4-3 Be able to use statistical analysis, visualization tools, or machine learning methods to process data, identify patterns or bottlenecks, and optimize algorithms, architectures, or parameter configurations to improve system performance.
	4-4 能通过科学推理和对比实验验证研究结论的合理性，体现创新性（如新算法、优化策略或应用场景），并遵守学术伦理（如数据合规、引用规范）。 4-4 Be able to verify the rationality of research conclusions through scientific reasoning and comparative experiments, demonstrate innovation (such as new algorithms, optimization strategies, or application scenarios), and comply with academic ethics (such as data compliance and citation standards).
5.能够针对复杂计算问题，选	5-1 能够根据问题需求，合理选择并熟练使用主流开发工具

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
择、运用和开发现代计算机工具与开发环境，包括编程框架、仿真平台、数据分析工具和智能化技术，并能够评估其适用性和局限性。 5.Ability to select, utilize, and develop modern computing tools and development environments - including programming frameworks, simulation platforms, data analytics tools, and intelligent technologies - for addressing complex computational problems, with demonstrated capacity to evaluate their applicability and limitations.	（如 IDE、版本控制系统）、数据分析工具（如 Python 科学计算库）或仿真平台（如 NS3、MATLAB）。 5-1 Ability to select and proficiently use mainstream development tools (such as IDE, version control system), data analysis tools (such as Python scientific computing library), or simulation platforms (such as NS3, MATLAB) according to problem requirements.
	5-2 能结合现代技术栈（如云计算框架、AI 开发工具链）构建解决方案，并利用 API、开源工具或自动化脚本提高开发效率。 5-2Ability to combine modern technology stacks (such as cloud computing frameworks, AI development toolchains) to build solutions, and use APIs, open source tools, or automated scripts to improve development efficiency.
	5-3 能对比不同工具的性能、精度和适用场景，分析其在特定问题中的局限性（如计算复杂度、数据规模限制），并提出改进或替代方案。 5-4 Ability to compare the performance, accuracy, and applicable scenarios of different tools, analyze their limitations in specific problems (such as computational complexity and data size limitations), and propose improvement or alternative solutions.
6.在解决复杂计算系统问题时，能够基于计算机工程实践，分析和评价技术方案对信息安全、隐私保护、能源消耗、数字包容性等可持续发展目标的影响，并理解相关法律责任和伦理要求。 6.Ability to analyze and evaluate the impacts of technical solutions on sustainable development objectives - including information security, privacy protection, energy consumption, and digital inclusion - when addressing complex computing system problems, while demonstrating understanding of relevant legal responsibilities and ethical requirements in	6-1 能够在系统架构设计、算法优化和工程实现中，评估和优化计算资源利用效率（如能耗、硬件利用率），分析技术方案对环境可持续性的影响。 6-1 Ability to evaluate and optimize computational resource utilization efficiency (such as energy consumption and hardware utilization) in system architecture design, algorithm optimization, and engineering implementation, and analyze the impact of technical solutions on environmental sustainability.
	6-2 能够识别技术方案可能带来的隐私风险、数字鸿沟等社会影响，确保符合信息安全规范和数据保护法规，评估其对数字包容性和社会公平的促进作用。 6-2 Being able to identify the privacy risks, digital divide, and other social impacts that technical solutions may bring, ensure compliance with information security standards and data protection regulations, and evaluate their role in promoting digital inclusivity and social equity.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
computer engineering practice.	
7.具有科技报国、服务社会的使命感，具备数字时代的人文素养和社会责任感。能够理解和践行计算机领域的工程伦理，在技术研发和工程实践中遵守信息安全、数据隐私等职业道德规范和相关法律法规，履行技术向善的社会责任。 7.Possess a mission-driven commitment to technological advancement for national development and social good, with humanistic literacy and social responsibility in the digital era. Capable of comprehending and practicing engineering ethics in computing, adhering to professional norms (including information security and data privacy) and relevant laws/regulations during technical R&D and engineering practice, while fulfilling the social responsibility of “technology for good”.	7-1 能够识别技术开发中的伦理困境（如算法偏见、隐私侵犯、AI 伦理等），理解并遵守计算机行业的职业道德规范（如 ACM/IEEE 伦理准则）和法律法规（如网络安全法、数据安全法） 7-1 Ability to identify ethical dilemmas in technology development (such as algorithm bias, privacy infringement, AI ethics, etc.), understand and comply with professional ethics standards in the computer industry (such as ACM/IEEE ethical guidelines) and laws and regulations (such as cybersecurity laws, data security laws, etc.).
	7-2 在工程项目中主动考虑技术的社会影响，具备团队协作、知识产权保护等职业素养，能够评估技术方案对社会公平、数字包容等可持续发展目标的影响 7-2 Proactively consider the social impact of technology in engineering projects, possess professional qualities such as teamwork and intellectual property protection, and be able to evaluate the impact of technological solutions on sustainable development goals such as social equity and digital inclusion.
8.能够在跨学科、跨角色的软硬件开发团队中有效发挥作用，既能作为独立开发者完成模块化任务，又能以团队成员或技术负责人的角色参与协作开发，运用现代软件工程和工程项目管理方法推进项目实施。 8.Ability to function effectively in cross-disciplinary hardware/software development teams, demonstrating both independent competency in completing modular tasks as an individual developer and	8-1 能够独立完成分配的开发任务（如模块设计、代码实现、文档编写），保证代码质量和工程规范性，按时交付可运行的软件组件。 8-1 Capable of independently completing assigned development tasks (such as module design, code implementation, document writing), ensuring code quality and engineering standardization, and delivering runnable software components on time.
	8-2 能够在敏捷开发等团队协作模式下有效沟通，使用版本控制、任务跟踪等工具（如 Git、JIRA）协调工作，具备技术方案讨论、代码评审和项目推进的能力。 8-2 Capable of effective communication in team collaboration modes such as agile development, coordinating work using tools such as version control and task tracking (such as Git, JIRA), and possessing the ability to discuss technical solutions,

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
collaborative capacity when serving as either team member or technical lead, while applying modern software engineering methods and project management approaches to advance project implementation.	conduct code reviews, and advance projects.
9.能够针对专业技术问题，采用规范的工程语言与业界同行及社会公众进行有效沟通，包括撰写技术文档、进行项目陈述、参与技术讨论；同时具备在全球化技术团队中开展跨文化协作的能力，理解并尊重技术交流中的文化差异。 9.Ability to communicate effectively about technical subjects using standard engineering language with both professional peers and public audiences through technical documentation writing, project presentations, and technical discussions; while demonstrating cross-cultural collaboration competence in global technical teams by understanding and respecting cultural differences in technical communication contexts.	9-1 能够规范撰写软硬件开发文档（如需求规格说明书、系统设计文档、API 接口文档），能够使用专业术语进行技术方案汇报，并针对不同受众（技术人员/非技术人员）调整表达方式。 9-1 Ability to write standardized software and hardware development documents (such as requirement specifications, system design documents, API interface documents), use professional terminology to report technical solutions, and adjust expression methods for different audiences (technical/non-technical).
	9-2 能够参与国际化技术社区的交流（如 GitHub 协作、Stack Overflow 讨论），理解跨国技术团队中的文化差异，在代码注释、文档编写、会议交流中体现文化敏感性。 9-2 Ability to participate in international technology community exchanges (such as GitHub collaboration, Stack Overflow discussions), understand cultural differences in multinational technology teams, and demonstrate cultural sensitivity in code commenting, document writing, and conference communication.
10.理解并掌计算机系统握软、硬件工程项目的管理原理与经济决策方法，能够在敏捷开发等现代软、硬件工程环境中应用项目管理工具和方法，有效协调技术、进度与资源的关系。 10.Understand and master management principles and	10-1 能够运用敏捷开发（Scrum/Kanban）等项目管理方法，合理规划软、硬件开发周期，熟练使用项目管理工具（如 JIRA、Trello）和版本控制系统（如 Git）进行任务跟踪和团队协作。 10-1 Be able to apply project management methods such as Scrum/Kanban, plan software and hardware development cycles reasonably, proficiently use project management tools (such as JIRA, Trello) and version control systems (such as Git) for task tracking and team collaboration.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
economic decision-making methods for computer system hardware/software engineering projects, with the ability to apply project management tools and methodologies in modern engineering environments (including agile development) to effectively coordinate relationships between technology, schedules, and resources.	10-2 能够在系统架构设计和技术方案选型中进行成本效益分析，能够评估技术债务风险，在质量、进度和资源约束下做出合理的技术决策。 10-2 Ability to conduct cost-benefit analysis in system architecture design and technical solution selection, assess technical debt risks, and make reasonable technical decisions under quality, schedule, and resource constraints.
11.具备应对快速技术演进的自主学习能力和技术敏感度，能够持续跟踪计算机领域的前沿发展，通过批判性思维评估新技术价值，并主动更新知识体系以适应行业变革。 11.Possess self-directed learning capability and technological acuity to address rapid technological evolution, demonstrating continuous tracking of computer science advancements, critical evaluation of emerging technologies' value, and proactive knowledge system updating to adapt to industry transformations.	11-1 能够通过开源社区（GitHub）、技术论坛（Stack Overflow）、在线课程（MOOCs）等渠道自主学习新技术，形成系统的技术学习方法论，包括文献查阅、源码分析、实验验证等能力。 11-1 Ability to independently learn new technologies through open source communities (GitHub), technology forums (Stack Overflow), online courses (MOOCs), and other channels, forming a systematic methodology for technology learning, including literature review, source code analysis, experimental verification, and other abilities.
	11-2 能够分析新兴技术（如量子计算、AI 大模型）对计算机行业的影响，具备技术选型与迁移能力，可快速掌握并应用行业主流的新工具、新框架。 11-2 Capable of analyzing the impact of emerging technologies such as quantum computing and AI big models on the computer industry, possessing the ability to select and transfer technologies, and quickly mastering and applying mainstream new tools and frameworks in the industry.

三、专业核心课程

III．Core Courses

离散数学、C 语言程序设计、数据结构、计算机组成原理、操作系统、计算机网络、数据库原理、算法设计与分析、软件工程、计算机系统结构。

Discrete Mathematics, C language programming, Data Structure, Principle of Computer Organization, Operating System, Computer Network, Database Principle, Algorithm Design and Analysis, Software Engineering, Computer Architecture .

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
人工智能基础 Fundamentals of Artificial Intelligence		●	●	●		
计算机视觉 Computer Vision		●	●	●		
自然语言处理导论 Introduction to Natural Language Processing		●	●	●		
人工神经网络及深度学习 Artificial Neural Networks and Deep Learning			●	●		
机器人学导论 Introduction to Robotics		●	●	●		
Spark 大数据技术与应用 Spark Big Data Technology and Applications				●		
网络信息安全 Network Information Security			●	●		
分布式计算 Distributed Computing				●		
机器学习 Machine Learning				●		
嵌入式系统开发实践 Embedded System Development Practice			●		●	

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">/</td><td rowspan="10">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
</table>

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="2">专业（类）
基础课
Disciplinary
Courses</td><td>大类基础课
Major Group Courses
专业基础课
Discipline Courses</td><td>37.5</td><td rowspan="2">27</td><td rowspan="4">/</td></tr>
<tr><td>专业课
Stream Courses Specialized course</td><td>11</td></tr>
<tr><td rowspan="3">专业及
方向课
Stream
Courses</td><td>军事实践课
Military Practical Course</td><td>3</td><td rowspan="3">/</td></tr>
<tr><td>专业实践课
Specialized Practical Course</td><td>18</td></tr>
<tr><td>毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="2">合计：174
Total：174</td><td>139</td><td>27</td><td>8</td></tr>
</table>

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713027760	入学教育	1
		1713018280	专业导论(计算机)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：9 Total：9				9

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：计算机科学与技术(拔尖实验班)课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（174 学分） In-class Teaching Courses （174 credits）			拓展素养（9 学分） Centralized Practicum （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	139	27	8	9	183

表 2：计算机科学与技术(拔尖实验班)必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education		1	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	

			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考试		综合素养	24	0	24	2-1	
			19	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	

			20	1713030460	创新思维与创新方法(计算机类) Innovative minds and approaches（computer class）	2	考查		综合素养	32	24	8	2-1	
			21	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			22	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			23	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010430	离散数学 Discrete Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			2	1713010630	C 语言程序设计 C language programming	3	考试	√	综合素养	48	48	0	1-1	
			3	1713022350	电路基础 Fundamentals of circuit	2.5	考试	√	综合素养	40	30	10	1-2	
			4	1713010460	数据结构 Data Structure	3	考试	√	综合素养	48	48	0	2-1	

			5	1713010470	数据结构实验 Data Structure Experiments	1	考查		综合素养	24	0	24	2-1	
			6	1713030310	电路与电子技术(双语) Circuit and Electronic Technology (Bilingual)	4	考试	√	综合素养	64	56	8	2-1	
			7	1713010440	计算机组成原理 Principle of Computer Organization	3.5	考试	√	综合素养	56	56	0	2-2	
			8	1713010450	计算机组成原理实验 Principle of Computer Organization Experiments	0.5	考查		综合素养	12	0	12	2-2	
			9	1713010550	数据库原理 Database Principle	3	考试	√	综合素养	48	48	0	2-2	
			10	1713010560	数据库原理实验 Database Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			11	1713010830	软件工程 Software Engineering	2	考试		综合素养	32	32	0	2-2	
			12	1713010530	操作系统 Operating System	3	考试	√	综合素养	48	48	0	3-1	
			13	1713010540	操作系统实验 Operating System Experiments	1	考查		综合素养	24	0	24	3-1	
			14	1713010610	编译原理 Compiler Principle	2	考试	√	综合素养	32	32	0	3-1	
			15	1713010620	编译原理实验 Compiler Principle Experiments	1	考查		综合素养	24	0	24	3-1	
			16	1713010590	计算机网络 Computer Network	2.5	考试	√	综合素养	40	40	0	3-2	
			17	1713010600	计算机网络实验 Computer Network Experiments	0.5	考查		综合素养	12	0	12	3-2	

	必修-专业及方向课程 Stream Courses		1	1713012370	机器学习 Machine Learning	2	考试	√	综合素养	32	32	0	3-1	
			2	1713012380	机器学习实验 Machine Learning Experiments	1	考查	√	综合素养	24	0	24	3-1	
			3	1713030440	微机原理与汇编语言 Microcomputer principles and assemble language Programming	5	考试	√	综合素养	80	60	20	3-1	
			4	1713010510	计算机系统结构 Computer Architecture	2.5	考试		综合素养	40	40	0	3-2	
			5	1713010520	计算机系统结构实验 Computer Architecture Experiments	0.5	考查		综合素养	12	0	12	3-2	
合计 Total						**107**				**1844**	**1434**	**410**		

表 3：计算机科学与技术(拔尖实验班) 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713019840	Python 程序设计与应用 Python Programming Design Python	2	考试		综合素养	32	32	0	2-1	
			2	1713019850	Python 程序设计与应用实验 Python Programming Design Experiments	1	考查		综合素养	24	0	24	2-1	

			3	1713030380	计算方法与应用 Computational method and application	3	考试		综合素养	48	32	16	2-1	
			4	1713010750	算法设计与分析 Algorithms Design and Analysis	2	考查		综合素养	32	24	8	2-2	
			5	1713019350	工程项目管理(计算机) Project Management	1	考查		综合素养	16	16	0	3-2	
			6	1713010770	网络信息安全 Network Information Security	2	考试		综合素养	32	32	0	4-1	
	限选-专业及方向课程 Stream Courses		1	1713010690	Java 语言程序设计 Java Programming Design	2	考试		综合素养	32	32	0	1-2	
			2	1713010700	Java 语言程序设计实验 Java Programming Design Experiments	1	考查		综合素养	24	0	24	1-2	
			3	1713010840	多媒体技术 Multimedia Technology	3	考试		综合素养	48	40	8	2-2	
			4	1713012290	人工智能基础 Artificial Intelligence Principle	2	考试		综合素养	32	32	0	2-2	
			5	1713012300	人工智能基础实验 Artificial Intelligence Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			6	1713030290	计算机视觉 Computer Vision	2.5	考查		综合素养	40	32	8	2-2	
			7	1713012460	自然语言处理导论 Introduction to Natural Language Processing	2	考试		综合素养	32	24	8	3-1	

			8	1713020820	人工神经网络及深度学习 ANN and Deep Learning	2	考试		综合素养	32	32	0	3-1	
			9	1713020830	人工神经网络及深度学习实验 ANN and Deep Learning Experiment	1	考查		综合素养	24	0	24	3-1	
			10	1713020840	Spark 大数据技术与应用 Spark Big Data Technology and Application	3	考查		综合素养	48	32	16	3-1	
			11	1713030300	机器人学导论(双语) Introduction to Robotics (Bilingual)	2	考查		综合素养	32	20	12	3-1	
			12	1713030420	强化学习 Reinforcement Learning	2.5	考查		综合素养	40	32	8	3-1	
			13	1713030560	Web 应用程序开发 Web Application Development	3	考查		综合素养	48	32	16	3-1	
			14	1713030530	数据库设计实践 Database Design Practice	2	考查		综合素养	60	0	60	3-2	
			15	1713030400	企业实践 Enterprise Practice	2	考查		综合素养	48	0	48	4-1	
			16	1713030430	水下机器人实践 Underwater Robot Practice	2	考查		综合素养	48	0	48	4-1	
合计 Total						**44**				**796**	**444**	**352**		

表 4：计算机科学与技术(拔尖实验班)任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses” , At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：计算机科学与技术(拔尖实验班) 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010880	程序设计实训 Programming Practical Training	2	考查		综合素养	60	0	60	1-2	
			3	1713010860	计算机组成原理课程实践 Practicum of Computer Organization Course Design Principles	2	考查		综合素养	60	0	60	2-2	
			4	1713010870	操作系统课程实践 Practicum of Operating System Course Design	2	考查		综合素养	60	0	60	3-1	

			5	1713012750	网络安全实践 Network Security Practice	2	考查		综合素养	60	0	60	3-2	
			6	1713019360	计算机系统综合设计 Comprehensive Design of Computer System	2	考查		综合素养	60	0	60	3-2	
			7	1713030320	大模型实训 Large Language Model Training	2	考查		综合素养	60	0	60	3-2	
			8	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			9	1713030390	嵌入式系统设计实践 Practice of Embedded System Design	2	考查		综合素养	60	0	60	4-1	
			10	1713030410	科研实践 Scientific Research Practice	2	考查		综合素养	60	0	60	4-1	
			11	1713030450	专业综合实习(计算机) Professional Comprehensive Internship (Computer Science and Technology)	2	考查		综合素养	60	0	60	4-1	
			12	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**34**				**1006**	**0**	**1006**		

表 6：计算机科学与技术(拔尖实验班) 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compul	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	

			2	1713027760	入学教育 Admission Orientations	1	考查		拓展素养	4	4	0	1-1	
			3	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	1713018280	专业导论(计算机) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						7				132	132	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	144	4	
3	思想道德与法治	必修	8	0.5	
4	劳动教育实践	必修	16	1	
5	大学物理实验	必修	48	2	
6	中国近现代史纲要	必修	8	0.5	
7	马克思主义基本原理	必修	8	0.5	
8	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
9	电路与电子技术	必修	8	0.5	●
10	数据结构实验	必修	24	1	●
11	计算机组成原理实验	必修	12	0.5	●
12	数据库原理实验	必修	24	1	●
13	操作系统实验	必修	24	1	●
14	编译原理实验	必修	24	1	●
15	计算机网络实验	必修	12	0.5	●
16	微机原理与汇编语言实验	必修	20	1.25	●
17	机器学习实验	必修	24	1	●
18	计算机系统结构实验	必修	12	0.5	●
19	程序设计实训	必修	60	2	●
20	计算机组成原理课程实践	必修	60	2	●
21	操作系统课程实践	必修	60	2	●
22	计算机系统综合设计	必修	60	2	●
23	嵌入式系统设计实践	必修	60	2	●

24	科研实践	必修	60	2	●
25	大模型实训	必修	60	2	●
26	网络安全实践	必修	60	2	●
27	专业综合实习	必修	60	2	●
28	毕业实习及毕业论文	必修	360	12	●
合计 Total			1414	50.25	

九、毕业要求对培养目标的支撑关系矩阵

IX．Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**	培养目标 5 **Program Objectives 5**
毕业要求 1-1 **Graduation Requirements 1-1**	●		●		
毕业要求 1-2 **Graduation Requirements 1-2**		●	●		
毕业要求 1-3 **Graduation Requirements 1-3**			●		
毕业要求 1-4 **Graduation Requirements 1-4**			●		
毕业要求 2-1 **Graduation Requirements 2-1**				●	
毕业要求 2-2 **Graduation Requirements 2-2**				●	
毕业要求 2-3 **Graduation Requirements 2-3**				●	
毕业要求 2-4 **Graduation Requirements 2-4**				●	
毕业要求 3-1 **Graduation Requirements 3-1**				●	

毕业要求 3-2 **Graduation Requirements 3-2**		●		●	
毕业要求 3-3 **Graduation Requirements 3-3**		●		●	
毕业要求 3-4 **Graduation Requirements 3-4**	●				
毕业要求 4-1 **Graduation Requirements 4-1**		●			
毕业要求 4-2 **Graduation Requirements 4-2**		●			
毕业要求 4-3 **Graduation Requirements 4-3**		●			
毕业要求 4-4 **Graduation Requirements 4-4**		●			
毕业要求 5-1 **Graduation Requirements 5-1**				●	
毕业要求 5-2 **Graduation Requirements 5-2**				●	
毕业要求 5-3 **Graduation Requirements 5-3**				●	
毕业要求 6-1 **Graduation Requirements 6-1**				●	
毕业要求 6-2 **Graduation Requirements 6-2**				●	
毕业要求 7-1 **Graduation Requirements 7-1**	●				
毕业要求 7-2 **Graduation Requirements 7-2**	●				

毕业要求 8-1 **Graduation Requirements 8-1**	●				
毕业要求 8-2 **Graduation Requirements 8-2**	●				
毕业要求 9-1 **Graduation Requirements 9-1**	●				
毕业要求 9-2 **Graduation Requirements 9-2**	●				
毕业要求 10-1 **Graduation Requirements10-1**				●	
毕业要求 10-2 **Graduation Requirements10-2**				●	
毕业要求 11-1 **Graduation Requirements11-1**					●
毕业要求 11-2 **Graduation Requirements11-2**					●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

序号	课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 4				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9		毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	中国近代史纲要																							H								
2	马克思主义基本原理																						H	M								
3	毛泽东思想和中国特色社会主义理论体系概论																					H		H								
4	习近平新时代中国特色社会主义思想概论																					H										
5	思想道德与法治												H									H										
6	逻辑学																H															
7	劳动教育（理论）																							M								
8	劳动教育（实践）																							M								
9	军事理论																								M							
10	军事训练																									M						
11	体育																								H	H					M	M
12	形式与政策																							H								
13	国家安全教育																							H								
14	大学生健康教育																														M	M
15	职业生涯规划																							H								
16	入学教育																														M	
17	就业指导																							H								

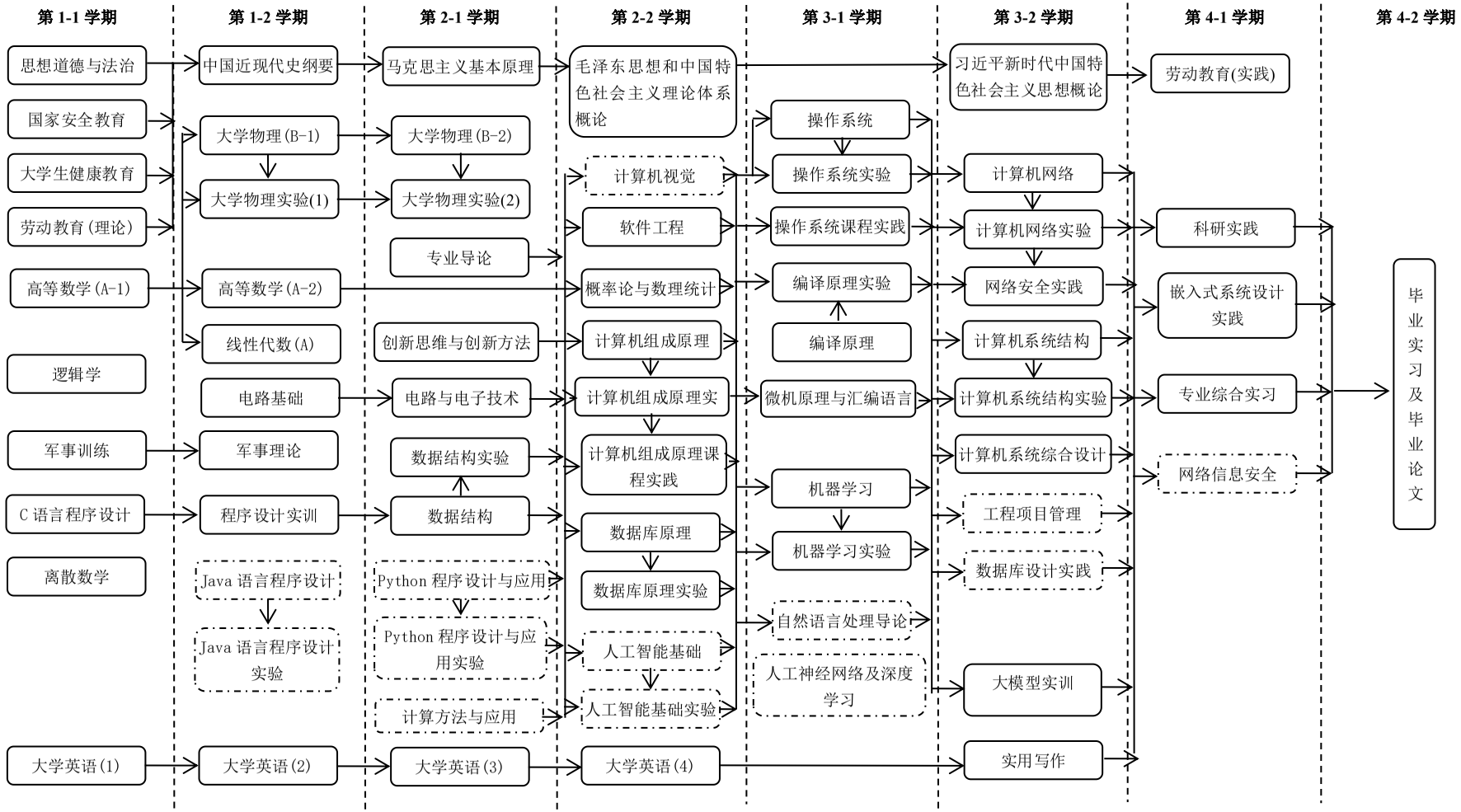
18	高等数学	H																															
19	线性代数	H																															
20	概率论与数理统计	H			H	H																											
21	大学物理	H																															
22	大学物理实验														H																		
23	大学英语																											H					
24	实用写作																										H						
25	电路与电子技术	M		H																													
26	科研实践											H																					
27	离散数学	H																															
28	C 语言程序设计																	H	H														
29	大模型实训																								H							H	
30	数据结构		H	H							H			H																			
31	数据结构实验														H																		
32	计算机组成原理		H																														
33	计算机组成原理实验														H																		
34	计算机组成原理课程实践																															H	
35	操作系统		H									H																					
36	操作系统实验														H																		
37	操作系统课程实践																															H	
38	计算机网络		H												H																		
39	计算机网络实验																	H	H														
40	数据库原理					H						H																					
41	数据库原理实验											H																					

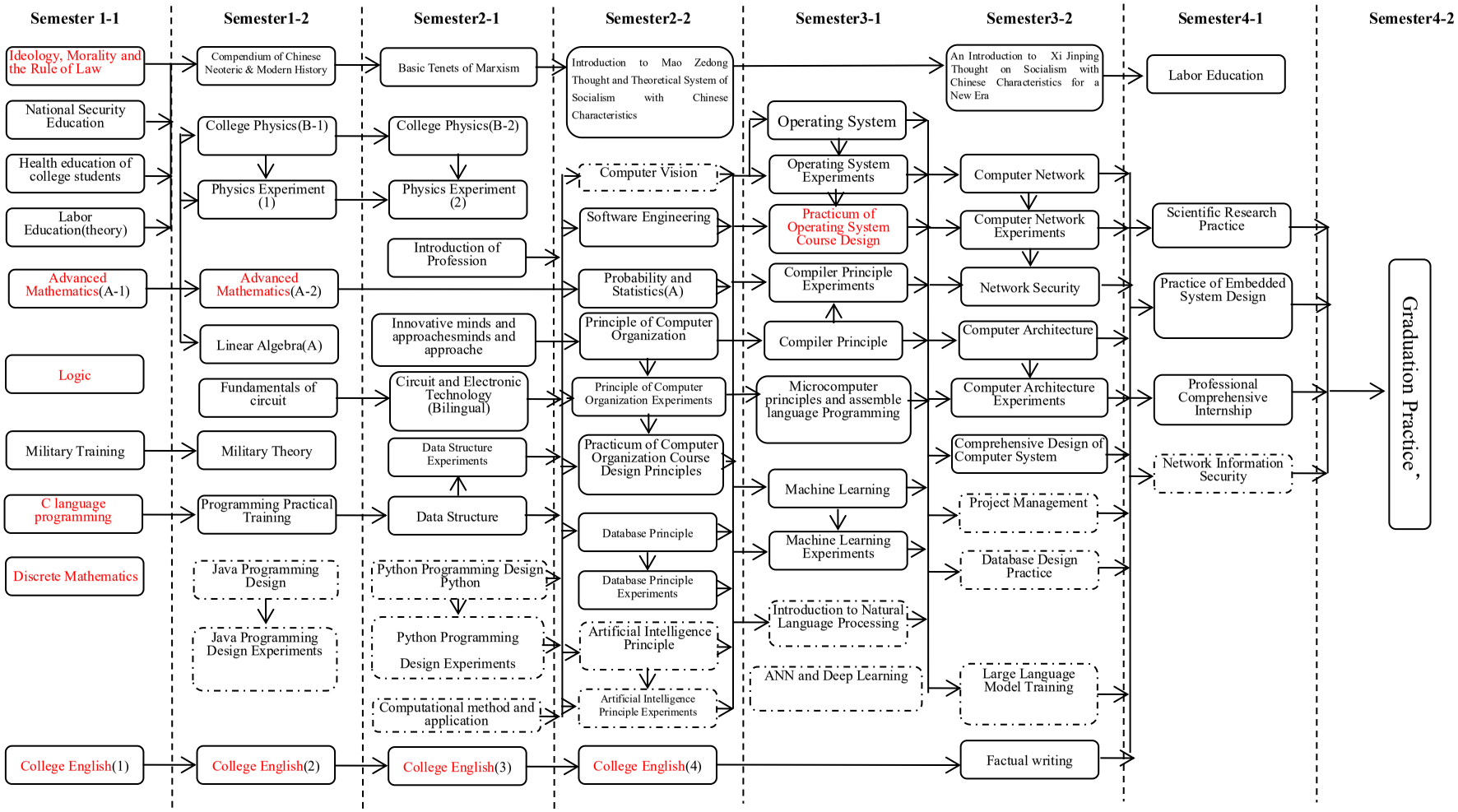
42	编译原理			H																												
43	编译原理实验																	H														
44	软件工程			H	H					H																						
45	微机原理与汇编语言																H	H														
46	计算机系统结构				H			H				H																				
47	计算机系统结构实验														H																	
48	计算机系统综合设计					H			H											H												
49	嵌入式系统设计								H																					H		
50	专业综合实习					H														H												
51	机器学习													H																		
52	机器学习实验										H																					
53	计算方法应用															H		H														
54	Python 程序设计与															H																
55	Python 程序设计与应用实验																	H														
56	算法设计与分析			H		H					H					H																
57	Java 语言程序设计																	H						H								
58	Java 语言程序设计																	H						H								
59	网络信息安全																						H									
60	多媒体技术																	H														
61	人工智能基础										H						H						H									
62	人工智能基础实验																	H														
63	自然语言处理导论						H																H									H
64	Spark 大数据技术与															H																
65	分布式计算													H																		

66	计算机视觉						H				H																					H
67	人工神经网络及深度学习						H													H												H
68	人工神经网络及深度学习实验																			H												
69	Android 平台应用开发技术																									H						
70	工程项目管理							H		H											H					H			H	H		
71	网络攻防														H	H																
72	毕业实习及毕业论文							H													H						H					

十一、课程配置流程图

XI. Flowchart of Course Configuration




Semester 1-1
Semester1-2
Semester2-1
Semester2-2
Semester3-1
Semester3-2
Semester4-1
Semester4-2
Ideology, Morality and the Rule of Law
National Security Education
Health education of college students
Labor Education(theory)
Advanced Mathematics(A-1)
Logic
Military Training
C language programming
Discrete Mathematics
College English(1)
Compendium of Chinese Neoteric & Modern History
College Physics(B-1)
Physics Experiment (1)
Advanced Mathematics(A-2)
Linear Algebra(A)
Fundamentals of circuit
Military Theory
Programming Practical Training
Java Programming Design
Java Programming Design Experiments
College English(2)
Basic Tenets of Marxism
College Physics(B-2)
Physics Experiment (2)
Introduction of Profession
Innovative minds and approachesminds and approache
Circuit and Electronic Technology (Bilingual)
Data Structure Experiments
Data Structure
Python Programming Design Python
Python Programming Design Experiments
Computational method and application
College English(3)
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
Computer Vision
Software Engineering
Probability and Statistics(A)
Principle of Computer Organization
Principle of Computer Organization Experiments
Practicum of Computer Organization Course Design Principles
Database Principle
Database Principle Experiments
Artificial Intelligence Principle
Artificial Intelligence Principle Experiments
College English(4)
Operating System
Operating System Experiments
Practicum of Operating System Course Design
Compiler Principle Experiments
Compiler Principle
Microcomputer principles and assemble language Programming
Machine Learning
Machine Learning Experiments
Introduction to Natural Language Processing
ANN and Deep Learning
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Computer Network
Computer Network Experiments
Network Security
Computer Architecture
Computer Architecture Experiments
Comprehensive Design of Computer System
Project Management
Database Design Practice
Large Language Model Training
Factual writing
Labor Education
Scientific Research Practice
Practice of Embedded System Design
Professional Comprehensive Internship
Network Information Security
Graduation Practice

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84724073 84729468

教学院长：84727731

教 务 处：847273005

计算机科学与技术（拔尖实验班）专业负责人：宁博

计算机科学拔尖学生培养基地

计算机科学与技术教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Software Engineering Major

[2025 级适用]

★软件工程（080902）

大连海事大学教务处

2025 年 9 月

软件工程专业本科培养计划（2025 版）

Undergraduate Program for Software Engineering Major

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业以立德树人为根本，服务国家战略和区域经济发展为目标，培养适应软件产业、交通信息服务业及相关行业领域发展需求，具有良好的科学素养和职业素养，具备设计开发复杂软件系统的能力、解决复杂软件工程问题的能力以及良好的沟通合作、组织管理能力，能够从事软件需求分析、软件设计与实现、软件测试、软件部署维护和软件项目管理等方面工作的工程技术人才，预期能够胜任软件工程教学科研、高级软件工程师、软件项目管理者和系统构架师等业务岗位工作。 本专业毕业生在信息技术相关专业领域经过五年的实践锻炼，能够具备职业素养能力、专业能力、项目协调与管理能力和职业提升能力，成为具有创新精神和国际视野的德智体美劳全面发展的社会主义建设者和接班人。 This major takes cultivating virtue and nurturing talents as its fundamental goal, serving national strategies and regional economic development. In order to meet the development needs of software industry, traffic information service industry and related industries, this program cultivates good scientific literacy and professional quality, Engineering and technical personnel with the ability to design and develop complex software systems, solve complex software engineering problems, good communication and cooperation, organization and management capabilities, and be able to engage in software requirements analysis, software design and implementation, software testing, software deployment and maintenance, and software project management, etc., are expected to be competent for teaching and	1. 具备良好的人文社会科学素养、社会责任感与职业道德，身心健康，诚实守信，遵守法律法规、行业标准和规范； 1. With good humanities and social science literacy, social responsibility and professional ethics, physical and mental health, honesty and trustworthiness, abide by laws and regulations, industry standards and norms;
	2. 能够综合运用工程知识解决软件需求获取与描述、软件架构设计/软件结构优化、软件测试、软件维护过程和软件项目管理等复杂软件工程问题，达到具有国际水准的软件工程师或软件项目管理者的能力，并在设计开发和运维管理中考虑环境与社会影响； 2. Utilize engineering knowledge to solve complex software engineering problems such as software requirements acquisition and description, software architecture design / software structure optimization, software testing, software maintenance process and software project management, and achieve the ability of software engineers or software project managers with international standards, and consider environmental and social impacts in design, development and operation and maintenance management;
	3. 能有效沟通和交流，在团队中发挥有效作用。能够在多学科背景下承担个体、团队成员和负责人的角色，体现出良好的团队合作精神及组织、协调、管理能力； 3. Communicate effectively and play an effective role in the team. Take on the role of individual, team member and leader under the background of multi-disciplinary, and show good team spirit and

research of software engineering, Senior Software Engineer, software project manager and system architect . Graduates of this major, after five years of practical training in the field of information technology, are able to possess professional competence, expertise, project coordination and management skills, and career advancement abilities, becoming socialist builders and successors with innovative spirit and international vision, with comprehensive development in morality, intelligence, physical fitness, aesthetics, and labor.	ability of organization, coordination and management; 4. 具有创新精神和国际视野，不断学习提升自己以适应社会发展。 4. Have the spirit of innovation and international vision, constantly learn and improve themselves to adapt to social development.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.工程知识。能够运用数学、自然科学、计算、工程基础和专业知识，解决复杂软件工程问题。 **1.Engineering knowledge.** Utilize mathematics, natural sciences, computing, engineering fundamentals, and professional knowledge to solve complex software engineering problems.	1-1 数学和自然科学知识：掌握数学和自然科学知识，并能应用其基本原理描述和分析复杂软件工程问题，通过正确的表述、建模、推演求解、比较分析等寻找解决方案。 1-1 Mathematics and Natural Science Knowledge: Master mathematics and natural science knowledge, and be able to apply their basic principles to describe and analyze complex software engineering problems, and find solutions through correct expression, modeling, deduction, and comparative analysis.
	1-2 工程基础知识：掌握工程基础知识，并能应用其基本原理分析和研究复杂软件工程问题，正确地识别、表述及建立解决方案等。 1-2 Engineering Fundamentals: Master engineering fundamentals and be able to apply their basic principles to analyze and study complex software engineering problems, correctly identify, articulate, and establish solutions.
	1-3 计算知识：掌握计算知识的基本原理与方法，建立大数据和 AI 思维，用于复杂软件工程问题的详细分析和建模。 1-3 Computational Knowledge: Master the basic principles and methods of computational knowledge, establish big data and AI thinking, and use them for detailed analysis and modeling of complex software engineering problems.
	1-4 专业知识：掌握软件工程专业知识，并能综合运用专业知识及相关领域的各类技术手段，解决复杂软件工程问题。 1-4 Professional knowledge: Master software engineering professional knowledge and be able to comprehensively apply professional knowledge and various technical means in related

	fields to solve complex software engineering problems.
2.问题分析。能够应用数学、自然科学、工程科学和软件工程专业知识的基本原理，并通过文献研究，分析、识别软件工程领域的复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 **2.Problem analysis**. Apply the basic principles of mathematics, natural sciences, engineering sciences, and software engineering expertise, and through literature research, analyze and identify complex engineering problems in the field of software engineering, comprehensively consider the requirements of sustainable development, and obtain effective conclusions.	2-1 问题识别：能够识别软件工程领域的复杂工程问题，并能判断其关键环节。 2-1 Problem Identification: Able to identify complex engineering problems in the field of software engineering and determine their key links.
	2-2 问题表达：能够对软件工程领域的复杂工程问题进行抽象描述、建模表达。 2-2 Problem expression: Able to abstractly describe and model complex engineering problems in the field of software engineering.
	2-3 文献研究：能够通过文献研究寻求解决复杂工程问题的多种可选方案。 2-3 Literature research: Able to seek multiple alternative solutions to complex engineering problems through literature research.
	2-4 因素分析与方案分析：能够对复杂工程问题的多种影响因素和多种可选方案进行分析评价，以获得有效结论。 2-4 factor analysis and scheme analysis: Able to analyze and evaluate multiple influencing factors and alternative solutions of complex engineering problems to obtain effective conclusions.
3.设计/开发解决方案。能够综合运用所掌握的专业知识、方法和技术，针对复杂工程问题设计和开发解决方案，设计满足特定需求的软件系统、模块或算法，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 **3.Design/development of solutions**. Comprehensively use the professional knowledge, methods, and technologies to design and develop solutions for complex engineering problems, design software systems, modules, or algorithms that meet specific needs, and consider feasibility from the perspectives of health, safety, and environment, full lifecycle cost and net zero carbon requirements, law and ethics, society and culture.	3-1 方案设计：能够针对复杂软件工程问题的全流程设计解决方案和算法。 3-1 Solution Design: Able to design full process solutions and algorithms for complex software engineering problems.
	3-2 软件设计：能够针对复杂工程问题的软件系统、模块或算法进行软件定义与软件设计。 3-2 Software Design: Able to define and design software systems, modules, or algorithms for complex engineering problems.
	3-3 软件开发：能够针对复杂工程问题的软件系统、模块或算法进行软件开发、测试和维护。 3-3 Software Development: Able to develop, test, and maintain software systems, modules, or algorithms for complex engineering problems.
	3-4 创新意识与制约因素考虑：能够在设计方案中体现创新意识，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3-4 Innovative awareness and consideration of constraints: Able to reflect innovative consciousness in the design scheme, and consider feasibility from the perspectives of health, safety and environment, full lifecycle cost and net zero carbon requirements, legal and ethical, social and cultural factors.

4.研究。能够基于科学原理并采用科学方法对复杂软件工程问题进行研究，包括设计实验与实施实验、分析与解释数据，并通过信息综合得到合理有效的结论。 **4.Investigation**. Based on the scientific principles and scientific methods, study the complex software engineering problems, including the design and implementation of experiments, analysis and interpretation of data and so on, and draw a reasonable and effective conclusion through information synthesis.	4-1 调研能力：能够针对复杂软件工程问题本身或其解决方案，通过调研确立实验目标和研究路线。 4-1 Research ability: able to establish experimental goals and research routes through research on complex software engineering problems themselves or their solutions.
	4-2 实验设计：能够根据实验目标和研究路线，设计完整的实验方案。 4-2 Experimental Design: Able to design a complete experimental plan based on the experimental objectives and research route.
	4-3 实验实施：能够构建实验系统，实施实验并正确地采集和处理数据。 4-3 Experimental Implementation: Able to construct experimental systems, conduct experiments, and correctly collect and process data.
	4-4 结果分析：能够对实验结果进行分析和解释，并通过信息综合得出合理有效的结论。 4-4 Result Analysis: Able to analyze and interpret experimental results, and draw reasonable and effective conclusions through information synthesis.
5.使用现代工具。能够针对复杂软件工程问题，开发或选用恰当的软件开发工具、建模工具、仿真工具和文献检索工具，完成复杂软件工程问题的预测与模拟，并能够理解其局限性。 **5.Modern tool usage**. Develop or select appropriate software development tools, modeling tools, simulation tools and literature retrieval tools for complex software engineering problems, complete the prediction and simulation of complex software engineering problems, and understand their limitations.	5-1 数据建模工具：能够选用恰当的建模工具对复杂软件工程问题的信息资源进行数据建模，完成数据库设计。 5-1 Data modeling tool: Able to select appropriate modeling tools to model the information resources of complex software engineering problems and complete database design.
	5-2 软件开发工具：能针对复杂软件工程问题，选用适合的编程语言、开发技术、开发平台、软件工具等用于软件设计开发，并能够针对特定需求开发必要的软件工具。 5-2 Software Development Tools: Able to select suitable programming languages, development techniques, development platforms, software tools, etc. for software design and development in response to complex software engineering problems, and able to develop necessary software tools for specific needs.
	5-3 模拟仿真与分析计算工具：能够开发或选用模拟仿真工具、文献检索工具和分析与计算工具等，对复杂软件工程问题的关键部分和整体进行资料收集、分析、计算、模拟和预测，并理解其局限性。 5-3 Simulation and Analysis Tools: Able to develop or select simulation tools, literature search tools, analysis and calculation tools, etc., to collect, analyze, calculate, simulate and predict key parts and the whole of complex software engineering problems, and understand their limitations.
6.工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价工程实践对健	6-1 工程背景知识：了解软件工程领域的技术标准体系、知识产权、产业政策和法律法规。 6-1 Engineering background knowledge: Understand the technical

康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。	standard system, intellectual property, industrial policies, and laws and regulations in the field of software engineering.
6.Engineering and society. Engineering and Sustainable Development. When solving complex engineering problems, analyze and evaluate the impact of engineering practices on health, safety, environment, law, and sustainable economic and social development based on relevant engineering background knowledge, and understand the responsibilities that should be undertaken.	6-2 工程对社会的影响：能分析和评价软件工程实践活动对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6-2 Impact of Engineering on Society: Able to analyze and evaluate the impact of software engineering practices on health, safety, environment, law, and sustainable economic and social development, and understand the responsibilities that should be undertaken.
7.工程伦理和职业规范。有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在软件工程实践中遵守工程职业道德、规范和相关法律，履行责任。	7-1 工程伦理：有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理。 7-1 Engineering Ethics: Possess the awareness of engineering serving the country and benefiting the people, possess humanities and social science literacy and a sense of social responsibility, and be able to understand and practice engineering ethics.
7.Engineering ethics and professional standards. Have the awareness of serving the country and benefiting the people through engineering, possess humanities and social science literacy and a sense of social responsibility, understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in software engineering practice, and fulfill responsibilities.	7-2 职业规范：理解并遵守诚实公正、诚信守则的工程职业道德、规范和相关法律，并能在工程实践中自觉遵守。 7-2 Professional Standards: Understand and abide by the engineering professional ethics, standards, and relevant laws of honesty, impartiality, and integrity, and be able to consciously abide by them in engineering practice.
8.个人和团队。能够适应多样化、多学科背景下的团队合作方式，并能在团队中承担个体、团队成员以及负责人的角色。 **8.Individual and teamwork:** Adapt to the team cooperation mode under the diverse and multi-disciplinary background, and take on roles as individuals, team members, and leaders within the team.	8-1 个体与团队成员角色：能够理解多样化、多学科背景下的团队中每个角色的定位与责任，能够胜任个体、团队成员的角色任务。 8-1 Individual and team member roles: able to understand the positioning and responsibilities of each role in a diverse and multidisciplinary team, and capable of fulfilling individual and team member role tasks.
	8-2 负责人角色：能够在多样化、多学科背景下的团队中承担负责人的角色，能够组织、协调和指挥团队开展工作。 8-2 Responsible role: Able to take on the role of a leader in a diverse and multidisciplinary team, able to organize, coordinate,

	and direct the team's work.
9.沟通。能够就复杂软件工程问题与业界同行及社会公众进行有效的沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够进行跨文化背景的沟通与交流，理解、尊重语言和文化差异。 **9.Communication.** Communicate effectively with the industry peers and the public on the complex software engineering problems, including the writing of reports and the design of articles, statement, clear expression or response to an instruction. Communicate and interact across cultural backgrounds, understand and respect language and cultural differences.	9-1 同行沟通：具有软件工程专业科技文档的写作能力和口头表达能力，能够就专业问题以报告、文稿、口头等方式和业界同行进行有效沟通和交流。 9-1 Peer Communication: Possess writing and oral expression skills in software engineering technical documents, able to effectively communicate and exchange professional issues with industry peers through reports, manuscripts, oral presentations, and other means.
	9-2 公众沟通：能够以社会公众可理解的方式表述专业问题，能够就专业问题与社会公众进行有效沟通和交流。 9-2 Public Communication: Able to express professional issues in a way that is understandable to the general public, and able to effectively communicate and exchange ideas with the public on professional issues.
	9-3 跨文化沟通：理解和尊重不同文化的差异性和多样性，具备跨文化交流的语言和书面表达能力，能就专业问题在跨文化背景下进行基本沟通和交流。 9-3 Cross cultural Communication: Understand and respect the differences and diversity of different cultures, possess language and written expression skills for cross-cultural communication, and be able to conduct basic communication and exchange on professional issues in a cross-cultural context.
10.项目管理。理解并掌握与软件工程项目相关的管理原理与经济决策方法，并能在多学科环境中加以应用。 **11.Project management**. Understand and master the management principles and economic decision-making methods related to software engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 掌握原理和方法：掌握软件工程项目管理原理与经济决策方法，理解软件生命周期中涉及的成本分析、人力物力安排、核算与经济决策问题。 10-1 Mastery of Principles and Methods: Master the principles of software engineering project management and economic decision-making methods, understand the cost analysis, human and material resource allocation, accounting, and economic decision-making issues involved in the software lifecycle.
	10-2 应用原理和方法：能够将工程管理原理与经济决策方法应用于多学科环境下的工程实践中。 10-2 Application Principles and Methods: Able to apply engineering management principles and economic decision-making methods to engineering practice in a multidisciplinary environment.
11.终身学习。具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 **11.Life-long learning.** Having the awareness and ability of self-learning, lifelong learning, and critical thinking, able to understand the impact of extensive technological	11-1 终身学习的意识：具备自主学习、终身学习和批判性思维的意识，能在技术快速更迭、学科专业交叉融合的社会发展大背景下认识到自主学习和终身学习的必要性。 11-1 Consciousness of lifelong learning: Possess the awareness of self-directed learning, lifelong learning, and critical thinking, and be able to recognize the necessity of self-directed learning and lifelong learning in the context of rapid technological changes and interdisciplinary integration of social development.
	11-2 终身学习的能力：具备自主学习、终身学习和批判性思维

changes on engineering and society, and adapt to new technological changes.	的知识基础，能根据自身条件和职业发展需求，采用合适的方法不断进行自我学习和提高，理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11-2 Ability for lifelong learning: Possess a knowledge foundation of self-learning, lifelong learning, and critical thinking, able to continuously engage in self-learning and improvement through appropriate methods based on one's own conditions and career development needs, understand the impact of extensive technological changes on engineering and society, and adapt to new technological changes.

三、专业核心课程

III．Core Courses

离散数学、C 语言程序设计、数据结构、软件工程导论、计算机组成原理、数据库原理、编译原理、操作系统、计算机网络、算法设计与分析、软件项目实践。

Discrete Mathematics, C language programming, Data Structure, Introduction to Software Engineering, Principle of Computer Organization, Database Principle, Compiler Principle, Operating System, Computer Network, Algorithms Design and Analysis, Software Project Practice.

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent +	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
面向对象分析与设计 Object-Oriented Analysis and Design		●				
软件需求分析 Software Requirement Analysis		●				
软件设计与体系结构 Software Design and Architecture		●				
软件质量保证与测试 Software Quality Assurance and Testing		●				
软件项目管理 Software Project Management		●				
大数据分析技术 Big Data Analysis Technigue	●	●	●			

机器人学导论 Introduction to Robotics (Bilingual)	●	●	●		●	
机器学习系统开发 Machine learning system development	●	●	●		●	
软件项目实践 Software Project Practice	●	●			●	●
软件工程综合实训 Integrated software engineering practice	●	●			●	●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="3">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="3">/</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td>数学与自然科学</td><td>数学类
Mathematics</td><td>15.5</td></tr>
</table>

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th colspan="2" rowspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="12"></td><td rowspan="2">类
Mathematic
s and
Natural
Sciences</td><td>物理类
Physics</td><td>9</td><td rowspan="12"></td><td rowspan="5"></td></tr>
<tr><td rowspan="10">通识类
General
Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication
and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational
Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and
Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and
Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）
基础课
Disciplinary Courses</td><td colspan="2">大类基础课
Major Group Courses
专业基础课
Discipline Courses</td><td>35.5</td><td rowspan="2">32</td><td rowspan="6">/</td></tr>
<tr><td>专业及
方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course
方向模块课
Directional Module Courses</td><td>1</td></tr>
<tr><td rowspan="3">集中实践
环节 Practical
&Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>14</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>14</td></tr>
<tr><td colspan="3">合计：165
Total：165</td><td>125</td><td>32</td><td>8</td></tr>
</table>

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit
				必修 Compulsory

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018290	专业导论(软件)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：软件工程课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（165 学分） In-class Teaching Courses （165 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	125	32	8	8	173

表 2：软件工程必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education		1	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	

			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	

			19	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			20	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			21	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			22	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			23	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			24	1713030460	创新思维与创新方法(计算机类) Innovative minds and approaches（computer class）	2	考查		综合素养	32	24	8	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplina		1	1713010430	离散数学 Discrete Mathematics Q	4	考试	√	综合素养	64	64	0	1-1	

			2	1713010630	C 语言程序设计 C language programming	3	考试	√	综合素养	48	48	0	1-1	
			3	1713022350	电路基础 Fundamentals of circuit	2.5	考试	√	综合素养	40	30	10	1-2	
			4	1713010460	数据结构 Data Structure	3	考试	√	综合素养	48	48	0	2-1	
			5	1713010470	数据结构实验 Data Structure Experiments	1	考查		综合素养	24	0	24	2-1	
			6	1713012030	软件工程导论 Introduction to Software Engineering	2	考试	√	综合素养	32	32	0	2-1	
			7	1713010440	计算机组成原理 Principle of Computer Organization	3.5	考试	√	综合素养	56	56	0	2-2	
			8	1713010450	计算机组成原理实验 Principle of Computer Organization Experiments	0.5	考查		综合素养	12	0	12	2-2	
			9	1713010550	数据库原理 Database Principle	3	考试	√	综合素养	48	48	0	2-2	
			10	1713010560	数据库原理实验 Database Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			11	1713010610	编译原理 Compiler Principle Q	2	考试	√	综合素养	32	32	0	2-2	
			12	1713010620	编译原理实验 Compiler Principle Experiments	1	考查		综合素养	24	0	24	2-2	

			13	1713010750	算法设计与分析 Algorithms Design and Analysis	2	考查		综合素养	32	24	8	2-2	
			14	1713010530	操作系统 Operating System	3	考试	√	综合素养	48	48	0	3-1	
			15	1713010540	操作系统实验 Operating System Experiments	1	考查		综合素养	24	0	24	3-1	
			16	1713010590	计算机网络 Computer Network	2.5	考试	√	综合素养	40	40	0	3-2	
			17	1713010600	计算机网络实验 Computer Network Experiments	0.5	考查		综合素养	12	0	12	3-2	
	必修-专业及方向课程 Stream Courses		1	1713012060	软件项目实践 Software Project Practice	1	考试	√	综合素养	16	16	0	4-1	
合计 Total						**95**				**1640**	**1286**	**354**		

表 3：软件工程 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Course	限选-专业及方向课程（前沿技术） Stream Courses	至少选一门	1	1713010670	人工智能 Artificial Intelligence	2.5	考试		综合素养	40	32	8	3-1	
			2	1713030550	机器学习系统开发 Machine Learning System Development	3	考查		综合素养	48	32	16	3-1	

			3	1713010680	大数据分析技术 Big Data Analysis Technigue	2	考查		综合素养	32	32	0	3-2	
			4	1713030300	机器人学导论(双语) Introduction to Robotics (Bilingual)	2	考查		综合素养	32	20	12	3-2	
	限选专业方向课（应用软件开发类） Stream Courses	需要从【Android 平应用开发技术+Android 平台应用开发技术实验】或【Web 应用程序开发】至少选择一组课程进行修读	1	1713010800	Android 平台应用开发技术 Development Technology of Android platform	1	考查		综合素养	16	16	0	3-1	
			2	1713010810	Android 平台应用开发技术实验 Development Technology of Android platform Experiments	1	考查		综合素养	24	0	24	3-1	
			3	1713030560	Web 应用程序开发 Web Application Development	3	考查		综合素养	48	32	16	3-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713010690	Java 语言程序设计 Java Programming Design	2	考试		综合素养	32	32	0	1-2	
			2	1713010700	Java 语言程序设计实验 Java Programming Design Experiments	1	考查		综合素养	24	0	24	1-2	
			3	1713010710	互联网软件基础 Introduction to Internet Software	2	考查		综合素养	32	24	8	2-1	建议选修
			4	1713012110	面向对象分析与设计 Object-oriented Analysis and Design	2.5	考试		综合素养	40	32	8	2-1	

			5	1713010760	软件设计与体系结构 Software Design and Architecture	3	考查		综合素养	48	40	8	2-2	
	限选-专业及方向课程 Stream Courses		1	1713030380	计算方法与应用 Computational method and application	3	考查		综合素养	48	32	16	2-1	
			2	1713010850	Unix/Linux 体系及编程 Unix/Linux Architecture and Programming	3	考试		综合素养	48	32	16	3-1	
			3	1713012140	软件需求分析 Software Requirement Analysis	2	考查		综合素养	32	24	8	3-1	
			4	1713012160	团队激励与沟通 Team Prompting and Communicating	1	考查		综合素养	16	16	0	3-1	建议选修
			5	1713010910	嵌入式系统软件设计 Embedded Software Design	3	考查		综合素养	48	32	16	3-2	
			6	1713012090	软件工程经济学 software Engineering Economics	2	考查		综合素养	32	32	0	3-2	建议选修
			7	1713012130	软件项目管理 Software Project Management	2	考查		综合素养	32	24	8	3-2	建议选修
			8	1713012150	软件质量保证与测试 Software Quality Assurance and Testing	2	考试		综合素养	32	24	8	3-2	
			9	1713030540	IT 职业英语 IT Professional English	2	考查		综合素养	32	32	0	3-2	
合计 Total						**45**				**736**	**540**	**196**		

表 4：软件工程任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 8 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”, “national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ” and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete 8 credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school’s relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：软件工程 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010880	程序设计实训 Programming Practical Training	2	考查		综合素养	60	0	60	1-2	
			3	1713012180	算法设计实践 Algorithm design practice	2	考查		综合素养	60	0	60	2-2	
			4	1713030530	数据库设计实践 Database Design Practice	2	考查		综合素养	60	0	60	3-1	

			5	1713010890	移动应用开发课程实践 Practicum of Mobile Application Development	2	考查		综合素养	60	0	60	3-2	
			6	1713012200	软件项目实践课程设计 Course Design of Software Project Practice	2	考查		综合素养	60	0	60	4-1	
			7	1713012210	软件工程综合实训 Integrated software engineering practiceIntegrated software engineering practice	4	考查		综合素养	120	0	120	4-1	
			8	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			9	1713030520	专业综合实习(软件工程) Integrated Major Practice(Software Engineering)	2	考查		综合素养	60	0	60	4-1	
			10	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**32**				**946**	**0**	**946**		

表 6：软件工程 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compul	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	

			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	1713018290	专业导论(软件) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total														

八、实践学时学分
Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练 Military Training	必修	90	3	
2	体育 Physical Education	必修	128	4	
3	劳动教育(实践) Labor Education (Practice)	必修	16	1	
4	程序设计实训 Programming Practical Training	必修	60	2	●
5	算法设计实践 Algorithm Design Practice	必修	60	2	●
6	数据库设计实践 Database Design Practice	必修	60	2	●
7	移动应用开发课程实践 Practicum of Mobile Application Development	必修	60	2	●
8	软件项目实践课程设计 Course Design of Software Project Practice	必修	60	2	●
9	软件工程综合实训 Integrated Software Engineering Practice	必修	120	4	●
10	专业综合实习(软件工程) Integrated Professional Internship(Software Engineering)	必修	60	2	●
11	毕业实习及毕业论文 Graduation Practice, Design & Thesis	必修	360	12	●
12	数据结构实验 Data Structure Experiments	必修	24	1	●
13	计算机组成原理实验 Experiments of Computer Organization Principle	必修	12	0.5	●
14	数据库原理实验 Database Principle Experiments	必修	24	1	●
15	编译原理实验 Compiler Principle Experiments	必修	24	1	●
16	操作系统实验 Operating System Experiments	必修	24	1	●
17	计算机网络实验 Computer Network Experiments	必修	12	0.5	●
18	算法设计与分析 Algorithms Design and Analysis	必修	8	0.5	●
19	Java 语言程序设计实验 Java Programming Design Experiments	限选	24	1	●
合计 Total			1226	42.5	

九、毕业要求对培养目标的支撑关系矩阵

Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1 **Graduation Requirements 1**		●		
毕业要求 2 **Graduation Requirements 2**		●		
毕业要求 3 **Graduation Requirements 3**	●	●		●
毕业要求 4 **Graduation Requirements 4**		●		
毕业要求 5 **Graduation Requirements 5**		●		
毕业要求 6 **Graduation Requirements 6**	●	●		
毕业要求 7 **Graduation Requirements 7**	●			
毕业要求 8 **Graduation Requirements 8**			●	
毕业要求 9 **Graduation Requirements 9**			●	●
毕业要求 10 **Graduation Requirements 10**		●	●	
毕业要求 11 **Graduation Requirements 11**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

Courses &Graduation Requirements Relationship Matrix

序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
1	专业导论（软件）																							H								H	
2	体育																								H								
3	大学英语																										H		H				
4	高等数学（A）	H				H																											
5	线性代数（A）	H				H																											
6	概率论与数理统计	H					H																										
7	大学物理（B）	H				H																											
8	大学物理实验								H								H																
9	军事理论																						H		H								
10	逻辑学																										H						

序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
11	实用写作																										H						
12	思想道德修养与法律基础																				H			H									
13	中国近现代史纲要																						H									H	
14	马克思主义基本原理																						H									H	
15	毛泽东思想和中国特色社会主义理论体系概论																				H		H										
16	习近平新时代中国特色社会主义思想概论																				H		H										
17	劳动教育																							H									
18	军事训练																								H								
19	入学教育																						H										
20	职业生涯规划																							H								H	

序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
21	就业指导																							H								H	
22	形势与政策																				H		H										
23	国家安全教育(信息)																				H			H									
24	大学生心理健康教育																								H			H					
25	C 语言程序设计		H								H								H														
26	电路基础		H																														
27	离散数学	H					H																										
28	数据结构			H			H				H																						
29	数据结构实验										H				H																		
30	软件工程导论			H			H					H									H										H		
31	计算机组成原理			H		H				H																							
32	计算机组成原理实验														H	H																	
33	数据库原理			H		H		H																									

序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
34	数据库原理实验																	H		H													
35	编译原理			H		H				H																							
36	编译原理实验														H																		
37	算法设计与分析				H			H						H																			H
38	操作系统			H	H	H																											
39	操作系统实验															H			H														
40	计算机网络		H		H																H												
41	计算机网络实验														H		H			H													
42	软件项目实践								H	H	H		H																		H		
43	创新思维与创新方法（计算机类）												H																			H	H
44	Java 语言程序设计		H							H																							
45	Java 语言程序设计实验																		H														

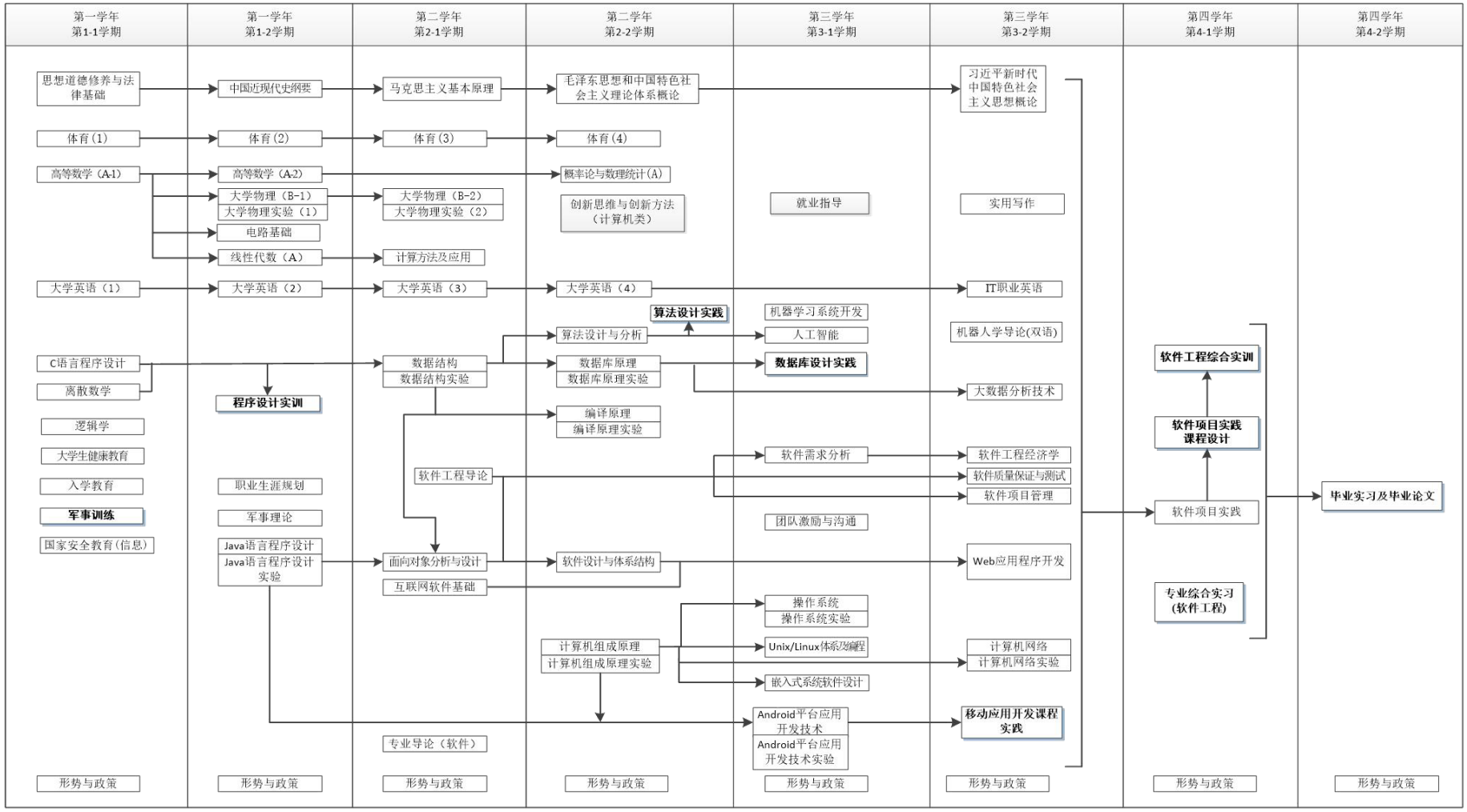
序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
46	互联网软件基础		H		H							H							H														
47	面向对象分析与设计				H	H	H				H								H														
48	软件设计与体系结构				H					H			H																				
49	计算方法及应用		H															H															
50	机器学习系统开发			H										H																			H
51	Android 平台应用开发技术				H					H								H															
52	Android 平台应用开发技术实验										H								H														
53	Web 应用程序开发											H						H															
54	人工智能			H			H							H																			H
55	IT 职业英语				H			H																					H				H
56	大数据分析技术			H						H				H						H												H	

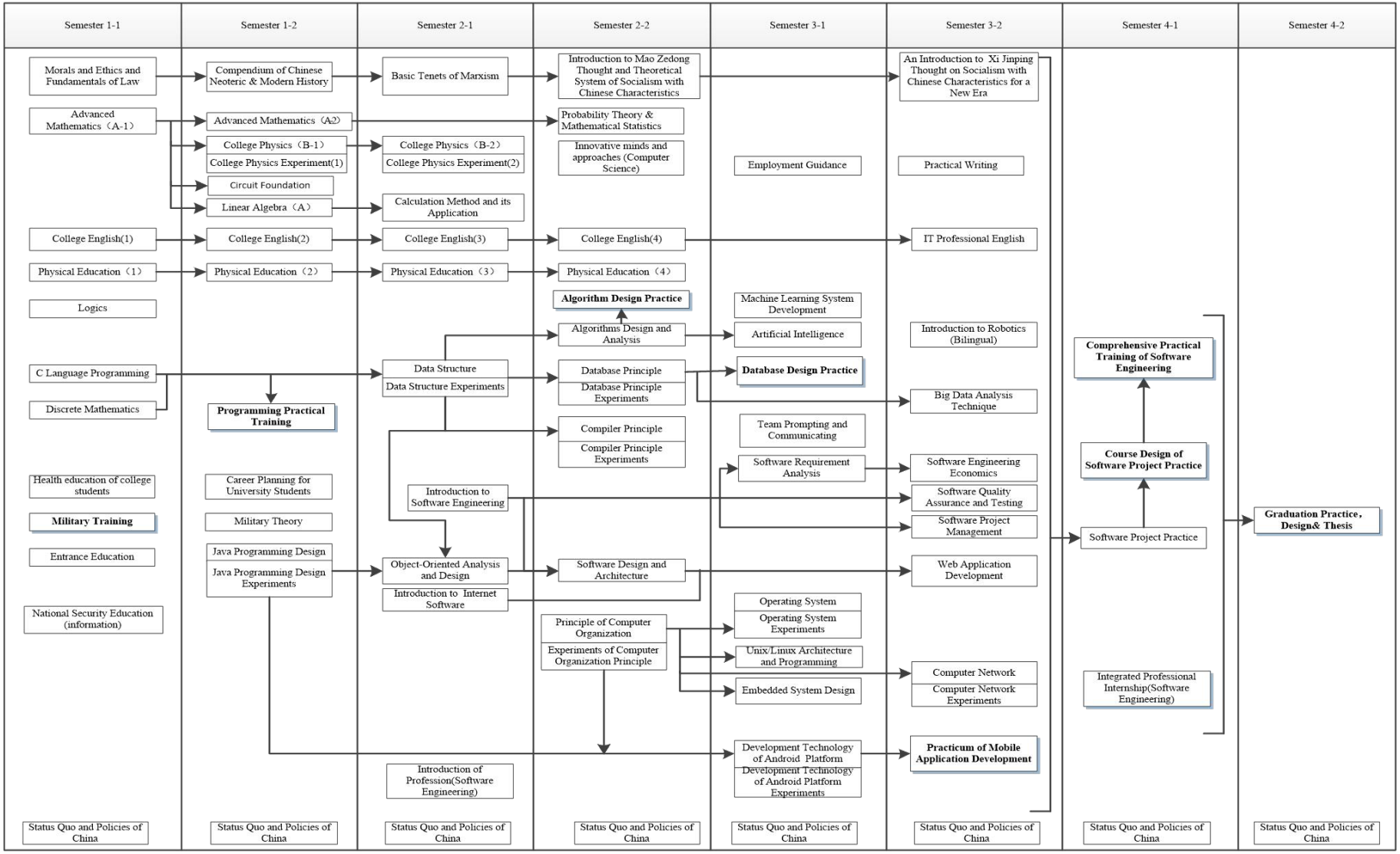
序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
57	机器人学导论(双语)			H			H							H																			H
58	Unix/Linux 体系及编程				H					H								H															
59	嵌入式系统软件设计										H			H						H											H		
60	软件项目管理												H									H								H	H		
61	软件工程经济学				H				H				H								H									H			
62	软件需求分析				H		H			H																	H						
63	软件质量保证与测试		H				H			H										H													H
64	团队激励与沟通																								H	H	H	H					
65	程序设计实训											H													H		H				H		
66	算法设计实践								H		H					H				H					H								
67	数据库设计实践							H		H						H		H							H								
68	移动应用开发课程实践								H			H														H		H					

序号	毕业要求及其指标点 / 课程名称	毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2				毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 3				毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	1	2	1	2	1	2	1	2	3	1	2	1	2
69	软件项目实践课程设计																		H						H	H	H				H		
70	软件工程综合实训								H			H														H		H			H		
71	专业综合实习(软件工程)																					H	H		H			H			H		
72	毕业实习及毕业论文							H		H			H									H		H	H	H	H						

十、课程配置流程图

Flowchart of Course Configuration




Semester 1-1
Semester 1-2
Semester 2-1
Semester 2-2
Semester 3-1
Semester 3-2
Semester 4-1
Semester 4-2
Morals and Ethics and Fundamentals of Law
Compendium of Chinese Neoteric & Modern History
Basic Tenets of Marxism
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Advanced Mathematics（A-1）
Advanced Mathematics（A2）
Probability Theory & Mathematical Statistics
College Physics（B-1）
College Physics Experiment(1)
College Physics（B-2）
College Physics Experiment(2)
Innovative minds and approaches (Computer Science)
Employment Guidance
Practical Writing
Circuit Foundation
Linear Algebra（A）
Calculation Method and its Application
College English(1)
College English(2)
College English(3)
College English(4)
IT Professional English
Physical Education（1）
Physical Education（2）
Physical Education（3）
Physical Education（4）
Logics
Algorithm Design Practice
Machine Learning System Development
Algorithms Design and Analysis
Artificial Intelligence
Introduction to Robotics (Bilingual)
Comprehensive Practical Training of Software Engineering
C Language Programming
Data Structure
Data Structure Experiments
Database Principle
Database Principle Experiments
Database Design Practice
Big Data Analysis Technique
Discrete Mathematics
Programming Practical Training
Compiler Principle
Compiler Principle Experiments
Team Prompting and Communicating
Course Design of Software Project Practice
Software Requirement Analysis
Software Engineering Economics
Health education of college students
Career Planning for University Students
Introduction to Software Engineering
Software Quality Assurance and Testing
Military Training
Military Theory
Software Project Management
Software Project Practice
Graduation Practice, Design& Thesis
Entrance Education
Java Programming Design
Java Programming Design Experiments
Object-Oriented Analysis and Design
Software Design and Architecture
Web Application Development
Introduction to Internet Software
National Security Education (information)
Operating System
Operating System Experiments
Principle of Computer Organization
Experiments of Computer Organization Principle
Unix/Linux Architecture and Programming
Computer Network
Computer Network Experiments
Embedded System Design
Integrated Professional Internship(Software Engineering)
Development Technology of Android Platform
Development Technology of Android Platform Experiments
Practicum of Mobile Application Development
Introduction of Profession(Software Engineering)
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
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后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84724073 84729468

教学院长：84727731

教 务 处：84723005

软件工程专业负责人：张德珍

软件工程教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate P1rogram for Network Engineering Major

[2025 级适用]

★网络工程（080903）

大连海事大学教务处
2025 年 9 月

网络工程专业本科培养计划（2025 版）
Undergraduate Program for Network Engineering Major

一、培养目标
I．Program Objectives

本专业培养具备网络工程基础理论、专业知识与应用能力，能从事计算机网络规划与设计、部署与实施、分析与测试、运行与管理以及应用开发等方面工作，并在工程实践中遵守职业道德和规范，富有创新、法律与环境意识，具有团队精神、持续学习能力与国际视野，能够成为德智体美劳全面发展的高素质创新型人才，成为社会主义事业优秀建设者和接班人。

本专业培养的学生在毕业后 5 年左右预期达到：

培养目标 1：能够熟练运用数学与自然科学、工程基础知识，以及电子、计算机、网络等专业知识；能够从事计算机网络规划与设计、部署与实施、分析与测试、运行与管理以及应用开发等方面工作；

培养目标 2：具备独立分析和解决复杂网络工程问题的能力，富有实践和创新能力，能够成为所在工作领域的高素质创新型人才；

培养目标 3：具备高度的社会责任感和职业道德，德智体美劳全面发展，能在工程实践中考虑和评价社会、健康、安全、法律、环境及可持续发展等方面的问题，成为社会主义事业优秀的建设者和接班人；

培养目标 4：具有团队协作、组织协调和跨文化合作交流能力；具备自主和终身学习能力，不断提升自我，以适应社会经济发展的需要。

This major cultivates the students with the basic theory, professional knowledge and application ability of network engineering. And students can be engaged in computer network planning and design, deployment and implementation, analysis and testing, operation and management, and application development, and abide by professional ethics and norms in engineering practice, full of innovation, legal and environmental awareness, team spirit, continuous learning ability and international perspective, can become high-quality engineering and technical talents with all-round development of morality, intelligence, sports, beauty and labor, cultivate excellent builders and successors for the socialist cause.

The students of this major are expected to reach about 5 years after graduation:

Objectives 1: Students master and apply mathematics and natural science, the basic knowledge of engineering foundation, as well as electronics, computer, network and other professional knowledge, and engage in computer network planning and design, deployment and implementation, etc., analysis and testing, operation and management, and application development;

Objective 2: Students have the basic ability to analyze and solve complex network engineering problems independently, have the ability of practice and innovation, and be able to become a high-quality engineering and technical talent in the field of work;

Objective 3: Students have a high sense of social responsibility and professional ethics, develop morally, intellectually, physically, aesthetically and laboriously in an all-round way, and be able to consider and evaluate social, health, safety, legal, environmental and sustainable development problems in engineering practice, and become an excellent builder and successor of the socialist cause;

Objective 4: Students have the ability of team cooperation, organization coordination, and cross-cultural cooperation and communication, self-learning and lifelong learning to constantly improve themselves to meet the needs of social and economic development.

二、毕业要求
II．Graduation Requirements

毕业要求	毕业要求指标点分解
1. **工程知识:** 具备用于解决复杂网络工程问题的数学、自然科学、计算、工程基础和专业知识及其运用能力。 1.Engineering knowledge: Have the mathematics, natural science, computing, engineering foundation and professional knowledge and the ability to solve complex network engineering problems.	1-1、能够将数学和自然科学运用到复杂网络工程问题的恰当表述中。 1-1 Can apply mathematics and natural science to the proper expression of complex network engineering problems.
	1-2、掌握计算和工程基础知识，并能应用于复杂网络工程问题的表述，能针对具体的对象建立数学模型并求解。 1-2 Master the basic knowledge of computing and engineering, and can be applied to the expression of complex network engineering problems, and can be able to establish mathematical models for specific objects and solve them.
	1-3、能够将相关知识和数学模型方法用于推演、分析网络工程问题。 1-3 Can use relevant knowledge and mathematical model methods to deduce and analyze network engineering problems.
	1-4、能够将相关知识和数学模型方法用于专业工程问题解决方案的比较与综合。 1-4 Can use relevant knowledge and mathematical modeling methods for the comparison and synthesis of professional engineering problem solutions.
2. **问题分析**：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂网络工程问题，综合考虑可持续发展的要求，以获得有效结论。 Problem analysis: can apply the basic principles of mathematics, natural science and engineering science, identify, express, and analyze complex network engineering problems through literature research, and comprehensively consider the requirements of sustainable development to obtain effective conclusions.	2-1、问题识别：能够运用数学、自然科学和工程科学基本原理，对复杂网络工程问题进行识别，判断其关键环节 2-1 Problem identification: it can use the basic principles of mathematics, natural science and engineering science to identify the complex network engineering problems and judge their key links
	2-2、问题表达：能够基于相关科学原理和数学模型方法正确表达复杂网络工程问题 2-2 Problem expression: to be able to correctly express complex network engineering problems based on relevant scientific principles and mathematical model methods
	2-3、文献研究：能认识到解决问题有多种方案可选择，会通过文献研究来寻求可替代的解决方案 2-3 Literature research: Can realize that there are many options to solve the problem, and will seek alternative solutions through literature research
	2-4、因素分析与方案分析：能运用自然科学、网络工程领域基本知识并借助文献研究，分析复杂网络工程问题的各种影响因素，综合考虑可持续发展的要求，获得有效结论。 2-4 Factor analysis and scheme analysis: can use the basic knowledge of natural science and network engineering and with the help of literature research, analyze the various influencing factors of complex network engineering problems, comprehensively consider the requirements of sustainable development, and obtain effective conclusions.
3. **设计/开发解决方案:** 能够针对复杂网络工程问题设计和开发解决方案，设计满足特定需求的网	3-1、能够针对复杂网络工程问题设计和开发解决方案。 3-1 Can design and develop solutions for complex network engineering problems.
	3-2、能够对特定需求的网络应用系统或单元(模块)进行设

络应用系统或单元(模块)，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 4.Design / development solutions: able to design and develop solutions for complex network engineering problems, design to meet the specific needs of the network application system or unit (module), innovative, and from the health, safety and environment, whole life cycle cost and net zero carbon requirements, legal and ethical, social and cultural perspective feasibility.	计。 Capable to design a network application system or units (modules) for specific requirements.
	3-3、能够在方案设计或系统设计环节中体现创新性。 Can reflect the innovation in the scheme design or the system design link.
	3-4、在解决网络工程问题的设计环节中，能够从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3-4 In the design link of solving network engineering problems, the feasibility can be considered from the perspectives of health, safety and environment, full life cycle cost and net zero carbon requirements, law and ethics, and society and culture.
4. **研究**：能够基于科学原理并采用科学方法对复杂网络工程问题进行研究，包括设计实施、测试、分析与解释数据、并通过信息综合得到合理有效的结论。 Research: Be able to study complex network engineering problems based on scientific principles and using scientific methods, including design and implementation, testing, analysis and interpretation of data, and obtain reasonable and effective conclusions through information synthesis.	4-1、调研能力：能够基于科学原理，通过文献研究或相关方法，调研和分析复杂网络工程问题的解决方案 4-1. Research ability: Be able to investigate and analyze the solutions to complex network engineering problems based on scientific principles and through literature research or related methods
	4-2、实验设计：能够根据具体项目内容及对象特征，选择合适的研究路线，设计实验方案 4-2. Experimental design: Be able to choose the appropriate research routes and design the experimental scheme according to the specific project content and object characteristics
	4-3、实验实施：能够根据实验方案构建实验系统，安全地开展实验，正确地采集实验数据 4-3. Experimental implementation: it can build the experimental system according to the experimental scheme, carry out the experiment safely, and collect the experimental data correctly
	4-4、结果分析：能对实验结果进行分析和解释，并通过信息综合得到合理有效的结论 4-4. Results analysis: It can analyze and interpret the experimental results, and get a reasonable and effective conclusion through information synthesis
5. **使用现代工具**：能够针对复杂网络工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂网络工程问题的预测与模拟，并能够理解其局限性。 Using modern tools: the ability to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for complex network engineering problems, including the prediction and simulation of complex network engineering problems, and to understand their limitations.	5-1、了解网络工程专业常用的现代仪器、信息技术工具、工程工具和模拟软件的使用原理和方法，并理解其局限性 5-1. Understand the use principles and methods of modern instruments, information technology tools, engineering tools and simulation software commonly used in network engineering majors, and understand their limitations
	5-2、能够选择和使用恰当的仪器、信息资源、工程工具和专业模拟软件，对复杂网络工程问题进行分析、计算与设计 5-2. Ability to select and use appropriate instruments, information resources, engineering tools and professional simulation software to analyze, calculate and design complex network engineering problems
	5-3、能够针对具体的对象，开发或选用满足特定需求的现

	代工具，模拟和预测专业问题，并能够分析其局限性 5-3. Be able to develop or select modern tools to meet specific needs for specific objects, simulate and predict professional problems, and be able to analyze their limitations
6. **工程与可持续发展**：在解决复杂网络工程问题时，能够基于工程相关背景知识，分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6. Engineering and Sustainable Development: When solving complex network engineering problems, we can analyze and evaluate the impact of engineering practice on health, safety, environmental, legal, economic and social sustainable development, based on the background knowledge related to engineering, and understand the responsibilities.	6-1、工程背景知识：了解网络工程领域的技术标准体系、知识产权、产业政策和法律法规，理解不同社会文化对工程活动的影响。 6-1. Engineering background knowledge: To understand the technical standard system, intellectual property rights, industrial policies and laws and regulations in the field of network engineering, and to understand the impact of different social cultures on engineering activities.
	6-2、工程对社会可持续发展的影响：能分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6-2. The impact of engineering on the sustainable development of society: able to analyze and evaluate the impact of engineering practice on health, safety, environmental, legal and economic and social sustainable development, and understand the responsibilities.
7. **工程伦理和职业规范**：有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. Engineering ethics and professional norms: have the consciousness of serving the country and benefiting the people, have the humanities and social science literacy and social responsibility, be able to understand and practice engineering ethics, abide by engineering professional ethics, norms and relevant laws in engineering practice, and fulfill responsibilities.	7-1、人文社会科学素养：有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感； 7-1. Humanities and social science literacy: have the consciousness of serving the country and benefiting the people, have the humanities and social science literacy and social responsibility;
	7-2、职业道德和规范：能够理解和践行工程伦理。 7-2. Professional ethics and norms: to be able to understand and practice engineering ethics.
	7-3、社会责任感：在工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7-3. Social responsibility: Abide by engineering professional ethics, norms and relevant laws in engineering practice, and fulfill responsibilities.
8. **个人和团队**：能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. Individual and team: Be able to assume roles as individuals, team members, and principals in a diverse and multidisciplinary context.	8-1、个体角色：能够在多样化、多学科背景下的团队中，基于自身专业特长，发挥个体优势，有独立开展工作的能力。 8-1. Individual roles: Be able to give full play to your individual strengths based on their own professional strengths in a diverse and multidisciplinary team.
	8-2、团队成员角色：能够在多样化、多学科背景下的团队中，与团队其他成员有效沟通，合作共事。 8-2. Role of team members: Be able to communicate effectively with and cooperate with other members of the team in a diverse and multi-disciplinary background.

	8-3 负责人角色：能够在多样化、多学科背景下的团队中承担负责人的角色，能够组织、协调和指挥团队开展工作。 8-3 Principal role: able to assume the role of leader in a diverse and multidisciplinary team, able to organize, coordinate and direct the team to carry out work.
9. **沟通**：能够就复杂网络工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. Communication: able to effectively communicate and communicate with industry peers and the public on complex network engineering issues, including writing reports and design documents, presentations, clearly expressing or responding to instructions; able to communicate and communicate in a transcultural context, understand and respect language and cultural differences.	9-1、能就专业问题，以口头、文稿、图表等方式，准确表达自己的观点，回应质疑，理解与业界同行和社会公众交流的差异性。 9-1. Be able to accurately express their opinions, respond to questions on oral, manuscripts, and charts, and understand the differences in communication with industry peers and the public.
	9-2、了解专业领域的国际发展趋势、研究热点，理解和尊重世界不同文化的差异性和多样性； 9-2. Understand the international development trends and research hotspots in the professional field, and understand and respect the differences and diversity of different cultures in the world;
	9-3、具备跨文化交流的语言和书面表达能力，能就专业问题，在跨文化背景下进行基本沟通和交流，理解、尊重语言和文化差异。 9-3. Have the language and written expression ability of cross-cultural communication, be able to conduct basic communication and communication in a cross-cultural context, and understand and respect language and cultural differences.
10. **项目管理**：理解并掌握与工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。 10. Project management: to understand and master the management principles and economic decision-making methods related to engineering projects, and it can be applied in a multidisciplinary environment.	10-1、掌握工程项目中涉及的管理与经济决策方法，了解工程及产品全周期、全流程的成本构成，理解其中涉及的工程管理与经济决策问题； 10-1. Master the management and economic decision-making methods involved in engineering projects, understand the cost composition of the whole cycle and the whole process of engineering and products, and understand the engineering management and economic decision-making issues involved;
	10-2、能在多学科环境下(包括模拟环境)，在设计开发复杂网络工程问题解决方案过程中，运用工程管理与经济决策方法 10-2. Ability to use engineering management and economic decision-making methods in the process of designing and developing solutions to complex network engineering problems in a multi-disciplinary environment (including simulated environment)
11. **终身学习**：具有自主学习、终身学习和批判性思维的意识和能	11-1、终身学习的意识：能在社会发展的大背景下，认识到自主、终身学习和批判性思维的必要性 11-1. Consciousness of lifelong learning: being able to recognize

力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11. Lifelong learning: with the awareness and ability of self-directed learning, lifelong learning and critical thinking, able to understand the impact of extensive technological change on engineering and society, and adapt to new technological change.	the necessity of autonomy, lifelong learning and critical thinking in the context of social development 11-2、终身学习的能力：具有自主学习、终身学习和批判性思维的能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11-2. Lifelong learning ability: with the ability of self-directed learning, lifelong learning and critical thinking, able to understand the impact of extensive technological change on engineering and society, and adapt to new technological change.

三、专业核心课程

III. Core Courses

离散数学、数据结构、计算机组成原理、数据库原理、计算机网络体系结构、网络信息安全、操作系统、网络系统集成技术。

Discrete Mathematics、Data Structure 、Principle of Computer Organization、Database Principle、 Architecture of Computer Network、 Network Information Security、 Operating System 、Network Integration Technology。

四、特色课程

IV. Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
通信网概论 Introduction to Communication network		●				
网络信息安全 Network Information Security		●				
Web 应用程序开发 Web Application Development		●				
Android 应用开发技术		●				
智能机器人 Intelligent Robot	●	●	●		●	
网络综合实践 General Network Practice		●			●	●
区块链技术 Technology of Block Chain		●			●	●

五、学制与学位

V．Duration and Degree

学制：4 年

Program Duration：4 years

授予学位：工学学士学位

Degree conferred：Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">/</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="7">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="4">/</td><td rowspan="4">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category		学分要求 Credit		
			必修 Compulsory	限选 Elective	任选 Option
		其他 Others			
专业（类） 基础课 Disciplinary Courses	大类基础课 Major Group Courses 专业基础课 Discipline Courses		23.5	30	/
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course		13.5		
	方向模块课（网络安全） Directional Module Courses 方向模块课（移动互联网应用） Directional Module Courses		/		
集中实践 环节 Practical &Training	专业实践课 Specialized Practical Course		12	/	
	军事实践课 Military Practical Course		3		
	毕业实践课 Graduation Practice		14		
合计：161.5 Total：161.5			123.5	30	8

拓展素养学分要求
Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018300	专业导论(网络)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：网络工程课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（161.5 学分） In-class Teaching Courses （161.5 credits）			拓展素养（8 学分） Centralized Practicum （8credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	123.5	30	8	8	169.5

表 2：网络工程必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	

			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	

			20	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			21	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			22	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-2	
			23	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			24	1713030460	创新思维与创新方法(计算机类) Innovative minds and approaches（computer class）	2	考查		综合素养	32	24	8	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010430	离散数学 Discrete Mathematics Q	4	考试	√	综合素养	64	64	0	1-1	
			2	1713010630	C 语言程序设计 C language programming	3	考试	√	综合素养	48	48	0	1-1	
			3	1713022350	电路基础 Fundamentals of circuit	2.5	考试	√	综合素养	40	30	10	1-2	

			4	1713010460	数据结构 Data Structure	3	考试	√	综合素养	48	48	0	2-1	
			5	1713010470	数据结构实验 Data Structure Experiments	1	考查		综合素养	24	0	24	2-1	
			6	1713030500	软件工程 Software Engineering	3	考试	√	综合素养	48	48	0	2-1	
			7	1713010440	计算机组成原理 Principle of Computer Organization	3.5	考试	√	综合素养	56	56	0	2-2	
			8	1713010450	计算机组成原理实验 Principle of Computer Organization Experiments	0.5	考查		综合素养	12	0	12	2-2	
			9	1713010550	数据库原理 Database Principle	3	考试	√	综合素养	48	48	0	2-2	
	必修-专业及方向课程 Stream Courses		1	1713010560	数据库原理实验 Database Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			2	1713012570	计算机网络体系结构 Architecture of Computer Network	3	考试	√	综合素养	48	48	0	2-2	
			3	1713012580	计算机网络体系结构实验 Architecture of Computer Network	1	考查		综合素养	24	0	24	2-2	
			4	1713010770	网络信息安全 Network Information Security	2	考试	√	综合素养	32	32	0	3-1	
			5	1713010530	操作系统 Operating System	3	考试	√	综合素养	48	48	0	3-2	
			6	1713010540	操作系统实验 Operating System Experiments	1	考查		综合素养	24	0	24	3-2	

			7	1713012610	网络系统集成技术 Network Integration Technology	2	考试	√	综合素养	32	32	0	3-2	
			8	1713012620	网络系统集成技术实验 Network Integration Technology Experiment	0.5	考查		综合素养	12	0	12	3-2	
合计 Total						**95.5**				**1648**	**1302**	**346**		

表 3：网络工程 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713010690	Java 语言程序设计 Java Programming Design	2	考试		综合素养	32	32	0	1-2	
			2	1713010700	Java 语言程序设计实验 Java Programming Design Experiments	1	考查		综合素养	24	0	24	1-2	
			3	1713010710	互联网软件基础 Introduction to Internet Software	2	考查		综合素养	32	24	8	2-2	
			4	1713010750	算法设计与分析 Algorithms Design and Analysis	2	考查		综合素养	32	24	8	2-2	
			5	1713010840	多媒体技术 Multimedia Technology	3	考试		综合素养	48	40	8	2-2	
			6	1713010850	Unix/Linux 体系及编程 Unix/Linux Architecture and Programming	3	考试		综合素养	48	32	16	3-1	

			7	1713012630	网络工程专业英语 Network Engineering professional English	2	考查		综合素养	32	32	0	3-1	
			8	1713012640	通信网概论 Introduction to Communication	2	考试		综合素养	32	32	0	3-1	建议选修
			9	1713012730	网络管理技术 Network Management Technology	1.5	考查		综合素养	24	24	0	3-1	
			10	1713012740	网络管理技术实验 Network Management Technology Experiment	0.5	考查		综合素养	12	0	12	3-1	
			11	1713019350	工程项目管理(计算机) Project Management	1	考查		综合素养	16	16	0	3-1	建议选修
			12	1713030440	微机原理与汇编语言 Microcomputer principles and assemble language Programming	5	考试		综合素养	80	60	20	3-1	
			13	1713030470	鸿蒙应用开发基础 Harmony OS application development foundation	2	考查		综合素养	32	22	10	3-1	
			14	1713010510	计算机系统结构 Computer Architecture	2.5	考试		综合素养	40	40	0	3-2	建议选修
			15	1713010520	计算机系统结构实验 Computer Architecture Experiments	0.5	考查		综合素养	12	0	12	3-2	建议选修
			16	1713010910	嵌入式系统软件设计 Embedded Software Design	3	考查		综合素养	48	32	16	3-2	
			17	1713012500	智能机器人 Intelligent Robot	2	考查		综合素养	32	32	0	3-2	

			18	1713012510	智能机器人实验 Intelligent Robot Experiments	2	考查		综合素养	48	0	48	3-2	
			19	1713012710	网络编程基础 Foundation of Network Programming	1.5	考查		综合素养	24	24	0	3-2	
			20	1713012720	网络编程基础实验 Foundation of Network Programming Experiment	1	考查		综合素养	24	0	24	3-2	
			21	1713030560	Web 应用程序开发 Web Application Development	3	考查		综合素养	48	32	16	3-2	
	限选-专业及方向课程（网络安全） Stream Courses		1	1713012650	恶意软件分析技术 Technology of Malware Analysis	1	考查		综合素养	16	16	0	3-2	
			2	1713012660	恶意软件分析技术实验 Technology of Malware Analysis Experiment	1	考查		综合素养	24	0	24	3-2	
			3	1713030480	区块链技术 Technology of Block Chain	2	考查		综合素养	32	32	0	3-2	
			4	1713030490	区块链技术实验 Technology of Block Chain Experiment	0.5	考查		综合素养	12	0	12	3-2	
	限选-专业及方向课程（移动互联网应用） Stream Courses		1	1713010920	Android 应用开发技术 Andriod Application Development Technologies	1	考查		综合素养	16	16	0	3-2	
			2	1713010930	Android 应用开发技术实验 Andriod Application Development Technologies Experiments	1	考查		综合素养	24	0	24	3-2	

合计 Total					844	562	282		

表 4：网络工程任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”, “national and social courses”, “science and technology courses”, At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：网络工程 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010880	程序设计实训 Programming Practical Training	2	考查		综合素养	60	0	60	1-2	
			3	1713012760	网络规划与设计实践 Network Design and Programme Practice	2	考查		综合素养	60	0	60	2-2	
			4	1713012750	网络安全实践 Network Security Practice	2	考查		综合素养	60	0	60	3-1	

			5	1713030530	数据库设计实践 Database Design Practice	2	考查		综合素养	60	0	60	3-2	
			6	1713010870	操作系统课程实践 Practicum of Operating System Course Design	2	考查		综合素养	60	0	60	4-1	
			7	1713012770	网络综合实践 General Network Practice	2	考查		综合素养	60	0	60	4-1	
			8	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			9	1713030510	专业综合实习(网络工程) Integrated Major Practice(network engineering)	2	考查		综合素养	60	0	60	4-1	
			10	2113000460	毕业实习及毕业论文 Graduation Practice，Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**30**				**886**	**0**	**886**		

表 6：网络工程 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	**课程类别 Course Categories**	**类别备注 Course Categories Remark**	**序号 No.**	**课程编号 Course Code**	**课程名称 Course Name**	**学分 Credits**	**考核方式 Testing method**	**是否学位课 Degree Course**	**综合/拓展素养课程**	**学时 Teaching Hours**			**上课学期 Semesters**	**备注 Notes**
										合计 Total	**讲课 Lectures**	**实践 Practicum**		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	

			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	1713018300	专业导论(网络) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**6**				**144**	**144**	**0**		

八、实践学时学分
VIII． Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	是否工程实践与毕业设计相关课程 Engineering Practice & Graduation Project
1	大学物理实验 Physics Experiment	必修	32	2	●
2	军事训练 Military Training	必修	90	3	
3	体育 Physical Education	必修	128	4	
4	创新思维与创新方法 Innovative minds and approaches	必修	10	0.5	●
5	Java 语言程序设计实验 Java Programming Design Experiments	限选	24	1	●
6	数据结构实验 Data Structure Experiments	必修	24	1	●
7	计算机组成原理实验 Principle of Computer Organization Experiments	必修	12	0.5	●
8	操作系统实验 Operating System Experiments	必修	24	1	●
9	计算机网络体系结构实验 Architecture of Computer Network	必修	24	1	●
10	数据库原理实验 Database Principle Experiments	必修	24	1	●
11	网络系统集成技术实验 Network Integration Technology	必修	12	0.5	●
12	Unix/Linux 体系及编程 Unix/Linux Architecture and Programming	限选	16	1	●
13	计算机系统结构实验 Computer Architecture Experiments	限选	12	0.5	●
14	网络管理技术实验 Network Management Technology Experiment	限选	12	0.5	●
15	网络编程基础实验 Foundation of	限选	24	1	●
16	Web 应用程序开发 Web application Development	限选	16	1	●
17	算法设计与分析 Algorithms Design and Analysis	限选	8	0.5	●
18	Android 应用开发技术实验	限选	24	1	●

	Android Application Development Technologies Experiments				
19	恶意软件分析技术实验 Technology of Malware Analysis Experiment	限选	24	1	●
20	智能机器人实验 Intelligent Robot Experiments	限选	48	2	●
21	区块链技术实验 Technology of Block Chain	限选	12	0.5	●
22	网络规划与设计实践 Network Design and Programme Practice	必修	60	2	●
23	网络安全实践 Network Security Practice	必修	60	2	●
24	数据库设计实践 Database Design Practice	必修	60	2	●
25	操作系统课程实践 Practicum of Operating System Course Design	必修	60	2	●
26	专业综合实习(网络工程) Integrated Major Practice (network engineering)	必修	60	2	●
27	网络综合实践 General Network Practice	必修	60	2	●
28	劳动教育（实践） Labor Education	必修	16	1	
29	程序设计实训 Programming Practical Training	必修	60	2	●
30	毕业实习及毕业论文 Graduation Practice，Design& Thesis	必修	360	12	●
合计 Total			1396	51.5	

九、毕业要求对培养目标的支撑关系矩阵

IX．Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**	●			
毕业要求 1-2 **Graduation Requirements 1-2**	●			
毕业要求 1-3 **Graduation Requirements 1-3**	●			
毕业要求 1-4 **Graduation Requirements 1-4**	●			
毕业要求 2-1 **Graduation Requirements 2-1**	●	●		
毕业要求 2-2 **Graduation Requirements 2-2**	●	●		
毕业要求 2-3 **Graduation Requirements 2-3**	●	●		
毕业要求 2-4 **Graduation Requirements 2-4**	●	●		
毕业要求 3-1 **Graduation Requirements 3-1**	●	●	●	
毕业要求 3-2 **Graduation Requirements 3-2**	●	●	●	
毕业要求 3-3 **Graduation Requirements 3-3**	●	●	●	
毕业要求 3-4 **Graduation Requirements 3-4**	●	●	●	
毕业要求 4-1 **Graduation Requirements 4-1**	●	●		
毕业要求 4-2 **Graduation Requirements 4-2**	●	●		
毕业要求 4-3 **Graduation Requirements 4-3**	●	●		
毕业要求 4-4 **Graduation Requirements 4-4**	●	●		
毕业要求 5-1 **Graduation Requirements 5-1**	●	●		
毕业要求 5-2 **Graduation Requirements 5-2**	●	●		
毕业要求 5-3 **Graduation Requirements 5-3**	●	●		
毕业要求 6-1 **Graduation Requirements 6-1**			●	
毕业要求 6-2 **Graduation Requirements 6-2**			●	
毕业要求 7-1 **Graduation Requirements 7-1**			●	
毕业要求 7-2 **Graduation Requirements 7-2**			●	
毕业要求 7-3 **Graduation Requirements 7-3**			●	
毕业要求 8-1 **Graduation Requirements 8-1**				●
毕业要求 8-2 **Graduation Requirements 8-2**				●
毕业要求 8-3 **Graduation Requirements 8-3**				●
毕业要求 9-1 **Graduation Requirements 9-1**				●
毕业要求 9-2 **Graduation Requirements 9-2**				●

毕业要求 9-3 **Graduation Requirements 9-3**				●
毕业要求 10-1 **Graduation Requirements 10-1**	●			
毕业要求 10-2 **Graduation Requirements 10-2**	●			
毕业要求 11-1 **Graduation Requirements 11-1**				●
毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系与毕业培养要求的对应关系矩阵

X. Curriculum System and Graduation Training Requirements

序号	毕业要求及其指标点 课程名称	毕业要求 1				毕业要求 2				毕业要求 3				毕业要求 4				毕业要求 5			毕业要求 6		毕业要求 7			毕业要求 8			毕业要求 9			毕业要求 10		毕业要求 11	
		1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	7-3	8-1	8-2	8-3	9-1	9-2	9-3	10-1	10-2	11-1	11-2
1	高等数学	H				H																													
2	线性代数	H				H																													
3	概率论与数理统计	H							H																										
4	大学物理	H																																	
5	大学物理实验														H																				
6	离散数学	H					H																												
7	电路基础		H																																
10	计算机组成原理		H			H																													
11	数据结构			H			H			H																									
12	操作系统			H																															
13	数据库原理			H																															
14	C 语言程序设计									H		H																							
15	网络信息安全				H						H											H													
16	计算机网络体系结构				H			H			H																								
17	计算机系统结构					H																													
18	通信网概论				H			H																											
19	专业导论																					H								H				H	
20	工程项目管理																											H				H	H		
21	Java 语言程序设计										H																								
22	互联网软件基础									M																									
23	软件工程						H			H																						H			
24	多媒体技术												M																						
25	Unix/Linux 体系及编程						M																												
26	算法设计与分析				M																														
27	Web 应用程序开发												M																						
28	网络系统集成技术												H																			H			
29	网络工程专业英语							H																							H				
30	网络编程基础										M																								
31	网络管理技术																											H	H				H		
32	Android 应用开发技术										M																								
33	恶意软件分析技术											M																							
34	计算机组成原理实验											H		H				H																	
35	数据结构实验								H					H	H																				
36	操作系统实验													H	H			H																	
37	数据库原理实验													H				H																	
38	计算机网络体系结构实验															H				H															
39	计算机系统结构实验												H		H																				
40	Java 语言程序设计实验																			M															
41	智能机器人实验						M																												
42	网络系统集成技术实验															M																			

43	网络编程基础实验																	M																	
44	网络管理技术实验															M																			
45	Android 应用开发技术实验																	M																	
46	恶意软件分析技术实验																		M																
47	毕业实习及毕业论文							H	H				H									H						H	H	H					H
48	操作系统课程实践															H			H	H															
49	程序设计实训								H																	H	H								H
50	专业综合实习(网络工程)																									H	H			H					H
51	网络安全实践																H					H													H
52	网络规划与设计实践																H									H							H		H
53	网络综合实践																H		H	H															
54	军事理论																						H												
55	体育																									H	H								
56	思想道德修养与法律基础												H								H			H	H										
57	中国近现代史纲要																				H		H												
58	马克思主义基本原理																						H											H	
59	毛泽东思想和中国特色社会主义理论体系概论																				H														
60	大学英语（一般要求）																														H				
61	逻辑学																												H						
62	公文写作																												H						
63	军事训练																										H								
64	公益劳动																							H											
65	入学教育																						H											H	
66	形势与政策																				H														
67	大学生心理健康教育																							H	H										
68	职业生涯规划																							H	H									H	
69	就业指导																				H			H	H										
70	创新创业类课程											H																							H
71	习近平新时代中国特色社会主义思想概论																						H											H	

备注：

1.不同学期的同一门课程只需要填写一次，如大学英语（一）和大学英语（二）按“大学英语”填写即可。

2.所有的课程和教学活动都要列入表格，包括集中实践性环节。

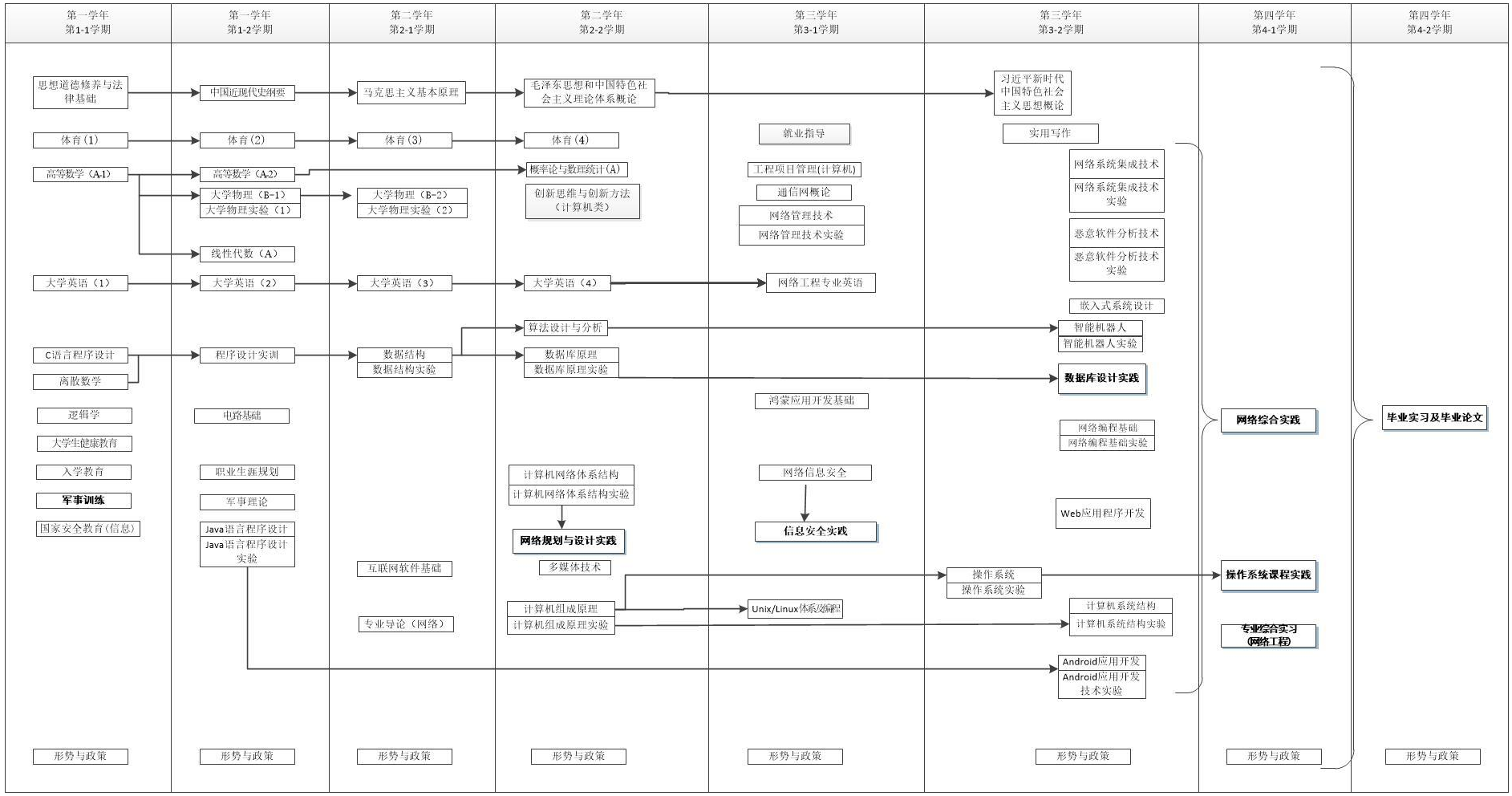
3.表格要清晰展示每门课程对毕业要求（指标点）的支撑程度，支撑度强的用“H”表示，支撑度中等的用“M”表示。支撑度中等的情况应尽可能少，不建议标注支撑度弱的情况。

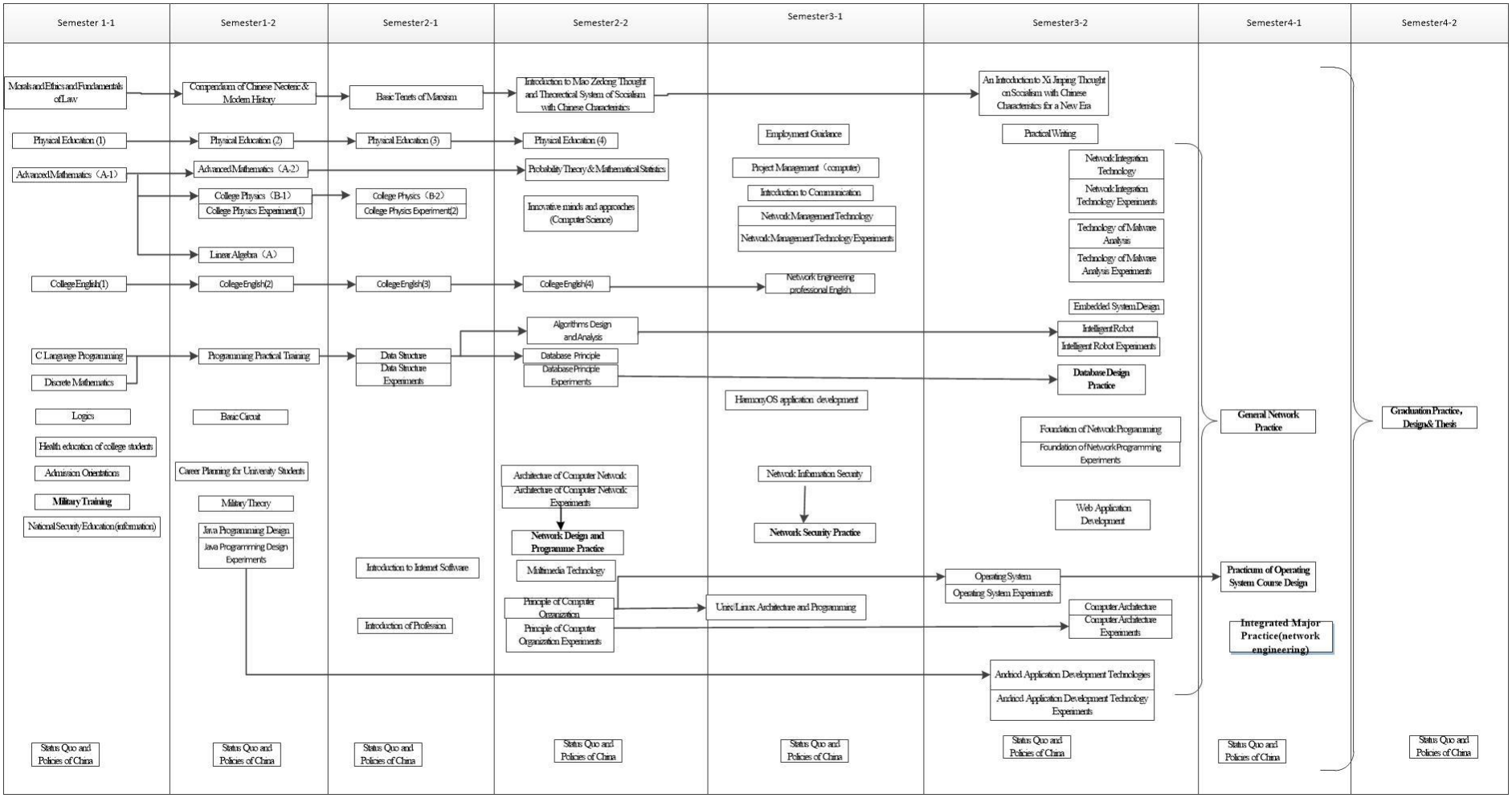
4.用于毕业要求（指标点）达成度评价计算的课程，在课程后面加★（如：航海模拟器★）。用于支撑毕业要求（指标点）的课程较多，可选取其中比较重要的一部分课程（包括但不限于专业核心课）用于达成度评价。原则上，每一个毕业要求（指标点）应至少有一门专业（类）基础课或专业方向课来支撑。

5.一门课程支撑的毕业要求（指标点）不宜过多，以 3-5 个为宜；每个毕业要求（指标点）对应的支撑课程数应当均衡。

6.课程目标相似的限选课组或任选课组，应共同支撑同一个毕业要求（指标点）。

十一、课程配置流程图
XI．Flowchart of Course Configuration




Semester 1-1
Semester1-2
Semester2-1
Semester2-2
Semester3-1
Semester3-2
Semester4-1
Semester4-2
Morals and Ethics and Fundamentals of Law
Compendium of Chinese Neoteric & Modern History
Basic Tenets of Marxism
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics
An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era
Physical Education (1)
Physical Education (2)
Physical Education (3)
Physical Education (4)
Employment Guidance
Practical Writing
Advanced Mathematics（A-1）
Advanced Mathematics（A-2）
Probability Theory & Mathematical Statistics
Project Management（computer）
Network Integration Technology
Network Integration Technology Experiments
College Physics（B-1）
College Physics Experiment(1)
College Physics（B-2）
College Physics Experiment(2)
Introduction to Communication
Innovative minds and approaches (Computer Science)
Network Management Technology
Network Management Technology Experiments
Technology of Malware Analysis
Technology of Malware Analysis Experiments
Linear Algebra（A）
College English(1)
College English(2)
College English(3)
College English(4)
Network Engineering professional English
Embedded System Design
Algorithms Design and Analysis
Intelligent Robot
Intelligent Robot Experiments
C Language Programming
Programming Practical Training
Data Structure
Data Structure Experiments
Database Principle
Database Principle Experiments
Database Design Practice
Discrete Mathematics
Harmony OS application development
Logics
Basic Circuit
General Network Practice
Graduation Practice, Design& Thesis
Foundation of Network Programming
Foundation of Network Programming Experiments
Health education of college students
Admission Orientation
Career Planning for University Students
Architecture of Computer Network
Architecture of Computer Network Experiments
Network Information Security
Military Training
Military Theory
Network Security Practice
Web Application Development
National Security Education (information)
Java Programming Design
Java Programming Design Experiments
Network Design and Programme Practice
Introduction to Internet Software
Multimedia Technology
Operating System
Operating System Experiments
Practicum of Operating System Course Design
Principle of Computer Organization
Principle of Computer Organization Experiments
Unix/Linux Architecture and Programming
Computer Architecture
Computer Architecture Experiments
Introduction of Profession
Integrated Major Practice(network engineering)
Android Application Development Technologies
Android Application Development Technology Experiments
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China
Status Quo and Policies of China

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

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网络工程教学指导委员会

大连海事大学教务处

2025年6月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Intelligence Science and Technology Major

[2025 级适用]

★智能科学与技术（080907T）

大连海事大学教务处

2025 年 9 月

智能科学与技术专业本科培养计划（2025 版）

Undergraduate Program for Intelligence Science and Technology

一、培养目标

I. Program Objectives

大连海事大学智能科学与技术专业，坚持“以成果为导向、以学生为中心、持续改进”办学理念，秉承“学汇百川、德济四海”教学理念，以“传授知识、培养能力、塑造价值、学生发展”为目标，致力于国家与地方经济建设和行业发展，使学生（知识目标）掌握自然科学、数学、计算机科学与技术基础、人工智能基础理论、基本方法、应用和工程技术知识，熟悉人工智能相关交叉学科知识；（能力目标）具备良好科学素养、实践能力、创新能力、系统思维能力、综合运用能力；（价值目标）成为具有家国情怀、全球视野、综合素养、创新能力的智能科学与技术领域高素质复合型人才；（学生发展）未来成长为人工智能研究、应用、工程方面的工程师、科学家、企业家，成为德智体美劳全面发展的社会主义建设者和接班人。

The Intelligence Science and Technology (IST) program at Dalian Maritime University adheres to the educational philosophy of “Outcome-Based Education, Student-Centered Learning, and Continuous Improvement.” It upholds the teaching philosophy of “Learning from diverse sources and Fostering virtue for global service.” The IST program **aims** at imparting knowledge, cultivating abilities, shaping values, and promoting student development. The IST program is dedicated to supporting national and local economic development and industry growth. (Knowledge Objective) It equips students with a solid foundation in natural sciences, mathematics, computer science and technology, fundamental theories and methods of Artificial Intelligence, as well as application, engineering and technical knowledge. Students will also become familiar with interdisciplinary subjects related to AI. (Ability Objective) Graduates will possess strong scientific literacy, practical skills, innovation capabilities, systems thinking, and the ability to integrate knowledge across various domains. (Value Objective) Graduates will become high-caliber, versatile talents in the field of intelligent science and technology, characterized by patriotism, global outlook, comprehensive personal qualities, and innovative spirit. (Student Development) .The IST program aims to nurture future professionals with the potential to grow into engineers, scientists, or entrepreneurs specializing in AI research, application, and engineering, ultimately becoming socialist builders and successors who excel in moral integrity, intellectual development, physical health, aesthetic appreciation, and a strong work ethic.

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
大连海事大学智能科学与技术专业，坚持“以成果为导向、以学生为中心、持续改进”办学理念，秉承“学汇百	1. （知识目标）掌握自然科学、数学、计算机科学与技术基础、人工智能基础理论、基本方法、应用和工程技术、交叉学科知识。 1. (Knowledge Objective) Acquire a solid foundation in

川、德济四海”教学理念，以“传授知识、培养能力、塑造价值、学生发展”为目标，致力于国家与地方经济建设和行业发展，使学生（知识目标）掌握自然科学、数学、计算机科学与技术基础、人工智能基础理论、基本方法、应用工程与技术知识，熟悉人工智能相关交叉学科知识；（能力目标）具备良好科学素养、实践能力、创新能力、系统思维能力、综合运用能力；（价值目标）成为具有家国情怀、全球视野、综合素养、创新能力的智能科学与技术领域高素质复合型人才；（学生发展）未来成长为人工智能研究、应用、工程方面的工程师、科学家、企业家，成为德智体美劳全面发展的社会主义建设者和接班人。 The Intelligence Science and Technology (IST) program at Dalian Maritime University adheres to the educational philosophy of“Outcome-Based Education, Student-Centered Learning, and Continuous Improvement.” It upholds the teaching philosophy of “Learning from diverse sources and Fostering virtue for global service.” The IST program aims at imparting knowledge, cultivating abilities, shaping values, and promoting student development. The IST program is dedicated to supporting national and local economic development and industry growth. (Knowledge Objective) It equips students with a solid foundation in	natural sciences, mathematics, computer science, and artificial intelligence, including theoretical principles, methodologies, engineering applications, and interdisciplinary knowledge.
	1. （能力目标）具备科学素养、实践能力、创新能力、系统思维能力。 2. (Ability Objective) Cultivate scientific literacy, hands-on problem-solving skills, innovative thinking, and systems-level reasoning.
	3. （价值目标）具有有家国情怀、全球视野、综合素养。 3. (Value Objective) Develop patriotic values, a global outlook, and well-rounded professionalism to serve societal needs.
	4. （学生发展）未来有潜力成长为工程师、科学家、企业家。 4. (Student Development) Prepare to excel as future engineers, scientists, or entrepreneurs in cutting-edge technological fields.

natural sciences, mathematics, computer science and technology, fundamental theories and methods of Artificial Intelligence, as well as applied engineering and technical knowledge. Students will also become familiar with interdisciplinary subjects related to AI. (Ability Objective) Graduates will possess strong scientific literacy, practical skills, innovation capabilities, systems thinking, and the ability to integrate knowledge across various domains. (Value Objective) Graduates will become high-caliber, versatile talents in the field of intelligent science and technology, characterized by patriotism, global outlook, comprehensive personal qualities, and innovative spirit. (Student Development) .The IST program aims to nurture future professionals with the potential to grow into engineers, scientists, and entrepreneurs specializing in AI research, application, and engineering, ultimately becoming socialist builders and successors who excel in moral integrity, intellectual development, physical health, aesthetic appreciation, and a strong work ethic.	

二、毕业要求

II. Graduation Requirements

毕业要求 **Graduation Requirements**	毕业要求分解指标点 **Observation Points**

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.**工程知识**：能够将数学、自然科学、计算、工程基础和专业知识用于解决复杂工程问题。 1.**Engineering knowledge:** To apply mathematics, science, computation, engineering, and expertise to the solution of complex engineering issues.	1-1 **数学和自然科学知识**：掌握数学和自然科学知识。 1-1 **Mathematics and Natural Science Knowledge:** To acquire natural science and mathematics, providing a strong foundation for advanced studies and practical applications in their field. 1-2 **工程基础知识**：掌握工程基础知识。 1-2 **Engineering Knowledge:** To master engineering principles and foundational knowledge necessary for the application and development of engineering solutions. 1-3 **专业知识**：掌握专业基础、专业知识。 1-3 **Professional Knowledge:** To master both foundational concepts and advanced knowledge.
2.**问题分析**：能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 2.**Problem analysis:** To apply mathematics, science, and engineering principles to identify, formalize, analyze complex engineering issues through literature review and guidance of sustainable development, and finally obtain efficacy conclusions.	2-1 **提出问题、形式化问题**：提出问题，形式化描述问题。 2-1 **Problem Identification and Formalization:** To identify and formalize complex problems.
	2-2 **分析问题、获得结论**：分析问题，研究文献，获得结论。 2-2 **Problem Analysis and Conclusion Drawing:**To critically analyze complex problems, conduct thorough literature reviews, and synthesize information to draw well-supported conclusions.
3. 设计/开发解决方案。能够针对复杂工程问题设计和开发解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3. **Design/development of solutions:** To design innovative solutions including designing systems, components,	3-1 **设计方案**：设计创新解决方案。 3-1 **Solution Design:** To conceive and develop creative, effective, and technically sound solutions to complex problems.
	3-2 **开发系统**：设计、开发、测试、维护软硬件系统。 3-2 **System Development:** To design, implement, test, and maintain integrated software and hardware systems.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
procedures that meet certain requirements for complex engineering issues. Meanwhile take social, health, security, law, culture, environmental aspects into account.	3-3 **考虑非技术因素：**考虑健康、安全、环境、全生命周期成本、净零碳要求、法律、伦理、社会、文化等影响因素。 3-3 **Consideration of Non-Technical Factors:** To demonstrate the ability to incorporate non-technical considerations, including public health and safety, environmental sustainability, full life-cycle costing, net-zero carbon goals, legal compliance, ethical responsibility, and social and cultural impacts, into the design and evaluation of engineering solutions.
4. **研究：**能够基于科学原理并采用科学方法对复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 4. **Research:** To study complex engineering issues through design, experiment, data analysis to obtain the sound conclusions, based on the science and scientific methodology.	4-1 **设计实验：**选择技术路线，设计实验方案。 4-1 **Experiment Design:** To possess the ability to choose suitable technical methods and design effective experimental schemes.
	4-2 **实施实验：**搭建实验系统，完成实验，采集数据。 4-2 **Experiment Implementation:** To construct experimental setups, conduct experiments, and systematically collect relevant data.
	4-3 **分析结果：**分析数据，得到合理有效结论。 4-3 **Result Analysis:** To interpret, evaluate experiment results, and draw meaningful, evidence-based conclusions.
5. **使用现代工具：**能够针对复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 5. **Modern tool usage:** To solve complex engineering issues by either selecting proper technology, resources, modern engineering and information tools or developing toolbox. Be able to simulate the process and predict the and results and to understand the solution limitations.	5-1 **选择与使用工具：**选择与使用恰当技术、资源、现代工程工具和信息技术工具。 5-1 **Selection and Use of Tools:** To choose and apply suitable technologies, resources, and modern tools, including engineering software, programming environments, data analysis platforms, and IT systems, to support problem-solving, design, and decision-making.
	5-2 **开发工具：**开发满足特定需求工具。 5-2 **Tool Development:** To design and implement customized tools to address specific technical or application-driven requirements.
6. **工程与可持续发展：**在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的	6-1 **背景知识：**了解专业技术标准体系、知识产权、产业政策和法律法规。 6-1 **Background Knowledge:** To understand the professional technical standards, intellectual property rights, industry policies, and relevant laws and regulations.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
责任。 6. **Engineering and sustainable development:** To analyze the engineering activities influences on the sustainable developments of health, security, environment, law, economics and society, understanding the corresponding liability.	6-2 **工程与社会：**分析和评价工程实践活动对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6-2 **Engineering and Society:** To assess the broader implications of engineering activities, including their effects on public health, safety, environmental quality, legal compliance, and socio-economic sustainability, and understand the ethical and professional responsibilities involved in engineering decision-making.
7. **工程伦理和职业规范：**有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7. **Ethics and profession norms:** Be aware of serving the nation and benefiting the people. Be aware of humanitarianism and social responsibility. Be able to understand and follow engineering ethics, comply with professional norms and laws.	7-1 **工程伦理：**理解和践行工程伦理。 7-1 **Engineering Ethics:** To understand the ethical principles in engineering practice and commit to professional conduct.
	7-2 **职业规范：**遵守工程职业道德、规范和相关法律。 7-2 **Professional Norms:** To demonstrate a commitment to upholding the ethical standards, professional conduct, and legal requirements.
8. **个人与团队：**能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8. **Team:** To take the responsibilities as a member or a leader in a multidisciplinary team.	8-1 **团队成员：**有效沟通，合作共事。 8-1 **Team Membership:** To function effectively as team members, demonstrating strong communication skills, collaborative problem-solving abilities, and work in multidisciplinary environments.
	8-2 **负责人：**组织、协调和指挥团队开展工作。 8-2 **Leadership:** To lead a team by effectively organizing tasks, coordinating team members, and directing collaborative efforts toward achieving common goals.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
9. **沟通：**能够就复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9. **Communication:** To communicate effectively with the peers and the common public on complex engineering issues, including drafting, statement, give or take orders. Be able to communicate in cross cultural context. Respect multiculturalism.	9-1 **交流与沟通：**撰写报告、设计文稿、陈述、发布或回应指令。 9-1 **Communication Skills：**To demonstrate effective communication skills in both written and oral forms, including the ability to write technical reports, prepare design documentation, deliver clear presentations, and accurately issue or respond to technical and operational instructions.
	9-2 **跨文化：**在跨文化背景下，沟通和交流专业问题。 9-2 **Cross-Cultural Communication:** To engage in effective communication and collaboration on technical and professional matters within diverse cultural settings.
10. **项目管理：**理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10. **Project management:** Understand the principles of project management and economic decision making. Be able to apply the principles in multidisciplinary solutions.	10-1 **原理和方法：**掌握工程项目管理原理与经济决策方法。 10-1 **Principles and Methods:** To demonstrate proficiency in the principles of engineering project management and economic decision-making methods.
	10-2 **运用：**在多学科环境下，运用原理和方法。 10-2 **Application:** To apply project management principles and economic decision-making methods in multidisciplinary contexts.
11. **终身学习：**具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11. **Life-long learning:** Be able to self-learning, lifelong learning, and critical thinking. Understand the technology innovation impacts on engineering and society. Be able to follow the innovation.	11-1 **学习意识：**认识自主学习、终身学习、批判性思维的必要性。 11-1 **Learning Awareness:** To understand the necessity and value of self-initiated learning, continuous personal and professional development, and the cultivation of critical thinking skills.
	11-2 **学习能力：**具备自主学习、批判性思维能力。 11-2 **Learning Ability:** To demonstrate strong self-directed learning skills and the capacity for critical thinking.

三、专业核心课程

III．Core Courses

数据结构、计算机组成原理、操作系统、计算机网络、数据库原理、人工智能、机器学习、信息系统分析与设计、人工神经网络及深度学习、大语言模型原理与应用、智能机器人。Data structure, Principle of Computer Organization, Operation System, Computer Network, Database Principle, Artificial Intelligence Principle, Machine Learning, Information System Analysis and Design, ANN and Deep Learning, Principles and Applications of Large Language Models, Intelligent Robot.

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disci plinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
脑与认知科学 Brain and Cognitive Science		●				
智能机器人操作系统 Intelligent Robot Operating System		●	●			
数据科学原理与应用 Data Science Principle and Application	●	●	●			
智能机器人 Intelligent Robot	●	●	●	●		
智能信息处理 Intelligent Information Processing	●		●			
自然语言处理导论 Introduction to Natural Language Processing			●	●		
机器视觉 Machine Vision			●	●		
大语言模型原理与应用 Principles and Applications of Large Language Models			●	●		
创新思维与创新方法 Innovative minds and approaches					●	
智能系统课程实践 Intelligent System Practice					●	
专业综合实习 Integrated Major Practice						●

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th colspan="2" rowspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">/</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="7">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
专业（类） 基础课 Disciplinary Courses	大类基础课 Major Group Courses 专业基础课 Discipline Courses	34.5	29.5	/
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course	15		
	方向模块课（智能系统与应用方向） Directional Module Courses 方向模块课（智能信息处理方向） Directional Module Courses	/		
集中实践 环节 Practical &Training	军事实践课 Military Practical Course	3	/	
	专业实践课 Specialized Practical Course	4		
	毕业实践课 Graduation Practice	14		
合计：165.5		128	29.5	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018270	专业导论(智能)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：智能科学与技术课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（165.5 学分） In-class Teaching Courses （165.5 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	128	29.5	8	8	173.5

表 2：智能科学与技术必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education		1	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	

			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			19	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	

			20	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			21	1713025480	创新思维与创新方法(智能&大数据) Innovative minds and approaches	2	考查		综合素养	32	22	10	2-2	
			22	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			23	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010430	离散数学 Discrete Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			2	1713010630	C 语言程序设计 C language programming	3	考试	√	综合素养	48	48	0	1-1	
			3	1713022350	电路基础 Fundamentals of circuit	2.5	考试	√	综合素养	40	30	10	1-2	

			4	1713010460	数据结构 Data Structure	3	考试	√	综合素养	48	48	0	2-1	
			5	1713010470	数据结构实验 Data Structure Experiments	1	考查		综合素养	24	0	24	2-1	
			6	1713019840	Python 程序设计与应用 Python Programming Design and Application	2	考试		综合素养	32	32	0	2-1	
			7	1713019850	Python 程序设计与应用实验 Python Programming Design and Application	1	考查	√	综合素养	24	0	24	2-1	
			8	1713010440	计算机组成原理 Principle of Computer Organization	3.5	考试	√	综合素养	56	56	0	2-2	
			9	1713010450	计算机组成原理实验 Principle of Computer Organization Experiments	0.5	考查		综合素养	12	0	12	2-2	
			10	1713010550	数据库原理 Database Principle	3	考试	√	综合素养	48	48	0	2-2	
			11	1713010560	数据库原理实验 Database Principle Experiments	1	考查	√	综合素养	24	0	24	2-2	
			12	1713010530	操作系统 Operating System	3	考试	√	综合素养	48	48	0	3-1	
			13	1713010540	操作系统实验 Operating System Experiments	1	考查		综合素养	24	0	24	3-1	
			14	1713010590	计算机网络 Computer Network	2.5	考试		综合素养	40	40	0	3-1	
			15	1713010600	计算机网络实验 Computer Network Experiments	0.5	考查		综合素养	12	0	12	3-1	

			16	1713010650	信息系统分析与设计 Information System Analysis and Design	3	考试	√	综合素养	48	48	0	3-1	
	必修-专业及方向课程 Stream Courses		1	1713012290	人工智能基础 Artificial Intelligence Principle	2	考试	√	综合素养	32	32	0	2-2	
			2	1713012300	人工智能基础实验 Artificial Intelligence Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			3	1713012350	模式识别 Pattern Recognition	2	考试	√	综合素养	32	32	0	2-2	
			4	1713012360	模式识别实验 Pattern Recognition Experiments	1	考查		综合素养	24	0	24	2-2	
			5	1713012310	智能信息处理` Intelligent Information Processing	2	考试	√	综合素养	32	32	0	3-1	
			6	1713012320	智能信息处理实验 Intelligent Information Processing Experiments	1	考查		综合素养	24	0	24	3-1	
			7	1713012370	机器学习 Machine Learning	2	考试	√	综合素养	32	32	0	3-1	
			8	1713012380	机器学习实验 Machine Learning Experiments	1	考查	√	综合素养	24	0	24	3-1	
			9	1713020820	人工神经网络及深度学习 ANN and Deep Learning	2	考试		综合素养	32	32	0	3-1	

			10	1713020830	人工神经网络及深度学习实验 ANN and Deep Learning Experiment	1	考查		综合素养	24	0	24	3-1	
合计 Total						108				1888	1420	468		

表 3：智能科学与技术 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-专业(类)基础课 Disciplinary Courses		1	1713010690	Java 语言程序设计 Java Programming Design	2	考试		综合素养	32	32	0	1-2	
			2	1713010700	Java 语言程序设计实验 Java Programming Design Experiments	1	考查		综合素养	24	0	24	1-2	
			3	1713012270	脑与认知科学 Brain and Cognitive Science	1.5	考试		综合素养	24	24	0	2-1	
			4	1713022800	脑与认知科学实验 Brain and Cognitive Science experiment	1	考查		综合素养	24	0	24	2-1	
			5	1713030380	计算方法与应用 Computational method and Application	3	考试		综合素养	48	32	16	2-1	
			6	1713010750	算法设计与分析 Algorithms Design and Analysis	2	考查		综合素养	32	24	8	2-2	

			7	1713012440	智能系统导论 Introduction to Intelligent Systems	2	考查		综合素养	32	32	0	2-2	
			8	1713010920	Android 应用开发技术 Android Application Development Technologies	1	考查		综合素养	16	16	0	3-2	
			9	1713010930	Android 应用开发技术实验 Android Application Development Technologies Experiments	1	考查		综合素养	24	0	24	3-2	
			10	1713012430	智能科学与技术专业英语 Professional English on Intelligence Sci. & Tech.	2	考查		综合素养	32	32	0	3-2	
	限选-专业及方向课程（智能系统与应用方向）Stream Courses		1	1713030360	智能机器人操作系统 Intelligent Robot Operating System	4	考查		综合素养	64	48	16	3-1	
			2	1713012500	智能机器人 Intelligent Robot	2	考试		综合素养	32	32	0	3-2	
			3	1713012510	智能机器人实验 Intelligent Robot Experiments	2	考查		综合素养	48	0	48	3-2	
			4	1713012520	机器视觉 Machine Vision	2.5	考查		综合素养	40	32	8	3-2	
	限选-专业及方向课程（智能信息处理方向）Stream		1	1713010850	Unix/Linux 体系及编程 Unix/Linux Architecture and Programming	3	考试		综合素养	48	32	16	3-1	

			2	1713012460	自然语言处理导论 Introduction to Natural Language Processing	2	考试		综合素养	32	24	8	3-1	
			3	1713020800	大数据分析及可视化 Big Data Analysis and Visualization Technology	2	考试		综合素养	32	32	0	3-2	
			4	1713020810	大数据分析及可视化实验 Big Data Analysis and Visualization Experiment	2	考查		综合素养	48	0	48	3-2	
			5	1713012490	数据科学原理与应用 Data Science Principle and Application	2	考查		综合素养	32	32	0	4-1	
合计 Total						38				664	424	240		

表 4：智能科学与技术任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。

The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses” , At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。

If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：智能科学与技术 实践环节课程设置及进程

Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010880	程序设计实训 Programming Practical Training	2	考查		综合素养	60	0	60	1-2	
			3	1713012550	智能系统课程实践 Intelligent System Practice	2	考查		综合素养	60	0	60	4-1	
			4	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			5	1713030370	专业综合实习(智数) Integrated Major Practice(ID)	2	考查	√	综合素养	60	0	60	4-1	
			6	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						22				646	0	646		

表 6：智能科学与技术 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	

			3	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	1713018270	专业导论(智能) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				**144**	**144**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	大学物理实验 Physics Experiment	必修	48	2	
2	军事训练 Military Training	必修	90	3	
3	体育 Physical Education	必修	128	4	
4	思想道德与法治 Ideology, Morality and the Rule of Law	必修	8	0.33	
5	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	必修	8	0.33	
6	马克思主义基本原理 Basic Tenets of Marxism	必修	8	0.34	
7	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	必修	8	0.33	
8	创新思维与创新方法 Innovative minds and approaches	必修	10	0.62	●
9	Java 语言程序设计实验 Java Programming Design Experiments	限选	24	1	●
10	数据结构实验 Data Structure Experiments	必修	24	1	●
11	计算机组成原理实验 Principle of Computer Organization Experiments	必修	12	0.5	●
12	操作系统实验 Operating System Experiments	必修	24	1	●
13	计算机网络实验 Computer Network Experiments	必修	12	0.5	●
14	数据库原理实验 Database Principle Experiments	必修	24	1	●
15	人工智能基础实验 Artificial Intelligence Principle Experiments	必修	24	1	●
16	机器学习实验 Machine Learning Experiments	必修	24	1	●
17	人工神经网络及深度学习实验 ANN and Deep Learning Experiment	必修	24	1	●
18	模式识别实验 Pattern Recognition Experiments	限选	24	1	●
19	Python 程序设计与应用实验 Python Programming Design and Application Experiment	限选	24	1	●
20	脑与认知科学实验 Brain and cognitive science experiment	限选	24	1	●
21	智能信息处理实验 Intelligent Information Processing	限选	24	1	●

	Experiments				
22	Android 应用开发技术实验 Android Application Development Technologies Experiments	限选	24	1	●
23	智能机器人操作系统 Intelligent Robot Operating System	限选	16	1	●
24	智能机器人实验 Intelligent Robot Experiments	限选	48	2	●
25	大数据分析及可视化实验 Big Data Analysis and Visualization Experiment	限选	48	2	●
26	程序设计实训 Programming Practical Training	必修	60	2	●
27	智能系统课程实践 Intelligent System Practice	必修	60	2	●
28	专业综合实习 Integrated Major Practice	必修	60	2	●
29	毕业实习及毕业设计（论文） Graduation Practice， Design& Thesis	必修	360	12	●
合计 Total			**1272**	**46.95**	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**	●			
毕业要求 1-2 **Graduation Requirements 1-2**	●			
毕业要求 1-3 **Graduation Requirements 1-3**	●			
毕业要求 2-1 **Graduation Requirements 2-1**		●		
毕业要求 2-2 **Graduation Requirements 2-2**		●		
毕业要求 3-1 **Graduation Requirements 3-1**		●		
毕业要求 3-2 **Graduation Requirements 3-2**		●		
毕业要求 3-3 **Graduation Requirements 3-3**			●	
毕业要求 4-1 **Graduation Requirements 4-1**		●		
毕业要求 4-2 **Graduation Requirements 4-2**		●		
毕业要求 4-3 **Graduation Requirements 4-3**		●		
毕业要求 5-1 **Graduation Requirements 5-1**		●		
毕业要求 5-2 **Graduation Requirements 5-2**		●		
毕业要求 6-1 **Graduation Requirements 6-1**	●		●	●
毕业要求 6-2 **Graduation Requirements 6-2**			●	●
毕业要求 7-1 **Graduation Requirements 7-1**			●	
毕业要求 7-2 **Graduation Requirements 7-2**			●	

毕业要求 8-1 **Graduation Requirements 8-1**				●
毕业要求 8-2 **Graduation Requirements 8-2**				●
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**				●
毕业要求 10-1 **Graduation Requirements 10-1**	●	●		●
毕业要求 10-2 **Graduation Requirements 10-2**		●		●
毕业要求 11-1 **Graduation Requirements 11-1**			●	●
毕业要求 11-2 **Graduation Requirements 11-2**			●	●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

		毕业要求 1			毕业要求 2		毕业要求 3			毕业要求 4			毕业要求 5		毕业要求 6		毕业要求 7		毕业要求 8		毕业要求 9		毕业要求 10		毕业要求 11	
序号	课名	1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era								H									H							H	
2	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History								H									H				H				
3	思想道德与法治 Ideology, Morality and the Rule of Law								H						H			H								
4	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics								H									H				H				
5	马克思主义基本原理 Basic Tenets of Marxism								H									H				H				
6	大学英语 College English																		H		H	H				
7	高等数学 Advanced Mathematics	H			H	H																				
8	概率论与数理统计 Probability and Statistics	H			H	H																				
9	线性代数 Linear Algebra	H			H	H																				
10	大学物理 College Physics	H			H	H																				
11	大学物理实验 Physics Experiment									H	H	H														
12	军事理论 Military Theory								H									H				H				
13	军事训练																		H	H	H					

	Military Training																								
14	体育 Physical Education																	H	H	H					
15	逻辑学 Logic																	H		H				H	
16	实用写作 Factual writing																	H		H	H				
17	创新思维与创新方法★ Innovative minds and approaches						H																	H	H
18	创新与创业 Innovation and Entrepreneurship													H	H	H									
19	国家与社会 Nation and Society														H		H				H				
20	科学与技术 Science and Technology																								
21	人文与艺术 Humanities and Art								H						H						H				
22	离散数学 Discrete Mathematics	H			H	H																			
23	C 语言程序设计 C language programming						H	H						H											
24	Java 语言程序设计 Java Programming Design						H	H						H											
25	Java 语言程序设计实验 Java Programming Design Experiments									H	H	H													
26	数据结构 Data Structure		H	H									H												
27	数据结构实验 Data Structure Experiments									H	H	H													
28	计算机组成原理 Principle of Computer Organization		H	H									H												
29	计算机组成原理实验 Principle of Computer Organization Experiments									H	H	H													
30	操作系统 Operating System		H	H									H												
31	操作系统实验 Operating System Experiments									H	H	H													
32	计算机网络		H	H									H												

	Computer Network																									
33	计算机网络实验 Computer Network Experiments									H	H	H														
34	数据库原理 Database Principle		H	H									H													
35	数据库原理实验 Database Principle Experiments									H	H	H														
36	人工智能基础★ Artificial Intelligence Principle		H	H									H													
37	人工智能基础实验 Artificial Intelligence Principle Experiments									H	H	H														
38	机器学习 Machine Learning		H	H									H													
39	机器学习实验 Machine Learning Experiments									H	H	H														
40	人工神经网络及深度学习 ANN and Deep Learning		H	H									H													
41	人工神经网络及深度学习实验 ANN and Deep Learning Experiment									H	H	H														
42	信息系统分析与设计★ Information System Analysis and Design							H									H						H	H		
43	模式识别 Pattern Recognition		H	H									H													
44	模式识别实验★ Pattern Recognition Experiments									H	H	H														
45	计算方法及应用 Calculation Method and Application			H	H	H																				
46	Python 程序设计与应用 Python Programming Design and Application		H	H									H													
47	Python 程序设计与应用实验 Python Programming									H	H	H														

	Design and Application Experiment																									
48	算法设计与分析★ Algorithms Design and Analysis			H	H	H																				
49	Unix/Linux 体系及编程 Unix/Linux System and Programming				H	H				H																
50	智能系统导论★ Introduction to Intelligent Systems												H	H		H										
51	脑与认知科学 Brain and Cognitive Science		H	H									H													
52	脑与认知科学实验 Brain and cognitive science experiment									H	H	H														
53	智能信息处理 Intelligent Information Processing		H	H									H													
54	智能信息处理实验 Intelligent Information Processing Experiments		H	H									H													
55	Android 应用开发技术 Android Application Development		H	H									H													
56	Android 应用开发技术实验 Android Application Development Technologies Experiments									H	H	H														
57	智能科学与技术专业英语★ Professional English on Intelligence Sci. & Tech.																	H		H	H					
58	机器视觉 Machine Vision		H	H									H													
59	自然语言处理导论 Introduction to Natural Language Processing		H	H									H													
60	智能机器人操作系统★						H	H	H																	

	Intelligent Robot Operating System																									
61	智能机器人 Intelligent Robot		H	H									H													
62	智能机器人实验 Intelligent Robot Experiments									H	H	H														
63	大语言模型原理与应用 Principles and Applications of Large Language Models		H	H									H													
64	大数据分析及可视化技术 Big Data Analysis and Visualization		H	H									H													
65	大数据分析及可视化实验 Big Data Analysis and Visualization Experiment									H	H	H														
66	数据科学原理与应用 Data Science Principle and Application		H	H									H													
67	程序设计实训 Programming Practical Training						H	H						H												
68	智能系统课程实践 Intelligent System Practice							H											H	H						
69	毕业实习及毕业设计（论文） Graduation Practice，Design& Thesis							H																	H	H
70	专业综合实习 Integrated Major Practice													H			H	H								
71	劳动教育（理论） Labor Education (Theory)														H	H	H									
72	劳动教育（实践） Labor Education (Practice)																		H	H	H					
73	大学生健康教育 Health education of college students								H							H	H									
74	国家安全教育 National Security Education								H									H				H				
75	形势与政策 Status Quo and Policies of China								H									H				H				
76	入学教育																				H				H	H

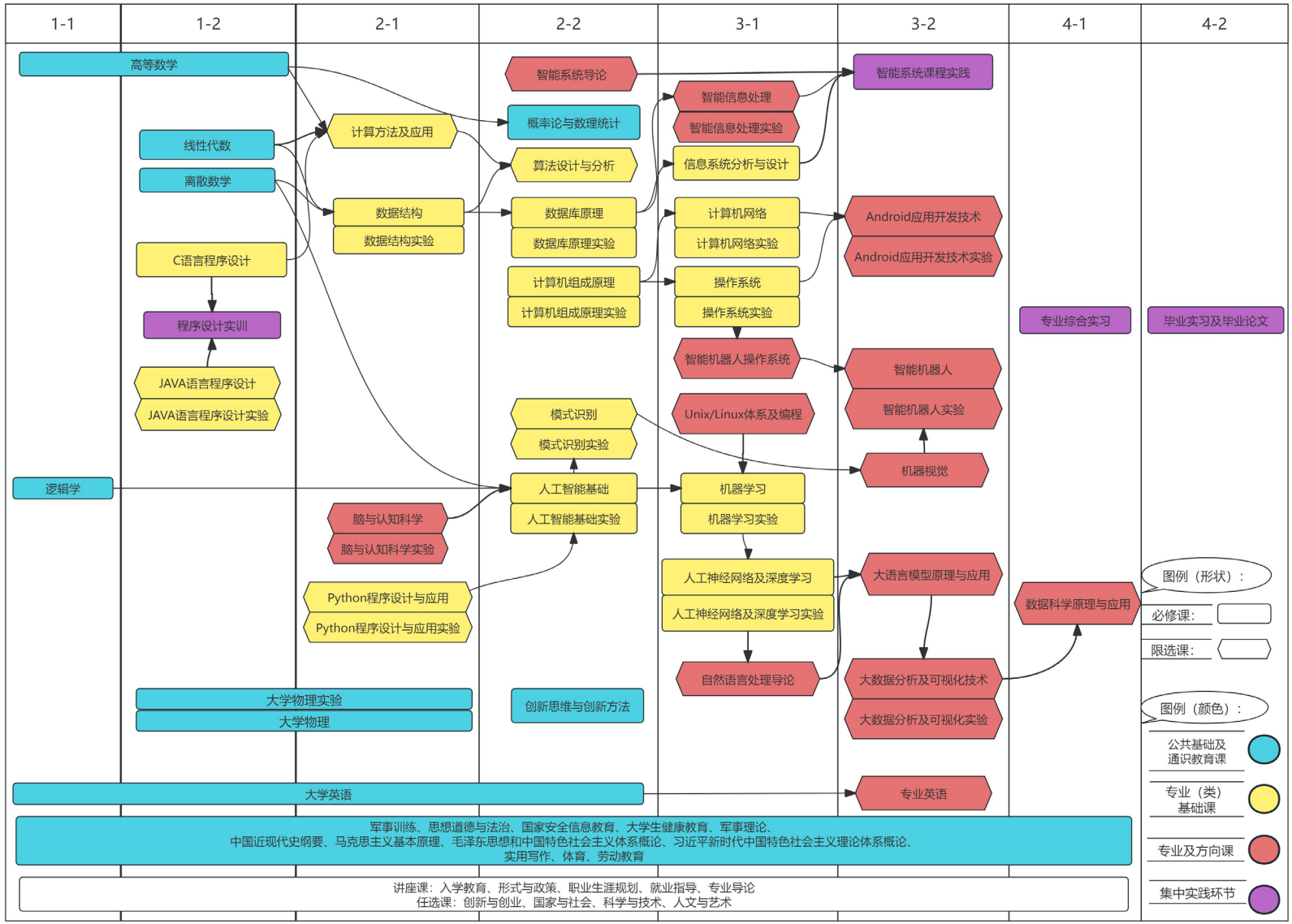
	Admission Orientations																								
77	专业导论（智能） Introduction of Profession			H																				H	H
78	职业生涯规划 Career Planning for University Students														H		H	H							
79	就业指导 Career Guidance for University Students																				H				H	H

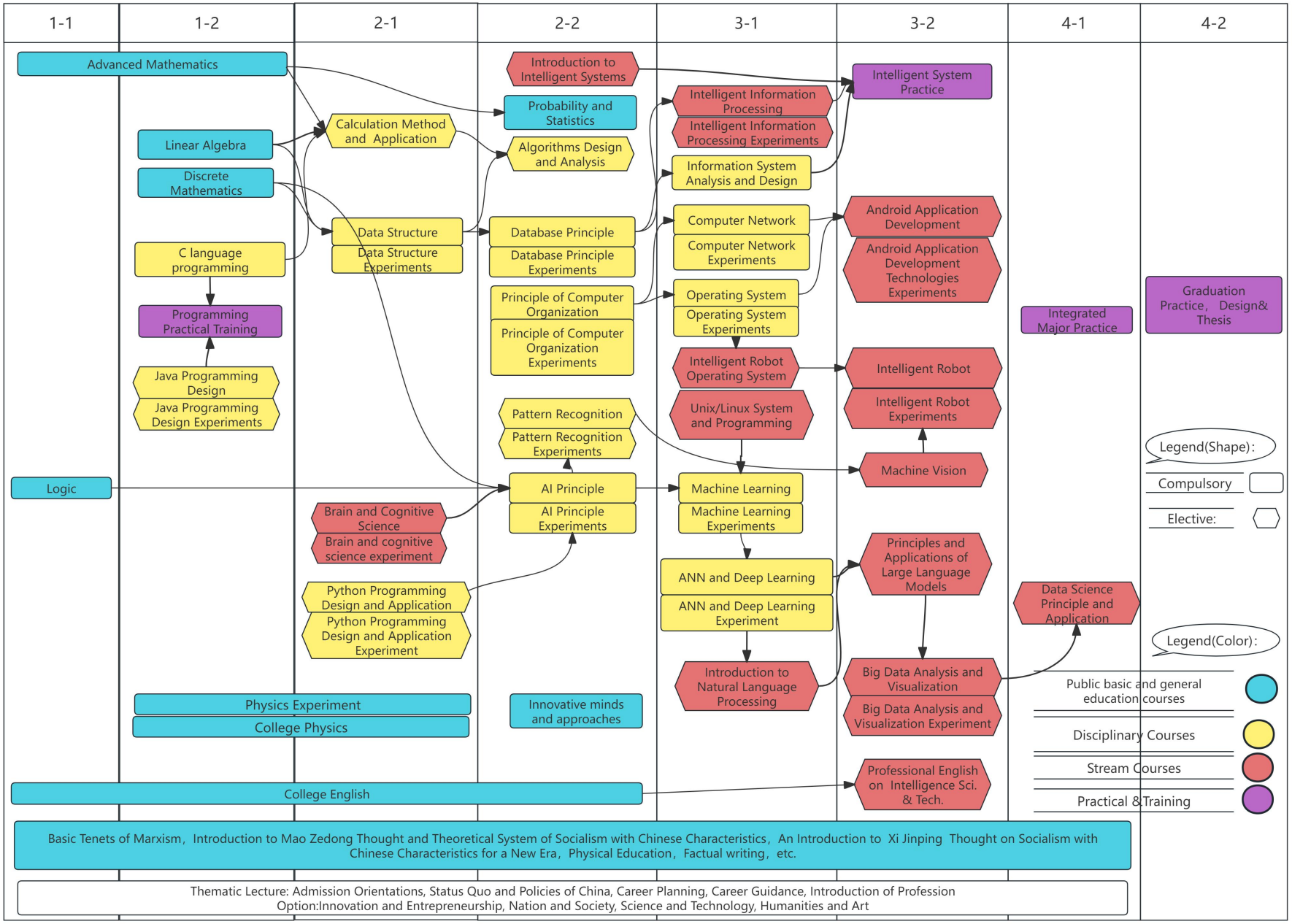
图例：

	公共基础及通识教育课 Public basic and general education courses	综合素养学分
	专业（类）基础课 Disciplinary Courses	
	专业及方向课 Stream Courses	
	集中实践环节 Practical &Training	
	公共基础及通识教育课 Public basic and general education courses	拓展素养学分
	讲座课 Thematic Lecture	
红字 Red	必修课 Compulsory	
黑字 Black	限选课 Elective	
蓝字 Blue	任选课 Option	

十一、课程配置流程图

XI. Flowchart of Course Configuration


1-1
1-2
2-1
2-2
3-1
3-2
4-1
4-2
高等数学
线性代数
离散数学
C语言程序设计
程序设计实训
JAVA语言程序设计
JAVA语言程序设计实验
逻辑学
大学物理实验
大学物理
计算方法及应用
数据结构
数据结构实验
脑与认知科学
脑与认知科学实验
Python程序设计与应用
Python程序设计与应用实验
智能系统导论
概率论与数理统计
算法设计与分析
数据库原理
数据库原理实验
计算机组成原理
计算机组成原理实验
模式识别
模式识别实验
人工智能基础
人工智能基础实验
创新思维与创新方法
智能信息处理
智能信息处理实验
信息系统分析与设计
计算机网络
计算机网络实验
操作系统
操作系统实验
智能机器人操作系统
Unix/Linux体系及编程
机器学习
机器学习实验
人工神经网络及深度学习
人工神经网络及深度学习实验
自然语言处理导论
智能系统课程实践
Android应用开发技术
Android应用开发技术实验
智能机器人
智能机器人实验
机器视觉
大语言模型原理与应用
大数据分析及可视化技术
大数据分析及可视化实验
专业英语
专业综合实习
数据科学原理与应用
毕业实习及毕业论文
图例（形状）：
必修课：
限选课：
图例（颜色）：
公共基础及通识教育课
专业（类）基础课
专业及方向课
集中实践环节
大学英语
军事训练、思想道德与法治、国家安全信息教育、大学生健康教育、军事理论、
中国近现代史纲要、马克思主义基本原理、毛泽东思想和中国特色社会主义体系概论、习近平新时代中国特色社会主义理论体系概论、
实用写作、体育、劳动教育
讲座课：入学教育、形式与政策、职业生涯规划、就业指导、专业导论
任选课：创新与创业、国家与社会、科学与技术、人文与艺术


1-1
1-2
2-1
2-2
3-1
3-2
4-1
4-2
Advanced Mathematics
Linear Algebra
Discrete Mathematics
C language programming
Programming Practical Training
Java Programming Design
Java Programming Design Experiments
Logic
Calculation Method and Application
Data Structure
Data Structure Experiments
Brain and Cognitive Science
Brain and cognitive science experiment
Python Programming Design and Application
Python Programming Design and Application Experiment
Physics Experiment
College Physics
Introduction to Intelligent Systems
Probability and Statistics
Algorithms Design and Analysis
Database Principle
Database Principle Experiments
Principle of Computer Organization
Principle of Computer Organization Experiments
Pattern Recognition
Pattern Recognition Experiments
AI Principle
AI Principle Experiments
Innovative minds and approaches
Intelligent Information Processing
Intelligent Information Processing Experiments
Information System Analysis and Design
Computer Network
Computer Network Experiments
Operating System
Operating System Experiments
Intelligent Robot Operating System
Unix/Linux System and Programming
Machine Learning
Machine Learning Experiments
ANN and Deep Learning
ANN and Deep Learning Experiment
Introduction to Natural Language Processing
Intelligent System Practice
Android Application Development
Android Application Development Technologies Experiments
Intelligent Robot
Intelligent Robot Experiments
Machine Vision
Principles and Applications of Large Language Models
Big Data Analysis and Visualization
Big Data Analysis and Visualization Experiment
Professional English on Intelligence Sci. & Tech.
Integrated Major Practice
Data Science Principle and Application
Graduation Practice, Design& Thesis
Legend(Shape):
Compulsory
Elective:
Legend(Color):
Public basic and general education courses
Disciplinary Courses
Stream Courses
Practical &Training
College English
Basic Tenets of Marxism, Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics, An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, Physical Education, Factual writing, etc.
Thematic Lecture: Admission Orientations, Status Quo and Policies of China, Career Planning, Career Guidance, Introduction of Profession
Option:Innovation and Entrepreneurship, Nation and Society, Science and Technology, Humanities and Art

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84724073 84729468

教学院长：84724289

教 务 处：84723005

智能科学与技术专业负责人：宁博

智能科学与技术教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Data Science and Big Data Technology Major

[2025 级适用]

★数据科学与大数据技术（080910T）

大连海事大学教务处

2025 年 9 月

数据科学与大数据技术专业本科培养计划（2025 版）

Undergraduate Program for Data Science and Big Data Technology Major

一、培养目标

I. Program Objectives

本专业培养具有良好道德与修养，遵守法律法规，具有社会和环境意识，掌握数学与自然科学基础知识以及与计算系统相关的基本理论、基本知识、基本技能和基本方法，具有包括计算思维在内的科学思维能力和设计计算解决方案、实现基于计算原理的系统的能力，能清晰表达，在团队中有效发挥作用，综合素质良好，能通过继续教育或其他的终身学习途径拓展自己的能力，了解和紧跟学科专业发展，掌握数据科学与大数据技术专业的完整理论知识体系与应用分析技能，能够从事大数据有关教学、开发和应用的复合型技术人才。

The major aims to train high-quality specialized technical talents who have employment competitiveness in the research, development, deployment, and applications of computer systems and other related fields. Students are required to have good morals and cultivation, obey laws and regulations, have social and environmental consciousness, master the basic knowledge of mathematics and natural science and the basic theory, basic knowledge, basic skills and basic methods related to computing system. They are trained to obtain the ability of scientific thinking, including computational thinking, and the ability of designing calculation solutions and realizing the systems based on the principle of calculation. They are clutivated to be able to express clearly, play an effective role in the team, and have a good comprehensive quality. They are expected to expand their own ability through continuing education or other life-long learning ways, and understand and keep up with the development of the discipline. Students will master the complete theoretical knowledge system and application analysis skills of data science and big data technology major, and will be cultivated as the practical and complex technical talents who can engage in teaching, development and application of big data.

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有良好道德与修养，遵守法律法规，具有社会和环境意识，掌握数学与自然科学基础知识以及与计算系统相关的基本理论、基本知识、基本技能和基本方法，具有包括计算思维在内的科学思维能力和设计计算解决方案、实现基于计算原理	1.培养学生具有良好道德与修养，遵守法律法规，具有社会和环境意识。 1.To cultivate students with good morals and integrity, who comply with laws and regulations, and possess social and environmental awareness.

<table>
<tr><td rowspan="4">的系统的能力，能清晰表达，在团队中有效发挥作用，综合素质良好，能通过继续教育或其他的终身学习途径拓展自己的能力，了解和紧跟学科专业发展，掌握数据科学与大数据技术专业的完整理论知识体系与应用分析技能，能够从事大数据有关教学、开发和应用的复合型技术人才。
The major aims to train high-quality specialized technical talents who have employment competitiveness in the research, development, deployment, and applications of computer systems and other related fields. Students are required to have good morals and cultivation, obey laws and regulations, have social and environmental consciousness, master the basic knowledge of mathematics and natural science and the basic theory, basic knowledge, basic skills and basic methods related to computing system. They are trained to obtain the ability of scientific thinking, including computational thinking, and the ability of designing calculation solutions and realizing the systems based on the principle of calculation. They are clutivated to be able to express clearly, play an effective role in the team, and have a good comprehensive quality. They are expected to expand their own ability through continuing education or other life-long learning ways, and understand and keep up with the development of the discipline. Students will master the complete theoretical knowledge system and application analysis skills of data science and big data technology major, and will be cultivated as the practical and complex technical talents who can engage in teaching, development and application of big data.</td><td>2.掌握数学与自然科学基础知识以及与计算系统相关的基本理论、基本知识、基本技能和基本方法，具有包括计算思维在内的科学思维能力和设计计算解决方案、实现基于计算原理的系统的能力。
2.To acquire fundamental knowledge in mathematics and natural sciences, as well as master the basic theories, principles, skills, and methodologies related to computing systems. To develop scientific thinking abilities, including computational thinking, along with the capability to design computational solutions and implement systems based on computing principles.</td></tr>
<tr><td>3. 综合素质良好，能通过继续教育或其他的终身学习途径拓展自己的能力，了解和紧跟学科专业发展.
3.To possess well-rounded qualities, with the ability to enhance one's competencies through continuing education or other lifelong learning pathways, while staying informed and keeping pace with the development of the discipline.</td></tr>
<tr><td>4. 掌握数据科学与大数据技术专业的完整理论知识体系与应用分析技能，能够从事大数据有关教学、开发和应用的复合型技术。
4.To master the comprehensive theoretical knowledge system and applied analytical skills in Data Science and Big Data Technology, and to become a versatile technical professional capable of engaging in big data-related teaching, development, and application.</td></tr>
</table>

二、毕业要求

II. Graduation Requirements

数据科学与大数据技术专业学生毕业时应掌握和具备以下几方面的知识与能力：

Students graduated from the DSBD major should possess the following knowledge and abilities：

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识： 能够运用数学、自然科学、工程基础知识和专业知识解决数据科学与大数据技术领域复杂工程问题，具备良好的科学、专业、人文素养和工程意识； **1. Engineering knowledge:** Be able to apply mathematics, natural science, the basic knowledge of engineering, and professional knowledge to the solution of complex engineering problems in Data Science and Big Data Technology engineering field, and establish good scientific, professional, humanistic literacy and engineering awareness;	1-1 能够运用数学、自然科学、工程基础知识和专业知识解决数据科学与大数据技术领域复杂工程问题； 1-1 To apply knowledge of mathematics, natural sciences, engineering fundamentals, and specialized expertise to solve complex engineering problems in the field of Data Science and Big Data Technology。
	1-2 具备良好的科学、专业、人文素养和工程意识 1-2 To possess sound scientific, professional, and humanistic literacy as well as engineering awareness.
2. 问题分析： 能够应用数学、自然科学、工程基础和数据科学与大数据技术基本原理，通 过文献研究识别、表达和分析数据科学与大数据技术领域的复杂工程问题，获得有效结 论； **2. Problem analysis:** Identify, express and analyze the complicated issues in the field of Data Science and Big Data Technology engineering by applying the basic principles of mathematics, natural science, engineering foundation, and intelligence science as well as by researching academic literature in order to obtain sound conclusions;	2-1 能够应用数学、自然科学、工程基础和数据科学与大数据技术基本原理 2-1 Identify, express and analyze the complicated issues in the field of Data Science and Big Data Technology engineering by applying the basic principles of mathematics, natural science
	2-2 能够通过文献研究识别、表达和分析数据科学与大数据技术领域的复杂工程问题，获得有效结论 2-2 Capable of identifying, expressing, and analyzing complex engineering problems in the fields of data science and big data technology through literature research, and obtaining effective conclusions
3. 设计/开发解决方案：能够设计针对复杂数据科学与大数据技术工程问题的解决方案， 设计满足于特定需求的系统、程序或算法，并能够在设计环节中体现出创新意识，考虑 社会、健康、安全、法律、文化、环境等问题； **3. Design/development of solutions:** Design solutions for complicated Data	3-1 能够设计针对复杂数据科学与大数据技术工程问题的解决方案 3-1 Design solutions for complicated Data Science and Big Data Technology engineering issues

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
Science and Big Data Technology engineering issues, including designing systems, programs, and algorithms that meet specific needs. Exhibit creativeness in the design process, taking society, health, security, law, culture, environment into considerations;	3-2 能够设计满足于特定需求的系统、程序或算法 3-2 Capable of designing systems, programs, and algorithms that meet specific needs
	3-3 能够在设计环节中体现出创新意识， 考虑 社会、健康、安全、法律、文化、环境等问题 3-3 Exhibit creativeness in the design process, taking society, health, security, law, culture, environment into considerations;
4. 研究：能够基于数据科学与大数据技术工程领域相关原理以及采用科学的方法通过设 计、实施实验方案， 分析、解释实验结果与数据对复杂的数据科学与大数据技术工程问 题进行研究，并通过综合各方面的信息得出合理有效的结论； **4. Investigation:** Be able to study complex issues through designing, implementing experimental schemes, analyzing, interpreting experimental results and data, based on the related principles in the field of intelligence engineering and adopting scientific methods, and draw reasonable and effective conclusions by synthesizing all aspects of information;	4-1 能够基于数据科学与大数据技术工程领域相关原理以及采用科学的方法通过设计、实施实验方案 4-1 Ability to design and implement experimental plans based on principles related to data science and big data technology engineering, as well as using scientific methods
	4-2 能够分析、解释实验结果与数据对复杂的数据科学与大数据技术工程问题进行研究，并通过综合各方面的信息得出合理有效的结论 4-2 Be able to analyze and interpret experimental results and data to study complex data science and big data technology engineering problems, and draw reasonable and effective conclusions by integrating information from various aspects
5. 使用现代工具： 能够在解决数据科学与大数据技术工程领域复杂问题时，合理使用和开 发相关的技术、资源、程序、模拟软件、工程工具和信息技术工具等， 并理解其局限性; **5. Modern tool usage:** Be able to solve complex engineering problems in the field of Data Science and Big Data Technology engineering, reasonably use and develop related technologies, resources, programs, simulation software, engineering tools and information technology tools, and understand their limitations;	5-1 能够在解决数据科学与大数据技术工程领域复杂问题时，合理使用和开发相关的技术、资源、程序、模拟软件、工程工具和信息技术工具等 5-1 Be able to solve complex engineering problems in the field of Data Science and Big Data Technology engineering, reasonably use and develop related technologies, resources, programs, simulation software, engineering tools
	5-2 能够合理解决数据科学与大数据技术工程领域复杂问题的同时理解其局限性 5-2 Be able to reasonably solve complex problems in the fields of data science and big data technology engineering while understanding their limitations

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
6. 工程与社会：能够基于数据科学与大数据技术工程领域相关的工程背景知识进行合理分 析，评价数据科学与大数据技术工程实践和复杂工程问题解决方案对社会、健康、安全、 法律以及文化的影响，并理解应承担的责任； **6. The engineering and society:** Be able to conduct rational analysis based on relevant engineering background knowledge in the field of Data Science and Big Data Technology, evaluate the impact of Data Science and Big Data Technology engineering practices and complex engineering solutions on society, health, security, law and culture, and understand their responsibilities;	6-1 能够基于数据科学与大数据技术工程领域相关的工程背景知识进行合理分析 6-1 Be able to conduct rational analysis based on relevant engineering background knowledge in the field of Data Science and Big Data Technology
	6-2 能够评价数据科学与大数据技术工程实践和复杂工程问题解决方案对社会、健康、安全、 法律以及文化的影响，并理解应承担的责任 6-2 Be able to evaluate the impact of Data Science and Big Data Technology engineering practices and complex engineering solutions on society, health, security, law and culture, and understand their responsibilities
7. 环境与可持续发展：能够理解和评价针对复杂数据科学与大数据技术工程问题的工程实 践对环境、社会可持续发展的影响； **7. Environment and sustainability:** Understand and evaluate the sustainability and impact of engineering work in the solution of complex Data Science and Big Data Technology engineering problems in societal and environmental contexts;	7-1 能够理解和评价针对复杂数据科学与大数据技术工程问题的工程实践对环境的影响 7-1 Ability to understand and evaluate the impact of engineering practices on the environment for complex data science and big data technology engineering problems
	7-2 能够理解和评价针对复杂数据科学与大数据技术工程问题的工程实践对社会可持续发展的影响 7-2 Be able to understand and evaluate the impact of engineering practices for complex data science and big data technology engineering problems on social sustainable development
8. 职业规范： 具有人文社会科学素养、社会责任感， 能够在数据科学与大数据技术工程领 域的工程实践中理解并遵守工程职业道德和规范， 履行责任；	8-1 具有人文社会科学素养、社会责任感 8-1 Have humanities and social science literacy, social responsibility

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
8. Ethics: Have humanities and social science literacy, social responsibility, understand and abide by engineering professional ethics and norms in the field of Data Science and Big Data Technology engineering, and fulfill their responsibilities;	8-2 能够在数据科学与大数据技术工程领域的工程实践中理解并遵守工程职业道德和规范，履行责任 8-2 Be able to understand and abide by engineering professional ethics and norms in the field of Data Science and Big Data Technology engineering, and fulfill their responsibilities;
9. 个人和团队： 具备良好的团队合作精神与责任意识，能够在多学科背景下的团队中承担 个体、团队成员以及负责人的角色； **9. Individual and teamwork:** Have a good sense of teamwork and responsibility, and can play the role of individual, team member and leader in a multidisciplinary team;	9-1 具备良好的团队合作精神与责任意识 9-1 Have a good sense of teamwork and responsibility
	9-2 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色 9-2 Can play the role of individual, team member and leader in a multidisciplinary team
	9-3 能够就数据科学与大数据技术工程领域的复杂工程问题与业界同行及社会公众进行有效沟通和交流 9-3 Be able to communicate effectively with their counterparts and the public on complex engineering issues in the field of Data Science and Big Data Technology engineering
10 项目管理： 理解并掌握工程项目管理原理与经济决策方法，并能在解决数据科学与大数 据技术工程问题的多学科环境中应用； **10. Project management:** Understand and master the principles of engineering project management and economic decision making, and apply them in the multidisciplinary environment to solve Data Science and Big Data Technology engineering problems;	10-1 理解并掌握工程项目管理原理与经济决策方法 10-1 Understand and master the principles of engineering project management and economic decision making
	10-2 能够在解决数据科学与大数据技术工程问题的多学科环境中应用 10-2 Apply them in the multidisciplinary environment to solve Data Science and Big Data Technology engineering problems
11. 终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。 **11. Life-long learning:** Have the	11-1 具有自主学习和终身学习的意识 11-1 Have the consciousness of independent learning and lifelong learning

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
consciousness of independent learning and lifelong learning, and have the ability to study continuously and adapt to development.	11-2 有不断学习和适应发展的能力 11-2 Have the ability to study continuously and adapt to development.

三、专业核心课程

III．Core Courses

数据结构、计算机组成原理、操作系统、Spark 大数据技术与应用、机器学习、人工神经网络及深度学习、大数据存储与处理、数据库原理与应用、Python 程序设计与应用、应用统计学与 R 语言。

Data structure, Principle of Computer Organization, Operation System, Spark Big Data Technology and Application, Machine Learning, Artificial Neural Network and Deep Learning, Big Data Storage and Processing, Principles and Applications of Database, Python Programming and Application, Applied Statistics and R Language.

四、特色课程

IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
大数据存储与处理 Big Data Storage and Processing	●	●		●		●
Spark 大数据技术与应用 Spark Big Data Technology and Application	●		●	●		●
人工神经网络及深度学习 Artificial Neural Network and Deep Learning	●	●	●	●		●
机器学习 Machine Learning	●	●	●	●	●	●

数据库原理与应用 Principles and Applications of Database	●	●		●		●
Python 程序设计与应用 Python Programming and Application	●	●		●		●
应用统计学与 R 语言 Applied Statistics and R Language	●	●		●	●	●
大模型原理与应用 Principles and Applications of Large Models	●	●	●	●	●	●
大数据分析与可视化 Big Data Analysis and Visualization	●	●	●	●	●	●

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and

so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="14"></td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>15.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="6">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td rowspan="2">专业（类）基础课
Disciplinary Courses</td><td colspan="2">大类基础课
Major Group Courses
专业基础课
Discipline Courses</td><td>24.5</td><td rowspan="2">29.5</td><td rowspan="6">/</td></tr>
<tr><td>专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>20</td></tr>
<tr><td rowspan="3">集中实践环节 Practical &Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td rowspan="3">/</td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>6</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>14</td></tr>
<tr><td colspan="3">合计：162
Total：162</td><td>125</td><td>29</td><td>8</td></tr>
</table>

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		1713018330	专业导论(大数据)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
合计：8 Total：8				8

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：数据科学与大数据技术课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（162 学分） In-class Teaching Courses （162 credits）			拓展素养（8 学分） Centralized Practicum （8 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	125	29	8	8	170

表 2：数据科学与大数据技术必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education		1	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			2	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			3	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	

			4	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			5	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			6	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-2	课外学时 4
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			14	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			15	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			16	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			17	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			18	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	

			19	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			22	1713025480	创新思维与创新方法(智能&大数据) Innovative minds and approaches	2	考查		综合素养	32	22	10	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			25	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			26	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713010430	离散数学 Discrete Mathematics Q	4	考试	√	综合素养	64	64	0	1-1	
			2	1713010630	C 语言程序设计 C language programming	3	考试	√	综合素养	48	48	0	1-1	
			3	1713022350	电路基础 Fundamentals of circuit	2.5	考试	√	综合素养	40	30	10	1-2	

			4	1713010460	数据结构 Data Structure	3	考试	√	综合素养	48	48	0	2-1	
			5	1713010470	数据结构实验 Data Structure Experiments	1	考查		综合素养	24	0	24	2-1	
			6	1713010440	计算机组成原理 Principle of Computer Organization	3.5	考试	√	综合素养	56	56	0	2-2	
			7	1713010450	计算机组成原理实验 Principle of Computer Organization Experiments	0.5	考查		综合素养	12	0	12	2-2	
			8	1713010550	数据库原理 Database Principle	3	考试	√	综合素养	48	48	0	2-2	
			9	1713010560	数据库原理实验 Database Principle Experiments	1	考查		综合素养	24	0	24	2-2	
			10	1713010650	信息系统分析与设计 Information System Analysis and Design	3	考试	√	综合素养	48	48	0	3-1	
	必修-专业及方向课程 Stream Courses		1	1713019860	应用统计学与R语言 Applied Statistics and R language	3	考试	√	综合素养	48	48	0	2-2	
			2	1713012370	机器学习 Machine Learning	2	考试	√	综合素养	32	32	0	3-1	
			3	1713012380	机器学习实验 Machine Learning Experiments	1	考查	√	综合素养	24	0	24	3-1	
			4	1713020780	大数据存储与处理 Big Data Storage and Processing	2	考试	√	综合素养	32	32	0	3-1	
			5	1713020790	大数据存储与处理实验 Big Data Storage and Processing Experiment	2	考查		综合素养	48	0	48	3-1	

			6	1713020820	人工神经网络及深度学习 ANN and Deep Learning	2	考试	√	综合素养	32	32	0	3-1	
			7	1713020830	人工神经网络及深度学习实验 ANN and Deep Learning Experiment	1	考试		综合素养	24	0	24	3-1	
			8	1713010590	计算机网络 Computer Network	2.5	考试	√	综合素养	40	40	0	3-2	
			9	1713010600	计算机网络实验 Computer Network Experiments	0.5	考查	√	综合素养	12	0	12	3-2	
			10	1713020800	大数据分析及可视化 Big Data Analysis and Visualization Technology	2	考试	√	综合素养	32	32	0	3-2	
			11	1713020810	大数据分析及可视化实验 Big Data Analysis and Visualization Experiment	2	考查		综合素养	48	0	48	3-2	
合计 Total						**103**				**1800**	**1356**	**444**		

表 3：数据科学与大数据技术 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	**课程类别 Course Categories**	**类别备注 Course Categories Remark**	**序号 No.**	**课程编号 Course Code**	**课程名称 Course Name**	**学分 Credits**	**考核方式 Testing method**	**是否学位课 Degree Course**	**综合/拓展素养课程 COURSE CORE**	**学时 Teaching Hours**			**上课学期 Semesters**	**备注 Notes**
										合计 Total	**讲课 Lectures**	**实践 Practicum**		
限选课组 Restrictive	限选-专业(类)基础课 Disciplinary Courses		1	1713010690	Java 语言程序设计 Java Programming Design	2	考试		综合素养	32	32	0	1-2	

			2	1713010700	Java 语言程序设计实验 Java Programming Design Experiments	1	考查		综合素养	24	0	24	1-2	
			3	1713019840	Python 程序设计与应用 Python Programming Design Python	2	考试		综合素养	32	32	0	2-1	
			4	1713019850	Python 程序设计与应用实验 Python Programming Design Experiments	1	考查		综合素养	24	0	24	2-1	
			5	1713010750	算法设计与分析 Algorithms Design and Analysis	2	考查		综合素养	32	24	8	2-2	
			6	1713010530	操作系统 Operating System	3	考试		综合素养	48	48	0	3-1	
			7	1713010540	操作系统实验 Operating System Experiments	1	考查		综合素养	24	0	24	3-1	
			8	1713010850	Unix/Linux 体系及编程 Unix/Linux Architecture and Programming	3	考试		综合素养	48	32	16	3-1	
			9	1713012460	自然语言处理导论 Introduction to Natural Language Processing	2	考试		综合素养	32	24	8	3-1	
	限选-专业及方向课程 Stream Courses		1	1713012290	人工智能基础 Artificial Intelligence Principle	2	考试		综合素养	32	32	0	2-2	
			2	1713012300	人工智能基础实验 Artificial Intelligence Principle Experiments	1	考查		综合素养	24	0	24	2-2	

			3	1713012530	智能机器人操作系统 Intelligent Robot Operating System	2	考查		综合素养	32	24	8	3-1	
			4	1713020840	Spark 大数据技术与应用 Spark Big Data Technology and Application	3	考查		综合素养	48	32	16	3-1	
			5	1713030360	智能机器人操作系统 Intelligent Robot Operating System	4	考查		综合素养	64	48	16	3-1	
			6	1713012500	智能机器人 Intelligent Robot	2	考查		综合素养	32	32	0	3-2	
			7	1713012510	智能机器人实验 Intelligent Robot Experiments	2	考查		综合素养	48	0	48	3-2	
			8	1713012520	机器视觉 Machine Vision	2.5	考查		综合素养	40	32	8	3-2	
			9	1713029180	大模型原理与应用 Principles and Applications of Large Foundation Models	2	考查		综合素养	32	24	8	3-2	
合计 Total						**37.5**				**648**	**416**	**232**		

表 4：数据科学与大数据技术任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses” , At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：数据科学与大数据技术 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010880	程序设计实训 Programming Practical Training	2	考查		综合素养	60	0	60	1-2	
			3	1713020860	大数据平台与存储技术综合实践 Integrated Practice of Large Data Platform and Storage Technology	2	考查		综合素养	60	0	60	3-2	

			4	1713020870	大数据分析与可视化技术综合实训 Comprehensive Practical Training of Large Data Analysis and Visualization Technology	2	考查		综合素养	60	0	60	4-1	
			5	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			6	1713030370	专业综合实习(智数) Integrated Major Practice(ID)	2	考查	√	综合素养	60	0	60	4-1	
			7	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**24**				**706**	**0**	**706**		

表 6：数据科学与大数据技术 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	

			4	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			5	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			6	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			7	1713018330	专业导论(大数据) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			8	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			9	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			10	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			11	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			12	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			13	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			14	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						6				144	144	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	是否工程实践与毕业设计相关课程 Engineering Practice & Graduation Project
1	军事训练 Military Training	必修	90	3	
2	体育 Physical Education	必修	128	4	
3	大学物理实验 Physics Experiment	必修	48	2	
4	创新思维与创新方法 Innovative minds and approaches	必修	8	0.5	●
5	Java 语言程序设计实验 Java Programming Design Experiments	限选	24	1	●
6	数据结构实验 Data Structure Experiments	必修	24	1	●
7	计算机组成原理实验 Principle of Computer Organization Experiments	必修	12	0.5	●
8	操作系统实验 Operating System Experiments	必修	24	1	●
9	计算机网络实验 Computer Network Experiments	必修	12	0.5	●
10	数据库原理实验 Database Principle Experiments	必修	24	1	●
11	人工智能基础实验 Artificial Intelligence Principle Experiments	必修	24	1	●
12	机器学习实验 Machine Learning Experiments	必修	24	1	●
13	人工神经网络及深度学习实验 ANN and Deep Learning Experiment	必修	24	1	●
14	计算方法及 Matlab 应用 Calculation Method and Matlab Application	限选	16	1	●
15	Python 程序设计与应用实验 Python Programming Design and Application Experiment	限选	24	1	●
16	算法设计与分析 Algorithms Design and Analysis	限选	8	0.5	●
17	机器视觉 Machine Vision	限选	8	0.5	●

18	自然语言处理导论 Introduction to Natural Language Processing	限选	8	0.5	●
19	智能机器人操作系统 Intelligent Robot Operating System	限选	16	1	●
20	智能机器人实验 Intelligent Robot Experiments	限选	48	2	●
21	大模型原理与应用 Large Language Model	限选	8	0.5	●
22	大数据分析及可视化实验 Big Data Analysis and Visualization Experiment	限选	48	2	●
23	大数据存储与处理实验 Big Data Storage and Processing Experiment	限选	48	2	●
24	Python 程序设计与应用实验 Python Programming Design Experiments	限选	24	2	●
25	大数据分析与可视化技术综合实训 Comprehensive Practical Training of Large Data Analysis and Visualization Technology	必修	60	2	●
26	毕业实习及毕业设计（论文） Graduation Practice， Design& Thesis	必修	360	12	●
27	大数据平台与存储技术综合实践 Integrated Practice of Large Data Platform and Storage Technology	必修	60	2	●
28	Spark 大数据技术与应用 Spark Big Data Technology and	限选	16	1	●
29	专业综合实习 Integrated Major Practice	必修	60	2	
30	劳动教育（实践） Labor Education	必修	16	1	
合计 Total			1294	50.5	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**	●			
毕业要求 1-2 **Graduation Requirements 1-2**	●	●		
毕业要求 2-1 **Graduation Requirements 2-1**		●		●
毕业要求 2-2 **Graduation Requirements 2-2**		●		●
毕业要求 3-1 **Graduation Requirements 3-1**	●	●	●	●
毕业要求 3-2 **Graduation Requirements 3-2**	●	●	●	●
毕业要求 3-3 **Graduation Requirements 3-3**	●	●	●	●
毕业要求 4-1 **Graduation Requirements 4-1**		●	●	●
毕业要求 4-2 **Graduation Requirements 4-2**			●	●
毕业要求 5-1 **Graduation Requirements 5-1**			●	●
毕业要求 5-2 **Graduation Requirements 5-2**			●	●
毕业要求 6-1 **Graduation Requirements 6-1**	●		●	●
毕业要求 6-2 **Graduation**	●		●	●

Requirements 6-2				
毕业要求 7-1 **Graduation Requirements 7-1**			●	●
毕业要求 7-2 **Graduation Requirements 7-2**			●	●
毕业要求 8-1 **Graduation Requirements 8-1**	●		●	●
毕业要求 8-2 **Graduation Requirements 8-2**	●		●	●
毕业要求 9-1 **Graduation Requirements 9-1**	●		●	
毕业要求 9-2 **Graduation Requirements 9-2**	●		●	
毕业要求 10-1 **Graduation Requirements 10-1**		●	●	●
毕业要求 10-2 **Graduation Requirements 10-2**		●	●	●
毕业要求 11-1 **Graduation Requirements 11-1**	●	●	●	●
毕业要求 11-2 **Graduation Requirements 11-2**	●	●	●	●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

		毕业要求 1 Graduation Requirements 1		毕业要求 2 Graduation Requirements 2		毕业要求 3 Graduation Requirements 3			毕业要求 4 Graduation Requirements 4		毕业要求 5 Graduation Requirements 5		毕业要求 6 Graduation Requirements 6		毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9		毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1-1	1-2	2-1	2-2	3-1	3-2	3-3	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	军事理论		H		H												H	H	H	H			H	H
2	体育		H																				H	H
3	思想道德修养与法律基础		H		H			H						H			H	H	H	H			H	H
4	中国近现代史纲要		H		H												H	H	H	H			H	H
5	马克思主义基本原理		H		H												H	H	H	H			H	H
6	毛泽东思想和中国特色社会主义理论体系概论		H		H												H	H	H	H			H	H
7	习近平新时代中国特色社 会主义思想概论		H		H												H	H	H	H			H	H
8	高等数学	H		H		H																		
9	线性代数	H		H		H							H									H		
10	概率论与数理统计	H		H		H							H									H		
11	大学物理	H		H		H							H									H		
12	大学物理实验	H		H		H							H									H		
13	大学英语(陆上一般要求)		H														H	H	H	H				
14	英语初级口语		H														H	H	H	H				
15	逻辑学		H																		H			
16	离散数学	H		H						H	H											H		
17	计算机组成原理	H		H											H									

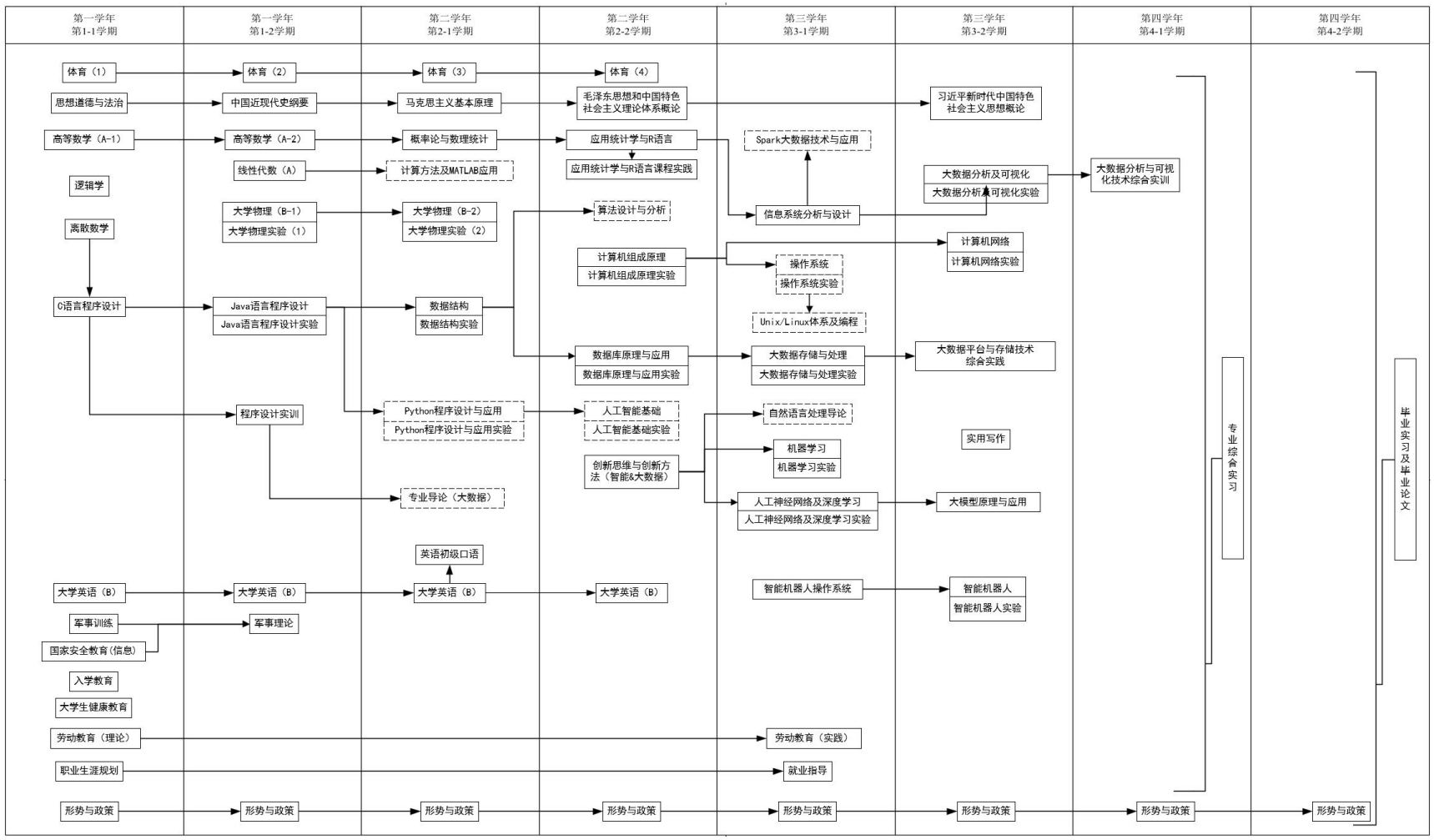
18	计算机组成原理实验	H							H						H	H								
19	大数据分析与可视化	H		H		H					H											H		
20	大数据分析与可视化实验	H		H		H			H		H				H	H						H		
21	人工神经网络及深度学习	H		H	H	H	H				H		H											
22	人工神经网络及深度学习实验	H		H		H	H		H		H		H		H	H						H		
23	信息系统分析与设计		H	H		H	H	H		H			H		H	H								
24	人工智能基础	H		H							H											H		
25	人工智能基础实验	H		H					H		H				H	H						H		
26	机器学习	H		H		H	H						H											
27	机器学习实验	H		H		H	H		H	H	H		H		H	H								
28	计算方法及 MATLAB 应用	H		H		H					H		H											
29	算法设计与分析	H		H		H	H			H	H	H	H											
30	自然语言处理导论		H	H									H											
31	计算机网络	H		H							H											H		
32	计算机网络实验	H		H							H				H	H	H	H	H	H		H		
33	军事训练		H	H									H										H	H
34	毕业实习及毕业论文		H					H														H		
35	应用统计学与 R 语言课程实践	H		H		H	H		H		H											H		
36	大数据平台与存储技术综合实践	H		H		H				H	H	H			H	H						H		
37	大数据分析与可视化技术综合实训	H		H		H	H		H		H											H		
38	入学教育		H							H	H	H					H	H	H	H				
39	形势与政策		H	H	H	H											H	H	H	H	H		H	H
40	职业生涯规划		H	H	H								H				H	H	H	H			H	H
41	就业指导		H					H		H	H	H					H	H	H	H			H	H

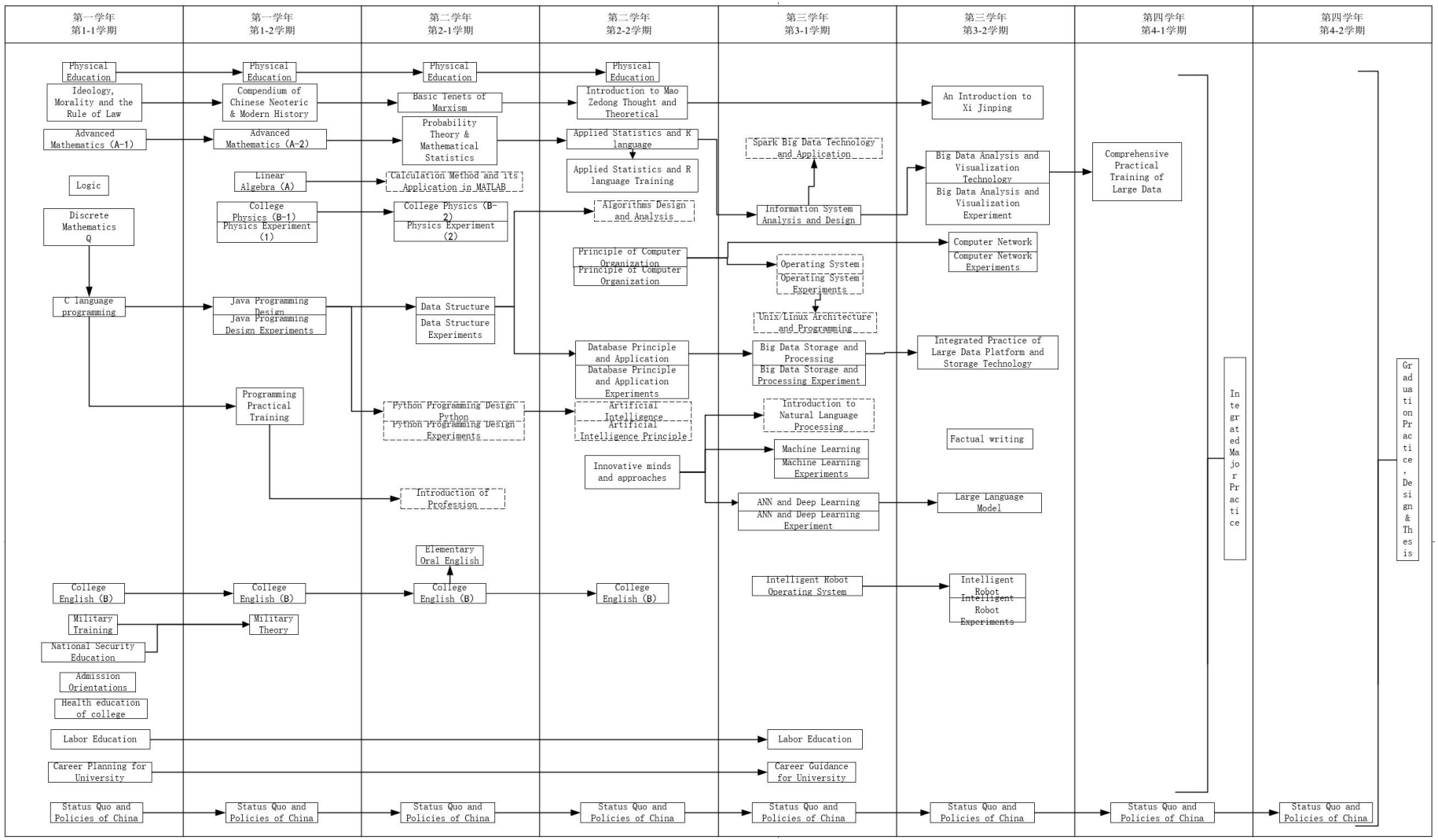
42	专业导论(大数据)		H	H	H																			
43	劳动教育（理论）		H				H	H																
44	创新思维与创新方法（智能&大数据）		H		H		H	H						H								H		
45	实用写作		H		H					H	H	H		H										
46	C 语言程序设计	H		H		H				H	H											H		
47	数据结构	H		H		H	H			H	H											H		
48	数据结构实验	H		H		H	H		H	H	H				H							H		
49	数据库原理与应用	H		H		H							H											
50	数据库原理与应用实验	H				H			H	H	H	H			H									
51	应用统计学与 R 语言	H		H							H											H		
52	大数据存储与处理	H		H		H					H		H									H		
53	大数据存储与处理实验	H		H		H			H		H		H		H							H		
54	Java 语言程序设计	H		H		H	H						H									H		
55	Java 语言程序设计实验	H		H		H	H		H	H	H	H										H		
56	Python 程序设计与应用	H		H	H	H	H				H											H		
57	Python 程序设计与应用实验	H		H		H	H		H		H				H	H						H		
58	操作系统	H		H							H													
59	操作系统实验	H		H					H		H				H									
60	Unix/Linux 体系及编程	H		H			H						H									H		
61	Spark 大数据技术与应用	H		H		H				H	H	H										H		
62	智能机器人操作系统	H		H			H				H											H		
63	智能机器人	H		H							H											H		
64	智能机器人实验	H		H			H	H							H							H		

65	大模型原理与应用	H		H		H					H	H										H		
66	专业综合实习		H	H	H	H						H	H									H	H	H
67	劳动教育（实践）		H					H						H			H		H				H	H
68	国家安全教育(信息)		H	H				H					H	H									H	H
69	大学生健康教育	H	H					H						H			H		H				H	H

十一、课程配置流程

XI. Flowchart of Course Configuration




第一学年 第1-1学期
第一学年 第1-2学期
第二学年 第2-1学期
第二学年 第2-2学期
第三学年 第3-1学期
第三学年 第3-2学期
第四学年 第4-1学期
第四学年 第4-2学期
Physical Education
Ideology, Morality and the Rule of Law
Advanced Mathematics (A-1)
Logic
Discrete Mathematics Q
C language programming
Programming Practical Training
College English (B)
Military Training
National Security Education
Admission Orientations
Health education of college
Labor Education
Career Planning for University
Status Quo and Policies of China
Compendium of Chinese Neoteric & Modern History
Advanced Mathematics (A-2)
Linear Algebra (A)
College Physics (B-1)
Physics Experiment (1)
Java Programming Design
Java Programming Design Experiments
Military Theory
Basic Tenets of Marxism
Probability Theory & Mathematical Statistics
Calculation Method and its Application in MATLAB
College Physics (B-2)
Physics Experiment (2)
Data Structure
Data Structure Experiments
Python Programming Design Python
Python Programming Design Experiments
Introduction of Profession
Elementary Oral English
Introduction to Mao Zedong Thought and Theoretical
Applied Statistics and R language
Applied Statistics and R language Training
Algorithms Design and Analysis
Principle of Computer Organization
Principle of Computer Organization
Database Principle and Application
Database Principle and Application Experiments
Artificial Intelligence
Artificial Intelligence Principle
Innovative minds and approaches
Spark Big Data Technology and Application
Information System Analysis and Design
Operating System
Operating System Experiments
Unix/Linux Architecture and Programming
Big Data Storage and Processing
Big Data Storage and Processing Experiment
Introduction to Natural Language Processing
Machine Learning
Machine Learning Experiments
ANN and Deep Learning
ANN and Deep Learning Experiment
Intelligent Robot Operating System
An Introduction to Xi Jinping
Big Data Analysis and Visualization Technology
Big Data Analysis and Visualization Experiment
Computer Network
Computer Network Experiments
Integrated Practice of Large Data Platform and Storage Technology
Factual writing
Large Language Model
Intelligent Robot
Intelligent Robot Experiments
Comprehensive Practical Training of Large Data
Integrated Major Practice
Graduation Practice, Design & Thesis

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

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数据科学与大数据技术教学指导委员会

大连海事大学教务处

2025 年 9 月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Electronic Information Engineering Major

[2025 级适用]

★电子信息工程专业（080701）

大连海事大学教务处

2025 年 9 月

电子信息工程专业本科培养计划（2025 版）

Undergraduate Program for Electronic Information Engineering Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业贯彻落实党的教育方针，坚持立德树人，服务“海洋强国”和“交通强国”战略，培养具有较扎实的自然科学基础知识和专业理论技术知识，具备良好的人文社会科学综合素养，能够在电子信息工程相关领域从事科学研究、设计开发、测试运维和服务管理等工作的专业技术人才及行业骨干。 This major implements the educational policies of Communist Party of China, adheres to the principle of moral education and talent cultivation, and serves the national strategies of "Maritime Power" and "Transportation Power". It aims to cultivate professional and technical talents and industry leaders who have a solid foundation in natural sciences and professional theoretical knowledge, possess good comprehensive literacy in humanities and social sciences, and are capable of engaging in scientific research, design and developing, testing and operation, and service management in the field of electronic information engineering.	1. 能够综合运用工程知识解决电子信息相关领域的复杂工程问题，在工程问题解决过程中体现创新意识，并综合考虑社会、环境、法规、健康、安全与文化等因素影响。 1. Using engineering knowledge to solve complex engineering problems in electronic information field, with considering social, environmental, regulatory, health, safety and cultural factors, and with innovative consciousness in the process of solving engineering problems.
	2. 在职业生涯中具有良好的人文社会科学素养、社会责任感和职业道德。 2. With good humanities and Social Sciences literacy, social responsibility and professional ethics in their career.
	3. 具备国际视野，具有沟通、交流与管理能力，在工作团队中，能作为主要成员发挥骨干作用。 3. Having international vision, communication and management skills, and being able to play a backbone role as a key member in a team.
	4. 具有自主学习和适应发展能力，具备终身学习意识。 4. Having the ability to learn independently and adapt to the development of society, and having the consciousness of lifelong learning.

二、毕业要求

II．Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识 1. Engineering knowledge	1-1 能够将数学和自然科学、计算、工程基础知识，用于解决电子信息相关领域复杂工程问题。 1-1 Utilize the knowledge of mathematics and natural science, computing, engineering to solve complex engineering problems in the field of electronic information.
	1-2 能够电子电路、信号与系统等专业基础知识和电子信息工程专业知识，用于解决电子信息相关领域复杂工程问题。 1-2 Utilize the knowledge of electronic circuit, signal and system, electronic information engineering etc. to solve complex engineering problems in the field of electronic information.
2. 问题分析 2. Problem analysis	2-1 能够应用工程知识基本原理，对电子信息工程相关领域复杂工程问题进行识别和表达。 2-1 Identify and describe complex engineering problems of electronic information engineering utilizing the basic principles of Engineering knowledge.
	2-2 能够通过文献研究分析电子信息工程相关领域复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 2-2 Analyze complex engineering problems of electronic information engineering through literature research, taking into full account the requirements of sustainable development, and obtain the effective conclusions.
3. 设计/开发解决方案 3. Design/development of solutions	3-1 能够针对电子信息工程相关领域复杂工程问题，对系统、单元或流程进行特定需求分析。 3-1 Analyze the specific requirement of complex engineering problems of electronic information engineering.
	3-2 能够设计和开发电子信息工程相关领域复杂工程问题的解决方案，体现创新性，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3-2 design or develop solutions to complex engineering problems of electronic information engineering, considering social, evaluating feasibility with respect to health, safety, and environmental aspects, whole life-cycle cost and net-zero carbon commitments, legal and ethical frameworks, and socio-cultural considerations.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
4. 研究 4. Investigation	4-1 能够基于科学原理并采用科学方法对电子信息工程相关领域复杂工程问题进行研究，包括设计实验方案，分析和解释实验/试验数据。 4-1 Research complex engineering problems of electronic information engineering with scientific principles and scientific methods, such as designing experimental schemes, analyzing and interpreting experimental/test data.
	4-2 能够通过综合研究结果和实验/试验数据等信息，针对电子信息工程相关领域复杂工程问题给出合理有效的结论。 4-2 Obtain reasonable and effective conclusions for complex engineering problems of electronic information engineering by synthesizing research results and experimental/test data.
5. 使用现代工具 5. Modern tool usage	5-1 能够开发、选择与使用适当的技术、资源、现代工程工具和信息技术工具，采集、整理和使用复杂工程问题相关信息数据。 5-1 Develop, select and use appropriate technology, resources, modern engineering tools and information technology tools, to collect, process and utilize the information data which is related to those complex engineering problems.
	5-2 能够开发、选择与使用适当的技术、资源、现代工程工具和信息技术工具，对电子信息工程相关领域复杂工程问题进行预测与模拟，理解其局限性。 5-2 Develop, select and use appropriate technology, resources, modern engineering tools and information technology tools, to predict and simulate complex engineering problems of electronic information engineering; and understand their limitations of modern tools.
6. 工程与可持续发展 6. Engineering and sustainable development	6-1 能够基于相关工程背景知识，分析和评价电子信息领域相关工程实践对健康、安全以及法律的影响，并理解应承担的责任。 6-1 Analyze and evaluate the influence of the health, safety and legal on the engineering practices of electronic information engineering considering related engineering background, and understand the corresponding responsibilities.
	6-2 能够理解和评价在解决电子信息工程领域相关复杂工程问题中，工程实践对环境、经济和社会可持续发展的影响，

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
	并理解应承担的责任。 6-2 Understand and evaluate the impact of engineering practices on environmental, economic, and social sustainability in solving complex problems in electronic information engineering, and understand the corresponding responsibilities.
7. 工程伦理和职业规范 7. Engineering ethics and professional conduct	7-1 具有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感。 7-1 Demonstrate a commitment to serving the nation through engineering and improving people's well-being, with literacy in the humanities and social sciences and a strong sense of social responsibility.
	7-2 能够在电子信息工程实践中理解和践行工程伦理，并遵守工程职业道德、规范和相关法律，履行责任。 7-2 Understand and practice engineering ethics in the context of electronic information engineering, adhering to professional conduct, standards, and relevant legal regulations, to fulfill associated responsibilities.
8. 个人和团队 8. Individual and teamwork	8-1 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8-1 Take on roles as an individual, team member, or leader in a multidisciplinary team setting.
	8-2 能够在多样化背景下的团队中承担个体、团队成员以及负责人的角色，比如面对面、远程和分布式等环境。 8-2 Take on roles as an individual, team member, or leader in teams operating in diverse contexts, such as face-to-face, remote, and distributed environments.
9. 沟通 9. Communication	9-1 能够就电子信息工程相关领域复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。 9-1 Communicate effectively with industry counterparts, the public people on the complex engineering issues of electronic information engineering, including writing reports, designing documentation, presenting statements, clearly expressing or responding to instructions.
	9-2 具备一定的国际视野，能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9-2 Have a global perspective, with the ability to communicate and collaborate effectively in cross-cultural environments, and to understand and respect linguistic and cultural differences.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
10. 项目管理 10. Project management	10-1 理解并掌握与电子信息工程项目相关的管理原理与经济决策方法。 10-1 Understand and master management principles and economic decision-making methods relevant to of electronic information engineering projects.
	10-2 能在多学科环境中应用电子信息工程项目相关的管理原理与经济决策方法。 10-2 Apply management principles and economic decision-making methods relevant to electronic information engineering projects in multidisciplinary settings.
11. 终身学习 11. Lifelong learning	11-1 具有自主学习、终身学习和批判性思维的意识和能力，有不断学习以适应发展的能力。 11-1 Possess the awareness and capability of self-directed and lifelong learning, as well as critical thinking, with the ability to continuously learn and adapt to evolving developments.
	11-2 能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11-2 Understand the impact of broad technological transformations on engineering and society, and to adapt to new and emerging technologies.

三、专业核心课程
III．Core Courses

电路理论、低频电子线路、信号与系统、电磁场与电磁波、高频电子线路、数字信号处理、微机原理与应用、通信原理、无线电导航原理、雷达原理与设备

Circuit Theory; Low-Frequency Electronic Circuits; Signals and Systems; Electromagnetic Fields and Waves; High-Frequency Electronic Circuits; Digital Signal Processing; Microcomputer Principles and Applications; Communication Principles; Radio Navigation Principles; Radar Principles and Equipment

四、特色课程
IV．Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
无线电导航原理 Radio Navigation Principles	●					
雷达原理与设备 Radar Principles and	●					

Equipment						
海上通信系统 Maritime Communication System	●					
人工智能导论 Introduction to Artificial Intelligence			●			
空间信息技术基础 Fundamentals of Space Information Technology		●				
导航信息处理 Navigation information process	●	●				
船舶交通管理电子信息系统 Electronic Information System for Vessel Traffic Services	●	●				
自动识别技术 Automatic Identification System	●	●				
智能控制系统 Intelligent Control System			●			
电子信息系统创新设计 Innovative Design of Electronic Information System					●	

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI．Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and

so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course
Category</th><th rowspan="2" colspan="2">课程子类
Course
Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="14">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="13">24</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="3">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="8">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">大类基础课
Major Group Courses
专业基础课
Discipline Courses</td><td>36.5</td><td rowspan="3"></td><td rowspan="3">/</td></tr>
<tr><td>专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>9</td></tr>
<tr><td rowspan="2">集中实践环节 Practical &Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td rowspan="2">/</td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>10.5</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	2		
合计：165.5 Total：165.5		133.5	24	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 No	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
	安全实践 Safe Practical &Training	1713027790	安全熟悉	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000130	专业导论(电子信息类)	0.5
		1713023230	专业导论(电信)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713021750	科技讲座	1
合计：10 Total：10				10

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：电子信息工程课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（165.5 学分） In-class Teaching Courses （165.5 credits）			拓展素养(10 学分) Centralized Practicum （10 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	133.5	24	8	10	175.5

表 2：电子信息工程必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	

			4	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713022310	创新思维与创新方法(电子信息类) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	

			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713009970	C 语言程序设计 C Language Programming	3	考试		综合素养	48	24	24	1-2	
			2	1713009980	电路理论 Circuit Theory	3.5	考试	√	综合素养	56	56	0	1-2	

			3	1713009990	电路实验 Circuit Theory Experiment	1	考查	√	综合素养	24	0	24	1-2	
			4	1713030180	模拟电子技术 Analog Electronics Technology	3.5	考试	√	综合素养	56	48	8	2-1	
			5	1713030190	电磁场与电磁波(电信) Electromagnetic Fields and Waves	3	考试	√	综合素养	48	40	8	2-1	
			6	1713021660	信号与系统 Signals & Systems	4	考试	√	综合素养	64	56	8	2-2	
			7	1713025270	工程概论(电信) Introduction to Engineering	2	考试	√	综合素养	32	32	0	2-2	
			8	1713030030	数字系统与逻辑设计 Digital Circuit and Logic Designs	3	考试	√	综合素养	48	38	10	2-2	
			9	1713029390	微机原理与应用 Principles and Application of Microcomputer	4.5	考试	√	综合素养	72	54	18	3-1	
			10	1713029410	数字信号处理(电信) Digital Signal Processing	3	考试	√	综合素养	48	40	8	3-1	
			11	1713031280	通信电子线路(电信) Communication Electronic Circuits	3	考试	√	综合素养	48	40	8	3-1	
			12	1713028900	数据结构(电信) Data Structures	3	考试	√	综合素养	48	40	8	3-2	
	必修-专业及方向课程 Stream Courses		1	1713028580	雷达原理与设备 Radar Principles and Equipment	2	考试	√	综合素养	32	24	8	3-2	
			2	1713029400	信息论与通信原理 Information Theory and Principles of Communications	5	考试	√	综合素养	80	72	8	3-2	
			3	1713029930	无线电导航原理 Radio Navigation Principle	2	考试	√	综合素养	32	24	8	3-2	

合计 Total						107				1800	1434	366		

表 3：电子信息工程 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			2	1713026340	Matlab 程序设计 Programming with Matlab	2	考查		综合素养	32	16	16	1-1	
			3	1713029460	嵌入式系统设计(电信) Embedded System Design (EIE)	2	考试		综合素养	32	24	8	2-1	
			4	1713028200	电子测量 Electronic Measurement	2	考查		综合素养	32	24	8	2-2	
			5	1713028560	微波技术(电信) Microwave Technology	3.5	考查		综合素养	56	48	8	2-2	
			6	1713028930	传感器原理与应用 Sensor Principle and Application	2	考查		综合素养	32	24	8	3-1	
	限选-专业及方向课程 Stream Courses		1	1713022670	人工智能导论 Introduction to Artificial Intelligence	2	考查		综合素养	32	24	8	2-2	

			2	1713028610	电子信息专业英语 Technical English for Electronic Information Majors	2	考试		综合素养	32	32	0	2-2	
			3	1713010150	EDA 技术 EDA Technology	2	考查		综合素养	32	16	16	3-1	
			4	1713011420	空间信息技术基础 Space Information Technology	2	考查		综合素养	32	28	4	3-1	
			5	1713011450	信号检测与处理 Signal Detecting and Processing	2	考试		综合素养	32	22	10	3-1	
			6	1713025300	电波与天线(电信) Propagation and Antenna	2	考试		综合素养	32	24	8	3-1	
			7	1713022490	数字图像处理技术基础 Fundamentals of digital image processing technology	2	考查		综合素养	32	24	8	3-2	
			8	1713028570	智能控制系统 Intelligent Control System	2	考试		综合素养	32	24	8	3-2	
			9	1713029920	海上通信系统 Marine Communication System	2	考查		综合素养	32	24	8	3-2	
			10	1713011390	自动识别技术 Automatic Identification Technology	2	考查		综合素养	32	22	10	4-1	
			11	1713011460	导航信息处理 Navigation Information Processing	2	考试		综合素养	32	24	8	4-1	
			12	1713011470	船舶交通管理电子信息系统 Electronic Information System for Vessel Traffic Services	2	考查		综合素养	32	24	8	4-1	

| 合计 Total | | |

			4	1713010330	电子线路课程设计 Course Project of Electronic Circuits	1	考查		综合素养	30	0	30	2-2	
			5	1713010340	数字系统课程设计 Course Project of Digital Systems	1	考查		综合素养	30	0	30	2-2	
			6	1713028590	电子电路CAD实践 Practice of Electronic Circuit CAD	1	考查		综合素养	30	0	30	2-2	
			7	2113000560	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	2-2	
			8	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			9	1713010350	单片机应用实践 Practice of Microprocessor Application	1	考查		综合素养	30	0	30	3-2	
			10	1713010400	专业文献查阅/写作及综述实训 Technical Material reading & Writing Training	1	考查		综合素养	30	0	30	3-2	
			11	1713026201	船舶实习(工程) Ship Practice (Engineering)	1	考查		综合素养	30	0	30	3-2	
			12	1713028600	人工智能视觉技术实践 Applied Artificial Intelligence for Computer Vision	0.5	考查		综合素养	15	0	15	3-2	
			13	1713011490	电子信息工程课程设计 Course Project of Electronic Information Engineering	1	考查		综合素养	30	0	30	4-1	
			14	1713011540	电子信息系统创新设计 Innovation Design for Electronic Information System	1	考查		综合素养	30	0	30	4-1	
			15	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			16	1713028880	专业实习(电信) Program practice	1	考查		综合素养	30	0	30	4-1	
			17	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						29.5				871	0	871		

表 6：电子信息工程 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000130	专业导论(电子信息类) Introduction to Profession	0.5	考查		拓展素养	8	8	0	1-1	
			4	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			5	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			6	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			7	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	

			8	1713023230	专业导论(电信) Introdution of Major (EE)	0.5	考查		拓展素养	8	8	0	2-1	
			9	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			10	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			11	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			12	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			13	1713021750	科技讲座 Science and Technology Lecture	1	考查		拓展素养	16	16	0	3-2	
			14	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			15	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			16	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						**7**				**160**	**160**	**0**		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育	必修	128	4	
3	中国近现代史纲要	必修	8	0.5	
4	马克思主义基本原理	必修	8	0.5	
5	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
6	大学物理实验（1）	必修	24	1.5	●
7	大学物理实验（2）	必修	24	1	●
8	C 语言程序设计	必修	24	1.5	●
9	C 语言程序设计实践	必修	30	1	●
10	电路理论	必修	12	0.75	●
11	低频电子线路	必修	8	0.5	●
12	电磁场与电磁波(电信)	必修	8	0.5	●
13	数字系统与逻辑设计	必修	10	0.625	●
14	信号与系统(电信)	必修	8	0.5	●
15	微机原理与应用	必修	18	1.125	●
16	数字信号处理(电信)	必修	8	0.5	●
17	高频电子线路(电信)	必修	8	0.5	●
18	数据结构(电信)	必修	8	0.5	●
19	无线电导航原理	必修	8	0.5	●
20	雷达原理与设备	必修	8	0.5	●
21	电子技术工艺实习	必修	30	1	●
22	电子线路课程设计	必修	30	1	●
23	数字系统课程设计	必修	30	1	●

24	电子电路 CAD 实践	必修	30	1	●
25	金工实习	必修	30	1	●
26	单片机应用实践	必修	30	1	●
27	专业文献查阅/写作及综述实训	必修	30	1	●
28	人工智能视觉技术实践	必修	15	0.5	●
29	船舶实习	必修	30	1	●
30	电子信息工程课程设计	必修	30	1	●
31	电子信息系统创新设计	必修	30	1	●
32	专业实习	必修	30	1	●
33	毕业设计（论文）	必修	360	12	●
合计 Total			1153	43.5	

九、毕业要求对培养目标的支撑关系矩阵

IX．Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1-1 **Graduation Requirements 1-1**	●			
毕业要求 1-2 **Graduation Requirements 1-2**	●			
毕业要求 2-1 **Graduation Requirements 2-1**	●			
毕业要求 2-2 **Graduation Requirements 2-2**	●			
毕业要求 3-1 **Graduation Requirements 3-1**	●			
毕业要求 3-2 **Graduation Requirements 3-2**	●			
毕业要求 4-1 **Graduation Requirements 4-1**	●			
毕业要求 4-2 **Graduation Requirements 4-2**	●			
毕业要求 5-1 **Graduation Requirements 5-1**	●			
毕业要求 5-2 **Graduation Requirements 5-2**	●			
毕业要求 6-1 **Graduation Requirements 6-1**	●			
毕业要求 6-2 **Graduation Requirements 6-2**	●			
毕业要求 7-1 **Graduation**		●		

Requirements 7-1				
毕业要求 7-2 **Graduation Requirements 7-2**		●		
毕业要求 8-1 **Graduation Requirements 8-1**			●	
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 9-1 **Graduation Requirements 9-1**			●	
毕业要求 9-2 **Graduation Requirements 9-2**			●	
毕业要求 10-1 **Graduation Requirements 10-1**			●	
毕业要求 10-2 **Graduation Requirements 10-2**			●	
毕业要求 11-1 **Graduation Requirements 11-1**				●
毕业要求 11-2 **Graduation Requirements 11-2**				●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

		毕业要求 1 **Graduation Requirements 1**		毕业要求 2 **Graduation Requirements 2**		毕业要求 3 **Graduation Requirements 3**		毕业要求 4 **Graduation Requirements 4**		毕业要求 5 **Graduation Requirements 5**		毕业要求 6 **Graduation Requirements 6**		毕业要求 1 **Graduation Requirements 7**		毕业要求 2 **Graduation Requirements 8**		毕业要求 3 **Graduation Requirements 9**		毕业要求 4 **Graduation Requirements 10**		毕业要求 5 **Graduation Requirements 11**	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	马克思主义基本原理													H	H								
2	中国近现代史纲要													H	H								
3	思想道德与法治											M		H	H								
4	毛泽东思想和中国特色社会主义理论体系概论													H	H								
5	习近平新时代中国特色社会主义思想概论													H	H								
6	大学英语																	H	H				
7	英语初级口语																	H	H				
8	英语中级口语																	H	H				
9	高等数学	H	H	M	M																		
10	概率论与数理统计	M	M	H	H																		
11	线性代数	H	H	M	M																		

		毕业要求 1 **Graduation Requirements 1**		毕业要求 2 **Graduation Requirements 2**		毕业要求 3 **Graduation Requirements 3**		毕业要求 4 **Graduation Requirements 4**		毕业要求 5 **Graduation Requirements 5**		毕业要求 6 **Graduation Requirements 6**		毕业要求 1 **Graduation Requirements 7**		毕业要求 2 **Graduation Requirements 8**		毕业要求 3 **Graduation Requirements 9**		毕业要求 4 **Graduation Requirements 10**		毕业要求 5 **Graduation Requirements 11**	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
12	复变函数与积分变换	M	M	H	H																		
13	大学物理	H	H	M	M																		
14	人工智能导论	M	M					H	H														
15	C 语言程序设计									H	H												
16	军事理论													M	M								
17	军事训练															H	H						
18	体　育															H	H						
19	逻辑学																	H	H				
20	实用写作																	H	H				
21	创新思维与创新方法			H	H							M											
22	电路理论	H	H	H	H	H	H	M	M														
23	低频电子线路	H	H	H	H	H	H	M	M														
24	电磁场与电磁波(电信)	H	H	H	H																		

		毕业要求 1 **Graduation Requirements 1**		毕业要求 2 **Graduation Requirements 2**		毕业要求 3 **Graduation Requirements 3**		毕业要求 4 **Graduation Requirements 4**		毕业要求 5 **Graduation Requirements 5**		毕业要求 6 **Graduation Requirements 6**		毕业要求 1 **Graduation Requirements 7**		毕业要求 2 **Graduation Requirements 8**		毕业要求 3 **Graduation Requirements 9**		毕业要求 4 **Graduation Requirements 10**		毕业要求 5 **Graduation Requirements 11**	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
25	数字系统与逻辑设计	H	H	M	M	M	M	H	H														
26	信号与系统(电信)	H	H	H	H	H	H	M	M														
27	工程概论											M	H							H	H		
28	微机原理与应用	H	H	M	M					H	H												
29	数字信号处理(电信)	H	H	H	H	H	H	M	M														
30	高频电子线路(电信)	H	H	H	H	H	H	M	M														
31	数据结构(电信)	H	H	M	M					H	H												
32	通信原理	H	H	H	H	H	H	M	M														
33	无线电导航原理	H	H	H	H	H	H	M	M			H											
34	雷达原理与设备	H	H	H	H	H	H	M	M			H											
35	电子技术工艺实习									H	H		M										
36	C 语言程序设计实践					M	M			H	H												
37	大学物理实验			M	M			H	H														

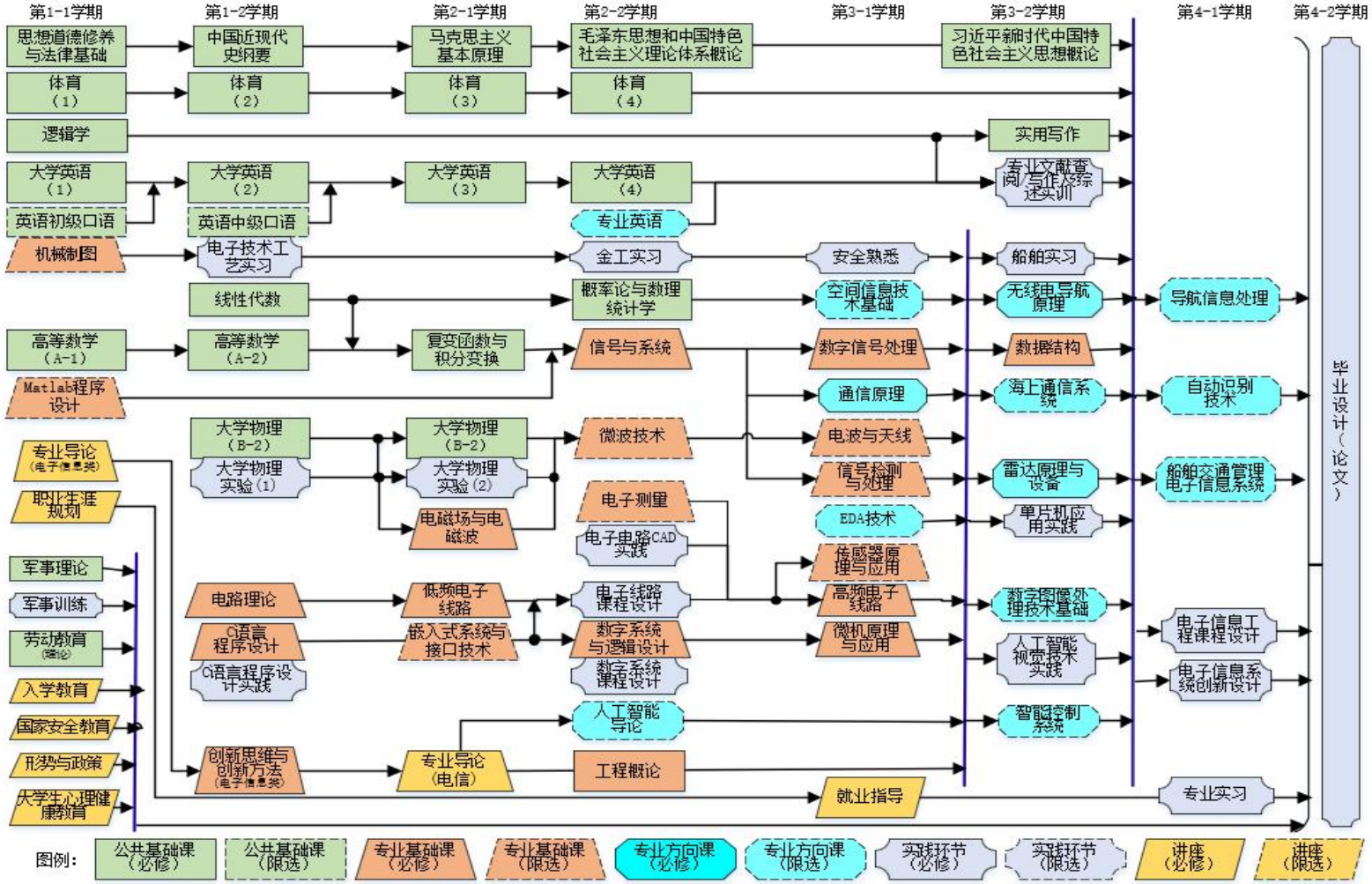
		毕业要求 1 **Graduation Requirements 1**		毕业要求 2 **Graduation Requirements 2**		毕业要求 3 **Graduation Requirements 3**		毕业要求 4 **Graduation Requirements 4**		毕业要求 5 **Graduation Requirements 5**		毕业要求 6 **Graduation Requirements 6**		毕业要求 1 **Graduation Requirements 7**		毕业要求 2 **Graduation Requirements 8**		毕业要求 3 **Graduation Requirements 9**		毕业要求 4 **Graduation Requirements 10**		毕业要求 5 **Graduation Requirements 11**	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
38	电子线路课程设计					H	H	H	H	M	M												
39	数字系统课程设计					H	H	H	H	M	M												
40	电子电路 CAD 实践					H					H	H											
41	单片机应用实践									H	H												
42	专业文献查阅/写作及综述实训																	H	H			M	M
43	人工智能视觉技术实践	M	M	H	H	H	H			H	H												
44	电子信息工程课程设计					H	H									M	M			H	H		
45	电子信息系统创新设计							H	H							M	M			H	H		
46	专业实习									H	H	L											
47	毕业设计（论文）			H	H	H	H	H	H			M	H					H	H	H	H	M	M
48	金工实习									H	H	L											
49	船舶实习									H	H	L											
50	劳动教育									H	H	L											

		毕业要求 1 **Graduation Requirements 1**		毕业要求 2 **Graduation Requirements 2**		毕业要求 3 **Graduation Requirements 3**		毕业要求 4 **Graduation Requirements 4**		毕业要求 5 **Graduation Requirements 5**		毕业要求 6 **Graduation Requirements 6**		毕业要求 1 **Graduation Requirements 7**		毕业要求 2 **Graduation Requirements 8**		毕业要求 3 **Graduation Requirements 9**		毕业要求 4 **Graduation Requirements 10**		毕业要求 5 **Graduation Requirements 11**	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
51	安全熟悉									H	H	L											
52	形势与政策													H	H								
53	大学生健康教育															H	H	H	H				
54	国家安全教育											H		H	H								
55	入学教育											H	H	H	H	H	H					H	H
56	专业导论													H	H							H	H
57	职业生涯规划													H	H							H	H
58	就业指导													H	H								
59	机械制图									H	H												
60	Matlab 程序设计	H	H							H	H												
61	嵌入式系统与接口技术									H	H												
62	电子测量	M	M					H	H	H	H		M										
63	微波技术(电信)	M	M					H	H				M										

		毕业要求 1 **Graduation Requirements 1**		毕业要求 2 **Graduation Requirements 2**		毕业要求 3 **Graduation Requirements 3**		毕业要求 4 **Graduation Requirements 4**		毕业要求 5 **Graduation Requirements 5**		毕业要求 6 **Graduation Requirements 6**		毕业要求 1 **Graduation Requirements 7**		毕业要求 2 **Graduation Requirements 8**		毕业要求 3 **Graduation Requirements 9**		毕业要求 4 **Graduation Requirements 10**		毕业要求 5 **Graduation Requirements 11**	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
64	传感器原理与应用	H	H	M	M			H	H	M	M												
65	电波与天线(电信)	M	M			M	M	M	M														
66	信号检测与处理	M	M					H	H														
67	电子信息专业英语																	H	H			M	M
68	空间信息技术基础	M	M					H	H														
69	EDA 技术									H	H												
70	海上通信系统	M	M					H	H														
71	智能控制系统	M	M					H	H														
72	数字图像处理技术基础	M	M					H	H														
73	导航信息处理	M	M					H	H														
74	船舶交通管理电子信息系统	M	M										H							M	M		
75	自动识别技术	M	M					H	H														

十一、课程配置流程图

XII. Flowchart of Course Configuration



后　　记

育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84724073 84729468

教学院长：84727731

教 务 处：84723005

电子信息工程专业负责人：姜毅

电子信息工程教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Electronic Information Science and Technology Major

[2025 级适用]

★ 电子信息科学与技术（080714T）

大连海事大学教务处

2025 年 9 月

电子信息科学与技术专业本科培养计划（2025 版）

Undergraduate Program for Electronic Information Science and Technology Major

一、培养目标

I. Program Objectives

本专业旨在培养适应社会与信息技术发展需求，具有良好的社会责任感、职业道德、人文素养、科学素养和家国情怀，具有国际视野、跨文化交流能力和创新能力，系统掌握电子信息领域的基础理论和专业知识，具备良好的终身学习能力，能够在电子信息科学与技术相关领域从事科学研究、设计开发、测试运维和服务管理等工作的高素质工程技术人才与德智体美劳全面发展的社会主义建设者和接班人。

本专业学生毕业五年左右应具有以下职业能力：

（1）**坚实基础与终身学习：**具备扎实的数理基础、系统化的电子信息科学与技术专业核心知识及计算思维素养，树立终身学习理念，持续跟踪和扩展电子信息科学与技术领域的新理论、新知识和新技术，适应电子信息产业的快速迭代发展；

（2）**问题解决与创新：**能综合运用电子信息科学与技术及相关领域的专业知识和现代工具，分析解决电子信息科学与技术领域的工程问题，且体现创新性；

（3）**伦理责任与家国服务：**厚植工程报国、为民造福的家国情怀，践行社会主义核心价值观；恪守工程伦理规范，在设计制造中严守安全标准与知识产权法规；在解决方案的全生命周期中综合考虑健康、安全、法律以及经济和社会可持续发展的影响；具备健全人格、人文素养与劳动精神，主动服务国家战略需求，承担推动产业进步的社会责任；

（4）**全球视野与团队协作：**具有国际视野、良好的沟通交流、工程项目管理和团队合作能力以及良好的团队协作精神，能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。

The program aims to cultivate high-quality engineering technical talents, socialist builders and successors with all-round development in morality, intelligence, physique, aesthetics and labor, who can adapt to the development needs of society and information technology, have a good sense of social responsibility, professional ethics, humanistic literacy, scientific literacy and patriotism, possess international vision, cross-cultural communication ability and innovation ability, systematically grasp the basic theories and professional knowledge in the field of electronic information, and have good lifelong learning ability. They are able to engage in scientific research, design and development, testing, operation and maintenance, service management and other work in related fields of electronic information science and technology.

Approximately five years after graduation, students are expected to attain the following professional competencies:

(1) **Solid Foundation & Lifelong Learning:** Possess a solid foundation in mathematics and physics, systematic core knowledge in electronic information science and technology, and computational thinking literacy. Embrace the concept of lifelong learning, continuously track and expand knowledge of new theories, technologies, and advancements in the field, and adapt to the rapid iterative development of the electronic information industry.

(2) **Problem Solving & Innovation:** Apply professional knowledge and modern tools from electronic information science and technology and related fields comprehensively to analyze and solve engineering problems within the discipline, demonstrating innovation.

(3) **Ethical Responsibility & National Service**: Cultivate deep patriotism and a commitment to serving the nation and its people through engineering, actively advancing socialist core values. Adhere strictly to engineering ethics, ensuring compliance with safety standards and intellectual property regulations in design and manufacturing. Consider the impacts on health, safety, legal, economic, and social sustainability throughout the entire life cycle of solutions and take responsibility for them.Possess sound character, humanistic qualities, and a spirit of labor, proactively serving national strategic needs and undertaking the social responsibility to promote industrial progress.

(4) **Global Perspective & Teamwork:** Exhibit an international perspective, effective communication skills, engineering project management capabilities, strong teamwork spirit, and collaborative abilities. Be capable of performing effectively in diverse, multidisciplinary teams as an individual contributor, team member, or team leader.

二、毕业要求

II．Graduation Requirements

本专业学生毕业时应掌握和具备以下几方面的知识与能力：

Our Graduate Attribute Profile has 11 elements, supported by a Knowledge Profile and a definition of the Level of Problem Solving, both given below:

1.工程知识：能够将数学、自然科学、计算、工程基础知识，电子电路、信号与系统等专业基础知识和电子信息科学与技术领域专业知识，用于解决电子信息科学与技术领域复杂工程问题。

1-1 能够将数学、自然科学、计算等基础理论及相关基础知识应用于电子信息领域工程问题的正确表述；

1-2 能够针对电子信息领域的具体问题建立数学模型并求解；

1-3 能够运用电子信息专业基础理论及相关基础知识对电子信息科学与技术领域中的工程问题进行推演和分析；

1-4 能够将相关专业知识和数学模型方法用于电子信息科学与技术领域工程问题解决方案的比较与综合。

1.Engineering knowledge: The ability to apply mathematics, natural sciences, computing, fundamental engineering principles, specialized foundational knowledge (including electronic circuits, signals and systems), and domain-specific expertise in Electronic Information Science and Technology to solve complex engineering problems within the field of Electronic Information Science and Technology.

1-1 Apply mathematical, natural science, and computing theories to accurately formulate engineering problems in electronic information.

1-2 Establish and solve mathematical models for domain-specific problems.

1-3 Deduce and analyze engineering problems using professional foundational theories and knowledge.

1-4 Compare and synthesize solutions by integrating specialized knowledge with mathematical modeling methods.

2.问题分析：能够应用数学、自然科学、计算和工程科学的基本原理，识别、表达并通

过文献研究分析电子信息科学技术领域的复杂工程问题，综合考虑可持续发展的要求，以获对应复杂工程问题的有效结论。

2-1 能够运用数学、自然科学、计算、电子信息基本理论及专业知识，识别和判断电子信息领域复杂工程问题的关键环节；

2-2 能够根据基本原理与合理假设，定性或定量地从数学、物理或计算模型/解决方案等方面对复杂工程问题进行正确的表达；

2-3 能收集文献中的工程知识，找出与问题相关的理论与方法，分析电子信息科学与技术领域的复杂工程问题的影响因素和解决途径；

2-4 能运用自然科学、计算、电子信息科学基本原理并借助文献研究，对设定假设的准确性和解决方案的有效性进行分析评估，以获得有效的结论。

2.Problem analysis: The ability to apply fundamental principles of mathematics, natural sciences, and engineering science to identify, formulate, and analyze complex engineering problems in Electronic Information Science and Technology through literature research, while holistically considering sustainable development requirements to arrive at valid conclusions.

2-1 Identify and determine critical aspects of complex engineering problems using mathematical, natural science, computing, and domain knowledge.

2-2 Formulate complex engineering problems through mathematical, physical, or computational models based on fundamental principles and reasonable assumptions.

2-3 Investigate and analyze influencing factors and solution approaches through literature review.

2-4 Evaluate hypothesis validity and solution effectiveness using scientific principles and literature research.

3.设计/开发解决方案：针对复杂工程问题，能够应用电子信息科学与技术及其相关专业领域的基本理论和方法，设计或开发满足特定需求的软硬件模块或系统的解决方案，并体现创新性。同时，需从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化背景等角度综合考虑方案的可行性。

3-1 掌握工程设计和产品开发全周期、全流程的基本设计/开发方法和技术，了解影响设计目标和技术方案的各种因素。

3-2 能够针对电子信息领域复杂工程问题的特定需求，完成单元、模块设计；

3-3 能够进行电子信息领域复杂工程问题的软硬件系统设计，并在设计中体现创新性；

3-4 能够从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化背景等角度综合考虑方案的可行性。

3.Design/development of solutions: The ability to apply fundamental theories and methodologies in Electronic Information Science and Technology and related specialized fields to design or develop software/hardware modules or systems addressing complex engineering problems. These solutions must demonstrate innovation while holistically considering feasibility aspects including health, safety & environment; full lifecycle costs & net-zero carbon requirements; legal & ethical compliance; and socio-cultural contexts.

3-1 Master fundamental design/development methodologies and technical factors throughout engineering design and product development lifecycles.

3-2 Complete unit/module-level designs addressing specific requirements of complex engineering problems.

3-3 Implement system-level hardware/software designs demonstrating innovation.

3-4 Comprehensively evaluate solution feasibility considering multidimensional factors

including health, safety & environment; full life cycle costs & net-zero carbon requirements; legal & ethical compliance; and socio-cultural contexts.

4.研究：能够基于数学、自然科学和电子信息科学与技术及相关专业领域的科学原理和科学方法对电子信息科学与技术领域复杂工程问题进行研究，设计实验方案，分析和解释实验/试验数据，并通过综合研究结果和实验/试验数据等信息得到合理有效的结论。

4-1 能够基于相关科学原理和科学方法研究电子信息科学与技术领域相关复杂工程问题，通过文献研究或相关方法，调研和分析电子信息科学与技术领域复杂工程问题的解决方案；

4-2 能够根据具体的电子信息领域问题特征，选择合适的研究路线，设计实验方案；

4-3 能够根据实验方案构建实验系统，安全地开展实验，正确地采集实验数据；

4-4 能对实验结果进行分析和解释，并通过信息综合得到合理有效的结论。

4.Investigation: The ability to conduct research on complex engineering problems in the field of electronic information science and technology based on the scientific principles and methodologies of mathematics, natural sciences, electronic information science and technology, and related professional fields. This includes designing experimental protocols, analyzing and interpreting experimental/test data, and deriving reasonable and valid conclusions through the synthesis of research findings and experimental/test data.

4-1 Investigate solutions through literature research using relevant scientific principles and methods.

4-2 Select appropriate research approaches and design experimental schemes according to problem characteristics.

4-3 Construct experimental systems, conduct experiments safely, and collect valid data.

4-4 Analyze and interpret results to draw reasonable conclusions through information synthesis.

5.使用现代工具：能够开发、选择与使用适当的技术、资源、现代工程工具和信息技术工具，对电子信息科学与技术领域复杂工程问题进行预测与模拟;采集、整理和使用复杂工程问题相关信息数据；在现代工具使用过程中，理解其局限性。

5-1 了解电子信息科学与技术领域常用的现代仪器、信息技术工具、工程工具和仿真软件的使用原理和方法，并理解其局限性；

5-2 能够选择和使用恰当的仪器、信息资源、工程工具和仿真软件，对电子信息科学与技术领域复杂工程问题进行分析、计算和设计；

5-3 能够针对具体的目标和任务，开发或选用满足特定需求的现代工具、仿真软件等对电子信息专业问题进行模拟和预测，并能够分析其局限性。

5.Modern tool usage: The ability to develop, select, and use appropriate technologies, resources, modern engineering tools, and information technology tools to predict and simulate complex engineering problems in the field of electronic information science and technology; collect, organize, and utilize information data related to complex engineering problems; and understand the limitations of these tools during their application.

5-1 Understand operating principles and limitations of modern instruments, IT tools, engineering tools, and simulation software.

5-2 Select and employ appropriate tools for analysis, calculation, and design tasks.

5-3 Develop or adapt specialized tools for simulating and predicting domain-specific problems.

6.工程与可持续发展：能够基于电子信息科学与技术领域相关工程背景知识，分析和评

价电子信息科学与技术领域工程实践和复杂工程问题解决方案对健康、安全、法律以及经济和社会可持续发展的影响，并理解应承担责任。

6-1 了解电子信息科领域及相关领域的技术标准体系、知识产权、产业政策和法律法规；理解不同社会文化对工程活动的影响；了解与电子信息应用相关的环境保护和社会可持续发展的理念和内涵意义，以及国家相关战略、政策法规。

6-2 能够分析和评价电子信息科学与技术领域工程实践和复杂工程问题解决方案对健康、安全、法律以及经济和社会可持续发展的影响，并理解应承担的责任。

6.Engineering and Sustainable Development: The ability to analyze and evaluate the impacts of engineering practices and solutions to complex engineering problems in the field of electronic information science and technology on health, safety, law, as well as economic and social sustainable development, based on relevant engineering background knowledge in this field. This also involves understanding the responsibilities that should be undertaken.

6-1 Understand technical standards, intellectual property, industrial policies, legal regulations, and national sustainability strategies relevant to electronic engineering applications.

6-2 Critically assess impacts of engineering solutions on multidimensional sustainability and recognize associated responsibilities.

7.工程伦理与职业规范：具有工程报国、为民造福的意识，具有人文社会科学素养、健康的身体、正确的审美、良好的心理素质和社会责任感。能够理解和践行工程伦理，在电子信息科学与技术工程实践中遵守工程职业道德、规范和相关法律，履行责任。

7-1 树立工程报国、为民造福的意识，具备人文社会科学素养、健康的身体、正确的审美、良好的心理素质与社会责任感；理解个人与社会的关系，熟悉中国国情。

7-2 理解和践行工程伦理，理解工程技术的社会价值以及工程师的社会责任，在工程实践中能自觉遵守职业道德、规范和相关法律，主动履行责任。

7. Engineering Ethics and Professional Standards: Cultivate a profound commitment to advancing national development through engineering excellence and enhancing public welfare, embodying multidimensional competencies including humanistic and social scientific literacy, holistic wellness encompassing physical vitality and sound aesthetic discernment, psychological resilience, and unwavering social accountability. Demonstrate embodied application of engineering ethics to uphold professional integrity, ensure rigorous compliance with regulatory standards and legal requirements, and honor fundamental commitments throughout all Electronic Information Science and Technology practices. Have humanities and social sciences literacy, and social responsibility, understand and abide by engineering professional ethics in the engineering project in field of electronic information technology, and fulfill their responsibilities.

7-1 Develop commitment to national development through engineering, demonstrating social scientific literacy, physical-psychological wellness, aesthetic discernment, and social responsibility.

7-2 Understand engineering's social value and practitioners' responsibilities, actively complying with ethical codes and legal regulations.

8.个人和团队：具有良好的团队协作精神与团队合作能力，能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。

8-1 能够正确认识多样化、多学科团队对解决复杂工程问题的实践价值，具备良好的团队协作精神；

8-2 能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人等角色。

8.Individual and teamwork: Demonstrate robust collaborative ethos and effective teamwork

capabilities, enabling seamless transition between roles as an autonomous contributor, synergistic team member, and accountable leader within culturally diverse and multidisciplinary contexts.

8-1 Recognize the value of diverse multidisciplinary teams in solving complex engineering problems.

8-2 Perform effectively in various roles within diverse teams.

9．沟通：能够就电子信息科学与技术领域复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通、交流与合作，理解、尊重语言和文化差异。

9-1 能够就电子信息科学与技术领域的复杂工程问题，通过口头、文稿、图表等方式准确表达自己的观点或回应指令；

9-2 能够阅读专业文献和资料，了解电子信息科学与技术领域的国际发展趋势及研究热点，充分理解与尊重文化；

9-3 熟练掌握至少一门外语，在跨文化背景下，就电子信息科学与技术领域的复杂工程题，开展基本语言与书面沟通交流。

9. Communication: The ability to effectively communicate complex engineering problems in Electronic Information Science and Technology to both professional peers and the general public through various means including written reports and design documentation, oral presentations, and clear articulation or response to instructions. Additionally, the competence to engage in effective communication and collaboration in cross-cultural contexts, demonstrating understanding and respect for linguistic and cultural differences.

9-1 Express technical viewpoints and respond to instructions accurately through oral, written, and graphical means.

9-2 Comprehend international trends through literature while respecting cultural differences.

9-3 Communicate professionally in at least one foreign language in cross-cultural contexts.

10 项目管理：理解并掌握工程项目相关的管理原理与经济决策方法，并能在多学科环境中应用。

10-1 理解并掌握工程管理原理与经济决策方法；了解工程及产品全周期、全流程的成本构成，理解其中涉及的工程管理与经济决策问题；

10-2 能在多学科环境下（包括模拟环境），在设计开发解决方案的过程中，运用工程管理与经济决策方法。

10.Project management: Comprehend and systematically apply project management principles and economic decision-making methodologies within Electronic Information Science and Technology contexts, demonstrating proficiency in implementing these frameworks across multidisciplinary project environments.

10-1 Understand fundamental project management and economic decision-making methods; understand the cost composition of the full life cycle and entire process of projects and products, and comprehend the engineering management and economic decision-making issues involved therein

10-2 Apply management and economic principles in multidisciplinary solution development.

11.终身学习：具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。

11-1 具备自主学习、终身学习和批判思维的意识和能力，充分认识到只有通过终身不断的自主学习才能跟上社会发展和技术进步；

11-2 针对个人和职业发展的需求，具有持续学习、自我完善和适应发展的能力（含技术

问题理解、归纳总结、问题提出等能力）。

11. Life-long learning: Demonstrate awareness and sustained capacity for autonomous learning, perpetual skill development, and critical thinking. Possess the intellectual agility to comprehend systemic impacts of pervasive technological transformations on engineering practice and societal structures, enabling proactive adaptation to emerging technological disruptions.

11-1 Recognize the necessity of continuous learning for professional relevance and possess critical thinking awareness.

11-2 Maintain abilities for self-improvement and adaptation, including technical comprehension, stigmatization, and problem formulation.

三、专业核心课程

III．Core Courses

电路理论、模拟电子技术、数字系统与逻辑设计、微机原理与应用、电磁场与电磁波、 信号与系统、数据结构、通信电子线路、数字信号处理、信息论与通信原理

Circuit Theory, Analog Electronic Technology,Digital Systems and Logic Design,Principles and Applications of Microcomputers,Electromagnetic Fields and Electromagnetic Waves,Signals and Systems,Data Structures,Communication Electronic Circuits,Digital Signal Processing (DSP),Information Theory and Communication Principles

四、特色课程

IV．Feature Courses

根据国家战略、社会与经济发展需求，专业教学秉承“以学生为中心、成果导向、持续改进”的教育理念，采用“2+X”的培养模式，从第三年开始，分计算机视觉与语音、射频通信与网络和微电子器件与集成电路三个特色方向进行专门培养。各方向的特色课程分为必选和限选两类，分别为：

计算机视觉与语音方向（CVS）必选课：数字图像处理、机器视觉系统（双语）、智能视觉与深度学习、数字图像处理实践

射频通信与网络方向（RCN）必选课：电波与天线、射频电路设计（双语）、数字微波通信、射频电路设计实践

微电子器件与集成电路方向（MIC）必选课:微电子技术基础、FPGA 数字系统设计（双语）、SOPC 技术、FPGA 应用实践

三个方向的限选课为：嵌入式系统设计、计算机通信网、微电子器件[MIC]、集成电路制造技术[MIC]、EDA 技术[MIC]、微波技术[RCN]、微波技术综合设计实践[RCN]、语音信号处理[CVS]、智能机器人[CVS]、Python 编程与机器学习基础[CVS]、智能芯片编译技术导论[CVS, MIC]，其中，课程名上标说明该课程与对应的方向相关，建议根据感兴趣的方向选修。

Guided by national strategies and the needs of social and economic development, the teaching program for the Electronic Information Science and Technology major adheres to the educational philosophy of "student-centered, outcome-oriented, and continuously improving," implementing a "2+X" cultivation model. Starting from the third year, students specialize in one of three distinct tracks: Computer Vision and Speech (CVS), Radio Frequency Communication and Networking (RCN), or Microelectronic Devices and Integrated Circuits (MIC). The specialized courses for each track include both Required and Elective courses.

For the CVS track, required courses are: Digital Image Processing, Machine Vision Systems (Bilingual), Intelligent Vision and Deep Learning, and Digital Image Processing Practice.

For the RCN track, required courses are: Electromagnetic Waves and Antennas, RF Circuit Design (Bilingual), Digital Microwave Communication, and RF Circuit Design Practice.

For the MIC track, required courses are: Fundamentals of Microelectronics, FPGA Digital System Design (Bilingual), SOPC Technology, and FPGA Application Practice.

Elective courses common to all three tracks include: Embedded System Design, Computer Communication Networks, Microelectronic Devices (for MIC), Integrated Circuit Manufacturing Technology (for MIC), EDA Technology (for MIC), Microwave Technology (for RCN), Microwave Technology Comprehensive Design Practice (for RCN), Speech Signal Processing (for CVS), Intelligent Robotics (for CVS), Python Programming and Fundamentals of Machine Learning (for CVS), Introduction to Intelligent Chip Compilation Technology(for MIC or CVS).

The track abbreviation (e.g., CVS, RCN, MIC) following a course name indicates its primary relevance to that specific track and serves as a recommendation for students within that track to prioritize electing it.

五、学制与学位

V．Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="17">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="16">29</td><td rowspan="13">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="11">通识类
General Cours</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>海事素养
Maritime Literacy</td><td>0</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
</table>

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td></td><td></td><td>其他
Others</td><td></td><td rowspan="3"></td><td></td></tr>
<tr><td>专业（类）基础课
Disciplinary Courses</td><td colspan="2">大类基础课
Major Group Courses
专业基础课
Discipline Courses</td><td>36.5</td><td rowspan="7">/</td></tr>
<tr><td>专业及方向课
Stream Courses</td><td colspan="2">专业课
Stream Courses Specialized course</td><td>8</td></tr>
<tr><td rowspan="4">集中实践环节 Practical &Training</td><td colspan="2">军事实践课
Military Practical Course</td><td>3</td><td rowspan="4"></td></tr>
<tr><td colspan="2">专业实践课
Specialized Practical Course</td><td>10</td></tr>
<tr><td colspan="2">毕业实践课
Graduation Practice</td><td>12</td></tr>
<tr><td colspan="2">其他实践课
Others</td><td>1</td></tr>
<tr><td colspan="3">合计：168
Total：168</td><td>131</td><td>29</td><td>8</td></tr>
</table>

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000130	专业导论(电子信息类)	0.5
		1713018260	专业导论(电科)	0.5
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713021750	科技讲座	1
合计：9 Total：9				9

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：电子信息科学与技术课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（168 学分） In-class Teaching Courses （168 credits）			拓展素养（9 学分） Centralized Practicum （9 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	131	29	8	9	177

表 2：电子信息科学与技术必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education courses		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	

			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713022310	创新思维与创新方法(电子信息类) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	

			20	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-1	
			21	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			22	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			23	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			24	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713009970	C 语言程序设计 C Language Programming	3	考试		综合素养	48	24	24	1-2	
			2	1713009980	电路理论 Circuit Theory	3.5	考试	√	综合素养	56	56	0	1-2	

			3	1713009990	电路实验 Circuit Theory Experiment	1	考查	√	综合素养	24	0	24	1-2	
			4	1713028220	电磁场与电磁波(电科) Electromagnetic Fields and Waves	3	考试	√	综合素养	48	40	8	2-1	
			5	1713029810	电子信息科学与技术概论 Overview of Electronic Information Science and Technology	2	考查	√	综合素养	32	32	0	2-1	
			6	1713030180	模拟电子技术 Analog Electronics Technology	3.5	考试	√	综合素养	56	48	8	2-1	
			7	1713021660	信号与系统 Signals & Systems	4	考试	√	综合素养	64	56	8	2-2	
			8	1713025260	工程概论(电科) Introduction to Engineering	2	考试		综合素养	32	32	0	2-2	
			9	1713030030	数字系统与逻辑设计 Digital Circuit and Logic Designs	3	考试	√	综合素养	48	38	10	2-2	
			10	1713029390	微机原理与应用 Principles and Application of Microcomputer	4.5	考试	√	综合素养	72	54	18	3-1	
			11	1713031230	通信电子线路(电科) Communication Electronic Circuits	3	考试	√	综合素养	48	40	8	3-1	
			12	1713019440	信息产业创新创业实践导论 Introduction to innovation and entrepreneurship in information technology field	1	考查		综合素养	16	16	0	3-2	
			13	1713031310	数据结构(电科) Data Structures	3	考查		综合素养	48	40	8	3-2	

	必修-专业及方向课程 Stream Courses		1	1713028920	数字信号处理(电科) Digital Signal Processing	3	考试	√	综合素养	48	40	8	3-1	
			2	1713029400	信息论与通信原理 Information Theory and Principles of Communications	5	考试	√	综合素养	80	72	8	3-1	
合计 Total						**106**				**1784**	**1434**	**350**		

表 3：电子信息科学与技术 限选课程设置及进程

备注:,备注:必须从【微电子器件与集成电路方向】、【射频通信与网络方向】、【计算机视觉与语音方向】三个方向中选择一个方向进行修读。

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选专业方向课（计算机视觉与语音方向） Stream Courses		1	1713011210	数字图像处理 Digital Image Processing	2	考试		综合素养	32	24	8	3-1	
			2	1713028410	机器视觉系统(双语) Machine Vision System (Bilingual)	2	考试		综合素养	32	16	16	3-2	
			3	1713011280	数字图像处理实践 Practice of Digital Image Processing	2	考查		综合素养	60	0	60	4-1	集中实践环节
			4	1713026950	智能视觉与深度学习 Intelligent Vision with Deep Leaning	2	考试		综合素养	32	22	10	4-1	
	限选专业方向课（微电子器件与集成电路方向） Stream Courses		1	1713011240	微电子技术基础 Introduction to Microelectronics	2	考试		综合素养	32	32	0	3-1	
			2	1713029830	FPGA 数字系统设计(双语) Digital System Design with FPGA	2	考试		综合素养	32	16	16	3-2	

			3	1713011260	SOPC 技术 SOPC Technology	2	考查		综合素养	32	16	16	4-1	
			4	1713011290	FPGA 应用实践 Practice of FPGA Application	2	考查		综合素养	60	0	60	4-1	集中实践环节
	限选专业方向课（射频通信与网络方向） Stream Courses		1	1713025290	电波与天线(电科) Propagation and Antenna	2	考试		综合素养	32	24	8	3-1	
			2	1713028430	射频电路设计(双语) Fundamentals of RF Circuits Design (Bilingual)	2	考查		综合素养	32	16	16	3-2	
			3	1713010310	数字微波通信 Digital Microwave Communication	2	考查		综合素养	32	28	4	4-1	
			4	1713011270	射频电路设计实践 Practice of RF Circuits Design	2	考查		综合素养	60	0	60	4-1	集中实践环节
	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			3	1713026340	Matlab 程序设计 Programming with Matlab	2	考查		综合素养	32	16	16	1-1	
			4	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
			5	1713027160	Python 编程与机器学习基础 Fundamentals of Python programming and machine learning	2.5	考试		综合素养	40	32	8	2-2	
			6	1713028200	电子测量 Electronic Measurement	2	考查		综合素养	32	24	8	2-2	
			7	1713028930	传感器原理与应用 Sensor Principle and Application	2	考查		综合素养	32	24	8	3-1	

			8	1713010290	C++程序设计基础 Basics of C++ Language Programming	2	考查		综合素养	32	16	16	4-1	
	限选-专业(类)基础课 Disciplinary Courses		1	1713028910	微波技术(电科) Microwave Technology	3.5	考查		综合素养	56	48	8	2-2	
			2	1713010150	EDA 技术 EDA Technology	2	考试		综合素养	32	16	16	3-1	
			3	1713010250	计算机通信网 Computer Communications Networks	3	考查		综合素养	48	40	8	3-2	
			4	1713010270	嵌入式系统设计 Design of Embedded System	2	考查		综合素养	32	16	16	3-2	
			5	1713012500	智能机器人 Intelligent Robot	2	考查		综合素养	32	32	0	3-2	
			6	1713012510	智能机器人实验 Intelligent Robot Experiments	2	考查		综合素养	48	0	48	3-2	
			7	1713025490	微电子器件 Microelectronic Device	2	考查		综合素养	32	32	0	3-2	
			8	1713010280	语音信号处理 Speech Signal Processing	2	考查		综合素养	32	24	8	4-1	
			9	1713011230	图像压缩技术 Image Compression Technology	2	考查		综合素养	32	24	8	4-1	
			10	1713028230	集成电路制造技术 Integrated Circuit Manufacturing Technology	2	考查		综合素养	32	32	0	4-1	

			11	1713028400	智能芯片编译技术导论 Introduction to Intelligent Chip Compilation Technology	2	考查		综合素养	32	24	8	4-1	
合计 Total						63				1140	686	454		

表 4：电子信息科学与技术任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and“other courses”. Among them, need to take at least 2 credits from“Humanities and art courses”,“national and social courses”,“science and technology courses”, At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：电子信息科学与技术 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Course	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010320	电子技术工艺实习 Electronics Technology Practice	1	考查		综合素养	30	0	30	1-2	

			3	1713010360	C 语言程序设计实践 Practice of Programming with C Language	1	考查		综合素养	30	0	30	1-2	
			4	1713010330	电子线路课程设计 Course Project of Electronic Circuits	1	考查		综合素养	30	0	30	2-2	
			5	1713010340	数字系统课程设计 Course Project of Digital Systems	1	考查		综合素养	30	0	30	2-2	
			6	1713028211	电科创新实践 I Innovative Practice I of Electronic Information Science and Technology Majors	1	考查		综合素养	30	0	30	2-2	
			7	2113000570	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	2-2	
			8	1713010350	单片机应用实践 Practice of Microprocessor Application	1	考查		综合素养	30	0	30	3-2	
			9	1713010371	信号综合处理实践 Practice of Signal Processing	1	考查		综合素养	30	0	30	3-2	
			10	1713010400	专业文献查阅/写作及综述实训 Technical Material reading & Writing Training	1	考查		综合素养	30	0	30	3-2	
			11	1713028212	电科创新实践 II Innovative Practice II of Electronic Information Science and Technology Majors	1	考查		综合素养	30	0	30	3-2	
			12	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			13	1713031250	专业实习(电科) Professional Internship(Electronic Information Science and Technology)	1	考查		综合素养	30	0	30	4-1	
			14	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						27				796	0	796		

表 6：电子信息科学与技术 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000130	专业导论(电子信息类) Introduction to Profession	0.5	考查		拓展素养	8	8	0	1-1	
			4	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			5	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			6	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	

			7	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			8	1713018260	专业导论(电科) Introduction of Profession	0.5	考查		拓展素养	8	8	0	2-1	
			9	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			10	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			11	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			12	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			13	1713021750	科技讲座 Science and Technology Lecture	1	考查		拓展素养	16	16	0	3-2	
			14	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			15	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			16	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						7				160	160	0		

八、实践学时学分
VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	“工程实践与毕业设计”相关课程 Engineering Practice & Graduation Project
1	体育(1)	必修	26	1	
2	体育(2)	必修	34	1	
3	体育(3)	必修	34	1	
4	体育(4)	必修	34	1	
5	军事训练	必修	90	3	
6	大学物理实验（1）	必修	24	1	●
7	大学物理实验（2）	必修	24	1	●
8	电路理论	必修	12	0.75	●
9	模拟电子技术	必修	8	0.5	●
10	数字系统与逻辑设计	必修	10	0.625	●
11	微机原理与应用	必修	18	1.125	●
12	电磁场与电磁波（电科）	必修	8	0.5	●
13	信号与系统	必修	8	0.5	●
14	数据结构(电科)	必修	8	0.5	●
15	通信电子线路(电科)	必修	8	0.5	●
16	数字信号处理(电科)	必修	8	0.5	●
17	信息论与通信原理	必修	8	0.5	●
18	电子技术工艺实习	必修	30	1	●
19	C 语言程序设计实践	必修	30	1	●
20	电子线路课程设计	必修	30	1	●
21	数字系统课程设计	必修	30	1	●
22	单片机应用实践	必修	30	1	●
23	信号处理综合实践	必修	30	1	●
24	专业文献查阅/写作及综述实训	必修	30	1	●
25	电科创新实践 I	必修	30	1	●
26	电科创新实践 II	必修	30	1	●
27	金工实习	必修	30	1	●
28	专业实习	必修	30	1	●
29	毕业论文	必修	360	12	●
30	微电子器件与集成电路方向模块课内实验课	限选	32	2	●
31	射频通信与网络方向模块课内实验课	限选			

32	计算机视觉与语音方向模块课内实验课	限选			
33	微电子器件与集成电路方向模块实践课	限选	60	2	●
34	射频通信与网络方向模块实践课	限选			
35	计算机视觉与语音方向模块实践课	限选			
合计		总计	1144	42	
		与毕业设计相关	926	35	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**
毕业要求 1 **Graduation Requirements 1**	●			
毕业要求 2 **Graduation Requirements 2**		●		
毕业要求 3 **Graduation Requirements 3**		●		
毕业要求 4 **Graduation Requirements 4**		●		
毕业要求 5 **Graduation Requirements 5**		●		
毕业要求 6 **Graduation Requirements 6**			●	
毕业要求 7 **Graduation Requirements 7**			●	
毕业要求 8 **Graduation Requirements 8**				●
毕业要求 9 **Graduation Requirements 9**				●
毕业要求 10 **Graduation Requirements 10**				●
毕业要求 11 **Graduation Requirements 11**	●			

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X．Courses &Graduation Requirements Relationship Matrix

序号	课程名称	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
1	习近平新时代中国特色社会主义思想概论																						H	H									
2	中国近现代史纲要																						H	H									
3	思想道德与法律																				H	H	H	H									
4	毛泽东思想和中国特色社会主义理论体系概论																						H	H									
5	马克思主义基本原理																						H	H									
6	大学英语																										H	H	H				
7	高等数学（A）	H	H	M	H	M	M	M	M																								
8	概率论与数理统计	H	H	M	M	M	M	M	M																					M	M		
9	线性代数（A）	H	H	M	H	M	M	M	M																								
10	复变函数与积分变换	M	H	M	M	M	M	M	M																								
11	大学物理 B	H	H	M	H	M	M	M	M																								
12	大学物理实验 B					M	M	M	H						H	H	H																
13	军事素养																						H										
14	军事训练																								M	H							
15	体育																						H		M	H							

序号	课程名称	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
16	逻辑学																										H					H	
17	实用写作																										H	H					
18	创新思维与创新方法(电子信息类)											M																				H	H
19	信息产业创新创业实践导论												H									M			H	M				H	H	M	
20	C 语言程序设计			H	M						M	M						M	M	M				M									
21	电路理论	H	H	M	M	H	H	H	H							M		M						M									M
22	模拟电子技术	H	H	M	M	H	H	H	H							M		M						M									
23	数字系统与逻辑设计	H	H	M	M	H	H	H	H							M		M						M									
24	微机原理与应用	H	H	M	M	H	H	H	H							M		M						M									
25	电磁场与电磁波(电科)	H	H	M	M	H	H	H	H		M		M			M		M						M									M
26	信号与系统	H	H	M	M	H	H	H	H		H					M		M						M									M
27	数据结构(电科)	H	H	M	M	H	H	H	H		H					M		M						M									M
28	工程概论(电科)									H			H								H	H								H	H		
29	通信电子线路(电科)	H	H	M	M	H	H	H	H							M		M						M									
30	数字信号处理(电科)	H	H	M	M	H	H	H	H		H					M		M						M									
31	信息论与通信原理	H	H	M	M	H	H	H	H		H					M		M						M									M
32	机械制图																	M	H														

序号	课程名称	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
33	Python 编程与机器学习基础	M	H	H	M						M	M		H	M			M	M	M				M									
34	Matlab 程序设计			H	M						M	M						M	M	M				M									
35	电子测量														H	M		H	H														
36	传感器原理与应用					M		M	M					H		H		H	H	M													
37	C++程序设计基础			H	M						M	M						M	M	M				M									
38	嵌入式系统设计			H	H						H	H		H	H	M	M																
39	计算机通信网			H	H						H	H		H	H	M	M																
40	微电子器件			H	H						H	H		H	H	M	M																
41	EDA 技术			H	M													H	H														
42	集成电路制造技术			H	H						H	H		H	H	M	M																
43	微波技术(电科)			H	H	M										H		M				M											
44	微波技术综合设计实践											H	H				H					M		M									
45	语音信号处理			H	H						H	H		H	H	M	M																
46	智能机器人			H	H						H	H		H	H	M	M																
47	智能芯片编译技术导论			H	H						H	H		H	H	M	M																
48	微电子技术基础	M	M	M	M	M	M	H	M		M	H		H	H	H	H		M														
49	FPGA 数字系统设计									H	H	H		M	M	M	M		H	M								H	H				
50	SOPC 技术								M		H				M							M											

序号	课程名称	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
51	FPGA 应用实践									H		H	H	M	M	M	M	M	M	H		M		M	M	M	H	M		M	M		
52	电波与天线(电科)	M	M	M	M	M	M	H	M		M	H		H	H	H	H		M														
53	射频电路设计（双语）									H	H	H		M	M	M	M		H	M								H	H				
54	数字微波通信								M		H				M							M											
55	射频电路设计实践									H		H	H	M	M	M	M	M	M	H		M		M	M	M	H	M		M	M		
56	数字图像处理	M	M	M	M	M	M	H	M		M	H		H	H	H	H		M														
57	机器视觉系统（双语）									H	H	H		M	M	M	M		H	M								H	H				
58	视觉智能与深度学习								M		H				M							M											
59	数字图像处理实践									H		H	H	M	M	M	M	M	M	H		M		M	M	M	H	M		M	M		
60	电子技术工艺实习									M	H	H			H	H	H	H	H	H		M		M	H	H	M						
61	C 语言程序设计实践									M	H	H			H	H	H	H	H	H				M	H	H	M						
62	电子线路课程设计									M	H	H			H	H	H	H	H	H		M		M	H	H	M						
63	数字系统课程设计									M	H	H			H	H	H	H	H	H		M		M	H	H	M						
64	单片机应用实践									M	H	H			H	H	H	H	H	H		M		M	H	H	M						
65	信号综合处理实践									M	H	H			H	H	H	H	H	H				M	H	H	M						
66	专业文献查阅/写作及综述实训							H																			H	H					H
67	电科创新实践 I									H		H	H	M	M	M	M	M	M	H		M		M	M	M	H	M		M	M		
68	电科创新实践 II									H		H	H	M	M	M	M	M	M	H		M		M	M	M	H	M		M	M		

序号	课程名称	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	3-1	3-2	3-3	3-4	4-1	4-2	4-3	4-4	5-1	5-2	5-3	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
69	专业实习									M		M	M				M				M	M			M	M	M	M		M	M		
70	毕业论文									H	H	H	H	H	H	H	H				H	H			H			H	M	H	H	H	H
71	金工实习																	H				M			H	H							
72	劳动教育（理论）																						H	H	H								
73	劳动教育（实践）																						H	H	H								
74	形势与政策																						H	H									
75	大学生健康教育																								H	H	H						
76	国家安全教育(信息)																				H	H	H	H									
77	入学教育																				H	H	H	H	H							H	
78	专业导论																				H	H		H								H	
79	职业生涯规划																				H	H	H	H								H	H
80	就业指导																						H	H									
81	电子信息科学与技术概论	M	M	M	M																M	M	M	M				M				M	

注： **表示专业限选通识课，6.5 学分；**

表示专业方向限选课，6 学分；

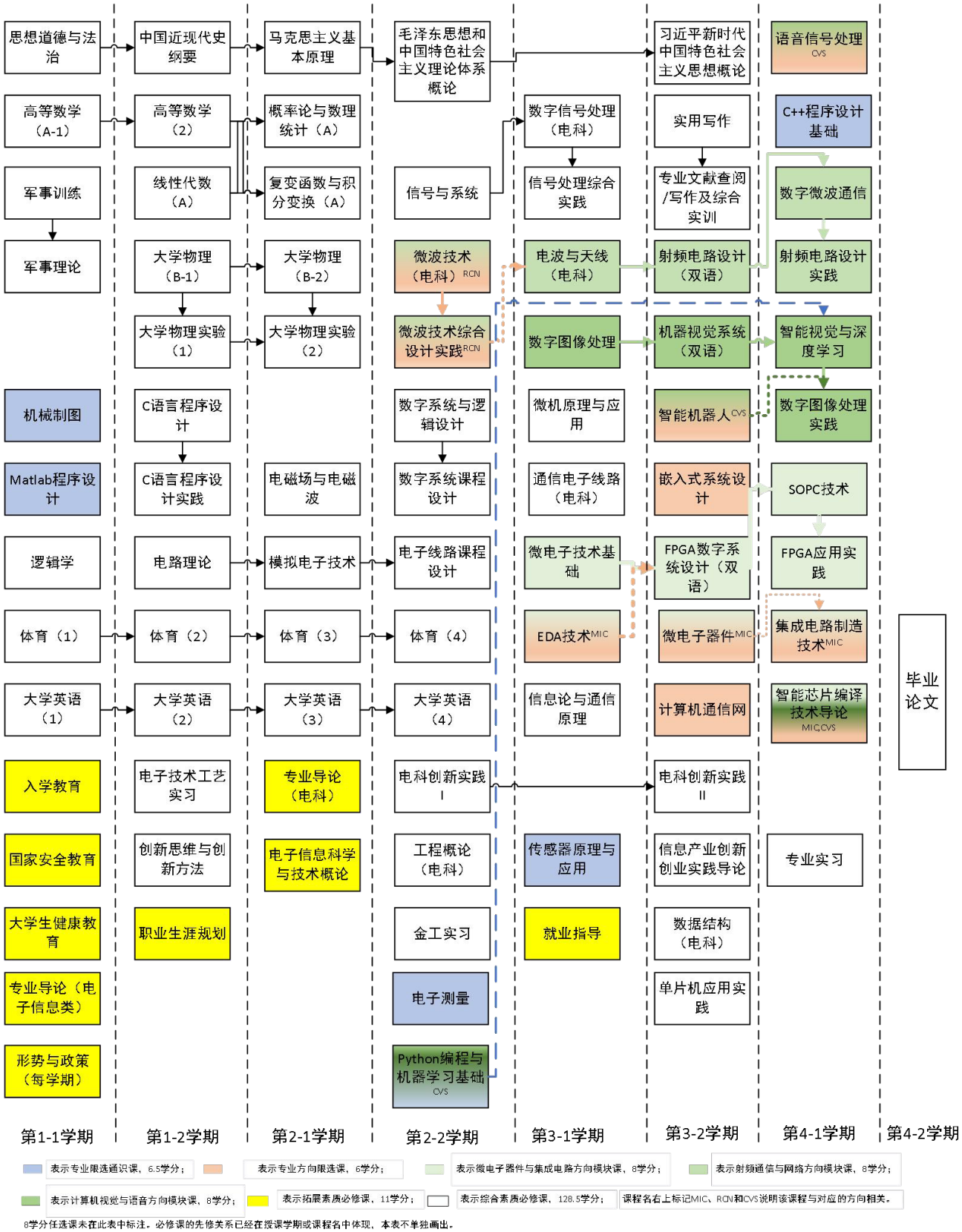
表示微电子器件与集成电路方向模块课，8 学分；

表示射频通信与网络模块课，8 学分；

表示计算机视觉与语音模块课，8 学分。

十一、课程配置流程图

XI. Flowchart of Course Configuration



注：必修课的先修关系已经在授课学期或课程名中体现，本表不另行画其之间的关系线，从而减少对查看限选课之间关系的干扰。

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84724073 84729468

教学院长：84727731

教 务 处：84723005

电子信息科学与技术专业负责人：王新年

电子信息科学与技术专业教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Communication Engineering Major

[2025 级适用]

★通信工程（080703）

大连海事大学教务处

2025 年 9 月

通信工程专业本科培养计划（2025 版）

Undergraduate Program for Communication Engineering

一、培养目标

I. Program Objectives

培养目标 Program Objectives	培养目标分解指标点 Observation Points
本专业致力于培养具有良好的科学素养和职业素养，能够在信息产业、交通运输、制造业、国防等行业的通信工程相关领域部门中，从事科学研究、设计开发、测试运维和服务管理等工作的复合型专业人才。 This program is dedicated to cultivating composite-type professionals with good scientific and professional qualities who can work in departments related to communication engineering within industries such as information technology, transportation, manufacturing, and national defense, engaging in scientific research, design and development, testing and maintenance, and service management.	1. 能够综合运用工程知识解决通信工程领域的工程问题，在工程问题解决过程中体现创新意识，并综合考虑社会、环境、法规、健康、安全与文化等因素影响； 1. Have engineering knowledge to solve engineering problems in the field of communication engineering technology, with considering social, environmental, regulatory, health, safety and cultural factors, and with innovative consciousness in the process of solving engineering problems.
	2. 在职业生涯中具有良好的人文社会科学素养、社会责任感和职业道德； 2. Have good humanities and Social Sciences literacy, social responsibility and professional ethics in their career;
	3. 具备国际视野，具有沟通、交流与管理能力，在工作团队中，能作为主要成员发挥骨干作用； 3. Have international vision, communication and management skills, and being able to play a backbone role as a key member in a team.
	4. 具有自主学习和适应发展能力，具备终身学习意识。 4. Have the ability to learn independently and adapt to the development of society, and having the consciousness of lifelong learning.

二、毕业要求

II. Graduation Requirements

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1.工程知识。能够将数学、自然科学、计算、工程基础和专业知识用于解决复杂工程问题。 1.Engineering knowledge. Ability to apply mathematics, natural sciences,	1-1 能够将数学、自然科学、计算、工程基础知识用于解决复杂通信工程问题。 1-1 Ability to apply fundamental knowledge of mathematics, natural sciences, computing, and engineering to solve complex communication engineering problems.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
computation, engineering fundamentals, and specialized knowledge to solve complex engineering problems.	1-2 能够将数学、自然科学、计算、工程专业知识用于解决复杂通信工程问题。 1-2 Ability to apply mathematical, natural, computational, and engineering expertise to solve complex communications engineering problems.
2.问题分析。能够应用数学、自然科学和工程科学的基本原理，识别、表达并通过文献研究分析复杂工程问题，综合考虑可持续发展的要求，以获得有效结论。 2.Problem analysis. Be able to apply the basic principles of mathematics, natural science and engineering science, identify, express and analyze complex engineering problems through literature research, and comprehensively consider the requirements of sustainable development to obtain effective conclusions.	2-1 能够应用数学、自然科学和工程科学的基本原理，识别和表述复杂通信工程问题。 2-1 Be able to apply the basic principles of mathematics, natural science and engineering science to identify and express complex communication engineering problems.
	2-2 能够应用数学、自然科学和工程科学的基本原理，在考虑可持续发展的要求下，利用文献研究分析复杂通信工程问题，以获得有效结论 2-2 Be able to apply the basic principles of mathematics, natural science and engineering science, and use literature to study and analyze complex communication engineering problems in consideration of the requirements of sustainable development to obtain effective conclusions
3.设计/开发解决方案。能够针对复杂工程问题设计和开发解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，体现创新性，并从健康、 安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3.Design/develop solutions. Be able to design and develop solutions for complex engineering problems, design systems, units (components) or processes that meet specific needs, reflect innovation, and consider feasibility from the perspectives of health, safety and environment, full life cycle cost and net zero carbon requirements, law and ethics, society and culture.	3-1 能够针对复杂通信工程问题设计满足特定需求的系统、单元（部件）或工艺流程，设计应体现创新性。 3-1 The system, unit (component) or process flow that be designed for complex communication engineering problems can meet specific requirements, and the design should reflect innovation.
	3-2 能够针对复杂通信工程问题开发特定的解决方案，并从健康、安全与环境、全生命周期成本与净零碳要求、法律与伦理、社会与文化等角度考虑可行性。 3-2 Be able to develop specific solutions for complex communication engineering problems, and consider the feasibility from the perspectives of health, safety and environment, life-cycle cost and net zero carbon requirements, law and ethics, society and culture.

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
4.研究。能够基于科学原理并采用科学方法对复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 4.Research. Be able to study complex engineering problems based on scientific principles and scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information integration.	4-1 能够基于科学原理并采用科学方法，对复杂通信工程问题进行设计实验、分析与解释数据 4-1 Be able to design experiments, analyze and interpret data for complex communication engineering problems based on scientific principles and scientific methods
	4-2 能够基于科学原理并采用科学方法，综合复杂通信工程问题的实验信息并得到有效的结论。 4-2 Be able to synthesize the experimental information of complex communication engineering problems and obtain effective conclusions based on scientific principles and scientific methods.
5.使用现代工具。能够针对复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。 5.Use modern tools. Be able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for complex engineering problems, including prediction and simulation of complex engineering problems, and understand their limitations.	5-1 能够针对复杂通信工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具进行问题的预测与模拟。 5-1 Be able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools to predict and simulate complex communication engineering problems.
	5-2 能够针对复杂通信工程问题，在开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具时理解局限性并确保在合理范围内使用。 5-2 Be able to understand the limitations of developing, selecting and using appropriate technologies, resources, modern engineering tools and information technology tools for complex communication engineering problems and ensure that they are used within a reasonable range.
6.工程与可持续发展。在解决复杂工程问题时，能够基于工程相关背景知识，分析和评价工程实践对健康、安全、环境、法律以及经济和社会可持续发展的影响，并理解应承担的责任。 6.Engineering and sustainable development. When solving complex engineering problems, be able to analyze and evaluate the impact of engineering practice on health, safety, environment, law, economic and social sustainable development based on relevant engineering background knowledge, and understand the	6-1 在解决复杂通信工程问题时，能够基于通信工程相关背景知识，从健康、安全、环境、法律以及经济和社会可持续发展角度来分析和评价通信工程实践影响。 6-1 When solving complex communication engineering problems, be able to analyze and evaluate the impact of communication engineering practices from the perspective of health, safety, environment, law, and economic and social sustainable development based on the relevant background knowledge of communication engineering.
	6-2 在解决复杂通信工程问题时，能够基于通信工程相关背景知识，理解工程实践中应承担的责任。 6-2 Be able to understand the responsibilities in engineering practice based on relevant background knowledge of communication

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
responsibilities to be undertaken.	engineering when solving complex communication engineering problems.
7.工程伦理和职业规范。有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理，在工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7.Engineering ethics and professional norms. Have the awareness of serving the country and benefiting the people, have humanities and social science literacy and social responsibility, be able to understand and practice engineering ethics, comply with engineering professional ethics, norms and relevant laws in engineering practice, and fulfill responsibilities.	7-1 有工程报国、为民造福的意识，具有人文社会科学素养和社会责任感，能够理解和践行工程伦理 7-1 Have the awareness of serving the country and benefiting the people, have humanities and social science literacy and social responsibility, and be able to understand and practice engineering ethics
	7-2 能够在通信工程实践中遵守工程职业道德、规范和相关法律，履行责任。 7-2 Abide by professional ethics, norms and relevant laws in communication engineering practice, and perform responsibilities.
8.个人与团队。能够在多样化、多学科背景下的团队中承担个体、团队成员以及负责人的角色。 8.Individuals and teams. Be able to assume the role of individual, team member and leader in a diversified and multidisciplinary team.	8-1 能够在多样化、多学科背景下的团队中承担个体的角色。 8-1 Be able to play an individual role in a diverse and multidisciplinary team.
	8-2 能够在多样化、多学科背景下的团队中承担团队成员以及负责人的角色。 8-2 Be able to play the role of team member and leader in a diversified and multidisciplinary team.
9.沟通。能够就复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令；能够在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异。 9.Communication. Be able to effectively communicate and exchange with industry peers and the public on complex engineering issues, including writing reports and design drafts, making statements, clearly expressing or responding to instructions; Be able to communicate and exchange in a cross-cultural	9-1 能够就复杂通信工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。 9-1 Be able to effectively communicate with peers in the industry and the public on complex communication engineering issues, including writing reports and design documents, making statements, clearly expressing or responding to instructions.
	9-2 能够就复杂通信工程问题在跨文化背景下进行沟通和交流，理解、尊重语言和文化差异. 9-2 Be able to communicate and exchange on complex communication engineering issues in a cross-cultural context,

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
context, understand and respect language and cultural differences.	understand and respect language and cultural differences
10.项目管理。理解并掌握与工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用。 10.Project management. Understand and master the management principles and economic decision-making methods related to engineering projects, and be able to apply them in a multidisciplinary environment.	10-1 能够理解并掌握与通信工程项目相关的管理原理与经济决策方法 10-1 Be able to understand and master the management principles and economic decision-making methods related to communication engineering projects
	10-2 能够在多学科环境中应用项目管理知识。 10-2 Be able to apply project management knowledge in a multidisciplinary environment.
11. 终身学习。具有自主学习、终身学习和批判性思维的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革。 11.Lifelong learning. Have the awareness and ability of independent learning, lifelong learning and critical thinking, be able to understand the impact of extensive technological changes on engineering and society, and adapt to new technological changes.	11-1 具有自主学习、终身学习和批判性思维的意识和能力。 11-1 Have the awareness and ability of independent learning, lifelong learning and critical thinking.
	11-2 能够理解广泛的技术变革对工程和社会的影响，并适应新技术变革。 11-2 Be able to understand the impact of extensive technological changes on engineering and society, and adapt to new technological changes.

三、专业核心课程

Ⅲ. Core Courses

电路理论、移动通信、信息论基础、通信原理、海上应急通信、计算机通信网、光纤通信、卫星通信、移动数字交换技术、多媒体通信

Circuit Theory、Mobile Communications、Information Theory、Communication System Princip、Maritime Emergency Communicationles、Computer Communications Networks、Optical Fiber Communication、Satellite Communication、Multimedia Communication

四、特色课程

IV. Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
5G 无线传输技术 5G wireless			●		●	

transmission technology						
通信频率合成技术 Communication frequency synthesis technology					●	
移动数字交换技术 Mobile digital switching technology			●			
光纤通信 Fiber optic communication		●				
卫星通信 Satellite communication	●		●			●
海上应急通信 Maritime emergency communication	●					
移动通信 Mobile communications	●		●	●		
多媒体通信 Multimedia communication		●				
现代视频成像与传输技术 Modern video imaging and transmission technology		●				

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">23</td><td rowspan="10">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="9">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="6">/</td><td rowspan="6">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
专业（类） 基础课 Disciplinary Courses	大类基础课 Major Group Courses 专业基础课 Discipline Courses	33.5		
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course	15.5		
集中实践 环节 Practical &Training	军事实践课 Military Practical Course	3	/	/
	专业实践课 Specialized Practical Course	10		
	毕业实践课 Graduation Practice	13		
	其他实践课 Others	2		
合计：168.5 Total：168.5		137.5	23	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit 必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
	安全实践 Safe Practical &Training	1713027790	安全熟悉	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000130	专业导论(电子信息类)	0.5
		1713018250	专业导论(通信)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713021750	科技讲座	1
合计：10.5 Total：10.5				10.5

七、教学计划进度表

参见表1～表6
Curriculum Structure
Refer to Table1～Table6.

表1：通信工程课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（168.5学分） In-class Teaching Courses （168.5 credits）			拓展素养（10.5学分） Centralized Practicum （10.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	137.5	23	8	10.5	179

表2：通信工程必修课程设置及进程
备注:
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory	必修-公共基础及通识教育课 Public		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	

			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	
			4	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713022310	创新思维与创新方法(电子信息类) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	

			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	
			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试		综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试		综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	

	必修-专业(类)基础课 Disciplinary Courses		1	1713009970	C语言程序设计 C Language Programming	3	考试		综合素养	48	24	24	1-2	
			2	1713009980	电路理论 Circuit Theory	3.5	考试	√	综合素养	56	56	0	1-2	
			3	1713009990	电路实验 Circuit Theory Experiment	1	考查	√	综合素养	24	0	24	1-2	
			4	1713024970	电磁场实验(通信) Experiment of electromagnetic wave	0.5	考查		综合素养	12	0	12	2-1	
			5	1713030180	模拟电子技术 Analog Electronics Technology	3.5	考试	√	综合素养	56	48	8	2-1	
			6	1713030230	电磁场与电磁波(通信) Electromagnetic Fields and Waves	3	考试	√	综合素养	48	40	8	2-1	
			7	1713021660	信号与系统 Signals & Systems	4	考试	√	综合素养	64	56	8	2-2	
			8	1713025280	工程概论(通信) Introduction to Engineering	2	考查		综合素养	32	32	0	2-2	
			9	1713030030	数字系统与逻辑设计 Digital Circuit and Logic Designs	3	考试	√	综合素养	48	38	10	2-2	
			10	1713029390	微机原理与应用 Principles and Application of Microcomputer	4.5	考试	√	综合素养	72	54	18	3-1	
			11	1713030200	通信电子线路(通信) Communication Electronic Circuits	2.5	考试	√	综合素养	40	32	8	3-1	
			12	1713029490	数据结构(通信) Data Structure (Communication)	3	考试		综合素养	48	40	8	3-2	

	必修-专业及方向课程 Stream Courses		1	1713011690	信息论基础 Theory of Information	2	考试	√	综合素养	32	32	0	2-2	
			2	1713029400	信息论与通信原理 Information Theory and Principles of Communications	5	考试	√	综合素养	80	72	8	3-1	
			3	1713020910	海上应急通信 Maritime Emergency Communication	3	考试	√	综合素养	48	42	6	3-2	
			4	1713021970	计算机通信网实验 Computer Communications Networks Experiment	0.5	考试		综合素养	12	0	12	3-2	
			5	1713021980	计算机通信网 Computer Communications Networks	2.5	考试	√	综合素养	40	40	0	3-2	
			6	1713011700	移动通信 Mobile Communication	2.5	考试	√	综合素养	40	32	8	4-1	
合计 Total						**110.5**				**1864**	**1484**	**380**		

表3：通信工程 限选课程设置及进程

备注:

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive	限选-公共基础及通识教育课 Public		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	

			2	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			2	1713026340	Matlab程序设计 Programming with Matlab	2	考查		综合素养	32	16	16	1-1	
			3	1713020930	通信工程专业英语 English for Communication Engineering	1.5	考查		综合素养	24	24	0	2-2	
			4	1713030260	微波技术(通信) Microwave Technongy	3.5	考试		综合素养	56	48	8	2-2	
			5	1713010150	EDA技术 EDA Technology	2	考查		综合素养	32	16	16	3-1	
			6	1713025310	电波与天线(通信) Propagation and Antenna	2	考试		综合素养	32	24	8	3-1	
			7	1713029520	现代视频成像与传输技术 Television Imaging Systems and Signal	2	考试		综合素养	32	26	6	3-1	
			8	1713029530	通信频率合成技术 Communication frequency synthesis technology	3	考试		综合素养	48	44	4	3-1	
			9	1713031260	数字信号处理(通信) Digital Signal Processing (Communication)	3	考试		综合素养	48	40	8	3-1	
			10	1713011620	卫星通信 Satellite Communication	2	考查		综合素养	32	32	0	3-2	

			11	1713011610	光纤通信 Optical Fiber Communication	2	考查		综合素养	32	26	6	4-1	
	限选-专业及方向课程 Stream Courses		1	1713010270	嵌入式系统设计 Design of Embedded System	2	考查		综合素养	32	16	16	3-2	
			2	1713011670	多媒体通信 Multimedia Communication	2	考查		综合素养	32	32	0	3-2	
			3	1713029510	移动数字交换技术 Mobile Digital Switching Technology	2	考试		综合素养	32	28	4	3-2	
			4	1713022020	5G无线传输技术 5G wireless Transmission Technology	2	考查		综合素养	32	32	0	4-1	
			5	1713030210	软件无线电 Software-Defined Radio	2	考查		综合素养	32	32	0	4-1	
			6	1713030220	短距离无线通信技术 Short-Range Wireless Communication Technology	2	考查		综合素养	32	32	0	4-1	
			7	1713030240	信息安全技术 Information Security Technology	2	考查		综合素养	32	32	0	4-1	
			8	1713030250	无线通信中的人工智能 Artificial Intelligence in Wireless Communication	2	考查		综合素养	32	32	0	4-1	
合计 Total						**43**				**720**	**624**	**96**		

表4：通信工程任选课程设置及进程

Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses” , At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表5：通信工程 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010320	电子技术工艺实习 Electronics Technology Practice	1	考查		综合素养	30	0	30	1-2	
			3	1713010360	C语言程序设计实践 Practice of Programming with C Language	1	考查		综合素养	30	0	30	1-2	
			4	1713010330	电子线路课程设计 Course Project of Electronic Circuits	1	考查		综合素养	30	0	30	2-2	
			5	1713010340	数字系统课程设计 Course Project of Digital Systems	1	考查		综合素养	30	0	30	2-2	

			6	1713010380	电子线路设计CAD实践 Practice of Electronic Circuits CAD	0.5	考查		综合素养	15	0	15	2-2	
			7	1713010390	微波技术综合设计实践 Practice of Microwave Technology	0.5	考查		综合素养	15	0	15	2-2	
			8	2113000570	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	2-2	
			9	1713027790	安全熟悉 Survival at Sea	1	考查		拓展素养	30	0	30	3-1	
			10	1713010350	单片机应用实践 Practice of Microprocessor Application	1	考查		综合素养	30	0	30	3-2	
			11	1713011720	通信网络实践 Practice of Communication Networks	1	考查		综合素养	30	0	30	3-2	
			12	1713011730	通信系统仿真实践 Simulation Practice of Communication Systems	1	考查		综合素养	30	0	30	3-2	
			13	1713026201	船舶实习(工程) Ship Practice (Engineering)	1	考查		综合素养	30	0	30	3-2	
			14	1713029500	中英文专业文献查阅/写作及综述实训 Training on Searching, writing, and reviewing professional literature in Chinese and English	1	考查		综合素养	30	0	30	3-2	
			15	1713011710	通信原理课程设计 Communication System Principles course design	1	考查		综合素养	30	0	30	4-1	
			16	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	

			17	1713031270	专业实习(通信) Program practice	1	考查		综合素养	30	0	30	4-1	
			18	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**30**				**886**	**0**	**886**		

表6：通信工程 讲座设置及进程

Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000130	专业导论(电子信息类) Introduction to Profession	0.5	考查		拓展素养	8	8	0	1-1	
			4	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			5	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时16
			6	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			7	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	

			8	1713018250	专业导论(通信) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			9	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			10	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	
			11	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			12	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			13	1713021750	科技讲座 Science and Technology Lecture	1	考查		拓展素养	16	16	0	3-2	
			14	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			15	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			16	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						7.5				168	168	0		

八、实践学时学分

Ⅷ. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	是否工程实践与毕业设计相关课程 Engineering Practice & Graduation Project
1	军事训练	必修	90	3	
2	体育（1）	必修	28	1	
3	思想道德与法治	必修	8	0.5	●
4	体育（2）	必修	32	1	
5	中国近现代史纲要	必修	8	0.5	●
6	体育（3）	必修	34	1	
7	马克思主义基本原理	必修	8	0.5	●
8	大学物理实验（2）	必修	24	1	●
9	体育（4）	必修	32	1	
10	习近平新时代中国特色社会主义思想概论	必修	8	0.5	●
11	大学物理实验（1）	必修	24	1	●
12	C 语言程序设计	必修	24	1.5	●
13	电路理论	必修	8	0.5	●
14	创新思维与创新方法(电子信息类)	必修	10	0.625	●
15	低频电子线路	必修	8	0.5	●
16	电磁场与电磁波	必修	8	0.5	●
17	数字系统与逻辑设计	必修	8	0.5	●
18	信号与系统(通信)	必修	8	0.5	●
19	微机原理与应用	必修	8	0.5	●
20	高频电子线路(通信)	必修	8	0.5	●
21	数据结构(通信)	必修	8	0.5	●
22	移动通信	必修	8	0.5	●
23	通信原理实验	必修	12	0.5	●

24	海上应急通信	必修	6	0.375	●
25	计算机通信网实验	必修	12	0.5	●
26	通信原理课程设计	必修	30	1	●
27	毕业论文	必修	360	12	
28	电子技术工艺实习	必修	30	1	●
29	C 语言程序设计实践	必修	30	1	●
30	电子线路课程设计	必修	30	1	●
31	数字系统课程设计	必修	30	1	●
32	金工实习	必修	30	1	●
33	单片机应用实践	必修	30	1	●
34	船舶实习（工程）	必修	30	1	●
35	中英文专业文献查阅/写作及综述实训	必修	30	1	●
36	通信网络实践	必修	30	1	●
37	通信系统仿真实践	必修	30	1	●
38	专业实习	必修	30	1	●
39	Matlab 程序设计	限选	108	6.75	●
40	通信频率合成技术				●
41	通信信号处理				●
42	光纤通信				●
43	现代视频成像与传输技术				●
44	移动数字交换技术				●
45	微波技术(通信)				●
46	微波技术综合设计实践				●
47	电波与天线(通信)				●
48	嵌入式系统设计				●
49	EDA 技术				●
50	数字信号处理(通信)				●
合计 Total			1260	49.75	24.9% (>20%)

九、毕业要求对培养目标的支撑关系矩阵

Ⅸ. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 Program Objectives 4
毕业要求 1-1 **Graduation Requirements 1-1**			●	●
毕业要求 1-2 **Graduation Requirements 1-2**	●		●	
毕业要求 2-1 **Graduation Requirements 2-1**	●			●
毕业要求 2-2 **Graduation Requirements 2-2**	●		●	
毕业要求 3-1 **Graduation Requirements3-1**	●	●		
毕业要求 3-2 **Graduation Requirements 3-2**	●		●	
毕业要求 4-1 **Graduation Requirements 4-1**			●	
毕业要求 4-2 **Graduation Requirements 4-2**	●			
毕业要求 5-1 **Graduation Requirements 5-1**		●		●
毕业要求 5-2 **Graduation Requirements 5-2**	●	●		
毕业要求 6-1 **Graduation Requirements 6-1**	●	●		
毕业要求 6-2 **Graduation Requirements 6-2**			●	●
毕业要求 7-1 **Graduation**		●		●

Requirements 7-1				
毕业要求 7-2 **Graduation Requirements 7-2**		●	●	
毕业要求 8-1 **Graduation Requirements 8-1**			●	●
毕业要求 8-2 **Graduation Requirements 8-2**			●	
毕业要求 9-1 **Graduation Requirements 9-1**	●		●	
毕业要求 9-2 **Graduation Requirements 9-2**	●	●	●	
毕业要求 10-1 **Graduation Requirements 10-1**		●		●
毕业要求 10-2 **Graduation Requirements 10-2**		●	●	
毕业要求 11-1 **Graduation Requirements 11-1**		●		●
毕业要求 11-2 **Graduation Requirements 11-2**		●		●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X．Courses &Graduation Requirements Relationship Matrix

毕业要求 / 课程名称		1		2		3		4		5		6		7		8		9		10		11	
		工程知识		问题分析		设计/开发解决方案		研究		使用现代工具		工程与可持续发展		工程伦理和职业规范		个人与团队		沟通		项目管理		终身学习	
		1-1	1-2	2-1	2-2	3-1	3-2	4-1	4-2	5-1	5-2	6-1	6-2	7-1	7-2	8-1	8-2	9-1	9-2	10-1	10-2	11-1	11-2
1	中国近现代史纲要													H									
2	思想道德与法治														H								
3	马克思主义基本原理											M		H									
4	毛泽东思想和中国特色社会主义理论体系概论													H									
5	习近平新时代中国特色社会主义思想概论													H									
6	军事理论													M									
7	军事训练																H						
8	劳动教育（理论）																						
9	劳动教育（实践）																						
10	入学教育																H						
11	体育（1）															H							
12	体育（2）															H							
13	体育（3）															H							
14	体育（4）															H							

15	国家安全教育(信息)											H			H								
16	逻辑学																		H				
17	实用写作																	H					
18	高等数学（A-1）	H		M																			
19	高等数学（A-2）		H		M																		
20	线性代数(A)	H			M																		
21	概率论与数理统计	M		H																			
22	复变函数与积分变换		M		H																		
23	大学物理（B-1）	H		M																			
24	大学物理（B-2）		H		M																		
25	大学物理实验（1）			M					H														
26	大学物理实验（2）				M				H														
27	大学英语（B）																	H					
28	英语初级口语																		H				
29	英语中级口语																	H					
30	微机原理与应用				H		M																
31	微机原理与应用实验								H	H													
32	数据结构(通信)	H								H										L			
33	电路理论	H		H				H		M													
4	C 语言程序设计	H		H																			
35	低频电子线路		H		H		M	H		M													
36	高频电子线路(通信)		H		H		M	H		H													
37	数字系统与逻辑设计		H		H		M		H	M													
38	工程概论(通信)											M								H			
39	信号与系统(通信)	H			H			H		M													

40	电磁场与电磁波(通信)		H		H				H	M													
41	人工智能通识	H		H																			
42	短距离无线通信技术				M				M		M												
43	网络信息安全技术	H						M		M													
44	软件无线电						H					M											
45	无线通信中的人工智能	H																					
46	通信原理		H		H																		
47	通信原理实验	H						H		H													
48	电波与天线(通信)		M		H																		
49	信息论基础	H		H																			
50	计算机通信网	H						M		M													
51	计算机通信网实验							H		M													
52	现代视频成像与传输技术				H					M													
53	MATLAB 程序设计									M													
54	数字信号处理(通信)		H		H				H	M													
55	EDA 技术					M		M		M													
56	微波技术(通信)		H		H		M		H	H		M											
57	通信频率合成技术			H			M																
58	移动数字交换技术						H					M											
59	移动通信							H		M													
60	海上应急通信			H						M													
61	光纤通信								H	M													
62	卫星通信			M					M	M													
63	5G 无线传输技术		H																				
64	多媒体通信						H					M											

65	通信原理课程设计	M				H		H		H						M							
66	创新思维与创新方法(电子信息类)					H																M	
67	通信系统仿真实践	H		H						H													
68	通信网络实践	H				H		H		H						M							
69	毕业论文																M	H		H		H	
70	电子线路课程设计			M		H		H		H													
71	数字系统课程设计			M		H		H		H													
72	电子技术工艺实习									L													
73	C 语言程序设计实践								M		M												
74	智能电子系统电路设计实践											M											
75	金工实习									H		L											
76	安全熟悉													M									
77	船舶实习（工程）									H		L											
78	微波技术综合设计实践									M		M											
79	单片机应用实践				M		H		H	H						L							
80	嵌入式系统设计						M		M														
81	中英文专业文献查阅/写作及综述实训									H								H				L	
82	形势与政策													H									
83	大学生健康教育															H		H					
84	职业生涯规划													H								H	
85	专业导论(电子信息类)				M				M									M					
86	专业导论(通信)				M				M									M					

87	科技讲座							H															
88	就业指导														H								
90	专业实习																M	H		H		H	

后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每4年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于2021年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

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通信工程教学指导委员会

大连海事大学教务处

2025年9月

大连海事大学
DALIAN MARITIME UNIVERSITY

本科专业培养计划

Undergraduate Program for Optoelectronics Information Science and Engineering Major

[2025 级适用]

★光电信息科学与工程（080705）

大连海事大学教务处

2025 年 9 月

光电信息科学与工程专业本科培养计划（2025 版）

Undergraduate Program for Optoelectronics Information Science and Engineering Major

一、培养目标

I. Program Objectives

培养目标 **Program Objectives**	培养目标分解指标点 **Observation Points**
本专业培养具有良好体魄、健全人格、基本人文素养、良好职业道德和社会责任感，掌握光电信息科学与工程专业所必需的数理和工程基础理论、专业知识和技能并有工程实践经历，具备较强的创新意识、海洋意识和团队协作精神，能够在光电传感与检测、光电信息处理、光学光电器件的设计与应用特别是海洋光电等领域从事研发、设计、制造、营销、运行维护和项目管理工作，能胜任技术研发、工程应用、质量检测和生产管理等岗位。毕业生德智体美劳全面发展，具有终生学习意识和持续竞争能力，毕业后成为所在光电行业领域的相关企业、科研院所等单位的复合应用型人才 The program cultivates students with robust physical fitness, sound character, basic humanistic literacy, excellent professional ethics, and a strong sense of social responsibility. They acquire the essential mathematical, physical, and engineering foundational theories, specialized knowledge, and skills required for the field of optoelectronic information science and engineering, along with practical engineering experience. They develop strong innovative thinking, marine awareness, and teamwork spirit, enabling them to engage in research and development, design, manufacturing, marketing, operation and maintenance, and project management in fields such as optoelectronic sensing and detection,	1. 具有崇高思想内涵、家国情怀、人文科学素养、健壮体魄、健全人格、光电行业良好职业道德和社会责任感 1. Possess noble ideological content, a sense of national pride, humanistic and scientific literacy, a strong physique, a well-rounded personality, excellent professional ethics in the optoelectronics industry, and a strong sense of social responsibility
	2. 系统掌握本专业领域的专业知识，能够将数学、自然科学、计算机、外语、工程基础和专业知识相结合解决光电信息领域的复杂工程问题 2. Have a solid grasp of professional knowledge in this field and be able to combine math, natural sciences, computers, foreign languages, engineering basics, and professional knowledge to solve complex engineering problems in the field of optoelectronic information
	3. 具备组织或协助团队完成光电信息相关领域中器件、系统等产品设计和应用开发等工作 3. Ability to organize or assist teams in completing product design and application development related to optoelectronic devices and systems
	4. 能够充分利用现代工程工具和信息技术工具，针对电路、光电信号处理等领域的工程问题进行模拟、分析与预测 4. Be able to make full use of modern engineering tools and information technology tools to simulate, analyze, and predict engineering problems in fields such as circuits and optoelectronic signal processing
	5. 了解光电信息科学与技术的理论前沿，把握当代光电信息技术的应用前景和最新的发展动态；

optoelectronic information processing, and the design and application of optical optoelectronic devices, especially in marine optoelectronics. Graduates are well-rounded in morality, intelligence, physical fitness, aesthetics, and labor, possess a lifelong learning mindset and sustained competitive ability, and typically become composite applied talents in relevant enterprises, research institutes, and other organizations within the optoelectronics industry after graduation	通过继续学习或工程实践不断更新专业知识，加强创新意识和开拓精神，并在实际工作中加以运用 5. Understand the theoretical frontiers of optoelectronic information science and technology, grasp the application prospects and latest development trends of contemporary optoelectronic information technology; continuously update professional knowledge through further study or engineering practice, strengthen innovative awareness and pioneering spirit, and apply them in actual work

二、毕业要求

II. Graduation Requirements

本专业学生主要学习数学、物理、工程技术基础知识和光电信息科学与工程专业基础理论，掌握光电信息科学与工程相关领域的技术研发、工程设计和项目管理的手段与方法，具有对复杂工程项目提出解决方案，跟踪本专业领域的发展动态并有应用于工程实际的知识、能力和素养。毕业生能胜任在光电信息科学与工程领域的相关企业、科研院所、学校等企事业单位从事设计、开发、应用、教学或管理工作。

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
1. 工程知识：能够运用数学、自然科学、工程基础和专业知识，解决光电信息领域的复杂工程问题 1. Engineering knowledge: Ability to apply mathematics, natural sciences, engineering fundamentals, and professional knowledge to solve complex engineering problems in the field of optoelectronic information	1-1 运用数学、自然科学、工程基础知识表述光电信息领域复杂工程问题 1-1 Use basic knowledge of mathematics, natural sciences, and engineering to describe complex engineering problems in the field of optoelectronic information
	1-2 针对光电系统或过程建立数学模型并利用边界条件求解 1-2 Establish mathematical models for optoelectronic systems or processes and solve them using boundary conditions
	1-3 用专业知识和数学模型判别光电系统的有效性、可靠性并评估性能 1-3 Use professional knowledge and mathematical models to determine the effectiveness and reliability of optoelectronic systems and evaluate their performance
	1-4 通过模型比较和综合，优选光电系统工程问题解决方案并完成方案设计 1-4 Optimize solutions to optoelectronic system engineering problems and complete design plans through model comparison and integration

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
2. 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析光电信息领域的复杂工程问题，以获得有效结论 2. Problem Analysis: Able to apply the basic principles of mathematics, natural sciences, and engineering sciences to identify, express, and analyze complex engineering problems in the field of optoelectronic information through literature research in order to obtain effective conclusions	2-1 识别光电信息领域复杂工程问题的关键环节和参数，结合专业知识分解问题 2-1 Identify key elements and parameters of complex engineering problems in the field of optoelectronic information, and decompose problems based on professional knowledge
	2-2 通过文献查阅分析、表达和建模分解后的问题，描述系统解决方案 2-2 Describe system solutions after analyzing, expressing, and modeling the issues identified through literature review
	2-3 运用工程基础和专业原理分析影响光电系统有效性、可靠性的因素，获得有效结论 2-3 Apply engineering fundamentals and professional principles to analyze factors affecting the effectiveness and reliability of optoelectronic systems and obtain effective conclusions
3. 设计/开发解决方案：能够设计针对光电信息工程领域复杂工程问题的解决方案，设计满足特定需求的光学光电系统、信息传输及光电技术处理单元（部件），并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化及环境等因素 3. Design/Develop Solutions: Able to design solutions for complex engineering problems in the field of optoelectronic information engineering, design optical optoelectronic systems, information transmission, and optoelectronic technology processing units (components) that meet specific requirements, and demonstrate innovation in the design process while considering social, health, safety, legal, cultural, and environmental factors	3-1 针对电子信息工程领域复杂工程问题提出解决方案思路 3-1 Proposing solution ideas for complex engineering problems in the field of electronic information engineering
	3-2 独立进行系统软硬件模块设计与实现，体现创新意识 3-2 Independently design and implement system software and hardware modules, demonstrating innovative thinking
	3-3 综合运用理论和技术手段解决实际问题 3-3 Comprehensive application of theory and technical means to solve practical problems
	3-4 工程设计中综合考虑社会、健康、安全、法律、文化等因素 3-4 Comprehensive consideration of social, health, safety, legal, cultural, and other factors in engineering design
4.研究：能够基于科学原理并采用科学方法对光电信息工程领域复杂	4-1 采用科学方法研究和实验验证光电信息相关物理现象 4-1 Use scientific methods to study and experimentally verify physical phenomena related to optoelectronic information

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
工程问题进行研究，包括设计和开展实验、分析与解释数据、并通过信息综合得到合理有效的结论 4. Research: Able to conduct research on complex engineering problems in the field of optoelectronic information engineering based on scientific principles and using scientific methods, including designing and conducting experiments, analyzing and interpreting data, and drawing reasonable and effective conclusions through information synthesis	4-2 运用光电信息领域基本理论，根据研究对象特征选择研究路线，设计可行实验方案 4-2 Apply basic theories in the field of optoelectronic information, select research approaches based on the characteristics of the research subject, and design feasible experimental plans
	4-3 构建实验系统，分析和解释实验结果，通过信息综合得到合理有效结论 4-3 Construct an experimental system, analyze and interpret the experimental results, and draw reasonable and effective conclusions through information synthesis
5. 使用现代工具：能够针对光学光电系统设计、信息传输及光电技术应用等过程中的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂光电工程问题的预测与模拟，并能够理解其局限性 5. Use modern tools: Be able to develop, select, and use appropriate technologies, resources, modern engineering tools, and information technology tools for complex engineering problems in the design of optical optoelectronic systems, information transmission, and optoelectronic technology applications, including the prediction and simulation of complex optoelectronic engineering problems, and be able to understand their limitations	5-1 理解现代仪器仪表和专业软件工作原理，掌握信息检索工具、专业数据库和相关软件的使用方法 5-1 Understand the working principles of modern instruments and professional software, and master the use of information retrieval tools, professional databases, and related software
	5-2 选择与使用恰当专业软件进行光电信息系统、信息传输及处理过程的设计与优化 5-2 Select and use appropriate professional software for the design and optimization of optoelectronic information systems, information transmission, and processing
	5-3 借助信息检索工具和专业软件，对特定研究对象的解决方案进行开发、模拟和预测，并理解其局限性 5-3 Develop, simulate, and predict solutions for specific research subjects using information retrieval tools and specialized software, and understand their limitations

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
6. 工程与可持续发展：能够基于光电工程相关背景知识进行合理分析，评价光电专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任 6. Engineering and Sustainable Development: Ability to analyze and evaluate the social, health, safety, legal, and cultural impacts of photovoltaic engineering practices and complex engineering solutions based on photovoltaic engineering-related knowledge, and to understand the responsibilities that must be assumed	6-1 识别和客观评价光电领域工程项目实施对社会、健康、安全、法律及文化的影响 6-1 Identify and objectively evaluate the social, health, safety, legal, and cultural impacts of implementing projects in the field of optoelectronics
	6-2 理解环境、社会可持续发展的理念、内涵和影响因素 6-2 Understanding the concept, connotation, and influencing factors of environmental and social sustainability
	6-3 针对光电领域工程项目，运用人文知识和行业标准法规，评价方案对环境和社会可持续发展的影响 6-3 For engineering projects in the field of optoelectronics, use humanities knowledge and industry standards and regulations to evaluate the impact of the plan on environmental and social sustainability
7. 工程伦理和职业规范：有工程报国、工程为民的意识，具有人文社会科学素养和社会责任感，能够理解和应用工程伦理，在光电专业工程实践中遵守工程职业道德、规范和相关法律，履行责任 7. Engineering Ethics and Professional Standards: Possess a sense of engineering for the nation and engineering for the people, have a foundation in the humanities and social sciences and a sense of social responsibility, be able to understand and apply engineering ethics, adhere to engineering professional ethics, standards, and relevant laws in optoelectronics engineering practice, and fulfill responsibilities	7-1 具有哲学、历史、法律文化等人文社会科学素养，理解应担负的社会责任 7-1 Possess a background in the humanities and social sciences, including philosophy, history, and legal culture, and understand the social responsibilities that must be assumed
	7-2 理解工程职业道德与规范的内涵，并在工程实践中自觉遵守 7-2 Understand the meaning of professional ethics and standards in engineering, and follow them in engineering practice

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
8. 个人与团队：具有一定的组织管理和团队协作能力，能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色 8. Individual and team: Possess certain organizational management and team collaboration skills, and be able to assume the roles of individual, team member, and leader in multidisciplinary teams	8-1 在多学科背景下与团队成员配合共事，理解团队合作重要性，具有团队合作精神 8-1 Work with team members in a multidisciplinary context, understand the importance of teamwork, and demonstrate teamwork spirit
	8-2 具备组织能力，能组织、协调和指挥团队开展工作，有效实现目标 8-2 Possess organizational skills, able to organize, coordinate, and direct teams to carry out work and effectively achieve goals
9. 沟通：能够就复杂光电信息工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并具备一定的国际视野，能够在跨文化背景下进行沟通和交流 9. Communication: Ability to effectively communicate and interact with industry peers and the general public on complex optoelectronic information engineering issues, including writing reports and design documents, making presentations, clearly expressing or responding to instructions. Possesses a certain degree of international perspective and is able to communicate and interact in cross-cultural contexts	9-1 通过口头、书面等方式准确陈述和表达自己的观点 9-1 Accurately state and express one's opinions through oral and written means
	9-2 就同行及社会公众提出的专业问题，通过口头、书面等方式清晰回 9-2 Respond clearly to professional questions raised by peers and the general public through verbal and written means
	9-3 使用英语进行沟通交流，了解专业领域国际发展趋势 9-3 Communicate in English to understand international trends in professional fields
10. 项目管理和财务：理解并掌握光电专业工程项目相关的管理原理与经济决策方法，并能够在多学科环境中应用 10. Project Management and Finance: Understand and master	10-1 了解光电信息工程项目管理与经济决策基本知识，理解并掌握相应工程项目管理 10-1 Understand the basic knowledge of project management and economic decision-making in optoelectronic information engineering, and comprehend and master the corresponding project management techniques

毕业要求 Graduation Requirements	毕业要求分解指标点 Observation Points
management principles and economic decision-making methods related to optoelectronics engineering projects, and be able to apply them in a multidisciplinary environment	10-2 在光电信息系统项目的设计与实践过程中，恰当运用工程管理原理 10-2 Appropriate application of engineering management principles in the design and implementation of optoelectronic information system projects
11. 终身学习：具有自主学习和终身学习的意识和能力，能够理解广泛的技术变革对工程和社会的影响，适应新技术变革，具有批判性思维能力 11. Lifelong learning: Possess the awareness and ability to engage in independent learning and lifelong learning, understand the impact of broad technological changes on engineering and society, adapt to new technological changes, and possess critical thinking skills	11-1 认识不断探索和学习的必要性，具有自主学习和终身学习的意识和知识基础 11-1 Recognize the necessity of continuous exploration and learning, and possess the awareness and knowledge base for independent learning and lifelong learning
	11-2 具有自主学习能力，能够总结归纳、分析推理、判断解决技术问题 11-2 Possesses independent learning abilities, capable of summarizing, analyzing, reasoning, judging, and solving technical problems

三、专业核心课程

Ⅲ. Core Courses

光学电磁理论、物理光学、应用光学、光电检测技术、信息光学、光纤通信原理技术、激光原理及应用、信号与系统、模拟电子技术、数字系统与逻辑设计

Optical Electromagnetic Theory, Physical Optics, Applied Optics, Optoelectronic Detection Technology, Information Optics, Fiber Optic Communication Principles and Technology, Laser Principles and Applications, Signals and Systems, Low-Frequency Electronic Circuits, Digital Systems and Logic Design

四、特色课程

Ⅳ. Feature Courses

课程名称 Name	交通海事 Transport/ Maritime	学科交叉 Cross-Disciplinary	智能+ Intelligent+	本研贯通 UG-Grad Integration	专创融合 Specialty& innovation	行业共建 industry collaboration
EDA 技术 EDA Technology		●				

光学系统设计 Optics System Design			●		●	
光电图像处理 Optoelectronic Image Processing	●				●	
嵌入式系统设计 Design of Embedded System	●	●		●		
DSP 原理及应用 Principle and Application of DSP		●				
微机原理与应用 Principles and Application of Micro-Computer		●		●		
信息论与通信原理 Information Theory and Communication Principles	●			●	●	
语音信号处理 Speech Signal Processing		●		●		
海洋传感与智能检测 Marine Sensing and Intelligent Detection	●	●	●		●	●

五、学制与学位

V. Duration and Degree

学制：4 年

Program duration: 4 years

授予学位：工学学士学位

Degree conferred: Bachelor of Engineering

六、学分修读要求

VI. Credit Requirements

培养计划学分包括综合素养学分和拓展素养学分两部分，学生毕业时须同时满足两部分学分要求。学生转专业、大类分流、奖学金评定、推免研究生等学分计算要求详见相关管理办法。

The credit requirement for the degree program consists of two parts: Comprehensive Literacy Credits and Extended Literacy Credits. Students must fulfill the credit requirements for both parts to graduate. For specific credit calculation rules regarding major transfers, academic stream selection, scholarship assessments, and recommendation for admission to graduate programs and so on, please refer to the relevant management regulations.

综合素养学分要求

Comprehensive Literacy Credit Requirement

<table>
<tr><th rowspan="2">课程类别
Course Category</th><th rowspan="2" colspan="2">课程子类
Course Sub-Category</th><th colspan="3">学分要求
Credit</th></tr>
<tr><th>必修
Compulsory</th><th>限选
Elective</th><th>任选
Option</th></tr>
<tr><td rowspan="15">公共基础及通识教育课
Public basic and general education courses</td><td colspan="2">思政理论
Ideological and Political Theory</td><td>15</td><td rowspan="15">34</td><td rowspan="9">/</td></tr>
<tr><td colspan="2">外语类
Foreign Languages</td><td>8</td></tr>
<tr><td rowspan="2">数学与自然科学类
Mathematics and Natural Sciences</td><td>数学类
Mathematics</td><td>18.5</td></tr>
<tr><td>物理类
Physics</td><td>9</td></tr>
<tr><td rowspan="7">通识类
General Course</td><td>军事素养
Military Literacy</td><td>2</td></tr>
<tr><td>体育素质
Physical Literacy</td><td>4</td></tr>
<tr><td>沟通写作
Communication and Writing</td><td>2</td></tr>
<tr><td>创新思维
Invitational Thinking</td><td>2</td><td></td></tr>
<tr><td>创新与创业
Innovation and Entrepreneurship</td><td rowspan="5">/</td><td rowspan="5">8</td></tr>
<tr><td>国家与社会
Nation and Society</td></tr>
<tr><td>科学与技术
Science and Technology</td></tr>
<tr><td>人文与艺术
Humanities and Art</td></tr>
<tr><td>其他
Others</td></tr>
</table>

课程类别 Course Category	课程子类 Course Sub-Category	学分要求 Credit		
		必修 Compulsory	限选 Elective	任选 Option
专业（类） 基础课 Disciplinary Courses	专业基础课 Discipline Courses	18		
专业及 方向课 Stream Courses	专业课 Stream Courses Specialized course	22		
集中实践 环节 Practical &Training	军事实践课 Military Practical Course	3	/	
	专业实践课 Specialized Practical Course	10		
	毕业实践课 Graduation Practice	12		
	其他实践课 Others	2		
合计：169.5 Total：169.5		127.5	34	8

拓展素养学分要求

Extended Literacy Credit Requirements

课程类别 Course Category	课程子类 Course Sub-Category	课程编号 Num	课程名称 Course	学分要求 Credit
				必修 Compulsory
公共基础及通识教育课 Public basic and general education courses	劳动素养 Labor Education	1713027720	劳动教育（理论）	1
集中实践 环节 Practical &Training	劳动实践 Labor Practical &Training	1713027730	劳动教育（实践）	1
讲座课 Thematic Lecture	思政类 Ideological and Political Education	1713025341 至 1713025348	形势与政策	2
	身心健康 Health Education	2113000510	大学生健康教育	1
	安全意识 Safety Education	2113000330	国家安全教育(信息)	1
	发展服务类 Development and Guidance	1713000480	入学教育	0
		2113000130	专业导论(电子信息类)	0.5
		1713018310	专业导论(光电)	1
		1713000520	职业生涯规划	0.5
		1713000530	就业指导	0.5
	专业学术类 Academic Education	1713021750	科技讲座	1
合计：9.5 Total：9.5				9.5

七、教学计划进度表

参见表 1～表 6
Curriculum Structure
Refer to Table1～Table6.

表 1：光电信息科学与工程课程设置及学分安排
Table1： Curriculum and Credits

课程分类 Course Categories	综合素养（169.5 学分） In-class Teaching Courses （169.5 credits）			拓展素养（9.5 学分） Centralized Practicum （9.5 credits）	总计
	必修 Compulsory	限选 Restrictive Optional	任选 Free Optional	必修 Compulsory	
学分 Credits	127.5	34	8	9.5	179

表 2：光电信息科学与工程必修课程设置及进程
Table2： Curriculum of Compulsory Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-公共基础及通识教育课 Public basic and general education		1	1713000010	军事理论 Military Theory	2	考查		综合素养	32	32	0	1-1	课外学时 4
			2	1713000021	体育(1) Physical Education	1	考查	√	综合素养	26	0	26	1-1	
			3	1713000071	高等数学(A-1) Advanced Mathematics	4	考试	√	综合素养	64	64	0	1-1	

			4	1713000410	逻辑学 Logic	1	考查		综合素养	16	16	0	1-1	
			5	1713025360	思想道德与法治 Ideology, Morality and the Rule of Law	3	考试	√	综合素养	48	40	8	1-1	
			6	1713027701	大学英语(1) College English	2	考试	√	综合素养	32	32	0	1-1	
			7	1713000022	体育(2) Physical Education	1	考查	√	综合素养	34	0	34	1-2	
			8	1713000072	高等数学(A-2) Advanced Mathematics	6	考试	√	综合素养	96	96	0	1-2	
			9	1713000110	线性代数(A) Linear Algebra	2.5	考试	√	综合素养	40	40	0	1-2	
			10	1713000171	大学物理(B-1) College Physics	3	考试	√	综合素养	48	48	0	1-2	
			11	1713000191	大学物理实验(1) Physics Experiment	1	考查		综合素养	24	0	24	1-2	
			12	1713019280	中国近现代史纲要 Compendium of Chinese Neoteric & Modern History	3	考查	√	综合素养	48	40	8	1-2	
			13	1713022310	创新思维与创新方法(电子信息类) Innovative thinking and innovative methods	2	考查		综合素养	32	22	10	1-2	
			14	1713027702	大学英语(2) College English	2	考试	√	综合素养	32	32	0	1-2	
			15	1713027720	劳动教育(理论) Labor Education	1	考查		拓展素养	16	16	0	1-2	
			16	1713000023	体育(3) Physical Education	1	考查	√	综合素养	34	0	34	2-1	
			17	1713000050	马克思主义基本原理 Basic Tenets of Marxism	3	考试	√	综合素养	48	40	8	2-1	
			18	1713000172	大学物理(B-2) College Physics	4	考试	√	综合素养	64	64	0	2-1	

			19	1713000192	大学物理实验(2) Physics Experiment	1	考查		综合素养	24	0	24	2-1	
			20	1713027703	大学英语(3) College English	2	考试	√	综合素养	32	32	0	2-1	
			21	1713027740	复变函数与积分变换(A) Complex Function and Integral Transformation(A)	3	考试	√	综合素养	48	48	0	2-1	
			22	1713000024	体育(4) Physical Education	1	考查	√	综合素养	34	0	34	2-2	
			23	1713026100	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3	考试	√	综合素养	48	48	0	2-2	
			24	1713027600	概率论与数理统计(A) Probability and Statistics(A)	3	考试	√	综合素养	48	48	0	2-2	
			25	1713027704	大学英语(4) College English	2	考试	√	综合素养	32	32	0	2-2	
			26	1713022040	习近平新时代中国特色社会主义思想概论 An Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3	考试	√	综合素养	48	40	8	3-2	
			27	2113000580	实用写作 Factual writing;	1	考查	√	综合素养	16	16	0	3-2	
	必修-专业(类)基础课 Disciplinary Courses		1	1713009970	C 语言程序设计 C Language Programming	3	考试		综合素养	48	24	24	1-2	
			2	1713009980	电路理论 Circuit Theory	3.5	考试	√	综合素养	56	56	0	1-2	

			3	1713009990	电路实验 Circuit Theory Experiment	1	考查	√	综合素养	24	0	24	1-2	
			4	1713030180	模拟电子技术 Analog Electronics Technology	3.5	考试	√	综合素养	56	48	8	2-1	
			5	1713021660	信号与系统 Signals & Systems	4	考试	√	综合素养	64	56	8	2-2	
			6	1713030030	数字系统与逻辑设计 Digital Circuit and Logic Designs	3	考试	√	综合素养	48	38	10	2-2	
	必修-专业及方向课程 Stream Courses		1	1713011750	光学电磁理论 Electromagnetic Theory of Optics	2	考试	√	综合素养	32	32	0	2-1	
			2	1713028840	应用光学 Applied Optics	3	考试	√	综合素养	48	38	10	2-2	
			3	1713028850	物理光学 Physical Optics	3.5	考试	√	综合素养	56	46	10	2-2	
			4	1713027200	海洋传感与智能检测 Marine Sensing and Intelligent Detection	2.5	考查		综合素养	40	40	0	3-1	
			5	1713028890	光电检测技术 PHOTOELECTRIC DETECTION TECHNOLOGY	4	考试	√	综合素养	64	48	16	3-1	
			6	1713029420	信息光学 Information Optics	4	考试	√	综合素养	64	54	10	3-1	
			7	1713029430	激光原理及应用 Principle and Applying of Laser	3	考试	√	综合素养	48	38	10	3-1	
合计 Total						**101.5**				**1712**	**1364**	**348**		

表 3：光电信息科学与工程 限选课程设置及进程

Table3： Curriculum of Restrictive Optional Courses

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
限选课组 Restrictive Optional Courses	限选-公共基础及通识教育课 Public basic and general education courses		1	1713000240	英语初级口语 Elementary Oral English	1	考查		综合素养	32	32	0	1-1	
			2	1713027780	英语中级口语 Intermediate Oral English	1	考试		综合素养	32	32	0	1-2	
			3	1713028860	数据结构(光电) Data Structure (Opto electronic)	3	考试		综合素养	48	40	8	3-2	
	限选-专业(类)基础课 Disciplinary Courses		1	1713010180	机械制图 Mechanical Graphing	2	考试		综合素养	32	28	4	1-1	
			2	1713026340	Matlab 程序设计 Programming with Matlab	2	考查		综合素养	32	16	16	1-1	
			3	1713022090	微纳光子集成 Integrated Optics with Micro and Nano Dimension	3	考查		综合素养	48	32	16	2-2	
			4	1713010150	EDA 技术 EDA Technology	2	考查		综合素养	32	16	16	3-1	
			5	1713019491	专业英语(光电)(1) Technical English Reading(Optoelectronics)	1.5	考查		综合素养	24	24	0	3-1	
			6	1713029390	微机原理与应用 Principles and Application of Microcomputer	4.5	考试		综合素养	72	54	18	3-1	
			7	1713030020	数字信号处理(光电) Digital Signal Processing	3	考试		综合素养	48	40	8	3-1	

			8	1713010270	嵌入式系统设计 Design of Embedded System	2	考查		综合素养	32	16	16	3-2	
			9	1713019492	专业英语(光电)(2) Technical English Reading(Optoelectronices)	1.5	考查		综合素养	24	24	0	3-2	
			10	1713028870	光纤通信原理技术 Principles and Technology of Optical Fiber Communication	3	考试		综合素养	48	40	8	3-2	
			11	1713010280	语音信号处理 Speech Signal Processing	2	考查		综合素养	32	24	8	4-1	
			12	1713010290	C++程序设计基础 Basics of C++ Language Programming	2	考查		综合素养	32	16	16	4-1	
	限选-专业及方向课程 Stream Courses		1	1713029400	信息论与通信原理 Information Theory and Principles of Communications	5	考试		综合素养	80	72	8	3-1	
			2	1713011890	红外技术 Infrared Technology	2	考试		综合素养	32	30	2	3-2	
			3	1713011900	光电图像处理 Optoelectronic Image Processing	3	考试		综合素养	48	38	10	3-2	
合计 Total						**43.5**				**728**	**574**	**154**		

表 4：光电信息科学与工程任选课程设置及进程
Table4： Free Electives System

1.全校性选修课程分为人文与艺术、国家与社会、科学与技术、创新与创业、其他，共计 5 种课程类别。本专业须修读的全校性选修课总学分不少于 **8** 分。其中，须从人文与艺术、国家与社会、科学与技术 3 种课程类别中分别至少选修 2 学分。具体课程见每年度选课系统中的全校性选修课程一览。
The elective courses are divided into “humanities and art courses”,“national and social courses”, “science and technology courses”, “innovation and entrepreneurship courses ”and “other courses”. Among them, need to take at least 2 credits from “Humanities and art courses”,“national and social courses”,“science and technology courses” , At the same time, it is necessary to complete **8** credits. For specific courses, please refer to the list of elective courses in the course selection system of each year.

2. 学生参加学校、院系组织的第二课堂活动，并符合学校有关学籍管理规定，可获得相应任选课学分，具体参考学生手册中的学籍管理规定部分。
If students participate in the second classroom activities organized by the school and departments, and meet the school's relevant regulations on student status management, they can obtain corresponding optional course credits. For details, please refer to the regulations on student status management in the student handbook.

表 5：光电信息科学与工程 实践环节课程设置及进程
Table5： Practical Training System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-实践环节 Practicum		1	1713000440	军事训练 Military Training	3	考查		综合素养	90	0	90	1-1	
			2	1713010320	电子技术工艺实习 Electronics Technology Practice	1	考查		综合素养	30	0	30	1-2	
			3	1713010360	C 语言程序设计实践 Practice of Programming with C Language	1	考查		综合素养	30	0	30	1-2	
			4	1713010330	电子线路课程设计 Course Project of Electronic Circuits	1	考查		综合素养	30	0	30	2-2	
			5	1713010340	数字系统课程设计 Course Project of Digital Systems	1	考查		综合素养	30	0	30	2-2	

			6	2113000560	金工实习 Metalworking Practice	1	考查		综合素养	30	0	30	2-2	
			7	1713010371	信号综合处理实践 Practice of Signal Processing	1	考查		综合素养	30	0	30	3-2	
			8	1713010400	专业文献查阅/写作及综述实训 Technical Material reading & Writing Training	1	考查		综合素养	30	0	30	3-2	
			9	1713011930	光电系统综合设计实践 Integrated Design Practice of Optoelectronic System	2	考查		综合素养	60	0	60	3-2	
			10	1713011960	光电检测应用实践 Application Practice of Photoelectric Detection	1	考查		综合素养	30	0	30	3-2	
			11	1713011940	光电检测技术课程设计 Optoelectronic Detection Course Design	1	考查		综合素养	30	0	30	4-1	
			12	1713027730	劳动教育(实践) Labor Education	1	考查		拓展素养	16	0	16	4-1	
			13	1713031240	专业实习(光电) Program practice (Optoelectronics)	1	考查		综合素养	30	0	30	4-1	
			14	2113000460	毕业实习及毕业论文 Graduation Practice, Design& Thesis	12	考查		综合素养	360	0	360	4-2	
合计 Total						**28**				**826**	**0**	**826**		

表 6：光电信息科学与工程 讲座设置及进程
Table6： General Lectures System

课程性质 Course Nature	课程类别 Course Categories	类别备注 Course Categories Remark	序号 No.	课程编号 Course Code	课程名称 Course Name	学分 Credits	考核方式 Testing method	是否学位课 Degree Course	综合/拓展素养课程 COURSE CORE	学时 Teaching Hours			上课学期 Semesters	备注 Notes
										合计 Total	讲课 Lectures	实践 Practicum		
必修课组 Compulsory Courses	必修-讲座 Lectures and Seminar		1	1713025341	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-1	
			2	1713000480	入学教育 Admission Orientations	0	考查		拓展素养	16	16	0	1-1	
			3	2113000130	专业导论(电子信息类) Introduction to Profession	0.5	考查		拓展素养	8	8	0	1-1	
			4	2113000330	国家安全教育(信息) National Security Education	1	考查		拓展素养	16	16	0	1-1	
			5	2113000510	大学生健康教育 Health education of college students	1	考查		拓展素养	16	16	0	1-1	课外学时 16
			6	1713000520	职业生涯规划 Career Planning for University Students	0.5	考查		拓展素养	8	8	0	1-2	
			7	1713025342	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	1-2	
			8	1713018310	专业导论(光电) Introduction of Profession	1	考查		拓展素养	16	16	0	2-1	
			9	1713025343	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-1	
			10	1713025344	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	2-2	

			11	1713000530	就业指导 Career Guidance for University Students	0.5	考查		拓展素养	8	8	0	3-1	
			12	1713025345	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-1	
			13	1713021750	科技讲座 Science and Technology Lecture	1	考查		拓展素养	16	16	0	3-2	
			14	1713025346	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	3-2	
			15	1713025347	形势与政策 Status Quo and Policies of China	0	考查		拓展素养	8	8	0	4-1	
			16	1713025348	形势与政策 Status Quo and Policies of China	2	考查		拓展素养	8	8	0	4-2	
合计 Total						7.5				168	168	0		

八、实践学时学分

VIII. Practical Hours and Credits

序号 NO.	课程名称 Course	课程性质 Course Nature	实践学时 Hours	实践学分 Credits	是否工程实践与毕业设计相关课程 Engineering Practice & Graduation Project
1	思想道德与法制	必修	8	0.5	
2	中国近现代史纲要	必修	8	0.5	
3	马克思主义基本原理	必修	8	0.5	
4	习近平新时代中国特色社会主义思想概论	必修	8	0.5	
5	创新思维与创新方法(电子信息类)	必修	10	0.625	
6	军事训练	必修	90	3	
7	电子技术工艺实习	必修	30	1	●
8	C 语言程序设计实践	必修	30	1	●
9	电子线路课程设计	必修	30	1	●
10	数字系统课程设计	必修	30	1	●
11	金工实习	必修	30	1	●
12	信号综合处理实践	必修	30	1	●
13	专业文献查阅/写作及综述实训	必修	30	1	●
14	光电系统综合设计实践	必修	60	2	●
15	光电检测应用实践	必修	30	1	●
16	光电检测技术课程设计	必修	30	1	●
17	劳动教育(实践)	必修	16	1	●
18	专业实习(光电）	必修	30	1	●
19	毕业实习及毕业论文	必修	360	12	●
合计 Total			868	30.625	

九、毕业要求对培养目标的支撑关系矩阵

IX. Graduation Requirements &Program Objectives Relationship Matrix

	培养目标 1 **Program Objectives 1**	培养目标 2 **Program Objectives 2**	培养目标 3 **Program Objectives 3**	培养目标 4 **Program Objectives 4**	培养目标 5 **Program Objectives 5**
毕业要求 1-1 **Graduation Requirements 1-1**		●	●		
毕业要求 1-2 **Graduation Requirements 1-2**		●	●		
毕业要求 1-3 **Graduation Requirements 1-3**		●			
毕业要求 1-4 **Graduation Requirements 1-4**		●		●	
毕业要求 2-1 **Graduation Requirements 2-1**		●	●		
毕业要求 2-2 **Graduation Requirements 2-2**				●	●
毕业要求 2-3 **Graduation Requirements 2-3**		●			
毕业要求 3-1 **Graduation Requirements 3-1**		●			
毕业要求 3-2 **Graduation Requirements 3-2**			●		●
毕业要求 3-3 **Graduation Requirements 3-3**			●		
毕业要求 3-4 **Graduation Requirements 3-4**	●				
毕业要求 4-1 **Graduation Requirements 4-1**		●		●	●
毕业要求 4-2 **Graduation**		●			●

Requirements 4-2					
毕业要求 4-3 **Graduation Requirements 4-3**					●
毕业要求 5-1 **Graduation Requirements 5-1**		●		●	
毕业要求 5-2 **Graduation Requirements 5-2**			●	●	
毕业要求 5-3 **Graduation Requirements 5-3**		●		●	
毕业要求 6-1 **Graduation Requirements 6-1**	●				
毕业要求 6-2 **Graduation Requirements 6-2**	●				
毕业要求 6-3 **Graduation Requirements 6-3**	●	●			
毕业要求 7-1 **Graduation Requirements 7-1**	●				
毕业要求 7-2 **Graduation Requirements 7-2**	●				
毕业要求 8-1 **Graduation Requirements 8-1**	●		●		
毕业要求 8-2 **Graduation Requirements 8-2**			●		
毕业要求 9-1 **Graduation Requirements 9-1**	●				
毕业要求 9-2 **Graduation Requirements 9-2**	●	●			
毕业要求 9-3 **Graduation Requirements 9-3**	●				●

毕业要求 10-1 **Graduation Requirements** 10-**1**	●				
毕业要求 10-2 **Graduation Requirements** 10-**2**	●		●		
毕业要求 11-1 **Graduation Requirements** 11-**1**					●
毕业要求 11-2 **Graduation Requirements** 11-**2**		●			●

注：支撑关系用“●”表示。

十、课程体系对毕业要求的支撑关系矩阵

X. Courses &Graduation Requirements Relationship Matrix

		毕业要求 1 Graduation Requirements 1				毕业要求 2 Graduation Requirements 2			毕业要求 3 Graduation Requirements 3				毕业要求 4 Graduation Requirements 4			毕业要求 5 Graduation Requirements 5			毕业要求 6 Graduation Requirements 6			毕业要求 7 Graduation Requirements 7		毕业要求 8 Graduation Requirements 8		毕业要求 9 Graduation Requirements 9			毕业要求 10 Graduation Requirements 10		毕业要求 11 Graduation Requirements 11	
		1-1	1-2	1-3	1-4	2-1	2-2	2-3	3-1	3-2	3-3	3-4	4-1	4-2	4-3	5-1	5-2	5-3	6-1	6-2	6-3	7-1	7-2	8-1	8-2	9-1	9-2	9-3	10-1	10-2	11-1	11-2
1	军事理论	H	H			H																									M	
2	体育			M								M												H	M							
3	高等数学	H	H	M	H									M																		
4	逻辑学		H				H		H		M			M																		
5	思想道德与法治											M							H	H	M	H										
6	大学英语																									H	H	H				M
7	劳动教育（理论）			M								M												H	M							
8	线性代数（A）	H	M	H	H									M																		
9	大学物理								H		H		H		M	M																
10	大学物理实验		H		H					H			H		M																	
11	中国近代史纲要											M							H		H	H	M									
12	马克思主义基本原理											H							M		H	M	H									
13	复变函数与积分变换（A）		H	M	H									M												M						
14	毛泽东思想和中国特色社会主义理论 体系概论											H							M		H	H	M									
15	概率论与数理统计（A）		H				H		H		M			M																		
16	习近平新时代中国特色											H							M		H	M	H									

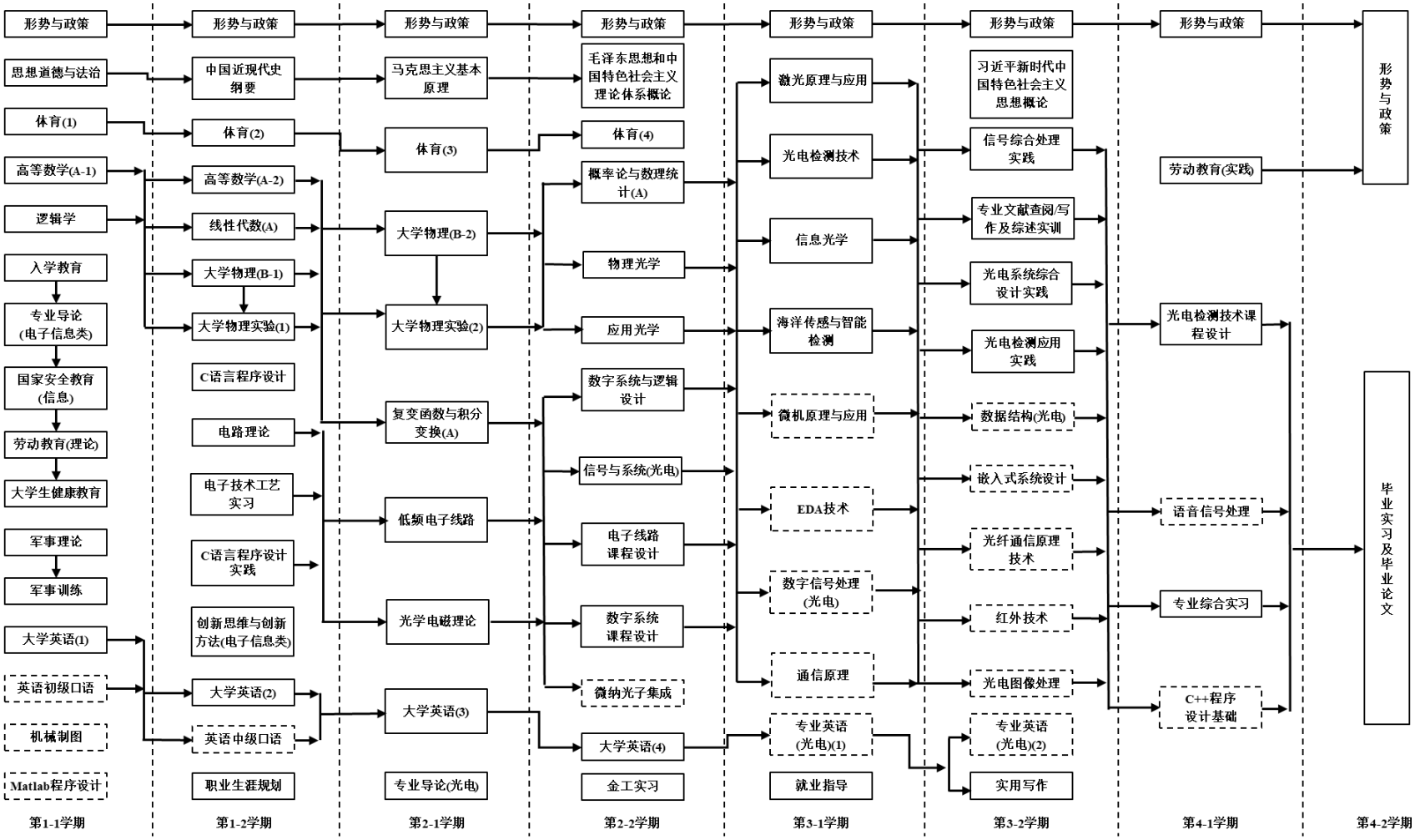
	社会主义思想概论																															
17	实用写作						H				M							M								H	H					
18	C 语言程序设计															H	H	H													M	M
19	电路理论★								H	H	M			H											H							
20	创新思维与创新方法(电子信息类)									H														H	H						M	M
21	模拟电子技术★			H					H	H		M												M								
22	数字系统与逻辑设计★		H				H		H		M			M																		
23	信号与系统（光电）★					H		M			H		H	M																		
24	光学电磁理论★		H			H		H						M									M									
25	物理光学												H	H			H				M									M		
26	应用光学												H	H			H				M									M		
27	激光原理及应用												H	H			H				M									M		
28	光电检测技术★					H		H					H	M																		
29	信息光学★												H	M			H				H									M		
30	海洋传感与智能检测★				H		H					M							M	H												
31	军事训练			M								M												H	M							
32	电子技术工艺实习									H			H		M									M	M							
33	C 语言程序设计实践															M	H	H													M	M
34	电子线路课程设计									H			H		M									M	M							
35	数字系统课程设计								H	M	H	H												M								
36	金工实习			M								M												H	M							

37	信号综合处理实践								H	H	M	H												M								
38	专业文献查阅/写作及综述实训						H					M		H												M	M					
39	光电系统综合设计实践								H	M	H	H												M								
40	光电检测应用实践									H			M																H	H		
41	光电检测技术课程设计								H	H	H	M												M								
42	劳动教育（实践）			M								M												H	M							
43	专业综合实习			M								M												H	M							
44	毕业实习及毕业论文								H	H	H															M	M					
45	科技讲座																		H	H	H							M	M			
46	形势与政策											H							H		H	M	M									
47	入学教育									H														H	H						M	M
48	专业导论（电子信息类）									H														H	H						M	M
49	国家安全教育（信息）											H							H			M	M						H			
50	大学生健康教育											H							H		H		M								M	
51	职业生涯规划									H														H	H						M	M
52	专业导论（光电）									H														H	H						M	M
53	就业指导									H													M	H	H						M	
54	英语初级口语																	M	H							H	M	H				
55	英语中级口语																	M	M							H	H	H				
56	数据结构（光电）														M		H	H							H						M	
57	机械制图			H	H		M	M																					M			

58	Matlab 程序设计★		M													H	H	H													H	
59	微纳光子集成★				H								H		H		M		H													
60	微机原理与应用★														M		H	H						H							M	
61	EDA 技术★						M	M														H	H						M			
62	专业英语（光电 ）★																	M	M							H	H	H				
63	数字信号处理（光电）★								H	M	H	H												M								
64	嵌入式系统设计★								H	M	H	M																				H
65	光纤通信原理技术★				H	H		M					H	M																		
66	语音信号处理												H	H	H		M														M	
67	C++程序设计基础															H	H	H													M	M
68	信息论与通信原理★	H			H			H					H																M			
69	红外技术★										M		H					M											H	H		
70	光电图像处理					H		H					H	M	M																	

十一、课程配置流程图

XI. Flowchart of Course Configuration



后　　记

培养计划是高等学校人才培养的纲领性文件，是教育思想和办学理念的集中体现，是实现人才培养目标的具体实施方案。根据学校质量体系文件《培养计划的制定与修订》（DMU-2-040）的要求，培养计划原则上每 4 年修订一次，在特殊情况下可提前或推迟进行修订，我校培养计划上一次全面修订于 2021 年进行。为满足教育教学改革的需要，本年度培养计划进行了全面大修。

本年度培养计划在多次校对、反复审核的过程当中，得到了各教学单位领导、教务、以及老师的大力支持和帮助。在此，对在培养计划修订过程中给予支持和帮助的各位，表示衷心的感谢。

培养计划的制定是一项繁琐的系统工作，难免会有疏漏，不足之处还望批评指正。培养计划的修订是以专业发展和知识更新为需求导向的，在执行过程中会进行细微调整。在此过程中，若产生分歧，应以教务系统为准。

对现行培养计划如有疑问请联系：

院　　办：84724073 84729468

教学院长：84727731

教 务 处：84723005

光电信息科学与工程专业负责人：王俊生

光电信息科学与工程教学指导委员会

大连海事大学教务处

2025 年 9 月