

电子科学与技术专业培养方案

Undergraduate Program of Electronic Science and Technology

I. 专业介绍 Introduction

西南交通大学电子科学与技术专业为国家一流本科专业，面向电子信息领域特别是面向国家集成电路战略，培养理论基础扎实、专业技术过硬，具有创新能力和国际视野的电子科技领军人才和高级专门人才。本专业拥有一支包含国家级及省部级人才在内的师资队伍，构建了完善的电子工程人才培养体系。近 5 年来，本专业教师主持国家自然科学基金重点、重大等高水平项目 10 余项，获省部级科研奖励一等奖 1 项、二等奖 2 项、詹天佑教书育人奖 1 项，培养学生在集创赛、电子设计大赛等获特等奖、一等奖 10 余项。

The Electronic Science and Technology major of Southwest Jiaotong University is a national first-class undergraduate program in the field of electronic information, especially for the national integrated circuit strategy. It cultivates electronic technology leading talents and high-level specialized talents with solid theoretical foundations, excellent professional skills, innovative capabilities, and international perspectives. This major has a teaching team that includes national and provincial level talents, and has established a comprehensive talent training system for electronic engineering. In the past 5 years, teachers in this major have led over 10 key and major high-level projects of the National Natural Science Foundation of China, and have won 1 first prize, 2 second prizes, and 1 Zhan Tianyou Teaching and Education Award at the provincial and ministerial level. They have trained students to win more than 10 special or first prizes in innovation competitions and electronic design competitions.

专业代码：080702

Program Code: 080702

专业名称：电子科学与技术

Program Name: Electronic Science and Technology

II. 培养目标 Objectives

我校电子科学与技术专业培养适应社会主义建设需要的德智体美劳全面发展，具备较好的电子科学与技术素养，良好的职业道德和人文素养；具有强烈的社会责任感；掌握电子科学与技术的基本理论，熟练掌握电子器件、集成电路和电子系统的现代设计方法与制造工艺；掌握计算机与人工智能、信息与通信等电子应用系统的基本原理，拥有较好的实践动手能力、系统分析与开发能力；具有较好的外语运用能力和良好的团队协作与交流能力，具备一定的国际视野的适应社会经济发展需要的专门人才。毕业后，可在集成电路及其应用领域从事产

品开发、技术管理、工程设计、教学科研等工作，并具有在工作中继续学习、不断更新知识的能力。

The graduates of this major are all-round development in morality, intelligence, physical fitness, aesthetics, and labor to meet the needs of socialist construction. They have humanities and social sciences accomplishment and social responsibility. They have systematically mastered the basic theory and professional knowledge of electronic devices, integrated circuits, and electronic systems, and they mastered the basic principles of electronic application systems such as computer and artificial intelligence, information and communication. They are proficient in the design technology and manufacturing methods of electronic systems. They have good practical ability, system analysis and development ability. In addition, they have good foreign language skills and good teamwork spirit and communication skills. They are professionals with a certain international perspective to meet the needs of social and economic development. After graduation, they can engage in product development, technology management, engineering design, teaching and scientific research in the field of integrated circuits and related application area, and have the ability to continue learning and constantly update knowledge in their work.

毕业生经过 5 年实践锻炼，能够达到以下目标：

After practicing in 5 years, graduates can achieve the following four objectives:

(1) 熟悉职业相关的国家法律法规，具备良好道德修养、人文素质、职业素养和社会责任感，能积极服务国家和社会。

(1) Familiar with professional laws and regulations, with good moral cultivation, humanistic quality, professionalism and social responsibility, and can actively serve the country and society.

(2) 针对实际需求，能运用自然科学、工程基础和电子科学与技术专业知识，对实际集成电路与电子系统工程问题进行分析，研究解决方案，承担集成电路系统的设计、开发和应用管理任务。

(2) Possess the ability of using natural science, engineering and electronics knowledge to analyze integrated circuits and electronic system engineering problems, research solutions, and undertake the tasks like designing, developing and managing integrated circuits and systems.

(3) 有多学科背景下的组织协调能力，能与业界同行、专业客户和公众进行有效沟通。

(3) Have the ability of organization and coordination in a multidisciplinary context, and be able to communicate effectively with industry peers, professional clients and the public.

(4) 具有终身学习能力，能适应社会、科技和职业发展的需求。

(4) With lifelong learning ability, can adapt to the needs of social, technological and professional development.

III. 专业毕业要求 Graduation Requirements

电子科学与技术专业实行弹性学制，学制 4-6 年，允许学生在取得规定的 162 学分后提前毕业，也允许延长学习年限，但一般不超过六年。

The major of Electronic Science and Technology implements a flexible academic system with 4-6 years. Students are allowed to graduate in advance after obtaining the required 162 credits. It is also allowed to extend the length of study, but generally does not exceed six years.

学生修完本专业培养计划规定的课程及教学实践环节，取得规定的学分，德、智、体考核合格，总学分不少于 162 学分，满足以下毕业要求，按照《中华人民共和国学位条例》规定的条件授予工学学士学位。

In accordance with the "Degree Regulations of People's Republic of China", students will be awarded to a bachelor's degree in engineering after achieving the following goals: completing the courses and practice parts specified in the professional talent cultivation program, obtaining not less than the required 162 credits, passing the moral, intellectual and physical examinations, and meeting the following graduation requirements.

对于本专业的学生，毕业要求包括如下 12 项基本要求：

For students in this major, the graduation requirements include the following 12 items:

1. 工程知识：掌握从事电子科学与技术领域工作所需要的数学、自然科学、工程基础和专业知识，并能够运用这些知识解决复杂电子系统工程问题；

1. Engineering Knowledge: Master the knowledge of mathematics, natural science, and engineering fundamentals required for work, and apply these knowledges to solve complex engineering problems in the area of electronic science and technology.

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科学与技术领域复杂工程问题，以获得有效结论；

2. Problem Analysis: Ability to apply the first principles of mathematics, natural sciences, and engineering sciences to identify, formulate, and analyze complex engineering problems in the area of electronic science and technology; obtain relevant information through literature researches and data queries to analyze engineering problems of electronic science and technology to reach substantiated conclusions.

3. 设计/开发解决方案：能够设计针对复杂工程问题的解决方案，设计满足特定需求的集成电路、电子系统硬件部件及相应软件，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；

3. Design/development of solutions: Ability to design solutions for complex engineering problems in the area of electronic science and technology, and to design ICs, hardware and software of electronic systems that meet specified needs with sense of innovation and with appropriate considerations for society, health, safety, law, culture, environment, etc.

4. 研究：具有基于科学原理并采用科学方法对复杂电子系统工程问题进行研究的能力，

包括设计与实施实验、分析与解释数据、并通过信息综合得到合理有序的结论；

4. Investigation: Ability to conduct investigations of complex problems in electronic systems based on scientific principles and methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. 使用现代工具：能够选择与使用恰当的技术、资源、现代工程开发工具和信息技术工具，对复杂电子信息系统工程问题进行设计、模拟与实现，并能够理解其局限性；

5. Modern Tool Usage: Ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems in electronic systems and networks, with an understanding of the limitations.

6. 工程与社会：在复杂电子信息系统工程问题解决方案的设计和实现过程中，能够根据具体的工程背景合理分析和评价其对社会、健康、安全、法律以及文化的影响，并理解应承担的责任；

6. The Engineer and Society: Ability to apply reasoning informed by electronic engineering contextual knowledge to assess societal, health, safety, legal and cultural issues and the possible consequent responsibilities relevant to electronic engineering practice and solutions to complex engineering problems.

7. 环境和可持续发展：在复杂电子信息系统工程问题解决方案的设计和实现过程及系统运行中能够理解和评价其对环境、社会可持续发展的影响；

7. Environment and Sustainability: Understand the guidelines, policies, laws and regulations on environmental protection and sustainable development in the information and electronic industry, and understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.

8. 职业规范：具有人文社会科学素养、社会责任感，能够在工程实践中理解并遵守工程职业道德和规范，履行责任；

8. Occupational norms: have humanistic and social science literacy as well as social responsibility, understand and comply with engineering professional ethics and norms in engineering practice and fulfill responsibilities.

9. 个人和团队：具有一定的组织管理能力、团队合作能力，能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色；

9. Individual and Team work: Function effectively in teamwork as an individual, and as a member or leader in engineering project or technical development teams in multi-disciplinary settings.

10. 沟通：能够就复杂系统工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令，并具备一定的国际视野和跨文化沟通交流能力；

10. Communication: can communicate effectively over complicated engineering problems with both industry peers and the general public, including writing reports, designing documents, giving presentations, clearly presenting or responding to instructions; can see into problems in an international perspective and communicate with people of different cultural backgrounds.

11. 项目管理：理解并掌握工程管理原理与经济决策方法，具有在多学科环境中应用的能力；

11. Project Management and Finance: Understand and master engineering management principles and economic decision-making methods, and be able to apply them in multidisciplinary environments.

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. Lifelong learning: have the consciousness of independent learning and lifelong learning and the ability of continuous learning and adapting to development.

上述 12 条毕业要求，支撑着专业培养目标的各个部分，其支撑关系矩阵如下表所示：

The above 12 graduation requirements support the various parts of the professional training objectives. The supporting relationship matrix is shown in the following table:

毕业要求对培养目标的支撑关系

The Support Relationship of Graduation Requirements for Cultivation Objectives

毕业要求 Graduation Requirements	培养目标 Training Objectives			
	目标 1 Objective 1	目标 2 Objective 2	目标 3 Objective 3	目标 4 Objective 4
毕业要求 1：工程知识 Graduation Requirements 1.Engineering Knowledge		√		√
毕业要求 2：问题分析 Graduation Requirements 2. Problem Analysis		√		
毕业要求 3：设计/开发解决方案 Graduation Requirements 3. Design/development of solutions		√		
毕业要求 4：研究 Graduation Requirements 4. Investigation		√		√
毕业要求 5：使用现代工具 Graduation Requirements 5. Modern Tool Usage		√		√
毕业要求 6：工程与社会 Graduation Requirements 6. The Engineer and Society	√			
毕业要求 7：环境和可持续发展 Graduation Requirements 7. Environment and Sustainability	√			
毕业要求 8：职业规范 Graduation Requirements 8. Ethics	√			
毕业要求 9：个人和团队 Graduation Requirements 9. Individual and Team work	√		√	
毕业要求 10：沟通 Graduation Requirements 10. Communication	√		√	
毕业要求 11：项目管理 Graduation Requirements 11. Project Management and Finance		√	√	
毕业要求 12：终身学习 Graduation Requirements 12. Lifelong learning				√

IV.学制与学位 Duration and Degree

学制：四年 Duration: 4 years

学位：工学学士 Degree: Bachelor of Engineering

V.主干学科与专业核心课程 Main Subject and Specialized Core Course

主干学科：电子信息

Main Subject: Electronic Information

专业核心课程：电路分析 BI（含实验）、电路分析 BII（含实验）、信号与系统 A、电磁场理论、半导体物理、电子信息材料与器件、现代半导体器件、集成电路工艺、模拟电子技术、数字电子技术、计算机组成原理 C、现代通信原理 C、通信电路、数字信号处理 A、模拟集成电路分析与设计基础、数字集成电路分析与设计基础；芯片类提升课程（二选一）：智能芯片与智能计算系统（含实验）、功率电子与功率集成电路（含实验）；系统类课程（六选一）：光纤通信、卫星通信、雷达原理、光电集成技术基础、现代传感技术原理、DSP 原理与应用。

Specialized Core Courses: Circuit Analysis BI(Including Experiments), Circuit Analysis BII(Including Experiments),signal and system A, electromagnetic theory, semiconductor physics, Electronic Information Materials and Devices, Modern semiconductor devices, Integrated Circuit Process, Analog Electronics Technology, Digital Electronics Technology, Principle of Computer Organization, Modern Communication theory C, Communication Circuits, Digital Signal Processing A, Fundamentals of Analog Integrated Circuit Analysis and Design, Fundamentals of Digital Integrated Circuit Analysis and Design; Chip courses (Choose one out of the two): Intelligent Chips and Intelligent Computing Systems (Including Experiments)/ Power Electronics and Power Integrated Circuits (Including Experiments); System courses (Choose one out of the six): Optical Fiber Communication/Satellite Communication/DSP Principles and Applications/Fundamentals of Optoelectronic Integration Technology/Modern Sensing Technology/Principles of Radar.

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	思政类 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
通识与多元化课程 General Education and Diversified Courses	“交通天下”通识教育课程（含跨学科课程） Core General Education Courses (Interdisciplinary Courses)							
	多元化课程 Diversified Courses							
	国际课程 International Courses					6		6
	大学生心理健康教育课程 University Student Psychological Health Courses							
	学生成长与发展规划课程 Student Growth and Development Planning Courses							
	劳动教育课程 Labor Education Courses	2						2
	公共艺术课程 Public Art Courses	2						2
学科与专业基础课程 Discipline and Specialty Foundational Courses	数学类 Mathematics Courses	21						21
	物理类 Physics Courses	8	2					10
	计算机基础类 Basic Computer Courses	4	1					5
专业教育课程 Specialized Courses	专业核心课 Specialized Core Course	49.5	11.5					61
	专业限选课 Specialized Restricted Courses			4.5	1.5			6

实践教学 环节 Practice Courses	集中性实践教学环节：基本技能训练、工程实践、综合课程设计、社会与文化素质和实践、毕业实习与毕业设计 Centralized Practical Teaching Process: Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design		14					14
	创新创业实践：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 Practice: Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc		2					2
必修环节 A Compulsory Part	“第二课堂”项目：思想政治与道德素养类项目、学术科技与创新创业类项目、艺术体验与审美修养类项目、文化沟通与交往能力类项目、心理素质与身体素质类项目、社会工作与领导能力类项目、社会实践与志愿服务类项目 "The Second Lesson" Project: Ideological and Political Education and Moral Literacy Projects, Academic and Technological Innovation and Entrepreneurship Projects, Art Experience and Aesthetic Education Projects, Cultural Communication and Interpersonal Skills Projects, Psychological and Physical Health Projects, Social Work and Leadership Development Projects, Social Practice and Volunteering Projects							0

	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								162

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
思政类 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 Semester 1	马克思主义学院 School of Marxism	6,7,8	
	中国近现代史纲要 Conspectus of Chinese Modern History	必修 Compulsory	3	0.4	第 2 学期 Semester 2	马克思主义学院 School of Marxism	7,8	
	马克思主义基本原理 The Basic Principles of Marxism	必修 Compulsory	3	0.4	第 3 学期 Semester 3	马克思主义学院 School of Marxism	8	
	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 4 学期 Semester 4	马克思主义学院 School of Marxism	6,7,8	
	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 Semester 6	马克思主义学院 School of Marxism	6,7,8	
	形势与政策 I Situation and Policy I	必修 Compulsory	0		第 1 学期 Semester 1	马克思主义学院 School of Marxism	6,7,8	
	形势与政策 II Situation and Policy II	必修 Compulsory	0		第 2 学期 Semester 2	马克思主义学院 School of Marxism	6,7,8	
	形势与政策 III Situation and Policy III	必修 Compulsory	0		第 3 学期 Semester 3	马克思主义学院 School of Marxism	6,7,8	

	形势与政策IV Situation and Policy IV	必修 Compulsory	0		第 4 学期 Semester 4	马克思主义学院 School of Marxism	6,7,8	
	形势与政策 V Situation and Policy V	必修 Compulsory	0		第 5 学期 Semester 5	马克思主义学院 School of Marxism	6,7,8	
	形势与政策VI Situation and Policy VI	必修 Compulsory	0		第 6 学期 Semester 6	马克思主义学院 School of Marxism	6,7,8	
	形势与政策VII Situation and Policy VII	必修 Compulsory	0		第 7 学期 Semester 7	马克思主义学院 School of Marxism	6,7,8	
	形势与政策VIII Situation and Policy VIII	必修 Compulsory	2		第 8 学期 Semester 8	马克思主义学院 School of Marxism	6,7,8	
军事类 Military Courses	军事理论 Military Theories	必修 Compulsory	2		第 1 学期 Semester 1	武装部 Security Office	9	
	军事技能 Military Skills	必修 Compulsory	2	2	短 1 学期 Short Semester 1	武装部 Security Office	9	
外语类 Foreign Language Courses	英语 I College English I	必修 Compulsory	2		第 1 学期 Semester 1	外国语学院 School of Foreign Languages	10	
	英语II College English II	必修 Compulsory	2		第 2 学期 Semester 2	外国语学院 School of Foreign Languages	10	
	通用学术英语 English for General Academic Purposes	必修 Compulsory	2		第 3 学期 Semester 3	外国语学院 School of Foreign Languages	10	
	职场英语 Workplace English	限修 Distribution al Elective	2		第 4 学期 Semester 4	外国语学院 School of Foreign Languages	10	限修 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 Semester 1	体育学院 School of Physical Education	9	
	体育II Physical Education II	必修 Compulsory	1	1	第 2 学期 Semester 2	体育学院 School of Physical Education	9	
	体育III Physical Education III	必修 Compulsory	0.5	0.5	第 3 学期 Semester 3	体育学院 School of Physical Education	9	

	体育IV Physical Education IV	必修 Compulsory	0.5	0.5	第 4 学期 Semester 4	体育学院 School of Physical Education	9	
	体育健康课程 I Diversified Physical Education Courses I	必修 Compulsory	0.5	0.5	第 5 学期 Semester 5	体育学院 School of Physical Education	8	
	体育健康课程II Diversified Physical Education Courses II	必修 Compulsory	0.5	0.5	第 6 学期 Semester 6	体育学院 School of Physical Education	8	
通识与多元化课程 General Education and Diversified Courses 共 10 学分，其中必修 4 学分，限修 0 学分，选修 6 学分 A total credits of 10, including 4 for compulsory courses, 0 for distributional electives and 6 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
“交通天下”通识教育课程（含跨学科课程） Core General Education Courses (Interdisciplinary Courses)	“交通天下”通识教育课程（含跨学科课程） Core General Education Courses (Interdisciplinary Courses)	选修 Free Elective	6		2-8 学期 Semester 2-8	全校 The whole school	3,8	
多元化课程 Diversified Courses	多元化课程 Diversified Courses							
国际课程 International Courses	国际课程 International Courses							
大学生心理健康教育课程 University Student Psychological Health Courses	大学生心理健康教育课程 University Student Psychological Health Courses							
学生成长与发展规划课程 Student Growth and Development Planning Courses	学生成长与发展规划课程 Student Growth and Development Planning Courses							
劳动教育课程 Labor Education Courses	劳动教育课程 Labor Education Courses	必修 Compulsory	2		2-8 学期 Semester 2-8	全校 The whole school	9,12	
公共艺术课程 Art Education	公共艺术课程 Art Education	必修 Compulsory	2		2-8 学期 Semester 2-8	全校 The whole school	9,12	

学科与专业基础课程 Discipline and Specialty foundational Courses 共 36 学分，其中必修 36 学分，限修 0 学分，选修 0 学分 A total credits of 36, including 36 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
数学类 Mathematics Courses	高等数学 I Advanced Mathematics I	必修 Compulsory	5		第 1 学期 Semester 1	数学学院 School of Mathematics	1	
	线性代数 B Linearity Algebra B	必修 Compulsory	3		第 1 学期 Semester 1	数学学院 School of Mathematics	1	
	高等数学 II Advanced Mathematics II	必修 Compulsory	5		第 2 学期 Semester 2	数学学院 School of Mathematics	1	
	概率与数理统计 probability and mathematical statistics	必修 Compulsory	3		第 2 学期 Semester 2	数学学院 School of Mathematics	1	
	数理方程 B Equations of Mathematical Physics B	必修 Compulsory	2		第 3 学期 Semester 3	数学学院 School of Mathematics	1	
	复变函数与积分变换 Complex Function and Integral Transforms	必修 Compulsory	3		第 3 学期 Semester 3	数学学院 School of Mathematics	1	
物理类 Physics Courses	大学物理 AI University Physics AI	必修 Compulsory	4		第 2 学期 Semester 2	物理科学与技术学院 School of Physical Science and Technology	1	
	大学物理实验 I University Physics I	必修 Compulsory	1	1	第 2 学期 Semester 2	物理科学与技术学院 School of Physical Science and Technology	4	
	大学物理 AII Experiments of University Physics AII	必修 Compulsory	4		第 3 学期 Semester 3	物理科学与技术学院 School of Physical Science and Technology	1	
	大学物理实验 II Experiments of University Physics II	必修 Compulsory	1	1	第 3 学期 Semester 3	物理科学与技术学院 School of Physical Science and Technology	4	
计算机基础类 Basic Computer Courses	计算机程序设计 Advanced language programming	必修 Compulsory	4		第 1 学期 Semester 1	信息科学与技术学院 School of Information Science and Technology	1,3,9	
	计算机程序设计实验 Experiments of Advanced language programming	必修 Compulsory	1	1	第 1 学期 Semester 1	信息科学与技术学院 School of Information Science and Technology	5,9	

专业教育课程 Specialized Courses 共 67 学分，其中必修 61 学分，限修 6 学分，选修 0 学分 A total credits of 67, including 61 for compulsory courses, 6 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 Specialized Core Course	微电子学科前沿导论 Introduction on the Frontiers of Microelectronics	必修 Compulsory	2	1	第 1 学期 Semester 1	信息科学与技术学院 School of Information Science and Technology	2,8,9,10,11	
	数据结构与算法 Data Structure and Algorithms	必修 Compulsory	3	0.5	第 2 学期 Semester 2	信息科学与技术学院 School of Information Science and Technology	3,5	
	电路分析 B I (含实验) Circuit Analysis B I (Including Experiments)	必修 Compulsory	3	0.25	第 2 学期 Semester 2	电气工程学院 School of Electrical Engineering	1,2,4	
	电路分析 B II (含实验) Circuit Analysis B II (Including Experiments)	必修 Compulsory	2	0.25	第 3 学期 Semester 3	电气工程学院 School of Electrical Engineering	1,2,4	
	数字电子技术 B Digital Electronics Technology B	必修 Compulsory	3		第 3 学期 Semester 3	信息科学与技术学院 School of Information Science and Technology	2,4,11	
	数字电子技术实验 Experiments of Digital Electronics Technology	必修 Compulsory	1	1	第 3 学期 Semester 3	信息科学与技术学院 School of Information Science and Technology	3,4,5,10	
	模拟电子技术 Analog Electronics Technology	必修 Compulsory	4		第 4 学期 Semester 4	信息科学与技术学院 School of Information Science and Technology	1,4,5,11	
	模拟电子技术实验 Experiments of Analog Electronics Technology	必修 Compulsory	1	1	第 4 学期 Semester 4	信息科学与技术学院 School of Information Science and Technology	4,5,10	

专业核心课 Specialized Core Course	电磁场理论 Electromagnetic Theory	必修 Compulsory	3		第 4 学期 Semester 4	信息科学与 技术学院 School of Information Science and Technology	1,2,7	
	半导体物理 Semiconductor Physics	必修 Compulsory	3		第 4 学期 Semester 4	物理科学与 技术学院 School of Physical Science and Technology	2,4	
	信号与系统 A Signal and System A	必修 Compulsory	4	0.5	第 4 学期 Semester 4	信息科学与 技术学院 School of Information Science and Technology	1,2,4,5	
	计算机组成原理 C Principle of Computer Organization C	必修 Compulsory	2		第 4 学期 Semester 4	信息科学与 技术学院 School of Information Science and Technology	2,3,5,12	
	现代通信原理 C Modern Communication theory C	必修 Compulsory	2		第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	2,3	
	通信电路 Communication Circuits	必修 Compulsory	3		第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	2,3,8,10	
	通信电路实验 Experiments of communication Circuits	必修 Compulsory	1	1	第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	4,9,10,11	
	现代半导体器件 Modern semiconductor devices	必修 Compulsory	3	0.5	第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	1,2,4,7	
	模拟集成电路分析与设计 基础 Fundamentals of Analog Integrated Circuit Analysis and Design	必修 Compulsory	2		第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	1,2,3,6	
	模拟集成电路分析与设计 基础实验 Experiment of Fundamental Analog Integrated Circuits Analysis and Design	必修 Compulsory	1	1	第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	1,4,5,10	

专业核心课 Specialized Core Course	数字集成电路分析与设计 基础 Fundamentals of Digital Integrated Circuit Analysis and Design	必修 Compulsory	3		第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	1,3,5,6	
	数字集成电路分析与设计 基础实验 Experiment of Fundamentals of Digital Integrated Circuit Analysis and Design	必修 Compulsory	1	1	第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	3,5,9,11	
	FPGA 原理与 EDA 技术 Principle of FPGA and EDA Technology	必修 Compulsory	2	1	第 5 学期 Semester 5	信息科学与 技术学院 School of Information Science and Technology	1,5,11	
	集成电路工艺 Integrated Circuit Process	必修 Compulsory	2		第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	1,6,7	
	电子信息材料与器件 Electronic Information Materials and Devices	必修 Compulsory	2	0.5	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	2,3,5,12	
	嵌入式系统设计与应用 Design and Application of Embedded Systems	必修 Compulsory	2		第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	1,2,6	
	嵌入式系统设计与应用实 验 Experiments of Design and Application of Embedded Systems	必修 Compulsory	1	1	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	1,6,9,10	
	数字信号处理 A Digital Signal Processing A	必修 Compulsory	3	0.5	第 7 学期 Semester 7	信息科学与 技术学院 School of Information Science and Technology	1,2,4,6	
	人工智能算法基础 Fundamentals of Artificial Intelligence Algorithms	必修 Compulsory	2	0.5	第 7 学期 Semester 7	信息科学与 技术学院 School of Information Science and Technology	7,8,12	

专业限选课 Specialized Restricted Courses	智能芯片与智能计算系统 (含实验) Intelligent Chips and Intelligent Computing Systems (Including Experiments)	限修 Distribution al Elective	3	1	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	1,2,3,12	限修组 1: 芯片 设计提升 课程 限修至少 3 学分(含 1 学分实 践)。 Distributio nal Elective 3 Credits
	功率电子与功率集成电路 (含实验) Power Electronics and Power Integrated Circuits (Including Experiments)	限修 Distribution al Elective	3	1	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	1,2,3,12	
	光纤通信 Optical Fiber Communication	限修 Distribution al Elective	3	0.5	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology	1,2,10,12	限修组 2: 系统 类课程 限修至少 3 学分(含 0.5 学分实 践)Distrib utional Elective 3 Credits
	卫星通信 Satellite Communication	限修 Distribution al Elective	3	0.5	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology		
	DSP 原理与应用 DSP Principles and Applications	限修 Distribution al Elective	3	0.5	第 6 学期 Semester 6	信息科学与 技术学院 School of Information Science and Technology		
	光电集成技术基础 Fundamentals of Optoelectronic Integration Technology	限修 Distribution al Elective	3	0.5	第 7 学期 Semester 7	信息科学与 技术学院 School of Information Science and Technology		
	现代传感技术原理 Modern Sensing Technology	限修 Distribution al Elective	3	0.5	第 7 学期 Semester 7	信息科学与 技术学院 School of Information Science and Technology		
	雷达原理 Principles of Radar	限修 Distribution al Elective	3	0.5	第 7 学期 Semester 7	信息科学与 技术学院 School of Information Science and Technology		

实践教学环节 Practice Courses 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
集中性实践教学环节：基本技能训练、工程实践、综合课程设计、社会与文化素质和实践、毕业实习与毕业设计 Centralized Practical Teaching Process: Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design	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 Center of Engineering Training	7,8,9,11	
	电子工艺实习 Electronic Process Practice	必修 Compulsory	1	1	短 2 学期 Short Semester 2	信息科学与技术学院 School of Information Science and Technology	5,,8,11,12	
	电子技术课程设计 Electronic Technology Curriculum Design	必修 Compulsory	1	1	短 2 学期 Short Semester 2	信息科学与技术学院 School of Information Science and Technology	3,8,10,12	
	电子科学与技术专业工程实习 Engineering Practice of	必修 Compulsory	2	2	短 3 学期 Short Semester 3	信息科学与技术学院 School of Information Science and Technology	5,8,9,11,12	
	毕业设计 B Graduation Project B	必修 Compulsory	8	8	第 8 学期 Semester 8	信息科学与技术学院 School of Information Science and Technology	2,3,4,5,6,7,10,11,12	
创新创业实践：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 Practice: Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc	创新创业实践 Innovation and Entrepreneurship Practice	必修 Compulsory	2	2	3-7 学期 3-7 Semester	信息科学与技术学院 School of Information Science and Technology	9,12	按照《西南交通大学创新实践学分认定与管理办法》规定修习 Study in accordance with the Regulations on Credit Recognition and Management of Innovation 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
“第二课堂”项目：思想政治与道德素养类项目、学术科技与创新创业类项目、艺术体验与审美修养类项目、文化沟通与交往能力类项目、心理素质与身体素质类项目、社会工作与领导能力类项目、社会实践与志愿服务类项目 "The Second Lesson" Project: Ideological and Political Education and Moral Literacy Projects, Academic and Technological Innovation and Entrepreneurship Projects, Art Experience and Aesthetic Education Projects, Cultural Communication and Interpersonal Skills Projects, Psychological and Physical Health Projects, Social Work and Leadership Development Projects, Social Practice and Volunteering Projects	“第二课堂”项目 "The Second Lesson" Project	必修 Compulsory	0		1-8 学期 Semester 1-8	校团委 Communist Youth League Committee	10,12	

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 Comprehensive Quality Improvement Courses for College Students	必修 Compulsory	0		1-8 学期 Semester 1-8	校团委 Communist Youth League Committee	7,9	
	学生体质达标测评 Assessment of Students' Physical Fitness	必修 Compulsory	0		秋季学期 Fall Semester	体育学院 School of Physical Education	8	
学分总计 Total Credits			162					

西南交通大学培养方案变更申请表

申请单位		专业（方向）		涉及年级		涉及学生人数	
信息科学与技术学院		电子科学与技术		2023		60	
课程名称	课程编码	课程学分	选修性质	开课学期	变更内容	变更原因	
模拟集成电路分析与设计基础		2	必修	第 5 学期	课程名称变更为“模拟集成电路分析与设计”	根据学校课程名称的命名要求，本课程名称与学校其他类似课程名称有冲突，需调整该课程名称。	
模拟集成电路分析与设计基础实验		1	必修	第 5 学期	改名：“模拟集成电路分析与设计实验”	根据学校课程名称的命名要求，本课程名称与学校其他类似课程名称有冲突，需调整该课程名称。	
DSP 原理与应用		3	限修	第 6 学期	改名：“DSP 原理与应用（含实验）”，开课学期为：第 5 学期	根据学校课程名称的命名要求，本课程名称与学校其他类似课程名称有冲突，需调整该课程名称。且与通信专业一起到第 5 学期开课。	
本专业专家论证意见（可另附表）：							
专业负责人意见：  专业负责人签名：2023年9月10日		教授委员会意见： 经2023年9月10日教授委员会讨论，与会委员表决情况如下： 教授委员会主任签名：2023年9月10日			学院/中心 意见：  院长/主任 签名：2023年9月12日 学院/中心（盖章）：信息科学与技术学院		
开课学院/中心 意见：（如变更课程非本单位需要填写本栏） 开课单位教学负责人 签名：2023年9月12日							