

电子信息工程专业培养方案

Undergraduate Program of the Major of Electronic and Information Engineering

I. 专业介绍 Introduction

本专业建设依托电气工程学院（前身为创办于 1949 年 7 月的电机系）。1986 年，按照“培养与电气工程学科发展相配合的信息技术专门人才”的设想，由钱清泉教授（1997 年当选中国工程院院士）领衔创办了应用电子技术专业，并于 1988 年开始招收本科生。同期，由著名信息科学专家靳蕃教授负责创办了信息工程专业。1999 年专业调整，应用电子技术专业与信息工程专业合并，发展为现在的电子信息工程专业。

The construction of the major relies on the School of Electrical Engineering (formerly the Department of Electrical Machinery, founded in July 1949). In 1986, in line with the original idea of "training information technology professionals in line with the development of electrical engineering discipline", Professor Qian Qingquan (elected academician of Chinese Academy of Engineering in 1997) founded the major of Applied Electronic Technology, and began to recruit undergraduates in 1988. In the same period, Professor Jin Fan, a well-known expert in information science, was responsible for the establishment of the specialty of Information Engineering. In 1999, the specialty of Applied Electronic Technology and Information Engineering were merged and developed into the present specialty of Electronic Information Engineering.

专业代码：080603

Program Code: 080603

专业名称：电子信息工程

Program Name: Electronic and Information Engineering

II. 培养目标 Objectives

以培养社会主义建设者和接班人为根本任务，着力培养走在社会发展和经济建设前列，服务电子信息工程领域发展，胜任该领域产品开发设计、工程科学研究、生产组织管理、设备维护革新等方面工作，具有国际视野和轨道交通特色的高素质创新人才。应该具备的职业能力包括：

1. 具备社会责任感和使命感，坚守职业道德规范，在工程实践、科学研究中坚持国家和人民利益优先；
2. 能够通过工程师技术培训等多种学习方式提升专业持续发展能力，更新和调整专业知识和能力，以胜任电子信息工程行业技术的快速发展；
3. 具有创新思维，以及从事电子信息工程及应用领域产品研发、技术革新和工程科学研究的能力；
4. 能够应用专业以及职业相关的安全法规和专业技能，通过个人或者团队解决电子信息工程行业产品和装备生产中出现的问题，以提升产品和装备质量，并有利于改善环境促进可持续发展；

5. 能够主动参与工程行业和企事业单位的组织管理并担任一定的组织角色;
6. 能够开展跨学科跨文化学习, 掌握新的知识和技能, 拓展新的职业发展机会。

Aiming at nurturing new generations who will continue to maintain the prosperity and stability of our nation, this major cultivates scientists and engineers, being competent in the field of product design, engineering research, production organization and equipment innovation, and having wider international viewpoint and rail transit characteristics, who can lead the development of the field of electronic information engineering. The graduates are supposed to achieve the following professional abilities.

1. Have a sense of social responsibility and historical mission, stick to the professional norms, and always consider the national interests and peoples' interests as the first priority.
2. By a variety of learning methods such as engineer training to enhance professional sustainable development ability, update and adjust professional knowledge and ability, to be competent for the rapid development of electronic information engineering technology.
3. Have creative thinking, and the ability of product development, technology innovation and engineering scientific research in the field of electronic information engineering and application.
4. Apply professional and occupational safety regulations and professional skills to solve problems of equipment production in the field of electronic information engineering industry, so as to improve the quality of products and equipment, and to promote the environmental sustainability.
5. Actively participate and play a certain role in the organization and management of the engineering industry and enterprises.
6. Conduct interdisciplinary and cross-cultural learning, keep learning new technologies, expand opportunities to undertake new careers.

III. 专业毕业要求 Graduation Requirements

1. 工程知识: 具备数学、自然科学、电子信息基础和专业知识, 并能够将其用于描述、分析和解决电子信息工程领域的复杂工程问题。
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子信息工程领域的复杂工程问题, 以获得有效结论。
3. 设计/开发解决方案: 能够设计针对电子信息工程领域的复杂工程问题的解决方案, 设计满足特定需求的系统、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、文化以及环境等因素。
4. 研究: 能够基于科学原理并采用科学方法对复杂电子信息工程问题进行研究, 包括设计实验、分析、处理与解释数据、并通过信息综合得到合理有效的结论。
5. 使用现代工具: 能够针对电子信息工程领域的复杂工程问题, 选择、使用与开发恰当的技术、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。
6. 工程与社会: 能够基于电子信息工程专业背景知识进行合理分析, 评价电子信息工程领域相关复杂工程项目和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。
7. 环境和可持续发展: 能够理解和评价针对电子信息工程领域相关复杂工程问题的工程实践对环境、社会可持续发展的影响。
8. 职业规范: 具有人文社会科学素养、社会责任感, 能够在电子信息工程实践中理解并

遵守工程职业道德和规范，具备正确履行自己责任的能力。

9.个人和团队：能够在多学科背景下的工程项目或技术开发团队中承担个体、团队成员以及负责人的角色。

10.沟通：能够就电子信息工程领域相关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。

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。

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。

1. Engineering knowledge: Have basic knowledge of mathematics, natural science, electronic information and professional knowledge; and to describe, analyze and solve complex engineering problems in the field of electronic information engineering.

2. Problem analysis: The basic principles of mathematics, natural science and engineering science can be applied to identify, express and analyze complex engineering problems in the field of electronic information engineering through literature research, so as to obtain effective conclusions.

3. Design/Development Solutions: To provide solutions to complex engineering problems in the field of electronic information engineering, to design systems, units (components) that meet specific needs, to embody innovation awareness in the design process, and to take into account of social, health, safety, legal, cultural and environmental considerations.

4. Research: Based on scientific principles and using scientific methods to study complex electronic information engineering problems, including designing experiments, analyzing, processing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

5. Use modern tools: Be able to select, use and develop appropriate technologies, resources, modern engineering tools and information technology tools for complex engineering problems in the field of electronic information engineering, including prediction and Simulation of complex engineering problems, and understand their limitations.

6. Engineering and Society: To be able to conduct a reasonable analysis based on the professional background knowledge of electronic information engineering, to evaluate the impact of complex engineering projects and solutions to engineering problems in the field of electronic information engineering on society, health, safety, law and culture, and to understand the responsibilities to be undertaken.

7. Environment and Sustainable Development: Ability to understand and evaluate the impact of engineering practice on environmental and social sustainable development of complex engineering problems in the field of electronic information engineering.

8. Professional norms: with humanities and Social Sciences literacy, social responsibility, can understand and abide by engineering professional ethics and norms in the practice of electronic information engineering, and have the ability to perform their responsibilities correctly.

9. Individuals and teams: able to assume the roles of individuals, team members and leaders in a multidisciplinary project or technology development team.

10. Communication: To be able to effectively communicate with colleagues from industry and the public on complex engineering issues related to electronic information engineering, including writing reports and designing manuscripts, presenting statements, expressing clearly or responding to instructions; have a certain international perspective, and communicate in cross-cultural context.

11. Project management: Understand and master the principles of engineering management

and economic decision-making methods, and can apply the above knowledge in a multidisciplinary environment.

12. Lifelong learning: with the awareness of self-learning and lifelong learning, and the ability to constantly learn and adapt to social development.

IV.学制与学位 Duration and Degree

学制: 4 年

Duration: 4 Year

学位: 工学学士

Degree: Bachelor of Engineering

V.主干学科与主干课程 Main Subject and Main Course

主干学科: 电子信息工程,控制科学与工程,计算机科学与技术

Main Subject: Electronic Information Engineering, Control Science and Engineering, Computer Science and Technology

学科与专业基础课程:

数学与自然科学基础课: 高等数学 I、高等数学 II、线性代数 B、复变函数与积分变换、概率论与数理统计、大学物理 BI、大学物理 BII、大学物理实验 I、大学物理实验 II

专业基础课程: 工程制图、电路分析 AI (含实验)、电路分析 AII (含实验)、模拟电子技术 B、模拟电子技术实验、数字电子技术 B、数字电子技术实验、程序设计基础、数据结构与算法设计、信号与系统 (含实验)

专业核心课程: 数字信号处理 (含实验)、信息论与编码、电子信息工程概论、电子测量技术 (含实验)、软件设计综合实验、微机原理 (含实验)、自动控制原理 (含实验)、通信原理 (含实验)、嵌入式系统及应用(含实验)、计算机网络 (含实验)、通信电路、MCU 系统综合实验、综合设计

专业限修课程:

机器人系统模块专业课程: 人工智能与机器学习、电子设计自动化(含实验)、机器人控制 (含实验)、智能自主系统、传感器与信号检测技术(含实验)。

人工智能技术模块专业课程: 人工智能与机器学习、数字图像处理与计算机视觉(含实验)、大数据技术 (含数据库)、计算机图形学(含实验)、智能自主系统、智能控制技术。

轨道交通信息与控制模块专业课程: 电机拖动基础(含实验)、电力电子技术(含实验)、铁路信息系统架构、列车运行控制技术、现场总线与列车控制网络(含实验)、传感器与信号检测技术(含实验)、智能控制技术。

Discipline and Specialty Foundational Courses:

Foundational Courses on Mathematics and Natural Science: Calculus I、Calculus II、Linear Algebra B、Complex Functions and Integral Transformations、Probability Theory and Mathematical Statistics、Fundamentals of Physics BI、Fundamentals of Physics BII、College Physics Experiments I、College Physics Experiments II

Professional Foundational Courses: Engineering Drawing、Electric Circuits AI、Electric

Circuits AII、Analogue Electronic Technology B、Analogue Electronic Technology Experiments、Digital Electronic Technology B、Digital Electronic Technology Experiments、Fundamentals of programming、Data structure and algorithm design、Signals and Systems

Specialized Core Course: Digital Signal Processing、Information Theory and Coding、Introduction to Electronic and Information Engineering、Electronic Measurement Technology、Software Comprehensive Experiments、Principles of Micro-Computer、Principles of Automatic Control、Communication Theory、Embedded System and Its Application、Computer Networks、Communication Circuits、MCU System Comprehensive Experiments、Comprehensive Design

Specialized Restricted Courses:

Intelligent Autonomous System Module Course: AI and Machine Learning、Electronic Design Automation、Robot Control、Intelligent Autonomous System、Sensors and Signal Detection Technology

Professional Course of Artificial Intelligence Module: AI and Machine Learning、Digital Image Processing and Computer Vision、Big Data Technology、Computer Graphics、Intelligent Autonomous System、Intelligent Control System

Intelligent Rail Transit Specialty Course: Fundamentals of Electrical Machinery、Power Electronics、Architecture of Railway Information Systems、Advanced Control Technology of Train Operation、Field Bus Control Systems and Train Control Networks、Sensors and Signal Detection Technology、Intelligent Control System

VI. 毕业学分基本要求 Basic Requirements of Credits for Graduation

课程体系 Curriculum System		学分要求 Credits Requirements						
		必修 Compulsory		限修 Distributional Electives		选修 Free Electives		小计 Subtotal
		理论 Theory	实践 Practice	理论 Theory	实践 Practice	理论 Theory	实践 Practice	
公共基础课程 Public Basic Courses	思想政治类 Ideological Politics Courses	15	2					17
	军事类 Military Courses	2	2					4
	外语类 Foreign Language Courses	6		2				8
	体育类 Physical Education Courses		4					4
通识教育课程 General Education Courses	核心通识课 Core General Education Courses	4						4
	新生研讨课 Freshman Seminar			2				2

学科与专业基础课程（含实验） Discipline and Specialty Foundational Courses (Including Experiments)	数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	25	2					27
	专业基础课 Professional Foundational Courses	20.25	5.75					26
专业课程（含实验） Specialized Courses (Including Experiments)	专业核心课程 Specialized Core Course	25.25	11.75					37
	专业限修课程 Specialized Restricted Courses			7.25-8.5	1.5-2.75			10
实习实践教学 Practice Courses	基本技能训练、实习实训、综合课程设计、社会与文化素质实践、毕业实习与毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design		16					16
多元化课程 Diversified Courses	跨学科课程、美育专业类课程、学科竞赛类课程、其它个性化选修课程等 Interdisciplinary Courses, Aesthetic Education Courses, Subject Competition Courses, other Personalized Elective Courses, etc			4				4
创新创业实践 Innovation and Entrepreneurship Practice	创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc		2					2
必修环节 A Compulsory Part	大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness							0
总 计 Total								161

VII.课程设置细化表 Course Programs Table

公共基础课程 Public Basic Courses 共 33 学分，其中必修 31 学分，限修 2 学分，选修 0 学分 A total credits of 33, including 31 for compulsory courses, 2 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
思想政治类 Ideological Politics Courses	思想道德与法治 Ideological and Moral Education and the Rule of Law	必修 Compulsory	3	0.4	第 1 学期 1St Semester	马克思主义学院 School of Marxism	6.1	
	中国近现代史纲要 Conspectus of Chinese Modern History	必修 Compulsory	3	0.4	第 2 学期 2Nd Semester	马克思主义学院 School of Marxism	8.1	
	马克思主义基本原理 The Basic Principles of Marxism	必修 Compulsory	3	0.4	第 3 学期 3Rd Semester	马克思主义学院 School of Marxism	11.1	
	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	必修 Compulsory	3	0.4	第 5 学期 5Th Semester	马克思主义学院 School of Marxism	8.1	
	习近平新时代中国特色社会主义思想概论 Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	必修 Compulsory	3	0.4	第 6 学期 6Th Semester	马克思主义学院 School of Marxism	8.1	
	形势与政策 I Situation and Policy I	必修 Compulsory	0	0	第 1 学期 1St Semester	马克思主义学院 School of Marxism	7.1	
	形势与政策II Situation and Policy II	必修 Compulsory	0	0	第 2 学期 2Nd Semester	马克思主义学院 School of Marxism	7.1	
	形势与政策III Situation and Policy III	必修 Compulsory	0	0	第 3 学期 3Rd Semester	马克思主义学院 School of Marxism	7.1	
	形势与政策IV Situation and Policy IV	必修 Compulsory	0	0	第 4 学期 4Th Semester	马克思主义学院 School of Marxism	7.1	
	形势与政策 V Situation and Policy V	必修 Compulsory	0	0	第 5 学期 5Th Semester	马克思主义学院 School of Marxism	7.1	
	形势与政策VI Situation and Policy VI	必修 Compulsory	0	0	第 6 学期 6Th Semester	马克思主义学院 School of Marxism	7.1	

	形势与政策VII Situation and Policy VII	必修 Compulsory	0	0	第 7 学期 7Th Semester	马克思主义学院 School of Marxism	7.1	
	形势与政策VIII Situation and Policy VIII	必修 Compulsory	2	0	第 8 学期 8Th Semester	马克思主义学院 School of Marxism	7.1	
军事类 Military Courses	军事理论 Military Theories	必修 Compulsory	2	0	第 1 学期 1St Semester	武装部 Security Office	8.1/9.1	
	军事技能 Military Skills	必修 Compulsory	2	2	短 1 学期 Short Semester 1	武装部 Security Office	8.1/9.1	
外语类 Foreign Language Courses	英语 I College English I	必修 Compulsory	2	0	第 1 学期 1St Semester	外国语学院 School of Foreign languages	10.3	
	英语 II College English II	必修 Compulsory	2	0	第 2 学期 2Nd Semester	外国语学院 School of Foreign languages	10.3	
	通用学术英语 English for General Academic Purposes	必修 Compulsory	2	0	第 3 学期 3Rd Semester	外国语学院 School of Foreign languages	10.3	
	职场英语 Workplace English	限修 Distributional Elective	2	0	第 4 学期 4Th Semester	外国语学院 School of Foreign languages	10.3	限选 1 门, 2 学分 Limited to 1 course, 2 credits
	交际与文化视听说 Viewing, Listening & Speaking in English -- Communication & Culture							
	语言、文化与翻译 Language, Culture and Translation							
	英语公共演讲 Public Speaking in English							
体育类 Physical Education Courses	体育 I Physical Education I	必修 Compulsory	1	1	第 1 学期 1St Semester	体育部 Dept. of Physical Education	9.1	
	体育 II Physical Education II	必修 Compulsory	1	1	第 2 学期 2Nd Semester	体育部 Dept. of Physical Education	9.1	
	体育 III Physical Education III	必修 Compulsory	0.5	0.5	第 3 学期 3Rd Semester	体育部 Dept. of Physical Education	9.1	
	体育 IV Physical Education IV	必修 Compulsory	0.5	0.5	第 4 学期 4Th Semester	体育部 Dept. of Physical Education	9.1	
	体育健康课程 I Diversified Physical Education Courses I	必修 Compulsory	0.5	0.5	第 5 学期 5Th Semester	体育部 Dept. of Physical Education	9.1	
	体育健康课程 II Diversified Physical Education Courses II	必修 Compulsory	0.5	0.5	第 6 学期 6Th Semester	体育部 Dept. of Physical Education	9.1	

通识教育课程 General Education Courses 共 6 学分，其中必修 4 学分，限修 2 学分，选修 0 学分 A total credits of 6, including 4 for compulsory courses, 2 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
核心通识课 Core General Education	工程伦理 Engineering Ethics	必修 Compulsory	2		第 7 学期 7Th Semester	电气工程学院 School of Electrical Engineering	6.2/6.3/7.2/8.2	
	工程经济学 Engineering Economy	必修 Compulsory	2		第 7 学期 7Th Semester	电气工程学院 School of Electrical Engineering	6.2/11.1/11.2	
新生研讨课 Freshman Seminar	高速铁路车网电气关系 Electrical Relations between Vehicle and Catenary of High Speed Railway	限修 Distributional Electives	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	限修 2 学分 Distributional Electives 2 Credits
	高速铁路供电系统概论 High-speed Railway Power Supply System Generality		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	
	高速铁路弓网关系概论及前沿技术研讨 High-speed Railway Pantograph-Catenaries Relationship and Frontier Technology Seminar		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	
	跨界思维与创新研究探索 Tran Boundary Thinking and Innovation Research Exploration		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	
	城市轨道交通新型供电制式漫谈及其发展趋势 Emerging Traction Power Supply Technology and Its Development Trend		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	
	铁道电气化与自动化 Railway Electrification and Automation		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	
	高电压探秘 Secret of High Voltage		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	
	轨道交通牵引系统漫谈 Rambling on Rail Traffic Traction System		2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1	

新生研讨课 Freshman Seminar	电气设备多目标优化设计漫谈 On Electrical Equipment Multi-objective Optimization Design	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	电气科学家及创新创业漫谈 Rambling on Electric Scientist and Innovation Entrepreneurship	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	磁浮交通系统技术 Maglev Transportation System Technology	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	轨道交通中的电子与信息 Rail Transit Electronics and Information	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	智能电子装备 Intelligent Electric Equipment	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	信息处理的广阔天地 The Big World of Information Processing	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	嵌入式系统与智能化 Embedded System and Intelligentized	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	能源互联网探讨 Energy Internet	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	新能源发电技术概论 New Energy Power Generation Technology Generality	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	高速铁路牵引供电新技术导论 Introduction to High-speed Railway Traction Power Supply Technology	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	高速铁路技术及装备 High-speed Railway Technology and Equipment	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
	能源与节能技术 Energy and Energy-saving Technology	2		第 1 学期 1St Semester	电气工程学院 School of Electrical Engineering	9.2/10.1/12.1
学科与专业基础课程 (含实验) Discipline and Specialty foundational Courses (Including Experiments) 共 53 学分, 其中必修 53 学分, 限修 0 学分, 选修 0 学分 A total credits of 53, including 53 for compulsory courses, 0 for distributional electives and 0 for free electives						

课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	高等数学 I Calculus I	必修 Compulsory	5		第 1 学期 1St Semester	数学学院 mathematics	1.1	
	高等数学 II Calculus II	必修 Compulsory	5		第 2 学期 2Nd Semester	数学学院 mathematics	1.1	
	线性代数 B Linear Algebra B	必修 Compulsory	3		第 1 学期 1St Semester	数学学院 mathematics	1.1	
	复变函数与积分变换 Complex Functions and Integral Transformations	必修 Compulsory	3		第 3 学期 3Rd Semester	数学学院 mathematics	1.1	
	概率论与数理统计 Probability Theory and Mathematical Statistics	必修 Compulsory	3		第 3 学期 3Rd Semester	数学学院 mathematics	1.1	
	大学物理 BI Fundamentals of Physics BI	必修 Compulsory	3		第 2 学期 2Nd Semester	物理科学与技术学院 Physical science	1.1/4.1	
	大学物理 BII Fundamentals of Physics BII	必修 Compulsory	3		第 3 学期 3Rd Semester	物理科学与技术学院 Physical science	1.1/4.1	
	大学物理实验 I College Physics Experiments I	必修 Compulsory	1	1	第 2 学期 2Nd Semester	物理科学与技术学院 Physical science	1.1/4.1	
	大学物理实验 II College Physics Experiments II	必修 Compulsory	1	1	第 3 学期 3Rd Semester	物理科学与技术学院 Physical science	1.1/4.1	
专业基础课 Professional Foundational Courses	工程制图 Engineering Drawing	必修 Compulsory	2	0.5	第 1 学期 1St Semester	机械工程学院 School of mechanical engineering	5.2	
	电路分析 AI (含实验) Electric Circuits AI	必修 Compulsory	4	0.5	第 2 学期 2Nd Semester	电气工程学院 School of Electrical Engineering	1.3/2.1/4.1	
	程序设计基础 Fundamentals of programming	必修 Compulsory	2.5	1	第 2 学期 2Nd Semester	电气工程学院 School of Electrical Engineering	1.3/12.2	
	数据结构与算法设计 Data structure and algorithm design	必修 Compulsory	2.5	1	第 3 学期 3Rd Semester	电气工程学院 School of Electrical Engineering	1.3/5.3/5.4	

专业基础课 Professional Foundational Courses	电路分析 AII (含实验) Electric Circuits AII	必修 Compulsory	4	0.5	第 3 学期 3Rd Semester	电气工程学院 School of Electrical Engineering	1.3/2.1/4.1	
	模拟电子技术 B Analogue Electronic Technology B	必修 Compulsory	3		第 3 学期 3Rd Semester	信息科学与技术学院 Information science and technology	1.3	
	模拟电子技术实验 Analogue Electronic Technology Experiments	必修 Compulsory	1	1	第 3 学期 3Rd Semester	信息科学与技术学院 Information science and technology	1.3	
	数字电子技术 B Digital Electronic Technology B	必修 Compulsory	3		第 4 学期 4Th Semester	信息科学与技术学院 Information science and technology	1.3	
	数字电子技术实验 Digital Electronic Technology Experiments	必修 Compulsory	1	1	第 4 学期 4Th Semester	信息科学与技术学院 Information science and technology	1.3	
	信号与系统 (含实验) Signals and Systems	必修 Compulsory	3	0.25	第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	1.4/2.2	
专业课程 (含实验) Specialized Courses (Including Experiments) 共 47 学分, 其中必修 37 学分, 限修 10 学分, 选修 0 学分 A total credits of 47, including 37 for compulsory courses, 10 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
专业核心课程 Specialized Core Course	信息论与编码 Information Theory and Coding	必修 Compulsory	2		第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	1.2/3.1/12.1	
	电子信息工程概论 Introduction to Electronic and Information Engineering	必修 Compulsory	2		第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	6.1/7.1/7.2/11.1	
	电子测量技术 (含实验) Electronic Measurement Technology	必修 Compulsory	2.5	0.5	第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	1.3/4.1	
	软件设计综合实验 Software Comprehensive Experiments	必修 Compulsory	2	1	第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	4.2/4.3/6.3	
	MCU 系统综合实验 MCU System Comprehensive Experiments	必修 Compulsory	2.5	2.5	第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	4.2/4.3/5.3/5.4	

专业核心课程 Specialized Core Course	数字信号处理（含实验） Digital Signal Processing	必修 Compulsory	3	0.25	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.2/2.3	
	微机原理（含实验） Principles of Micro-Computer	必修 Compulsory	4	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.2/2.3/3.1	
	自动控制原理（含实验） Principles of Automatic Control	必修 Compulsory	4	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	2.1/2.2	
	通信原理（含实验） Communication Theory	必修 Compulsory	3	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	2.1	
	嵌入式系统及应用(含实验) Embedded System and Its Application	必修 Compulsory	3	1	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	5.3/5.4	
	计算机网络（含实验） Computer Networks	必修 Compulsory	3	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	4.2/7.2	
	通信电路 Communication Circuits	必修 Compulsory	2	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	1.4/3.2	
	综合设计 Comprehensive Design	必修 Compulsory	4	4	第 7 学期 7Th Semester	电气工程学院 School of Electrical Engineering	3.3/5.1/8.2/10.1/10.2	
专业限修课程 Specialized Restricted Courses（要求：至少 8 学分来自同一模块）	传感器与信号检测技术(含实验) Sensors and Signal Detection Technology	限修 Distributional Elective	2	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.4/5.3/5.4	机器人系统模块,选择 10 学分 Robotic System Module, 10 credits
	人工智能与机器学习 AI and Machine Learning	限修 Distributional Elective	3	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.4/6.1/10.2	
	电子设计自动化(含实验) Electronic Design Automation	限修 Distributional Elective	2	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	3.1/3.2/10.1	
	机器人控制（含实验） Robot Control	限修 Distributional Elective	3	0.75	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	2.2/6.2	
	智能自主系统 Intelligent Autonomous System	限修 Distributional Elective	3	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	3.3/5.3/6.3/9.2	

专业限修课程 Specialized Restricted Courses (要求: 至少 8 学分来自 同一模块)	人工智能与机器学习 AI and Machine Learning	限修 Distributional Elective	3	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.4/6.1/10.2	人工智能技术模块, 选择 10 学分 Professional Course of Artificial Intelligence Module, 10 credits
	数字图像处理与计算机视觉(含实验) Digital Image Processing and Computer Vision	限修 Distributional Elective	3	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	3.2	
	智能控制技术 Intelligent Control Technology	限修 Distributional Elective	2		第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	2.2/3.3/6.2	
	大数据技术 (含数据库) Big Data Technology	限修 Distributional Elective	2	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	3.1/10.1	
	计算机图形学(含实验) Computer Graphics	限修 Distributional Elective	2	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	5.3/10.2	
	智能自主系统 Intelligent Autonomous System	限修 Distributional Elective	3	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	3.3/5.3/6.3/9.2	
	传感器与信号检测技术(含实验) Sensors and Signal Detection Technology	限修 Distributional Elective	2	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.4/5.3/5.4	轨道交通信息与控制模块, 选择 10 学分 Rail Transit Information and Control Module, 10 credits
	电机拖动基础(含实验) Fundamentals of Electrical Machinery	限修 Distributional Elective	2	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	6.2/10.2	
	电力电子技术 B(含实验) Power Electronics B	限修 Distributional Elective	2	0.5	第 5 学期 5Th Semester	电气工程学院 School of Electrical Engineering	1.4/5.4	
	智能控制技术 Intelligent Control Technology	限修 Distributional Elective	2		第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	3.3/5.3/6.3/9.2	
	铁路信息系统架构 Architecture of Railway Information Systems	限修 Distributional Elective	2		第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	3.1/6.1/10.1	
	列车运行控制技术 Advanced Control Technology of Train Operation	限修 Distributional Elective	2		第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	5.4/9.2	
	现场总线与列车控制网络(含实验) Field Bus Control Systems and Train Control Networks	限修 Distributional Elective	2	0.5	第 6 学期 6Th Semester	电气工程学院 School of Electrical Engineering	3.2/6.3	

实习实践教学 Practice Course 共 16 学分，其中必修 16 学分，限修 0 学分，选修 0 学分 A total credits of 16, including 16 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
基本技能训练、 实习实训、综合 课程设计、社会 与文化素质实 践、毕业实习与 毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design	电子市场调查实践 Electronic Market Research	必修 Compulsory	1	1	短 1 学期 Short Semester 1	电气工程学院 School of Electrical Engineering	9.1/9.2/11.1/ 11.2	
	工程训练 A Engineering Training A	必修 Compulsory	2	2	短 1 学期 Short Semester 1	工程训练中心 Engineering training center	3.2/5.2	
	电子工艺实习 Electronic Process Practice	必修 Compulsory	2	2	短 2 学期 Short Semester 2	电气工程学院 School of Electrical Engineering	5.2	
	生产实习 Engineering Internship	必修 Compulsory	3	3	短 3 学期 Short Semester 3	电气工程学院 School of Electrical Engineering	7.1/7.2/8.2/ 11.2	
	毕业设计（论文） Graduation Dissertation	必修 Compulsory	8	8	第 8 学期 8Th Semester	电气工程学院 School of Electrical Engineering	2.3/4.3/5.1/8.2/10.2/ 10.3/ 12.2	
多元化课程 Diversified course 共 4 学分，其中必修 0 学分，限修 4 学分，选修 0 学分 A total credits of 4, including 0 for compulsory courses, 4 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
跨学科课程 Interdisciplinary Course	全校跨学科课程 Interdisciplinary Course of University	限修 Distributional electives	2		2-8 学期 2-8 Semester	全校 The whole school	3.3/5.1/12.1/12.2	限修 4 学分 Distributional electives 4 Credits 按照《西南交通大学多元化课程修读指导手册》执行。 Follow the 《Instruction manual of diversified courses of southwest Jiaotong University》
美育专业类课程 Aesthetic Education Specialty Courses	全校美育专业类课程 Aesthetic Education Specialty Courses of University		2				3.3/5.1/12.1/12.2	
学科竞赛类课程 Subject Competition Courses	全校学科竞赛课程 Subject Competition Courses of University		2				3.3/5.1/12.1/12.2	
个性化选修课程 Personalized Elective Courses	全校个性化选修课程 Personalized Elective Courses of University		2				3.3/5.1/12.1/12.2	

创新创业实践 Innovation and Entrepreneurship Practice 共 2 学分，其中必修 2 学分，限修 0 学分，选修 0 学分 A total credits of 2, including 2 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc	课外创新实践 Extracurricular Innovation Practice	必修 Compulsory	2	2	2-7 学期 2-7 Semester	电气工程学院 School of Electrical Engineering	3.3/5.1/12.1/12.2	按照《西南交通大学创新实践学分认定与管理办法》规定执行 By Credit Recognition and Management of Innovative Practice in Southwest Jiaotong University
必修环节 A compulsory part 共 0 学分，其中必修 0 学分，限修 0 学分，选修 0 学分 A total credits of 0, including 0 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness	大学生综合素质提升（第二、第三课堂） Comprehensive Quality Improvement Courses for College Students (The Second and Third Classroom)	必修 Compulsory	0	0	1-8 学期 1-8 Semester	校团委 Communist Youth League Committee		
	学生体质达标测评 Assessment of Students' Physical Fitness	必修 Compulsory	0	0	秋季学期 fall Semester	体育部 Dept. of Physical Education		
学分总计 Total Credits			161					