

Wuxi University



无锡学院  
WUXI UNIVERSITY

## Cultivation Plan of Electronic Information Engineering

Department of Electronic Information Engineering

School of Electronic Information Engineering

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# **Cultivation Plan of Electronic Information Engineering**

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## **I Objectives of the Programme**

The major in Electronic Information Engineering is oriented towards local economic development, cultivating individuals with moral and cultural literacy and a sense of social responsibility. It aims for comprehensive development in intellectual, physical, aesthetic, and labor aspects. Students are equipped with fundamental knowledge in electronics and information technology, and basic skills in designing, developing, integrating, testing, and applying electronic information devices and systems. Graduates are innovative and application-oriented talents capable of engaging in technical research and development, engineering design, production maintenance, and management within the field of electronic information engineering.

After four years of study, graduates should possess solid knowledge in mathematics, natural sciences, and specialized subjects, particularly in analog electronic circuits, digital logic circuits, microcomputer principle and single-chip microcomputer technology, digital signal processing, communication principles, intelligent information processing, and electronic system synthetic design. They should be capable of proposing solutions to complex engineering problems in the field of electronic information engineering. Graduates should have the ability to learn independently and engage in lifelong learning, continuously keeping up with cutting-edge technologies. They should possess humanistic literacy and a sense of social responsibility, basic foreign language skills in listening, speaking, reading, and writing, and a certain international perspective, enabling them to communicate and interact in a cross-cultural context. They should be able to work independently or collaboratively in teams, and organize and coordinate team members to achieve goals.

## **II Program Learning Outcomes**

### **1. Basic scientific literacy**

- Ability to apply mathematics and natural sciences to analysis and solve practical problems in the field of electrical and information engineering.
- Be able to use computers and networks, and have the ability to access and use information.
- Ability to pay attention to the development trend and application prospects of science and technology.

### **2. Professional knowledge, independent learning and research ability**

- Ability to conduct independent research and obtain a higher degree, and to acquire and apply relevant professional knowledge in the field of electronic information engineering.
- Ability to conduct research on complex engineering problems in the field of electronic information engineering based on scientific principles, using the scientific method, including designing experiments, analyzing and interpreting data, and synthesizing information to obtain reasonable and valid conclusions.
- A sense of independent learning and lifelong learning, and the ability to continuously learn and adapt to development.

### 3. Engineering practice ability

- Mastery of operation and maintenance techniques for integrating, testing, and applying electronic information equipment and systems in the field of electronic information engineering.
- To design systems, units (components) or processes that meet the needs of information acquisition, transmission, processing and application, and to be able to demonstrate a sense of innovation in the design process, taking into account social, health, safety, legal, cultural and environmental factors.

### 4. Ability to expand engineering and related fields

- Ability to evaluate technical proposals from a holistic and interdisciplinary perspective.
- Understand and master the principles of engineering project management and economic decision-making methods for integrating, testing, and applying electronic information equipment and systems in the field of electronic information engineering, and be able to apply them in a multidisciplinary environment.
- To be able to understand and evaluate the impact of professional engineering practices on the environment and social sustainability in response to complex engineering problems in the field of electronic information engineering.

### 5. International Communication Skills

- Basic listening, speaking, reading and writing skills in foreign languages.
- Have some international perspective and be able to communicate and interact in a cross-cultural context.

### 6. Teamwork Ability

- Be able to assume the roles of individual, team members, and leader in a multidisciplinary team.
- Ability to work as a team member and communicate effectively with other members of a team in a multidisciplinary context.
- Be able to work independently or in a team, and be able to organize and coordinate team members to achieve goals.

## III Models

### **Module 1: Mathematics and Physics**

- **Learning Objectives:** To master relevant knowledge in mathematics, physics, and related disciplines, laying a solid foundation for subsequent courses. Able to apply fundamental knowledge to analyze and solve practical problems.

- **Learning Outcomes:** Ability to understand and appropriately express technical problems using mathematics and physics; ability to establish basic models to analyze and solve practical engineering problems; ability to observe, analyze, and solve practical engineering problems using mathematical methods; ability to analyze, compute, and synthesize phenomena in engineering sciences based on mathematics and physics.

- **Relevant Courses:** Advanced Mathematics I (1), Advanced Mathematics I (2), Linear Algebra, Probability Theory and Statistics, Complex Functions and Integral Transformations II, College Physics II (1), College Physics II (2), College Physics Experiment II.

### **Module 2: Engineering Fundamentals**

**Learning Objectives:** To master the fundamental principles and knowledge in the field of electronic information engineering, including circuit analysis, digital and analog circuits, signal processing, and computer programming, laying a solid foundation for subsequent specialized courses and the resolution of practical engineering problems.

- **Learning Outcomes:** Master the basic principles and knowledge in the field of electronic information engineering, including circuit analysis, digital and analog circuits, signal processing, high-frequency electronic circuits, engineering drawing, and computer programming; able to analyze and solve practical engineering problems in simple circuits and complex electronic systems.

- **Relevant Courses:** Introduction to Electronic Information Engineering, Fundamentals of Circuit Analysis, Fundamentals of Digital Electronic Technology, Experiment for Fundamentals of Digital Electronic Technology, Fundamentals of Analog Electronics Technology, Experiment for Fundamentals of Analog Electronics Technology, Signals and Systems I, Electromagnetic Fields and Waves, High Frequency Electronic Circuits, Digital Signal Processing, Engineering Cartography, C Language Programming.

### **Module 3: Engineering Applications**

- **Learning Objectives:** To master solid professional knowledge and key application technologies in the field of electronic information engineering, with a strong ability to apply specialized knowledge.

- **Learning Outcomes:** Master the general methods and skills required to solve practical engineering problems; able to comprehensively apply learned knowledge to

design and optimize systems in the field of electronic information engineering, and continuously analyze, summarize, verify, and solve phenomena in engineering.

- **Relevant Courses:** Electronic Design Automation, Microcomputer Principles and Single-Chip Microcomputer Technology, Experiments for Microcomputer Principles and Single-Chip Microcomputer, Information Theory and Coding, Modern Sensor Technology, Principles of Communication II, Principle and Application of CPLD/FPGA, Intelligent Information Processing.

#### **Module 4: Professional Electives**

- **Learning Objectives:** To meet individualized learning needs based on students' course interests and career development, further expanding their professional knowledge and improving the application of their knowledge.

- **Learning Outcomes:** Master cutting-edge knowledge and skills in the field of electronic information engineering and be able to comprehensively evaluate technical solutions.

- **Relevant Courses:** Engineering Ethics, Engineering Project Management and Economic Decision Making, Engineering Creativity, Artificial Intelligence and Information Technology, C Language Programming II, Digital Image Processing, Embedded System Design, Pattern Recognition and Machine Learning, Deep learning, Big Data Technology and Applications.

#### **Module 5: Foreign Languages**

- **Learning Objectives:** To possess cross-cultural communication abilities and international cooperation skills.

- **Learning Outcomes:** Master the knowledge required for passing the College English Test Band 4; able to search for and read professional English literature and communicate in English about professional issues; possess cross-cultural communication skills required for career development.

- **Relevant Courses:** English for General Purpose(1), English for General Purpose(2), English for General Purpose(3), English for General Purpose(4).

#### **Module 6: General Education**

- **Learning Objectives:** To understand the social model and norms of China; to develop good character, team spirit, and humanistic values; and to achieve comprehensive development in moral, intellectual, physical, aesthetic, and labor aspects.

- **Learning Outcomes:** Master knowledge of modern Chinese history, humanistic spirit, sports, and military training; understand social phenomena; stay informed about and adapt to social development; communicate and collaborate effectively with others; foster team spirit; promote physical and mental health and self-improvement; develop sound character and psychological qualities; hold correct

views on life, values, morality, and law; possess humanistic qualities and a sense of social responsibility.

- **Relevant Courses:** Situation & Policy, Ideology, Morality and the Rule of Law, Modern Chinese History, Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, Marxism Basic Theory, Introduction to Mao Zedong Thought and Theory of Socialism with Chinese Characteristics, Introduction to Modern Chinese History, Introduction to Mao Zedong Thought and Theory of Socialism with Chinese Characteristics Practice, Military Theory, Career Development, Psychological Health Education, Employment Guidance, Physical Education(1), Physical Education(2), Physical Education(3), Physical Education(4).

#### **Module 7: Practical Courses**

- **Learning Objectives:** To consolidate theoretical knowledge, enhance understanding of applied knowledge, and develop the ability to analyze and evaluate complex engineering problems and propose solutions.

- **Learning Outcomes:** Master the ability to analyze and solve practical problems in the field of electronic information engineering; be capable of designing solutions for complex engineering problems in this field, designing systems, components, or processes that meet the needs of information acquisition, transmission, processing, and application. Able to apply engineering knowledge to analyze and evaluate problems and understand their limitations; capable of innovative design and finding valuable solutions.

- **Relevant Courses:** Understanding Practice, Use of Electronic Measuring Instruments, Metalworking Practice II, PCB and SMT Process Practice, Electronic Systems Synthetic Design, Innovation Practice(1), Electronic Technology Course Design, Virtual Course Design, Intelligent Information Processing Synthetic Design, Innovation Practice(2), Graduation Practice, Social Practice, Labor Practice, Innovation and Entrepreneurship Training.

#### **Module 8: Graduation Dissertation(Design)**

- **Learning Objectives:** To propose solutions based on the analysis of practical problems and complete real-world projects.

- **Learning Outcomes:** Be able to complete the writing of the bachelor's thesis with the help of a supervisor and pass the graduation defense.

- **Relevant Course:** Graduation Dissertation(Design).

#### **IV Curriculum structure system**

The duration of study for the Electronic Information Engineering program is four years. According to the teaching program, the curriculum is divided into eight competency modules. Courses in different competency modules are linked chronologically.

The Mathematics and Physics modules are offered in semesters 1-3 to prepare students for subsequent specialized courses.

Courses in the Engineering Fundamentals module are offered in semesters 1-5 to prepare students for the Applied Engineering courses.

Courses in the Engineering Application Module are offered in the 3rd-6th semesters to enable students to acquire solid professional knowledge and a strong ability to apply professional knowledge.

Elective module courses are offered in semesters 1-6, mainly concentrated in semesters 4-6, to meet individualized learning needs, further expand students' professional knowledge and improve their application of knowledge according to their curricular interests and career development needs.

General Education modules are offered in semesters 1-6 to enable students to develop a correct outlook on life, values, ethics and law, humanistic qualities and a sense of social responsibility.

Foreign language modules are offered in semesters 1-4 to enable students to communicate in English about professional issues and to develop the intercultural communication skills needed for career development.

Practical modules are offered in all semesters.

The Bachelor's Dissertation is completed in the final semester. The topics of the bachelor's thesis are mainly from the supervisor's scientific research projects and the actual technical problems of the cooperative enterprises.

According to the teaching plan, after 8 semesters of study, students will obtain at least 221 ECTS credits.

### V Bachelor's degree

Students who complete all courses specified in the program and earn the required number of credits can earn a bachelor's degree in engineering.

### VI Curriculum of the Programme

Curriculum of Mechanical Design, Manufacturing and Automation								
(Note: CP-Credit Point, S-Semester, L-Lecture, P-Practice)		Type	Chinese CP	ECTS CP	Work Load		S	Remark
Competence fields	Module				Contact Hours	Self-Study Hours		
Mathematics and Physics	Advanced Mathematics I(1)	L	6	6	96	84	1	
	Advanced Mathematics I(2)	L	6	6	96	84	2	
	Linear Algebra	L	3	3	48	42	2	
	Probability Theory	L	3	3	48	42	3	

	and Statistics							
	Complex Function and Integral Transformation II	L	2	2	32	28	3	
	College Physics II(1)	L	3	3	48	42	2	
	College Physics II(2)	L	3	3	48	42	3	
	College Physics Experiment II	P	1.5	3	48	42	3	
Engineering Fundamentals	Introduction to Electronic Information Engineering	L	0.5	1	8	22	1	
	Fundamentals of Circuit Analysis	L&P	4	4	64	56	2	
	Fundamentals of Digital Electronic Technology	L	3	3	48	42	2	
	Experiments for Fundamentals of Digital Electronic Technology	P	1	2	16	44	2	
	Fundamentals of Analog Electronic Technology	L	4	4	64	56	3	
	Experiments for Fundamentals of Analogy Electronics Technology	P	1	2	16	44	3	
	Signals & Systems I	L&P	5	5	80	70	4	
	Electromagnetic Fields and Waves	L&P	3	3	48	42	4	
	Digital signal processing	L&P	3	3	48	42	5	
	High Frequency Electronic Circuits	L	3	3	48	42	4	
	Engineering Cartography	L&P	2	2	32	28	1	
	C Language Programming	L	4	4	64	56	1	
Engineering Applications	Electronic Design Automation	L&P	2	2	32	28	3	
	Microcomputer	L	3	3	48	42	3	

	Principles and Single-Chip Microcomputer Technology							
	Experiments for Microcomputer Principles and Single-Chip Microcomputer	P	1	2	16	44	3	
	Information Theory and Coding	L	2	2	32	28	4	
	Modern Sensor Technology	L&P	2	2	32	28	5	
	Principles of Communication II	L&P	2.5	2.5	40	35	6	
	Principle and Application of CPLD/FPGA	L&P	2	2	32	28	5	
	Intelligent Information Processing	L&P	2.5	2.5	40	35	6	
Professional Elective	Engineering Ethics	L	1	1	16	14	1	Take at least 14 ECTS credits
	Engineering Project Management and Economic Decision Making	L	1	1	16	14	5	
	Engineering Creativity	L	1	1	16	14	2	
	Artificial Intelligence and Information Technology	L&P	2	2	32	28	4	
	C Language Programming II	L&P	2	2	32	28	4	
	Digital Image Processing	L&P	2	2	32	28	4	
	Embedded System Design	L&P	2	2	32	28	6	
	Pattern Recognition and Machine Learning	L&P	2	2	32	28	4	
	Deep learning	L&P	2	2	32	28	5	
	Big Data Technology and Applications	L&P	2	2	32	28	6	
Foreign	English for General	L	3	3	48	42	1	

Language	Purpose(1)							
	English for General Purpose(2)	L	2	2	32	28	2	
	English for General Purpose(3)	L	2	2	32	28	3	
	English for General Purpose(4)	L	2	2	32	28	4	
General Education	Situation & Policy	L	2	2	32	28	1-8	Additional 8 ECTS credits in other general studies courses
	Ideology, Morality and the Rule of Law	L	3	3	48	42	1	
	Modern Chinese History	L	2	2	32	28	2	
	Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	L	3	3	48	42	4	
	Marxism Basic Theory	L	3	3	48	42	5	
	Introduction to Mao Zedong Thought and Theory of Socialism with Chinese Characteristics	L	2	2	32	28	6	
	Military Theory	L	2	2	36	24	1	
	Career Development	L	1	1	16	14	1	
	Psychological Health Education	L	2	2	32	28	2	
	Employment Guidance	L	1	1	16	14	6	
	Physical Education(1)	L&P	1	1	36	0	1	
	Physical Education(2)	L&P	1	1	36	0	2	
	Physical Education(3)	L&P	1	1	36	0	3	
	Physical Education(4)	L&P	1	1	36	0	4	
Practice Courses	Understanding Practice	P	1	2	16	44	1	
	Use of Electronic Measuring Instruments	P	1	2	16	44	1	
	Metalworking Practice II	P	1	2	16	44	3	
	PCB and SMT Process	P	2	4	32	88	3	

	Practice							
	Electronic Systems Synthetic Design	P	2	4	32	88	6	
	Innovation Practice(1)	P	2	4	32	88	6	
	Electronic Technology Course Design	P	2	4	32	88	5	
	Virtual Course Design	P	2	4	32	88	5	
	Intelligent Information Processing Synthetic Design	P	2	4	32	88	6	
	Innovation Practice(2)	P	2	4	32	88	7	
	Graduation Practice	P	2	8	64	176	8	
	Social Practice	P	2	4	96	24	1-8	
	Labor Practice	P	1	2	8	52	1-8	1,3,5,7
	Innovation and Entrepreneurship Training	P	2	6	32	148	1-8	
Graduation Dissertation(Design)	Graduation Dissertation(Design)	P	7	28	240	600	7,8	
Total ECTS: 221 ECTS / semester: 27.625								