

光电信息科学与工程专业2024级本科人才培养方案

一、专业基本信息

学科门类: 理学 专业代码: 080705

授予学位：理学学士 标准学制：四年

毕业学分要求: 167学分

二、培养目标与培养要求

1. 培养目标

本专业聚焦信息化、智能化的时代新需要，培养担当民族复兴大任的时代新人，培养德智体美劳全面发展的社会主义建设者和接班人。培育掌握必备的自然科学基础知识和光电子、光信息等相关领域的专业知识，具备良好的学习、实践、创新、沟通等能力和一定的国际视野的创新型工程技术人才。能够在光通信、光学设计、光学材料、光电检测、光电传感、成像技术、机器视觉、光电器件、绿色照明、光伏新能源、节能减排等方面从事科学研究、技术开发、工艺优化、技术咨询、教育培训和管理等工作，或在相关专业继续深造，攻读硕士、博士学位。

本专业毕业生具有如下目标预测：

- (1) 具有正确的价值观和道德观、良好的文化素养、专业素养和强烈的社会责任感;
- (2) 具备批判性和创造性思维,能够分析和解决光电信息领域实践中的工程问题,具有良好的沟通交流、团队协作能力和一定的国际视野,胜任技术骨干或团队领导;
- (3) 能够从法律、社会、环境和可持续性等多方面宽广的系统视角进行项目管理,具备合理运用专业知识分析解决光电信息领域复杂工程问题的能力;
- (4) 能够跟踪光电信息领域的技术前沿,具备工程实践和创新能力,能独立承担光电信息领域中器件、系统等产品设计和应用开发工作;
- (5) 能够通过继续学习或工程实践不断更新专业知识,实现能力和技术水平的提升。

2. 毕业要求

掌握数学、物理、电学、光学、信息、工程等方面的基本理论和基本知识；掌握光电信息领域的基本理论、知识和技能；熟悉光电检测、光电信息处理、光通信与光网络、光纤传感、光电显示与存储、光电仪器设计与制备、数字图像处理等相关领域等有关政策和法规；了解光电信息领域的理论前沿、应用背景和最新发展动态，以及相关产业的发展状况；具有一定的实验设计，归纳整理、数据分析，论文撰写、学术交流的能力；具备良好的科学文化和人文素养、高尚的职业道德和强烈的可持续发展理念；具有较强的创新意识、沟通能力、团队协作和管理能力，以及终身学习和适应发展的能力。

毕业能力要求及其指标点分解:

毕业能力要求	指标点
毕业要求1： 工程知识： 能够将数学、自然科学、工程基础和专业知 识用于解决光电信息领域中的复杂工程问题。	1-1.能够将数学、自然科学知识用于光电信息领域中相关问题的表述；
	1-2.能够针对光电信息领域应用中的具体对象和过程建立相应的数理模型并合理求解；
	1-3.能将自然科学、工程基础等专业相关知识和数理模型用于推演、分析光电信息领域的复杂工程问题；
	1-4.能够运用自然科学、工程基础等相关知识和数理模型，对光电信息领域复杂工程问题的提出综合解决方案。

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光电信息领域的复杂工程问题，以获得有效结论。	2-1.能够对光电信息领域复杂工程问题中涉及的数学与物理等的基本原理进行归类、识别和判断；
	2-2.能够应用工程科学的基本理论，对光电信息领域复杂工程问题建立模型、准确描述并分析；
	2-3.能够应用工程专业知识，结合文献查阅，分析光电信息领域的复杂工程问题，并获得有效结论。
毕业要求3： 设计/开发解决方案： 能够设计针对光电信息领域的前沿科学和复杂工程问题的解决方案，设计满足特定需求的光电/光信息系统，并能够在设计中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。	3-1.能够根据复杂工程问题需求，分析约束条件，确定解决方案；
	3-2.能够针对特定约束条件，确定系统（或元件）的设计参数，并能够在设计环节中体现创新意识；
	3-3.能够综合考虑社会、健康、安全、法律、文化以及环境等因素优化方案、参数。
毕业要求4： 研究： 能够基于科学原理并采用科学方法对光电信息领域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。	4-1.能够基于科学原理，对光电信息领域复杂工程问题的解决方案进行调研和分析；
	4-2.能够对光电信息领域复杂工程问题的解决进行实验设计，构建实验系统，正确采集数据；
	4-3.能够对实验数据进行处理和分析，对数据信息进行综合和解释，并获得合理有效的结论。
毕业要求5： 使用现代工具： 能够针对光电信息系统设计和信息传输及处理等过程中的复杂工程问题，选择、使用、开发恰当的技术、资源、现代工程工具和信息技术工具，	5-1.了解光电信息领域常用的现代仪器、信息技术工具、工程工具原理和方法，并理解其局限性；
	5-2.能够选择与使用恰当的现代仪器、信息技术工具、工程工具，对光电信息领域的复杂工程问题进行分析；

包括对复杂工程问题的预测与模拟，并能够理解其局限性。	5-3.能够针对光电信息领域的工程问题，选用或开发满足特定需求的现代工具、信息技术工具、工程工具进行模拟和预测，并能够分析其适用范围和局限性。
毕业要求6： 工程与社会： 能够基于工程相关背景知识进行合理分析，评价本专业工程实践和光电信息领域新技术、新产品的开发和应用对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。	6-1.了解光电信息领域的技术标准、知识产权、法律法规和产业政策，能够认识到工程实践中涉及的社会、健康、安全、法律以及文化问题；
	6-2.能分析和评价光电信息领域工程实践中涉及的社会、健康、安全、法律以及文化问题，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。
毕业要求7： 环境和可持续发展： 能够理解和评价光电信息领域复杂工程问题的专业工程实践对环境、社会可持续发展的影响。	7-1.能够理解环境保护和社会可持续发展的内涵与意义，认识光电信息领域工程实践对环境和好社会可持续发展的影响；
	7-2.能够从环境保护和可持续发展的角度，思考光电信息领域工程实践的可持续性，评价产品周期中可能对人类和环境造成的损害和隐患。
毕业要求8： 职业规范： 具有人文社会科学素养，社会责任感强，能够在光电信息领域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.具有正确的世界观、人生观和价值观，理解个人与社会的关系，了解中国国情；
	8-2.能够理解光电工程师的职业性质和社会责任，在工程实践中依据本领域相关技术规范 and 标准开展工作；
	8-3.能够在实践中理解并恪守职业道德和规范，履行可持续发展的社会责任。
毕业要求9： 个人和团队： 能够在多学科背景下的团队中承担个体、团队成员以及责任人的角色。	9-1.能够理解团队合作的意义，能够与其他学科背景成员进行有效沟通，承担个人的义务；
	9-2.具有良好大局观念，能够在团队中适应某一角色（团队成员或负责人），承担相应职责，有效开展工作。
毕业要求10： 沟通： 能够就光电信息领域复杂工程问题与业界同行及社会公众	10-1.能就光电信息及相关领域工程问题，以口头、文稿、图表等方式，准确表达自己的观点，回应指令，理解与业界同行及社会公众交流的差异性；

进行有效沟通和交流，包括撰写报告和设计文稿、演讲，清晰表达观点，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。	10-2.了解光电信息及相关领域的研究热点和国际发展趋势，理解和尊重世界不同文化的差异性和多样性；
	10-3. 具备跨文化交流的语言和书面表达能力，能在跨文化背景下就专业问题进行基本沟通和交流，并理解和尊重世界不同文化的差异性和多样性。
毕业要求11： 项目管理： 理解并掌握工程原理与经济决策方法，并能在多学科环境中应用。	11-1.掌握光电信息学科相关复杂工程蕴含的工程管理原理，具备一定的市场经济、工程管理和相关法律法规的基础知识；
	11-2.能够在多学科环境中综合运用工程管理原理与经济决策方法，开展工程项目的论证、规划、组织实施和进程管理等。
毕业要求12： 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。	12-1.能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；
	12-2.具有自主学习的能力，对工程技术问题具有理解和归纳总结能力，能适应专业和社会发展。

三、主干学科与相近专业

主干学科：光学工程

相近专业：电子信息工程、微电子科学与工程

四、专业核心课程

1.几何光学、2.波动与近代光学、3.电磁场理论、4.激光原理与技术、5.固体与半导体物理、6.原子与量子物理、7.信息光学、8.光电子器件及其应用

五、实践教学环节

1、分散性实践（实验、上机、实践）：总学分 19.1；总学时：611.2。

2、集中性实践环节

序号	课程名称	周数	学分	培养模式
(1)	军事技能训练	3	2.0	学校
(2)	工程实训（金工实习）	2	1.0	学校+企业（社会）
(3)	电路电子技术实验	1	1.0	学校

(4)	电子设计与制作	2	1.0	学校
(5)	光电集成设计	2	1.0	学校
(6)	光电综合技术实践	2	1.0	学校
(7)	专业实习	2	1.0	学校
(8)	光学仪器设计与实践	2	1.0	学校
(9)	成像技术实践	2	1.0	学校
(10)	光学实验	4	1.0	学校
(11)	专业基础实验	8	2.0	学校
(12)	专业综合实验	8	2.0	学校
(13)	专业实训	8	2.0	学校
(14)	毕业设计（论文）	16	8.0	学校+企业（社会）
合计	14门	62	25.0	-

3、 实践学分比例：26.4 %

六、短学期安排

序号	课程名称	学分	各短学期学时分配			备注
			短学期1	短学期2	短学期3	
1	军事技能训练	2.0	3周			
2	电子设计与制作	1.0		2周		
3	光电集成设计	1.0		2周		
4	光电综合技术实践	1.0			2周	交替轮 换进行
5	光学仪器设计与实践	1.0			2周	交替轮 换进行
6	成像技术实践	1.0			2周	交替轮 换进行
7	专业实习	1.0			2周	
合计		8.0	3	4	8	

七、学分分布

学分及比例	学分	其中实验实践学分/比例	其中选修学分/比例
通识教育课程	43/25.7%	9.6/5.7%	6/3.6%
学科平台课程	42.5/25.4%	4/2.4%	0/0%
专业必修课程	51/30.5%	22/13.2%	0/0%
能力拓展选修课程	30.5/18.3%	8.5/5.1%	30.5/18.3%
总学分/比例	167/100%	44.1/26.4%	36.5/21.9%

八、微专业计划及要求

微专业名称：量子与信息微专业

课程 序号	课程名称	学分/学时	各学期周学时分配				
			三	四	五	六	备注
1	数学建模	2.0/32		4(1~8)			该微专业需要 有较高的数理 基础， 建议高等数学、 线性代数、 概率论与数理统计、 大学物理成绩 均在85分以上
2	复杂网络与大数据分析	2.5/48				6(1~8)	
3	波动与近代光学	4.0/64	4				
4	原子与量子物理	4.0/64			4		
5							
总计		12.5/208					

Optoelectronic Information Science and Engineering

Major 2024 Undergraduate Curriculum

I 、 Basic Information

Discipline:	Science	Major Code :	080705
Degrees Conferred:	Bachelor of Science	Duration:	4 years
Requirements for Graduation Credits:	167 credits		

II 、 Educational Objectives and Requirements

1. Educational Objectives

This major focuses on the new needs of the era of informatization and intelligence, aiming to cultivate new talents who can undertake the great task of national rejuvenation and become well-rounded socialist constructors and successors with comprehensive development in morality, intelligence, physique, aesthetics, and labor. It also aims to cultivate innovative engineering talents who have mastered the necessary basic knowledge of natural science and professional knowledge in related fields such as optoelectronics and optical information, possess good abilities in learning, practice, innovation, communication, and have a certain international perspective. They are able to engage in scientific research, technological development, process optimization, technical consultation, education and training, and management in the fields of optical communication, optical design, optical materials, photoelectric detection, photoelectric sensing, imaging technology, machine vision, photoelectric devices, green lighting, photovoltaic new energy, energy conservation and emission reduction, or further their studies in related majors to pursue master and doctor. Graduates should obtain knowledge and competences as follows:

- (1) Possessing correct values and moral concepts, good cultural literacy, professional literacy, and a strong sense of social responsibility;
- (2) Possessing critical and creative thinking, able to analyze and solve engineering problems in the practical field of optoelectronic information, with good communication, team collaboration abilities, and a certain international perspective, suitable for being a technical backbone or team leader;
- (3) Able to managing projects from a broad and systematic perspective encompassing legal, social, environmental, and sustainability aspects, and possess the ability to analyze and solve complex engineering problems in the field of optoelectronic information by rationally applying professional knowledge learned;
- (4) Able to keeping up with the technological frontiers in the field of optoelectronic information, possess engineering practice and innovation capabilities, and independently undertake the design, application, and development of devices, systems, and other products in the field of optoelectronic information;
- (5) Able to continuously updating professional knowledge through further learning or engineering practice, achieving the enhancement of abilities and technical skills.

2. Graduation Requirements

Mastering the basic theories and fundamental knowledge in mathematics, physics, electricity, optics, information, and engineering;

Grasping the basic theories, knowledge, and skills in the field of optoelectronic information;

Familiar with relevant policies and regulations in the fields of photoelectric detection, photoelectric information processing, optical communication and optical networks, fiber optic sensing, photoelectric display and storage, design and preparation of photoelectric instruments, and digital image processing;

Understanding the theoretical frontiers, application backgrounds, and the latest development trends in the field of optoelectronic information, as well as the development status of related industries;

Possessing a certain ability in experimental design, induction and collation, data analysis, paper writing, and academic exchanges;

Possessing good scientific and cultural literacy, noble professional ethics, and a strong concept of sustainable development;

Possessing strong innovative consciousness, communication skills, team collaboration and management abilities, as well as the ability for lifelong learning and adaptation to development.

Graduates should obtain knowledge and competences as follows:

Graduation Requirements	Indices
Requirement 1: Engineering Knowledge: Able to apply mathematics, natural sciences, engineering fundamentals, and specialized knowledge to solve complex engineering problems in the field of photoelectric information.	1-1. Able to apply mathematical and natural science knowledge to the representation of related problems in the field of optoelectronic information;
	1-2. Able to establish corresponding mathematical and physical models for specific objects and processes in the application of optoelectronic information, and solve them reasonably;
	1-3. Able to apply natural science, engineering foundations, and other related professional knowledge along with mathematical and physical models to deduce and analyze complex engineering problems in the field of optoelectronic information;
	1-4. Able to utilize natural science, engineering foundations, and other related knowledge along with mathematical and physical models to propose comprehensive solutions to complex engineering problems in the field of optoelectronic information.
Requirement 2: Problem Analysis: Able to apply the basic principles of mathematics, natural	2-1. Able to categorize, identify, and judge the basic principles of mathematics and physics involved in complex engineering problems in the field of optoelectronic information;

sciences, and engineering sciences to identify, articulate, and analyze complex engineering problems in the field of optoelectronic information through literature research, in order to arrive at effective conclusions.	2-2. Able to apply the basic theories of engineering science to establish models, accurately describe, and analyze complex engineering problems in the field of optoelectronic information;
	2-3. Able to apply professional engineering knowledge, combined with literature review, to analyze complex engineering problems in the field of optoelectronic information and arrive at effective conclusions.
Requirement 3: Design/Development of Solutions: Able to design solutions for cutting-edge scientific and complex engineering problems in the field of optoelectronic information, create photoelectric/optical information systems that meet specific requirements, and demonstrate innovative thinking in the design process, taking into account factors such as society, health, safety, law, culture, and the environment.	3-1. Able to analyze constraint conditions and determine solutions based on the requirements of complex engineering problems;
	3-2. Able to determine the design parameters of a system (or component) specific to certain constraint conditions, and demonstrate innovative thinking in the design process;
	3-3. Able to optimize solutions and parameters by comprehensively considering factors such as society, health, safety, law, culture, and the environment.
Requirement 4: Research: Able to conduct research on complex engineering problems in the field of optoelectronic information based on scientific principles and employing scientific methods, including designing experiments, analyzing and interpreting data, and drawing reasonable and effective conclusions through information synthesis.	4-1. Able to investigate and analyze solutions to complex engineering problems in the field of optoelectronic information based on scientific principle;
	4-2. Able to design experiments, construct experimental systems, and correctly collect data for solving complex engineering problems in the field of optoelectronic information;
	4-3. Able to process and analyze experimental data, synthesize and interpret data information, and arrive at reasonable and effective conclusions.

Requirement 5: Using Modern Tools: Able to select, utilize, and develop appropriate techniques, resources, modern engineering tools, and information technology tools for complex engineering problems in the processes of optoelectronic information system design, information transmission, and processing. This includes the prediction and simulation of complex engineering problems, as well as the ability to understand their limitations.	5-1. Understand the principles and methods of commonly used modern instruments, information technology tools, and engineering tools in the field of optoelectronic information, and comprehend their limitations;
	5-2. Able to select and utilize appropriate modern instruments, information technology tools, and engineering tools to analyze complex engineering problems in the field of optoelectronic information;
	5-3. Able to select or develop modern tools, information technology tools, and engineering tools that meet specific needs for engineering problems in the field of optoelectronic information, perform simulations and predictions, and analyze their applicable scope and limitations.
Requirement 6: Engineering and Society: Able to conduct reasonable analysis based on relevant engineering background knowledge, evaluate the impact of engineering practices, as well as the development and application of new technologies and products in the field of optoelectronic information on society, health, safety, law, and culture, and understand the responsibilities that should be assumed.	6-1. Understand the technical standards, intellectual property rights, laws and regulations, and industrial policies in the field of optoelectronic information, and be aware of the social, health, safety, legal, and cultural issues involved in engineering practices;
	6-2. Able to analyze and evaluate the social, health, safety, legal, and cultural issues involved in engineering practices in the field of optoelectronic information, as well as the impact of these constraints on project implementation, and understand the responsibilities that should be assumed.
Requirement 7: Environment and Sustainable Development: Able to understand and evaluate the impact of professional	7-1. Able to understand the meaning and significance of environmental protection and sustainable social development, and recognize the impact of engineering practices in the field of optoelectronic information on environmental and social sustainability;

engineering practices for complex engineering problems in the field of optoelectronic information on environmental and social sustainability.	7-2. Able to consider the sustainability of engineering practices in the field of optoelectronic information from the perspective of environmental protection and sustainable development, and evaluate potential harm and risks to humans and the environment during the product lifecycle.
Requirement 8: Professional Ethics: Possessing a strong foundation in humanities and social sciences, and a sense of social responsibility, able to understand and adhere to professional ethics and norms in engineering practices in the field of optoelectronic information, and fulfill responsibilities accordingly.	8-1. Possess a correct worldview, outlook on life, and values, understand the relationship between individuals and society, and be aware of China's national condition;
	8-2. Able to understand the professional nature and social responsibilities of an optoelectronic engineer, and conduct work in engineering practices according to relevant technical specifications and standards in this field;
	8-3. Able to understand and strictly adhere to professional ethics and norms in practice, and fulfill social responsibilities for sustainable development.
Requirement 9: Personal and Teamwork: Able to assume the roles of an individual, team member, and responsible person in a multidisciplinary team.	9-1. Able to understand the significance of teamwork, communicate effectively with members from other disciplines, and fulfill individual obligations;
	9-2. Possess a good sense of the overall situation, able to adapt to a role (team member or leader) in the team, assume corresponding responsibilities, and effectively carry out work.
Requirement 10: Communication: Able to effectively communicate and exchange ideas with industry peers and the general public on complex engineering issues in the field of optoelectronic information, including writing reports and design documents, presenting speeches, clearly expressing	10-1. Able to accurately express one's opinions, respond to instructions, and understand the differences in communication with industry peers and the general public, through oral presentations, documents, charts, and other methods, regarding engineering issues in the field of optoelectronic information and related areas;
	10-2. Understand the research hotspots and international development trends in the field of optoelectronic information and related areas, and comprehend and respect the differences and diversity of different cultures around the world;

opinions, and possessing a certain international perspective, enabling communication and exchange in a cross-cultural context.	10-3. Possess the linguistic and written ability for cross-cultural communication, capable of conducting basic communication and exchange on professional issues in a cross-cultural context, and understanding and respecting the differences and diversity of different cultures around the world.
Requirement 11: Project Management: Understand and master engineering principles and economic decision-making methods, and be able to apply them in a multidisciplinary environment.	11-1. Possess a grasp of the engineering management principles embedded in complex engineering in the field of optoelectronic information, along with basic knowledge of market economics, engineering management, and related laws and regulations;
	11-2. Able to comprehensively apply engineering management principles and economic decision-making methods in a multidisciplinary environment, to carry out project justification, planning, organization, implementation, and progress management of engineering projects.
Requirement 12: Lifelong Learning: Possess the awareness of independent learning and lifelong learning, as well as the ability to continuously learn and adapt to development.	12-1. Recognize the necessity of continuous exploration and learning, and possess the awareness of independent learning and lifelong learning;
	12-2. Have the ability to self-study, understand and summarize engineering technical issues, and adapt to professional and social development.

III、 Main Disciplines and Related Majors

Main Disciplines: Optical Engineering

Related Majors: Electronic Information Engineering, Microelectronics Science and Engineering

IV、 Core Courses

1. Geometric Optics, 2. Wave and Modern Optics, 3. Electromagnetic Field Theory, 4. Laser Principles and Technology, 5. Solid and Semiconductor Physics, 6. Atom and Quantum Physics, 7. Information Optics, 8. Optoelectronic Devices and Their Applications.

V、 Practical Teaching Session

- 1、 Separate Practice (Experiment, Programming and Practice) :
Total Credits: 19.1; Total Hours: 611.2.
- 2、 Intensive Practice

No.	Course Name	Weeks	Credit	Training Mode
(1)	Military Skill Training	3	2.0	Schools

(2)	Engineering Training (Metalworking Practice)	2	1.0	Schools and Enterprises
(3)	Circuit and Electronic Technology Experiment	1	1.0	Schools
(4)	Electronic Design and Fabrication	2	1.0	Schools
(5)	Integrated Design of Photoelectronics	2	1.0	Schools
(6)	Optoelectronic Integrated Technology Practice	2	1.0	Schools
(7)	Specialized Practice	2	1.0	Schools
(8)	Design and Practice of Optical Instruments	2	1.0	Schools
(9)	Imaging Technique Practice	2	1.0	Schools
(10)	Optical Experiment	4	1.0	Schools
(11)	Fundamental Specialized Experiment	8	2.0	Schools
(12)	Comprehensive Specialized Experiment	8	2.0	Schools
(13)	Specialized Training	8	2.0	Schools
(14)	Graduation Design (Thesis)	16	8.0	Schools and Enterprises
Total	14	62	25.0	-
3、Practice Credits Proportion: <u>26.4%</u>				

VI、Short Semester Arrangement

No.	Course Name	Credit	Short Semester Hour Distribution			
			Short Semester 1	Short Semester 2	Short Semester 3	
1	Military Skill Training	2.0	3 weeks			
2	Electronic Design and Fabrication	1.0		2 weeks		
3	Integrated Design of Photoelectronics	1.0		2 weeks		
4	Optoelectronic integrated Technology Practice	1.0			2 weeks	Alternate rotation
5	Design and Practice of Optical Instruments	1.0			2 weeks	Alternate rotation
6	Imaging Technique Practice	1.0			2 weeks	Alternate rotation
7	Specialized Practice	1.0			2 weeks	
Total		8.0	3	4	8	

VII、Credit Distribution

Credits and Proportion	Credits	Experiment and Practice Credits/Proportion	Optional Credits/Proportion
General Education	43/25.7%	9.6/5.7%	6/3.6%
Discipline Education	42.5/25.4%	4/2.4%	0/0%
Specialized Education	51/30.5%	22/13.2%	0/0%
Elective Courses for Expanding Abilities	30.5/18.3%	8.5/5.1%	30.5/18.3%
Total Credits/Proportion	167/100%	44.1/26.4%	36.5/21.9%

VIII、Micro major Programs and Requirements

Micro major: Quantum and Information

No.	Course Name	Credits/Hours	Weekly Hour Per Semester				Notes
			3	4	5	6	
1	Mathematical Modeling	2.0/32		4(1-8)			The micro-major requires a strong foundation in mathematics and physics. It is recommended that students with scores above 85 in advanced mathematics, linear algebra, probability theory and mathematical statistics, and university physics enroll in this course.
2	Complex Networks and Big Data Analytics	2.5/48				6(1-8)	
3	Wave and Modern Optics	4.0/64	4				
4	Atom and Quantum Physics	4.0/64			4		
Total		12.5/208					

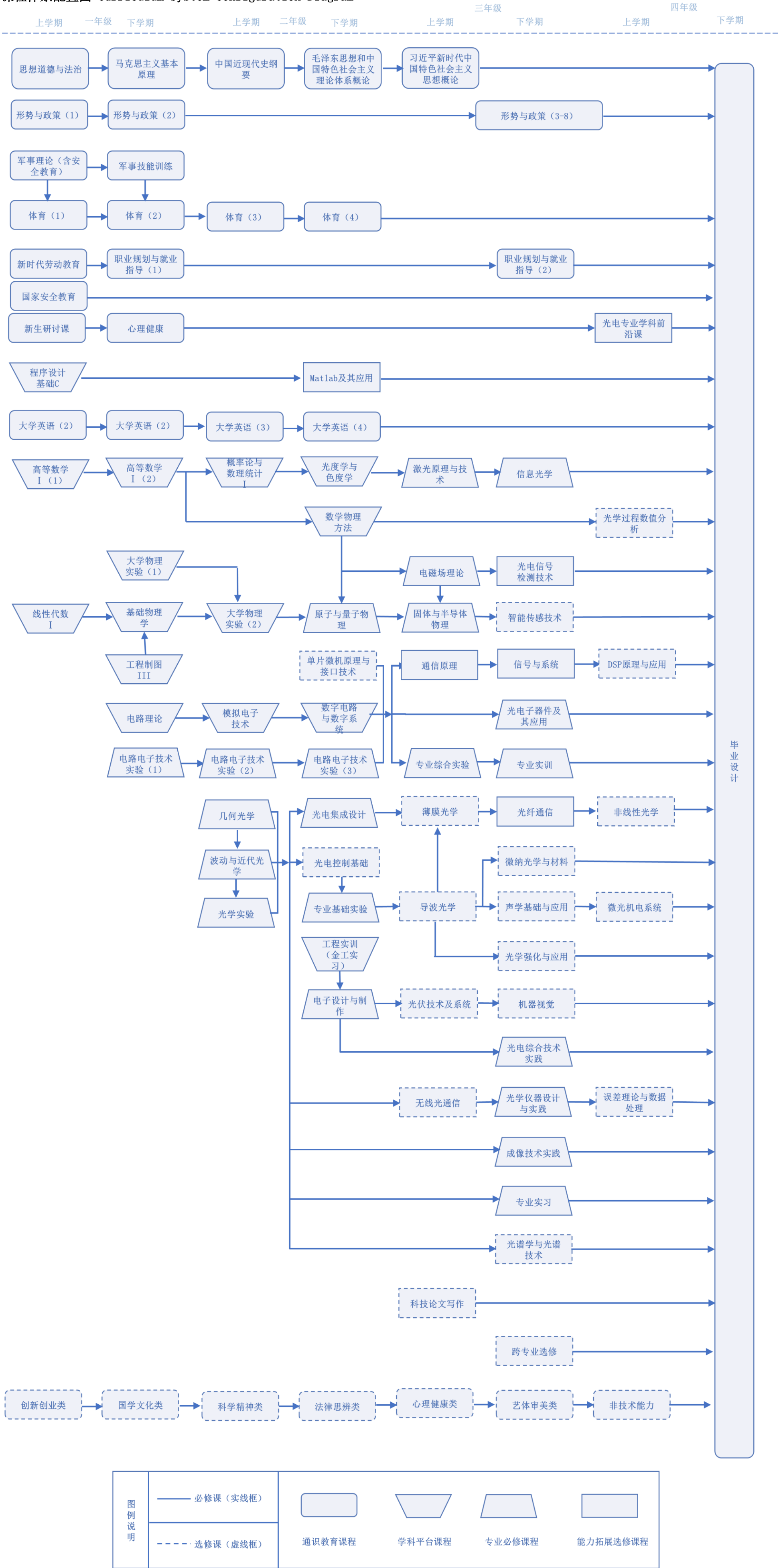
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能力 (Requirements) 课程 Courses	毕业能力1 Requirement 1				毕业能力2 Requirement 2			毕业能力3 Requirement 3			毕业能力4 Requirement 4			毕业能力5 Requirement 5			毕业能力6 Requirement 6		毕业能力7 Requirement 7		毕业能力8 Requirement 8			毕业能力9 Requirement 9		毕业能力10 Requirement 10			毕业能力11 Requirement 11		毕业能力12 Requirement 12			
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	7.1	7.2	8.1	8.2	8.3	9.1	9.2	10.1	10.2	10.3	11.1	11.2	12.1	12.2		
信号与系统 Signals and Systems		H			M									H																	M			
单片微机原理与接口技术 Principle OF Single-chip Microcomputer and Interface Technology								L	L					M	H	M																		
薄膜光学 Film Optics		M	L		H					M	H		M																					
导波光学 Waveguide Optics		H				H	M		M							M																		
光学强化与应用 Optical Strengthening and Application		H	M				M																									L		
光学过程数值分析 Numerical Analysis of Optical Processes		H	M				M					M	H	H																				
非线性光学 Non-linear Optics	H			L		L																						M	M			M		
DSP原理与应用 DSP Principle and Application			H		M						H	H				H						M	M					L	L				H	
光电专业学科前沿 Frontier of Optoelectronics Discipline														H			M	M										M	M			M	M	
光伏技术及系统 Photovoltaic Technologyand Systems	M		H	H															H															
无线光通信 Wireless Optical Communication		M				H																											M	
声学基础与应用 Fundamentals and Applications of Acoustics		H	M				M																											
机器视觉 Machine Vision			H		M						H	H		H		H						M	M					L	L			M	H	
微纳光学与材料 Nano Optics and Materials	H					H	M					H			H									M										
智能传感技术 Intelligent Sensor Technology			H		M						H	H		H		H						M	M					L	L			M	H	

能力 (Requirements) 课程 Courses	毕业能力1 Requirement 1				毕业能力2 Requirement 2			毕业能力3 Requirement 3			毕业能力4 Requirement 4			毕业能力5 Requirement 5			毕业能力6 Requirement 6		毕业能力7 Requirement 7		毕业能力8 Requirement 8			毕业能力9 Requirement 9		毕业能力10 Requirement 10			毕业能力11 Requirement 11		毕业能力12 Requirement 12		
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	7.1	7.2	8.1	8.2	8.3	9.1	9.2	10.1	10.2	10.3	11.1	11.2	12.1	12.2	
光谱学与光谱技术 Spectroscopy and Spectrum Technology			H									M										H					H	H					
误差理论与数据处理 Error Theory and Data Processing				M		M							H	M	M	M																	
微光机电系统 Micro- Optical Electromechanical System			M	M		H				H																			M				
物理光学 Physical Optics				M							M										H										H		
固体物理 Solid Physics	H				M		H				H		M																				
第二课堂 Co-curricular Activities																	M					M								L	H		
创新创业训练 Innovation and Entrepreneurship Training																								H	M					L			

X 课程体系配置图 Curriculum System Configuration Diagram



光电信息科学与工程专业专业教学进程表 Table of Teaching Schedule for Optoelectronic Information Science and Engineering Major																						
课程类别 Course Type	课程性质 Course Nature		序号No.	课程名称 Course Name	学 分 Credits	总学时数 Total Credit Hours	学时分配 Credit Hour Distribution				各学期周学时分配 Weekly Hours Per Semester								课程考试 学期 Examination Semester	开课学院 School	备 注 Notes	
							讲 课		实 验 Experiment	上 机 Program- ming	实 践 Practice	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th				八 8th
							线下课时 offline	线上课时 online														
通识教育课程 General Education	通识教育必修课程 General Education (Compulsory)	思政类 Ideological and Political Courses	1	思想道德与法治 Cultivation of Ideological Morality and Basis of Law	3.0	48	48				3								26			
			2	马克思主义基本原理 Elementary Theory of Marxism	3.0	48	48					3							26			
			3	中国近现代史纲要 Outline of Chinese Contemporary and Modern History	3.0	48	48							3						26		
			4	毛泽东思想和中国特色社会主义理论体系概论 Mao Zedong Thought and Theory of Socialism with Chinese Characteristics	3.0	64	32					32				3				26	思想政治理论实践环节（2.0学分）	
			5	习近平新时代中国特色社会主义思想概论 Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3.0	64	32					32				3				26		
			6	形势与政策 Current Situation and Policies	2.0	64	16					48	1	1	1	1	1	1	1		26	第1-2学期讲课，第3-8学期采用备案制 (Semester 1-2 using lectures, semester 3-8 using the filling system)
			7	国家安全教育 National Security Education for College Students	1.0	16	2	12				2	2								97	
		外语类 Foreign Language Courses	8	大学英语 College English	8.0	160	128	32				2	2	2	2					1234	12	
		军体类 Military Courses	9	军事理论 Military Theory	2.0	36	32				4	2									97	第一学期(In the 1st semester)
			10	军事技能训练 Military Skill Training	2.0	3周(Three weeks)					3周(Three weeks)		3周(Three weeks)								97	短学期1 (Short semester 1)
			11	体育 Physical Education	4.0	144	16				128	2	2	2	2						14	实践中含课外体测理论考试16学时 In practice,16 credit hours of extracurricular physical theory examination are included.
		成长规划类 Growth Planning Courses	12	新生研讨课 Freshman Seminar	1.0	16	16					2									13	1-8周 (1st-8th week)
			13	职业规划与就业指导 Career Planning and Employment Guidance	0.5	16	16						2				2				97	
			14	心理健康 Mental Health	0.5	16	16						2								97	第二学期(In the 2ed semester)
			15	新时代劳动教育 Labor Education in the New Era	1.0	16	4	12				2									13	1-8周 (1st-8th week)
	小计 Subtotal			37.0	820	454	56	0	0	308	16	33	8	8	4	3	1	1				
	通识教育选修课 General Education (Optional)		分为科学精神、创新创业、四史文化、心理健康、艺体审美、计算机和非技术能力课程类7个模块， 每个模块最多选修2.0学分（其中四史文化类、心理健康类、艺体审美类需选修不少于1.0学分），每学期最多选修2门课程，共修满6.0学分。																			
			小计 Subtotal			6.0	96	96	0	0	0	0										
	合计 Total				43.0	916	550	56	0	0	308	14	33	8	8	4	3	1	1			
	学科平台课程 Discipline Education	学科基础课程 Basic Courses	16	工程制图III Engineering Drawing III	2.0	40	32			8			4						1	04	1-10周 (1st-10th week)	
17			高等数学I Advanced Mathematics I	11.0	176	176					6	5							12	13		
18			线性代数 I Linear Algebra I	2.5	40	40					3								1	13		
19			程序设计基础C Fundamental of Programming Design C	3.0	64	32				32	4									13		
20			大学物理实验 College Physics Experiment	1.5	48			48				3	3							13		
21			基础物理学 Fundamental Physics	4.0	64	64						4							2	13		
22			概率论与数理统计I Probability and Mathematical Statistics I	2.5	40	40								3					3	13		
23			电路理论 Circuit Theory	3.0	48	48						3							2	13	1-16周， 1st-16th week	
24			数学物理方法 Methods of Mathematical Physics	4.0	64	64								4					4	13		
25			模拟电子技术 Analog Electronics Technique	3.0	48	48								6					3	13	1-8周 (1st-8th week)， 每次授课三节课，第10周考试	
26			数字电路与数字系统 Digital Circuits and Systems	3.0	48	48									6				4	13	1-8周 (1st-8th week) ,每次授课三节课，第10周考试	
27			光度学与色度学 Photometry and Chromaticity	2.0	32	32								4						13	9-16周(9th-16th week)	
小计 Subtotal			41.5	712	624	0	48	40	0	13	19	12	12	0	0	0	0					
集中性实践环节 Intensive Practice		28	工程实训（金工实习） Engineering Training (Metalworking Practice)	1.0	2周(Two Weeks)					2周(Two Weeks)				2周(Two Weeks)					04			

课程类别 Course Type	课程性质 Course Nature	序号No.	课程名称 Course Name	学 分 Credits	总学时数 Total Credit Hours	学时分配 Credit Hour Distribution				各学期周学时分配 Weekly Hours Per Semester								课程考试 学期 Examination Semester	开课学院 School	备 注 Notes	
						讲 课		实 验 Experiment	上 机 Program- ming	实 践 Practice	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th				八 8th
						线下课时 offline	线上课时 online														
		小计 Subtotal		1.0	2周(Two Weeks)					2周(Two Weeks)				2周(Two Weeks)							
	合计 Total		42.5	744	624	0	48	40	32	13	19	12	28	0	0	0	0				
专业必修课程 Specialized Education	专业核心课程 Core Courses	29	几何光学 Geometric Optics	3.0	48	36	12						4					3	13	1-9周(1st-9th week)，线下课程每次授课二节（线上课程10-12周自主排课）	
		30	波动与近代光学 Wave and Modern Optics	4.0	64	64							4					3	13		
		31	原子与量子物理 Atom and Quantum Physics	4.0	64	64								4				4	13		
		32	电磁场理论 Electromagnetic Field Theory	4.0	64	64									4			5	13		
		33	固体与半导体物理 Solid and Semiconductor Physics	4.0	64	64									4			5	13		
		34	激光原理与技术 Laser Principles and Technology	3.0	48	48									4			5	13	1-12周 (1st-12th week)	
		35	信息光学 Information Optics	3.0	48	48										6		6	13	1-8周(1st-8th week)	
		36	光电子器件及其应用 Optoelectronic Devices and their Applications	4.0	64	48	16									6		6	13	线下课程每次授课三节（线上课程自主排课）， 9-16周(9th-16th week)	
		小计 Subtotal		29.0	464	436	28	0	0	0	0	0	8	4	12	12	0	0			
	集中性实践环节 Intensive Practice Sessions	37	电路电子技术实验 Circuit and Electronic Technology Experiment	1.0	32			32				1	1	1					13	不排课表（教师自主安排），电路电子技术实验（1）0.3学分10学时，（2）0.3学分10学时，（3）0.4学分12学时	
		38	电子设计与制作 Electronic Design and Fabrication	1.0	2周(Two Weeks)					2周(Two Weeks)				2周(Two Weeks)					13	短学期2(Short semester 2)	
		39	光电集成设计 Integrated Design of Photoelectronics	1.0	2周(Two Weeks)					2周(Two Weeks)				2周(Two Weeks)					13	短学期2(Short semester 2)	
		40	光电综合技术实践 Opticoelectric integrated Technology Practice	1.0	2周(Two weeks)					2周(Two weeks)						2周(Two weeks)			13	短学期3(Short semester 3)	
		41	专业实习 SpecializedPractice	1.0	2周(Two weeks)					2周(Two weeks)						2周(Two weeks)			13	短学期3(Short semester 3)	
		42	光学仪器设计与实践 Design and Practice of Optical Instruments	1.0	2周(Two weeks)					2周(Two weeks)						2周(Two weeks)			13	短学期3(Short semester 3)	
		43	成像技术实践 Imaging Technique Practice	1.0	2周(Two weeks)					2周(Two weeks)						2周(Two weeks)			13	短学期3(Short semester 3)	
		44	光学实验 Optical Experiment	1.0	32			32					8							不排课表（教师自主安排）	
		45	专业基础实验 Fundamental Specialized Experiment	2.0	64			64						8					13	1-8周(1st-8th week)	
		46	专业综合实验 Comprehensive Specialized Experiment	2.0	64			64							8				13	1-8周(1st-8th week)	
		47	专业实训 Specialized Training	2.0	64			64								8			13	9-16周(9th-16th week)	
		48	毕业设计（论文） Graduation Design (Thesis)	8.0	16周(Sixteen weeks)					16周(Sixteen weeks)								16周(Sixteen weeks)	13		
		小计 Subtotal		22.0	704	0	0	256	0	448	0	0	8	48	8	56	0	16			
		合计 Total		51.0	1168	436	28	256	0	448	0	0	16	48	24	68	0	16			
能力拓展选修课程 Elective Courses for Expanding Abilities	专业选修课程 Specialized Elective Courses	49	Matlab及其应用 MATLAB and Its Application	2.0	48	16			32					6				13	必选， 1-8周(Compulsory,1st-8th week)		
		50	光电控制基础 Fundamental Control Theory of Photoelectronics	2.0	48	16			32					6				13	9-16周(9th-16th week)		
		51	通信原理 Principle of Communication	2.0	32	32								4			5	13	必选， 1-8周(1st-8th week)		
		52	科技论文写作 Scientific Paper Writing	2.0	32	32									4			13	1到8周,1st-8th week		
		53	光纤通信 Optical Fiber Communications	3.0	48	48									3			13	1-16周(1st-16th week)，每周一次三节课连上		
		54	光电信号检测技术 Optoelectric Detection technology	3.0	48	48									3			13	必选， 1-16周(Compulsory,1st-16th week)，每周一次三节课连上		
		55	信号与系统 Signals and Systems	3.5	64	48			16						4			13	必选Compulsory		
		56	单片微机原理与接口技术 Principle of Single-chip Microcomputer and Interface Technology	2.0	32	32								4				13	9-16周(9st-16th week)		
		57	薄膜光学 Film Optics	2.0	32	32									4			13	1-8周(1st-8th week)		
		58	导波光学 Waveguide Optics	2.0	32	32									4			13	9-16周(9th-16th week)		
		59	光学强化与应用 Optical Strengthening and Application	2.0	32	32										4		13	1-8周(1st-8th week)		

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