

自动化专业2024级本科人才培养方案

一、专业基本信息

学科门类：	工学	专业代码：	080801
授予学位：	工学学士	标准学制：	4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

自动化专业培养适应国家新型工业化战略与经济发展需求，拥有强烈的爱国主义精神、高度的社会责任感，能够运用自动化、信息化、智能化等相关领域的基础知识和专业技能，解决各类自动化系统设计中的复杂工程问题，能够在物联网产业、智能制造业以及轻工业等相关行业从事科学研究、工程设计与管理等工作的高素质、复合型创新工程人才，成为德、智、体、美、劳全面发展的社会主义合格建设者和可靠接班人。

本专业毕业生具有如下目标预测：

- （1）具有良好的职业道德、社会责任感、法律意识和人文科学素养；
- （2）具备扎实的自然科学和自动化及相关专业基础知识，为复杂自动化工程项目提供解决方案；
- （3）具备独立承担自动化及相关领域工程项目的能力，能够进行科学研究、工程设计与管理；
- （4）具备健康的身心、良好的人文科学素养和宽广的专业视野，和团队成员、专业人士能有效沟通，具备一定的组织、协调、管理和决策能力；
- （5）具备全球化意识和国际视野，在不断变化的国际形势和环境中，能够通过终身学习发展新的知识和技能，适应职业发展。

2. 毕业要求

通过本专业的学习，学生具备扎实的数学、物理、工程基础知识，以及自动化、物联网、通信等学科交叉、深宽兼备的专业知识；有较强的实践能力和创新意识，能够根据实际要求解决自动化领域的复杂工程问题；具有良好的人文科学素养、积极向上的价值观和较强的社会责任感；具有法律法规、工程伦理、安全和环保意识；能够进行积极有效的团队协作和沟通，具备终身学习能力。

毕业能力要求及其指标点分解：

毕业要求1： 工程知识：能够将数学、自然科学、自动化相关工程基础和专业知用于解决自动化系统复杂工程问题。	1-1. 能够将数学、自然科学、工程基础知识合理表述自动化领域复杂工程问题。
	1-2. 能够针对自动化系统复杂工程问题建立合理的数学模型，并综合运用数理工程知识和自动化专业知识进行推理、分析和求解。
	1-3. 能够针对自动化系统复杂工程问题，综合运用工程基础和自动化专业知识，提出合理的解决方案。
	1-4. 能够将工程基础和自动化专业知识用于复杂自动化工程项目中系统或产品的设计、集成与开发。
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，并通过文献研究，识别、表达	2-1. 能够识别和判断自动化系统复杂工程问题的关键环节、变量和参数，以及工程约束条件。
	2-2. 能够认识到解决问题有多重方案可选择，并能综合考虑外界约束和条件选择较合理的方案。

、分析自动化系统复杂工程问题，并获得有效结论。	2-3. 能够针对复杂工程问题的指标要求，通过文献分析寻求关键问题的解决方案。
	2-4 能够能运用基本原理，分析工业过程的影响因素，论证解决方案的合理性。
毕业要求3： 设计/开发解决方案：能够设计针对自动化系统复杂工程问题的解决方案，设计满足特定需求的系统、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。	3-1. 能够根据实际复杂工程问题确定设计目标和具体方案，并综合社会、健康、安全、法律、文化以及环境等因素评价设计方案的可行性。
	3-2. 能够融合自动化、电力电子、物联网、计算机等相关专业知识，设计满足特定需求的硬件和软件，并在设计中体现创新意识。
	3-3. 能够以实物或工程化表现形式，如图纸、报告等呈现设计成果。
毕业要求4： 研究：能够基于科学原理并采用科学方法对自动化系统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自动化工程相关的元件性能和物理现象的基本规律进行研究，并设计合理的实验方案进行验证。
	4-2. 能够基于科学原理，采用科学方法对复杂自动化工程问题中的测量、控制、执行等单元制定实验方案，并对实验结果进行分析和解释。
	4-3. 能够基于实验方案构建实验系统，安全开展实验，并对实验结果进行整理、归纳和分析。
	4-4. 能够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。
毕业要求5： 使用现代工具：能够针对自动化领域复杂工程问题，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，进行预测与模拟，并理解其局限性。	5-1. 能够熟练使用常用的现代仪器仪表、信息技术工具。
	5-2. 能够选择恰当的专业设计技术、资源与工具用于复杂工程问题的分析与设计。
	5-3. 能使用计算机仿真工具，完成复杂自动化工程项目的模拟与仿真分析，并理解其局限性。
毕业要求6： 工程与社会：能够对工程相关背景知识进行合理分析，评价自动化系统复杂工程问题的解决方案对社会、健康、安全、法律以及文化的影响，并明确应承担的责任。	6-1. 具有工程实习和社会实践的经历，了解自动化专业相关的背景知识、技术标准、知识产权、产业政策和法律法规等。
	6-2. 能识别和分析自动化系统复杂工程问题的新技术、新产品和新工艺的应用对社会、健康、安全、法律及文化的潜在影响。
	6-3. 客观评价自动化技术的应用与创新对社会、健康、安全、法律以及文化的影响，理解并明确应承担的责任。

毕业要求7： 环境和可持续发展：能够理解和评价针对自动化系统复杂工程问题的工程实践对环境、社会可持续发展的影响。	7-1. 理解环境保护和社会可持续发展的内涵和意义，具有环境保护和社会可持续发展的方针、政策和法律法规的基本知识。
	7-2. 能够了解并客观评价自动化领域复杂工程实践对于环境与社会可持续发展的影响，明确工程实践服务于环境保护与社会可持续发展的责任。
毕业要求8： 职业规范：具有人文社会科学素养、社会责任感，能够在自动化相关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. 尊重生命、关爱他人，主张正义，诚信守则，具有人文知识、思辨能力、处事能力和科学精神。
	8-2. 理解社会主义核心价值观，维护国家利益，具有推动国家发展和社会进步的责任感。
	8-3. 理解工程伦理的核心理念，在自动化相关工程实践中自觉遵守职业道德和规范，履行岗位职责。
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、团队成员以及负责人的角色。	9-1. 能主动与团队成员和其他学科背景人员沟通合作，有效完成团队分配的任务。
	9-2. 能够综合其他团队成员的意见，组织、管理和协调团队的工作，胜任团队责任人及成员的角色。
毕业要求10： 沟通：能够就自动化系统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。 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。	10-1. 能够使用适当的方式描述自动化系统设计、开发和测试中的复杂工程问题，并表达自己的观点。
	10-2. 能通过撰写报告、设计文稿和陈述发言等方式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。
	10-3. 具备英语听说读写的基本能力和一定的国际化视野，能在跨文化背景下进行沟通交流。

毕业要求11： 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。	11-1. 理解并掌握自动化领域相关工程活动中涉及的经济与管理原理。
	11-2. 能够将管理原理、经济决策方法用于自动化相关的多学科工程实践。
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. 能正确认识不断探索和终身学习的重要性，具备自主学习和终身学习的意识。
	12-2. 能针对个人或职业发展的需求，采用合适的方法，自主学习，发展自身能力。

三、主干学科与相近专业

主干学科：控制科学与工程

相近专业：电气工程及其自动化

四、专业核心课程

原理、计算机控制系统（双语）、过程控制系统、电机与拖动基础、运动控制系统、电力

五、实践教学环节

- 1、分散性实践（实验、上机、实践）：总学分__21__；总学时：__656__。
- 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	3	2	学校
(2)	工程实训（含金工实习）	2	1	学校+企业（社会）
(3)	电子综合设计I	1	0.5	学校+企业（社会）
(4)	电子综合设计II	1	0.5	学校+企业（社会）
(5)	生产实习	1	0.5	学校+企业（社会）
(6)	单片机原理与接口技术综合设计	3	1.5	学校
(7)	控制系统建模与分析综合设计	3	1.5	学校
(8)	过程控制系统综合设计	2	1	学校
(9)	运动控制系统综合设计	2	1	学校
(10)	PLC综合设计	2	1	学校
(11)	自动化卓越工程师实践/控制科学与工程科研训练	16	8	学校+企业（社会）

(12)	毕业设计（论文）	16	8	学校+企业（社会）
(13)	创新实践环节		4	学校+企业（社会）
合计		42	30.5	-

- 3、 实践学分比例：30.8%（保留到小数点后一位）
计算方法：（分散性实践学分+集中性实践环节学分）/本专业总学分

六、短学期安排

序号	课程名称	学分	各短学期学时分配			
			短学期1	短学期2	短学期3	
1	军事技能训练	2.0	3周			
2	电子综合设计I	0.5	1周			
3	单片机原理与接口技术综合设计	1.5		3周		
4	过程控制系统综合设计	1.0			1周	共2周（1周课内讲
5	运动控制系统综合设计	1.0			1周	共2周（1周课内讲
6	PLC综合设计	1.0			1周	共2周（1周课内讲
合计		7.0	3周	3周	3周	

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%	11.6/7%	6/3.6%
学科平台课程	46.5/27.9%	6/3.6%	0
专业教育课程	51.5/30.8%	24.8/14.8%	0
能力拓展课程	26/15.6%	9.1/5.5%	26/15.6%
总学分/比例	167/100%	51.5/30.8%	32/19.2%

八、微专业计划及要求

微专业名称：智能无人系统

课程 序号	课程名称	学分/学时	各学期周学时分配				备注
			三	四	五	六	
1	程序设计 与人工智 能基础	2/32	2				限 3 0 人
2	传感器与 检测技术	2/32		2			
3	通信技术 基础	2/32		2			
4	微控制器 与嵌入式 系统	2/32			2		
5	电机与运 动控制系 统	2/32				2	

微专业课程为核心课不多于5门，学分控制为10-15学分。

Automation Major 2024 Undergraduate Curriculum

I、Basic Information

Discipline: Engineering

Major Code : 80801

Degrees Conferred: Bachelor of Engineering

Duration: 4 years

Requirements for Graduation Credits: 167 credit

II、 Educational Objectives and Requirements

1. Educational Objectives

This major aims to cultivate the high-quality comprehensive innovative talents, who (1) meet the requirements of national new industrialization strategy and economic development; (2) develop morally, intellectually, physically, artistically, and laboringly; (3) have a strong sense of patriotism and a high sense of social responsibility; (4) can solve the complex engineering problems in the design of various automation systems by applying basic knowledge and professional skills in the fields of automation, information, intelligence, etc.; (5) can be Graduates should obtain knowledge and competences as follows:

(1) The graduates have high quality in professional ethics, the sense of social responsibility, the awareness of law, and humanity.

(2) The graduates have solid basic knowledge of natural science, automation and related majors, and can provide solutions for the complex automation engineering projects.

(3) The graduates have the ability to independently undertake the engineering projects in automation and related fields, and can be engaged in scientific research, engineering design, and management.

(4) The graduates are physically and psychologically healthy, have high quality in humanity and broad professional vision, can effectively communicate with team members and professionals, and have certain ability of organization, coordination, management and decision.

(5) The graduates have global awareness and international visions, and can acquire new knowledge and skills through lifelong learning to adapt to professional development in the

2. Graduation Requirements

Graduates should obtain knowledge and competences as follows: Through the study of this major, the students (1) have the solid basic knowledge of mathematics, physics and engineering, and interdisciplinary, deep, and wide professional knowledge of automation, IoT, communication, etc.; (2) have good practical ability and innovation awareness so as to solve complex engineering problems in the field of automation according to the practical requirements; (3) have high humanity quality, positive values, and strong social responsibility; (4) have the awareness of laws, engineering ethics, safety and environment; (5) can effectively cooperate and communicate with team member; (6) have the ability of lifelong study.

Graduation Requirements	Indices
Requirement 1 : Engineering Knowledge: The	1-1. The graduates can solve complex engineering problems by utilizing the basic knowledge of mathematics, science, and engineering.

graduates can apply the basic and professional knowledge in the field of mathematics, science, and automation to solve the complex engineering problems in automation.	1-2. The graduates can formulate the problems of automatic control by utilizing the basic knowledge of mathematics, science, and engineering, and can solve the problems by choosing properly approaches under the practical engineering constraints.
	1-3.The graduates can propose reasonable solutions to complex control engineering problems by applying the engineering basis and the professional knowledge of automation.
	1-4.The graduates can apply the engineering basis and the professional knowledge of automation to the system or product design, integration, and development in complex automation engineering projects.
Requirement 2 : Problem Analysis: The graduates can investigate, identify, express, and analyze the complex engineering problems in the automation systems, based on references and the fundamentals of mathematics, natural science, and engineering science	2-1.The graduates can identify and determine the key steps, variates, parameters, and the constraint conditions for the complex engineering problems in the automation systems.
	2-2. The graduates can recognize that there can be several optional solutions to solve the problems, and can chose the best one by considering the practical constraints and conditions.
	2-3.The graduates can search for the solutions of the key problems by literature analysis, according to the index requirements of complex engineering.
	2-4.The graduates can apply basic principles to analyze the process factors and discuss the rationality of the solutions.
Requirement 3 : Design/development Solutions: The graduates can design solutions for the complex engineering problems in the automation systems, can design systems and modules that meet the specific requirements, can show innovation	3-1.The graduates can propose design targets and solutions according to practical complex engineering problems, and can evaluate the feasibility of the solutions by comprehensively considering society, health, safety, law, culture, environment, etc.
	3-2.The graduates can design software and hardware satisfying the specific requirements and show the innovation awareness in the design, by integrating the professional knowledge in the fields of automation, power electronics, IoT, and communication, etc.
	3-3.The graduates can present the design results in terms of real objects or engineering forms, such as design drawings, reports, etc.
Requirement 4 : The graduates can do the research on the complex engineering problems of automation based on scientific principles, including experiment design, data analysis and explain, etc., and can obtain reasonable results through information synthesis	4-1.The graduates can investigate the element performances of automation engineering and the basic laws of physical phenomenon, and can design reasonable experiments for verification.
	4-2. The graduates can utilize scientific approaches to design the experiments for the units of automation engineering, such as measurement, control, actuator, etc., based on the principle of science.
	4-3.The graduates can construct experiment systems according to the experimental scheme, can safely do the experiment, and can arrange, conclude and analyze the experiment results.
	4-4.The graduates can analyze and explain the experiment results, and can obtain reasonable results through information synthesis.
Requirement 5 : Modern tool use: The graduates can do the prediction and simulation, and understand the	5-1.The graduates can proficiently use modern instrument, information technology tool, and design tool.
	5-2. The graduates can choose proper modern tools to design and develop automation systems.

limitations, according to the complex engineering problems in the field of automation by	5-3.The graduates can apply computer simulation tools to simulate and analyze the complex automation engineering projects, and understand the limitations.
Requirement 6: Engineering and society: The graduates can reasonably analyze the engineering related background knowledge, evaluate the impact of solutions to complex engineering problems in the automation systems	6-1.The graduates have the experience of engineering practice and social practice, and understand the background knowledge, technical standards, intellectual property rights, industrial policies, laws and regulations related to automation major
	6-2. The graduates can identify and analyze the potential impact of the application of new technologies, products and processes in the automation systems on society, health, safety, law and culture.
	6-3.The graduates can objectively evaluate the impact of the application and innovation of automation technology on society, health, safety, law and culture, and can understand and clarify the responsibilities to be undertaken.
Requirement 7: Environment and sustainable development: The graduates can understand and evaluate the impact of engineering practice on the environmental and	7-1.The graduates can understand the meanings and significance of environmental protection and social sustainable development, and have the basic knowledge of guidelines, policies, laws and regulations about environmental protection and social sustainable development.
	7-2. The graduates can understand and objectively evaluate the impact of engineering practice of complex engineering problems in the field of automation on the sustainable development of environment and society, and can clarify the responsibility of engineering practice for environmental protection and social sustainable development.
Requirement 8: Professional norms: The graduates have high quality in humanity and the strong sense of social responsibilities, and can understand and stick to the engineering professional ethics and norms in the automation	8-1.The graduates can respect for life, care for others, stand up for justice, are honest and trustworthy, and have humanistic knowledge, critical thinking skills, ability to act and scientific spirit.
	8-2. The graduates can understand the core values of socialism, stand up for national interests, and have the responsibility to promote national development and social progress.
	8-3.The graduates can understand the core concept of engineering ethics, consciously abide by the professional ethics and norms in the automation engineering practice, and fulfill the post responsibilities.
Requirement 9: Individual and Team: The graduates can take on the role of individual, team member and leader in a	9-1.The graduates can communicate and cooperate with team members to effectively complete the tasks assigned by the team.
	9-2. The graduates can integrate the opinions of other team members, can organize, manage and coordinate the work of the team, and can be qualified for the roles of team leader and members.
Requirement 10: Communication: The graduates can effectively communicate with peers in the industry and the public on complex engineering issues in the automation systems, including report and design paper	10-1.The graduates can appropriately describe the complex engineering problems in the design, development and test of automation systems, and can express their own opinions.
	10-2. The graduates can effectively communicate with peers in the industry and the public on complex engineering issues in the automation field, including report and design paper writing, presentation statement, etc.
	10-3.The graduates have the basic ability of English listening, speaking, reading and writing and certain international vision, and can communicate with others in a cross-cultural context.
Requirement 11: Project management: The graduates can understand and grasp engineering management principles	11-1.The graduates can understand and grasp the economic and management principles involved in the relevant engineering activities in the field of automation.
	11-2. The graduates can apply management principles and economic decision-making methods to automation related engineering practice.

Requirement 12: Lifelong learning: The graduates have the awareness of independent learning and lifelong learning, and have the ability of	12-1.The graduates can properly understand the importance of continuous exploration and lifelong learning, and have the awareness of independent learning and lifelong learning.
	12-3.The graduates can adopt appropriate methods to learn independently and develop their own abilities, according to the requirements of personal or career development.

III、 Main Disciplines and Related Majors

Main Disciplines: Control Science and Engineering

Related Majors: Electrical Engineering and Automation

IV、 Core Courses

**Automatic Control Principle, [Modern Control Theory
Fundamentals, Computer Control System, Process Control Systems, Motor and Drag**

V、 Practical Teaching Session

- 1、 Separate Practice（Experiment, Programming and Practice）：
Total Credits: _21____; Total Hours: _656____.
- 2、 Intensive Practice

No.	Course Name	Weeks	Credit	Training Mode
(1)	Military Skill Training	3	2	Schools
(2)	Engineering Training	2	1	Schools and Enterprises (Society)
(3)	Electronic Comprehensive Design I	1	0.5	Schools and Enterprises (Society)
(4)	Electronic Comprehensive Design II	1	0.5	Schools and Enterprises (Society)
(5)	Production Practice	1	0.5	Schools and Enterprises (Society)
(6)	Comprehensive Design of Single Chip Microcomputer Principle and	3	1.5	Schools
(7)	Comprehensive Design of Modeling and analysis for Control System	3	1.5	Schools
(8)	Comprehensive Design of Process Control Systems	2	1	Schools
(9)	Comprehensive Design of Motion Control Systems	2	1	Schools
(10)	Comprehensive Design of PLC	2	1	Schools
(11)	Excellence Engineer Practice of Automation/ Scientific Research	16	8	Schools and Enterprises (Society)
(12)	Graduation Design (Thesis)	16	8	Schools and Enterprises (Society)
(13)	Innovation and Entrepreneurship Training		4	Schools and Enterprises (Society)
Total		42	30.5	-

Practice Credits Proportion: ____30.8____%

- 3、 Calculation Method :(Separate practice credits + Intensive practice credits)/ Total credits of this major

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 Comprehensive Design I	0.5	1 week			
3	Comprehensive Design of Single Chip Microcomputer	1.5		3 weeks		
4	Comprehensive Design of Process Control Systems	1.0			1 week	Total 2 weeks (1 week in class)
5	Comprehensive Design of Motion Control Systems	1.0			1 week	Total 2 weeks (1 week in class)
6	Comprehensive Design of PLC	1.0			1 week	Total 2 weeks (1 week in class)
Total		7.0	3 weeks	3 weeks	3 weeks	

VII、 Credit Distribution

Credits and Proportion	Credits	Experiment and Practice Credits/Proportion	Optional Credits/Proportion
General Education	43/25.7%	11.6/6.9%	6/3.6%
Discipline Education	46.5/27.9%	6/3.6%	0
Specialized Education	51.5/30.8%	24.8/14.8%	0
Elective Courses for Expanding Abilities	26/15.6%	9.1/5.5%	26/15.6%
Total Credits/Proportion	167/100%	51.5/30.8%	32/19.2%

VIII、 Micro major Programs and Requirements

Micro major: Intelligent unmanned system

No.	Course Name	Credits/Hours	Weekly Hour Per Semester				
			3	4	5	6	Notes

1	Fundamentals of	2/32	2				
2	Sensors & Detection	2/32		2			
3	Fundamentals of Communication Technology	2/32		2			
4	Microcontrollers & Embedded Systems	2/32			2		
5	Motors and motion control systems	2/32				2	
	Thesis	10					

IX、 Correlation Matrix between Key Courses and Graduation Requirements (High Correlation—H, Medium Correlation—M, Low Correlation—L)
(每项毕业要求指标点都有3-6门课程支撑 (至少一门课对该指标点是H), 每门课能支撑3-6个指标点 (至少对一个指标点是H))

[illegible]

IX、 Correlation Matrix between Key Courses and Graduation Requirements (High Correlation—H, Medium Correlation—M, Low Correlation—L)
(每项毕业要求指标点都有3-6门课程支撑 (至少一门课对该指标点是H), 每门课能支撑3-6个指标点 (至少对一个指标点是H))

[illegible]

IX、主要课程与毕业能力要求关系矩阵图(相关性强H, 相关性中M, 相关性弱L)

IX. Correlation Matrix between Key Courses and Graduation Requirements (High Correlation—H, Medium Correlation—M, Low Correlation—L)

(每项毕业要求指标点都有3-6门课程支撑(至少一门课对该指标点是H), 每门课能支撑3-6个指标点(至少对一个指标点是H))

[illegible]

IX、 Correlation Matrix between Key Courses and Graduation Requirements (High Correlation—H, Medium Correlation—M, Low Correlation—L)
(每项毕业要求指标点都有3-6门课程支撑 (至少一门课对该指标点是H), 每门课能支撑3-6个指标点 (至少对一个指标点是H))

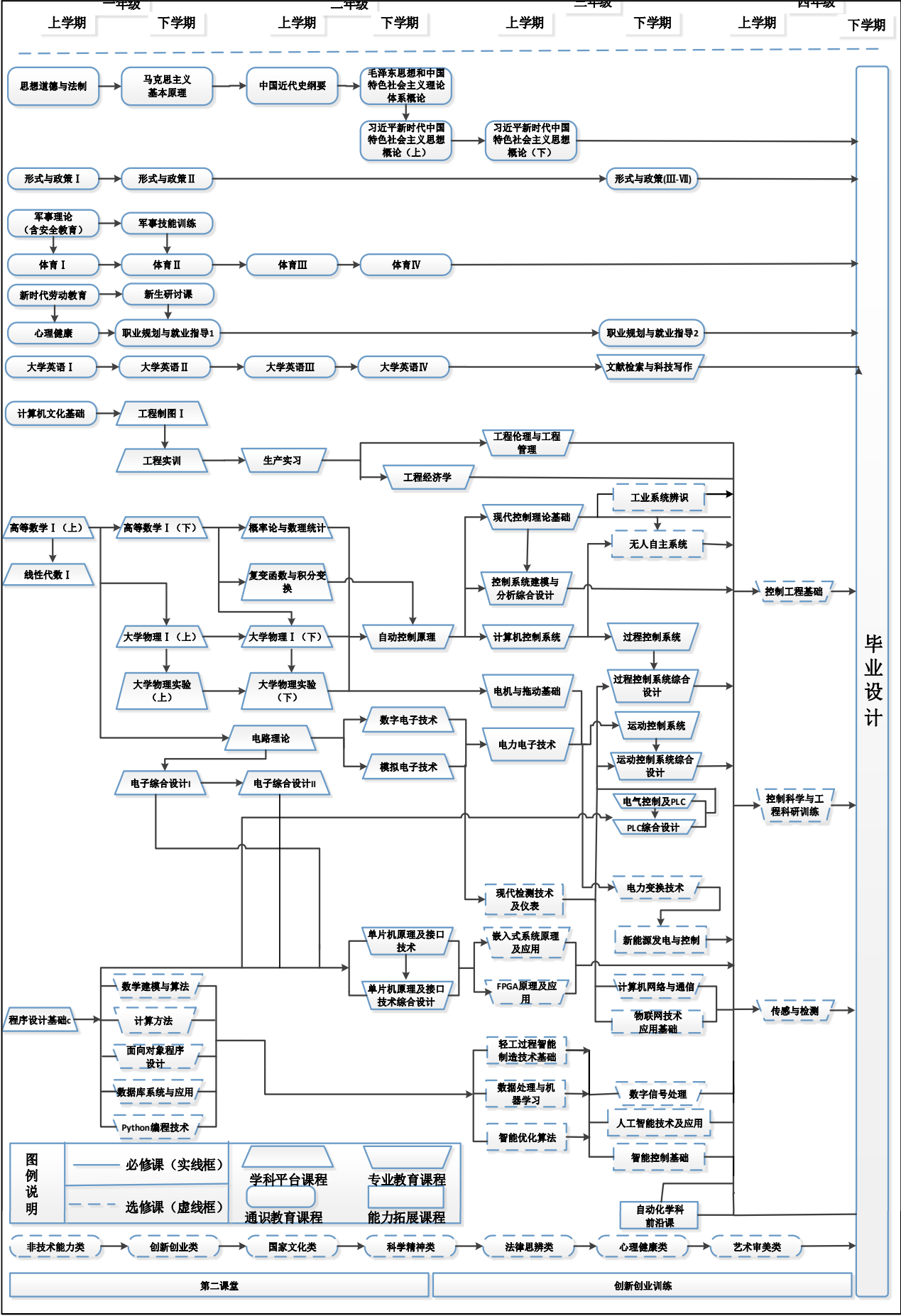
[illegible]

IX、主要课程与毕业能力要求关系矩阵图(相关性强H, 相关性中M, 相关性弱L)

IX、 Correlation Matrix between Key Courses and Graduation Requirements (High Correlation—H, Medium Correlation—M, Low Correlation—L)
(每项毕业要求指标点都有3-6门课程支撑（至少一门课对该指标点是H），每门课能支撑3-6个指标点（至少对一个指标点是H）

能力 (Requirement s) 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 Requireme nt 7		毕业能力8 Requirement 8			毕业能力9 Requiremen t 9		毕业能力10 Requirement 10			毕业能力 11 Requireme nt 11		毕业能力12 Requiremen t 12	
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	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	8.3	9.1	9.2	10.1	10.2	10.3	11.1	11	12.1	12.2
新能源发电与控制 New energy generation and control																				M		H													L
电源变换技术 Power transformation technology								L		L											M														
数字信号处理 Digital Signal Processing								M		L																									
计算机网络与通信 Computer Networks and Communications								L		M																									
物联网控制技术 IoT Control Technology										L										M		L													L
第二课堂 Co-curricular Activities																					L		L			L								H	L
创新创业训练 Innovation and Entrepreneurship									H	M									M							M		H		M			M		

自动化专业课程体系配置图 Curriculum System Configuration Diagram



自动化专业教学进程表																						
Table of Teaching Schedule for XX 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 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 Lecture		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 General Education (Compul sory)	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	中国近现代史纲要∥Outline of Chinese Contemporary and Modern History	3.0	48	48							3（理工 类） (Science and Engineeri ng)							26	
			3	马克思主义基本原理 ∥Elementary Theory of Marxism	3.0	48	48						3（理工 类） (Science and Engineering)								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	

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 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 Lecture		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															
		军体类 Military Courses	9	军事理论 Military Theory	2.0	36					4		2							97	第一或二学期 (In the 1st or 2nd semester)		
			10	军事技能训练 Military Skill Training	2.0	3周 (Three weeks)						3周		3周							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	
		成长规划类 Growth Planning Courses	12	新生研讨课 Freshman Seminar	1.0	16						2								03	第一或二学期 (In the 1st or 2nd semester)		
			13	职业规划与就业指导 Career Planning and Employment Guidance	0.5	16							2				2				97		
			14	心理健康 Mental Health	0.5	16							2								97	第一或二学期 (In the 1st or 2nd semester)	
			15	新时代劳动教育 Labor Education in the New Era	1.0	16	4	12					2								03		
	小计 Subtotal				37.0	756	166	56	0	0	246	16	10	8	10	3	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																	
合计 Total					43.0	740	164	44	0	0	244	14	10	8	10	3	3	1	1				
			16	高等数学I Advanced Mathematics	11.0	176	176					6	5							1 2	13		
			17	线性代数I Linear Algebra I	2.5	40	40						3								1		13
			18	概率论与数理统计I Probability Theory and Mathematical Statistics	2.5	40	40								3								3

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 Lecture		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														
学科平台课程 Discipline Education	学科基础课程 Basic Courses	19	复变函数与积分变换 Complex Variable Function and Integral Transformation	3.0	48	48						3						3	13		
		20	大学物理I College Physics I	7.0	112	112					4	3						23	13		
		21	大学物理实验 Experiments in College Physics	1.5	48			48			3	3							13		
		22	工程制图 III Engineering Drawing III	2.0	40	32			8		3						2	04			
		23	程序设计基础C C Programming Design Basis	3.0	64	32			32		4						1	03			
		24	电路理论 Circuit Theory	4.5	80	64		16				6					3	03			
		25	模拟电子技术 Analog Electronic Technology	4.0	72	60		12				5					4	03			
		26	数字电子技术 Digital Electronic Technology	3.5	64	52		12				4					4	03			
		小计 Subtotal		44.5	784	656	0	88	40	0	13	15	18	9	0	0	0	0			
	集中性实践环节 Intensive Practice Sessions	27	工程实训（含金工实习） Engineering Training	1	2周					2周		2周									04
		28	电子综合设计 I Electronic Comprehensive Design	0.5	1周						1周										03
		29	电子综合设计 II Electronic Comprehensive Design	0.5	1周							1周									03
		小计 Subtotal		2	4周					2周		3周	1周								
	合计 Total				46.5	784	656	0	88	40	0	13	15	18	9	0	0	0	0		
		30	自动控制原理 Automatic Control Principle	4.5	72	48	16	8					5					4	03		

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 Lecture		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														
专业必修课程 Specialized Education	专业核心课程 Core Courses	31	现代控制理论基础(双语) Modern Control Theory Fundamentals	2.0	32	32									4					03	1-8周
		32	计算机控制系统（双语） Computer Control System	3.0	56	40		16							3				5	03	
		33	过程控制系统 Process Control Systems	3.5	64	34	14	16								4			6	03	
		34	电机与拖动基础 Motor and Drag Foundation	3.0	56	40		16							4				5	03	
		35	运动控制系统 Motion Control Systems	3.5	64	48		16								4			6	03	
		36	电力电子技术 Power Electronics Technology	2.5	48	32		16							3				5	03	
		37	单片机原理与接口技术 Single Chip Microcomputer Principle and Interface Technology	3.5	64	48		16						4						03	
		38	电气控制及 PLC Electrical Control and PLC	2.5	40	24		16								3				03	
		39	现代检测技术 Morden Measuring Technology	2.0	32	24		8								2				03	1-8周
		小计 Subtotal		30.0	536	370	30	128		0	0	0	0	4	16	8	0	0			
		40	单片机原理与接口技术综合设计 Comprehensive Design of Single Chip Microcomputer Principle and Interface Technology	1.5	3周									3周						03	

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 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 Lecture		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															
	集中性实践环节 Intensive Practice Sessions	41	控制系统建模与分析综合 设计 Comprehensive Design of Modeling and analysis for Control System	1.5	3周										3周					03		
		42	过程控制系统综合设计 Comprehensive Design of Process Control Systems	1	2周											2周					03	
		43	运动控制系统综合设计 Comprehensive Design of Motion Control Systems	1	2周											2周					03	
		44	PLC综合设计 Comprehensive Design of PLC	1	2周											2周					03	
		45	自动化卓越工程师实践 Excellence Engineer Practice of Automation	8	16周																03	二选一
		46	控制科学与工程综合训练 （含生产实习） Comprehensive Training of Control Science and Engineering												16周				03			
		47	毕业设计（论文） Graduation Design （Thesis）	8	16周													16 周		03		
		小计 Subtotal		21.5	45周									1周	3周	3周	6周	16周	16 周			
合计 Total				51.5	536	370	30	128		0	0	0	0	4	14	8	0	0				
		48	◆工程伦理与工程管理 Engineering Ethics and Engineering	1.0	16	8	8									2				03	1-8周	
		49	◆工程经济学 Engineering Economy	1.0	16	16								2						08	商学院Mooc 学习	
		50	◆文献检索与科技写作 Literature Search and Technical English Writing	1.0	16	8				8						2				03	9-16周	

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 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 Lecture		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															
能力拓展选 修课程 Elective Courses for Expanding Abilities	专业选修课程 Specialized Elective Courses	51	◆自动化学科前沿课 Automation Frontier Courses	1.0	16	16										2				03	1-8周	
		52	◆人工智能技术及应用 Artificial Intelligence Technology and Its application	2.0	32	32									4						03	9-16周
		53	嵌入式系统原理及应用 Principle and Application of Embedded System	2.5	48	24			24						6						03	1-8周
		54	FPGA原理及应用 Principle and Application of FPGA	2.0	40	20			20						5						03	9-16周
		55	数学建模与算法 Mathematical modeling and algorithms	1.5	24	24						2									03	9-16周
		56	计算方法 Computational Method	2.0	40	24					16		5								03	1-8周
		57	面向对象程序设计 Object-oriented Programming	2.0	40	24					16		5								03	1-8周
		58	数据库系统与应用 Database Systems and Applications	2.0	40	24					16		5								03	9-16周
		59	Python编程技术 Python Programming	2.0	40	24					16		5								03	9-16周
		60	无人自主系统/Unmanned Autonomous System	2.0	32	32										4					03	1-8周
		61	先进控制技术 Advanced Control Technology	2.0	32	32										4					03	1-8周
		62	工业过程辨识 Industrial Process Identification	2.0	36	28			8							4					03	1-8周

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 Lecture		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															
	专业自主课程（含本硕贯通培养课程） Individualized Courses	63	轻工过程智能制造技术基础 Light industry process intelligent manufacturing technology foundation	1.0	16	16									4					03	1-8周	
		64	智能优化算法 Intelligent Optimization Algorithms	2.0	32	24		8							4					03	1-8周	
		65	数据处理与机器学习（双语） Data Processing and Machine Learning	2.0	32	24		8							4					03	9-16周	
		66	智能控制基础 Fundamentals of Intelligent Control	2.0	32	32										4				03	9-16周	
		67	新能源发电与控制 New energy generation and control	2.0	32	32										4				03	1-8周	
		68	电源变换技术 Power transformation technology	2.0	32	16	8	8								4				03	9-16周	
		69	数字信号处理 Digital Signal Processing	2.0	36	28			8							4				03	1-8周	
		70	计算机网络与通信 Computer Networks and Communications	2.0	32	24		8								4				03	1-8周	
		71	物联网控制技术 IoT Control Technology	2.0	32	32											4				03	9-16周
	跨专业选修课程 Multiple Interdisciplinary Elective Courses	72	控制工程基础 Control Engineering Foundation	2.0	32	32											4			03	1-8周	
		73	传感与检测 Sensing and Detection	2.0	32	32											4			03		
			小计 Subtotal		47.0	808	628	16	84	72	0	0	22	0	6	27	42	8				
	修读要求：至少修满22学分（◆为必选课程，其中至少修读1门其他专业开设的跨专业课程，或其他专业的专业课程）																					
创新实践环节 Innovation Practice	第二课堂 Co-curricular Activities		2.0	按《江南大学本科生第二课堂成绩单实施办法》执行																	30	
	创新创业训练 Innovation and Entrepreneurship Training		2.0	按《江南大学本科生创新创业训练学分认定办法》执行																	22	

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 Lecture		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														
合计 Total				26.0	808	628	16	84	72	0	0	22	0	6	27	42	8	1			
总计 Sum				167.0	2884	1820	102	300	112	246	29	47	26	28	44	53	9	1			