

轨道交通信号与控制专业培养方案

Undergraduate Program of Rail Transit Signaling and Control

I. 专业介绍 Introduction

西南交通大学信息科学与技术学院轨道交通信号与控制专业，一直致力于面向轨道交通发展需求，培养国家建设需要的轨道交通信号与控制方面的复合型创新人才，建成交通特色鲜明的国家一流专业。本专业有交通信息工程及控制国家一流学科（A+学科）、博士授权点、博士后流动站和国家级实验教学示范中心作为支撑，是国家级一流建设专业、国家首批“卓越工程师教育培养计划”专业、四川省特色品牌专业。

本专业培养具有电子、计算机、控制和通信等方面基本理论，系统掌握轨道交通信号与控制方面专业知识与方法，具备轨道交通信号与控制系统的技术研究、设计开发、技术管理、工程施工、运营维护等工程实践能力，面向铁路和城市轨道交通信号与控制领域的专门人才。毕业生遍布铁路、城轨、IT、高教等领域的企事业单位、公司、科研院所以及合资和外资企业。

Rail transit signaling and control specialty of the school of information science and technology in Southwest Jiaotong University, has been committed to cultivate outstanding talents and creative talents to satisfy the requirement of national railway signaling control construction, meanwhile constructing the national first-class specialty with traffic characteristic for the development of the rail transit oriented. With the national first-class discipline (A+) of traffic information engineering and control, the doctor authorization point of traffic information engineering and control, the postdoctoral research station and a national experimental teaching demonstration center, the specialty is a national first-class construction specialty, is selected as one of the first batch of national “excellent engineer training program”, and is a brand specialty in Sichuan Province.

The specialty aims to bring up specialized talents in areas of railway signaling control. It offers students with basic theories and knowledge of electronic science, computer science, control science and communication science, and helps them to systematic master foundational knowledge and methods related to railway signaling control as well as engineering practice skills of technology research, system design and development, technical management, engineering construction, operation and maintenance in railway signaling monitoring and control field. Our graduates are widely spread in research institutions and different kinds of enterprises across various sectors, such as railway transportation and IT industries.

专业代码：080802T

Program Code: 080802T

专业名称：轨道交通信号与控制

II.培养目标 Objectives

面向国家轨道交通信号与控制领域需求，培养具有社会主义核心价值观、优良的人文素养和职业道德，具有系统的专业知识、综合的工程实践和专业表达能力，具有自主学习能力和国际化视野的轨道交通信号与控制领域高素质创新人才。毕业后可在轨道交通信号与控制领域，从事设计开发、技术管理、工程施工/试验、产品制造/测试、运营维护、教学科研等方面工作。

Facing the needs of national rail transit signaling and control field, the specialty is committed to cultivating the high-quality innovative talents in the field of rail transit signaling and control, who are with socialist core values, excellent humanistic quality and professional ethics, with systematic professional knowledge, comprehensive engineering practice and professional expression ability, with independent learning ability and international vision. Graduates are able to work in system design and development, technical management, engineering construction/testing, production manufacturing/ testing, operation and maintenance, teaching and research in the rail transit signaling and control field.

学生毕业 5 年左右，经过行业实践和自身学习，能够达到以下目标：

About 5 years after graduation, students of the specialty can achieve the following specific goals objectives after industry practice and their own learning.

(1) 德智体美劳全面发展，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) Graduates have all-round development of the morality, intelligence, physique, beauty and labor, and have good moral cultivation, humanistic quality, professionalism and social responsibility, and can actively serve the country and society.

(2) 熟悉轨道交通信号职业相关的国家法律法规，针对实际需求，能运用自然科学、工程基础和轨道交通信号与控制专业知识，对轨道交通控制领域复杂工程问题进行分析，研究解决方案，承担轨道交通信号与控制系统的的设计、开发、维护和管理任务。

(2) Familiar with professional laws and regulations in the field of rail transit signaling and control, for the practical needs, can apply natural science, engineering fundamentals and rail transit signaling and control expertise to analyze and solve complex engineering problems in the rail transit signaling and control field, and undertake the design, development, maintenance and management of rail transit signaling control systems.

(3) 具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

轨道交通信号与控制专业实行弹性学制，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 rail transit signaling and control 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 of the specialty, the graduation requirements include the following 12 items:

1、工程知识：能够将数学、自然科学、工程基础和轨道交通信号与控制专业知识用于解决复杂工程问题。

1. Engineering knowledge: Capable of applying mathematic, natural science and engineering fundamentals and other specialized knowledge to solve complicated engineering problems.

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复杂工程问题，以获得有效结论。

2. Problem analysis: Capable of applying the fundamental principles of math, natural science and engineering to analyze complicated engineering problems and draw a valid conclusion through literature research.

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，设计轨道交通信号控制方面的系统、硬件部件和软件，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 and develop solutions: can develop solutions to complicated engineering problems, design various automation related systems, hardware components and software as well as be able to add into their design with innovative ideas and concern of the factors like society, health, security, law, culture and environment.

4、研究：能够基于科学原理并采用科学方法对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序的结论。

4. Research: can use science methods to carry on research on complicated engineering problems based on scientific principles, including designing experiments, analyzing and interpreting data as well as drawing reasonable conclusions from their achieved information.

5、使用现代工具：能够针对复杂问题，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，包括对复杂工程问题的预测与模拟，并能够理解其局限性。

5. Use modern tools: can use, select and develop appropriate techniques to solve complicated problems; make use of resources and apply modern engineering tools and information technology tools to predict and simulate complicated engineering problems and can also understand its limitations.

6、工程与社会：能够基于工程相关背景知识进行合理分析，评价专业工程实践和复杂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。

6. Engineering and society: be able to carry out rationality analysis based on relevant engineering background knowledge and evaluate the impacts that the professional engineering practice and the solutions to complicated engineering problems may impose on the society, health, security, law, culture and environment; have a clear understanding of their responsibilities.

7、环境和可持续发展：能够理解和评价针对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. Environment and sustainable development: can understand and evaluate some complicated engineering practices' influence on environment and its sustainable development.

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：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. Individuals and teams: can work as individuals, team members as well as team leaders in the teams with multidisciplinary backgrounds.

10、沟通：能够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，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，能够在跨文化背景下进行沟通和交流。

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，并能在多学科环境中应用；

11. Project management: understand the engineering management principles and can use economic decision-making methods to plan, manage and carry out engineering projects 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，其支撑关系如下表所示。

The above-mentioned 12 graduation requirements contribute to the realization of each objective. Their relations are expressed by the following matrix.

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：4 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: 交通运输、自动化

Main Subject: Traffic Transportation, Automation

专业核心课程: 高等数学、大学物理、英语、电路分析、模拟电子技术、数字电子技术 B、微机与接口技术 B、信号与系统、自动控制原理 B、数字信号处理 A、现代通信原理 C、铁路信号基础 A、车站信号自动控制、区间信号自动控制、列车运行控制、编组站自动化、铁路调度指挥系统、城市轨道交通控制。

Specialized Core Course: Advanced Mathematics, College Physics, English, Circuit Analysis, Analog Electronic Technology, Digital Electronic Technology B, Microcomputer and Interface Technology B, Signal and System, Automatic Control Principle B, Digital Signal Processing A, Modern Communication Principle C, Railway Signaling Base A, Automatic Control of Railway Station Signaling, Automatic Control of Railway Interval Signaling, Automatic Train Control, Railway Dispatch System, Urban Rail Traffic Control.

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 [33 credits]	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 [10 credits]	“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					3	3	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 [60 credits]	数学类 Mathematics Courses	19						19
	物理类 Physics Courses	6	2					8
	计算机基础类 Basic Computer Courses	12.5	2.5					15
	电子基础类 Basic Electronic Courses	11.5	2.5					14
	通信基础类 Basic Communication Courses	4						4
专业教育课程 Specialized Courses [43 credits]	专业核心课 Specialized Core Course	34	5					39
	专业限选课 Specialized Restricted Courses			4				4
实践教学环节 Practice Courses [16 credits]	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 [0 credits]	“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 [17 credits]	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 [4 credits]	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 [8 credits]	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 Distributional 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 [4 credits]	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)	铁路信号综合创新课程 B Comprehensive innovation Course B of Railway Signaling System	选修 Free Elective	3	3	第 7 学期 Semester 7	信息科学与技术学院 School of Information Science and Technology	2,3,4,5,9,10	轨道交通信号与控制专业必修
	“交通天下”通识教育课程（含跨学科课程） Core General Education Courses (Interdisciplinary Courses)		3		2-8 学期 Semester 2-8	全校 The whole school	8,10	
多元化课程 Diversified Courses	多元化课程 Diversified Courses					全校 The whole school	8,10	
国际课程 International Courses	国际课程 International Courses					全校 The whole school	8,10	
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					全校 The whole school	8,10	
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					全校 The whole school	8,10	
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	8,10	
公共艺术课程 Public Art Courses	公共艺术课程 Public Art Courses	必修 Compulsory	2		2-8 学期 Semester 2-8	全校 The whole school	8,10	

学科与专业基础课程 Discipline and Specialty foundational Courses 共 60 学分，其中必修 60 学分，限修 0 学分，选修 0 学分 A total credits of 60, including 60 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 [19 credits]	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	1,2,4	
	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	1,2,4	
	线性代数 B Linear Algebra B	必修 Compulsory	3		第 1 学期 Semester 1	数学学院 School of Mathematics	1,2,4,	
	复变函数与积分变换 Complex Function and Integral Transform	必修 Compulsory	3		第 3 学期 Semester 3	数学学院 School of Mathematics	1,2,4	
	概率论与数理统计 Probability and Mathematical Statistics	必修 Compulsory	3		第 4 学期 Semester 4	数学学院 School of Mathematics	1,2,4	
物理类 Physics Courses [8 credits]	大学物理 BI College Physics BI	必修 Compulsory	3		第 2 学期 Semester 2	物理科学与技术学院 School of Physical Science and Technology	1,2,4	
	大学物理 BII College Physics BII	必修 Compulsory	3		第 3 学期 Semester 3	物理科学与技术学院 School of Physical Science and Technology	1,2,4	
	大学物理实验 I Experiments in College 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	1,2,4	
	大学物理实验 II Experiments in College 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	1,2,4	
计算机基础类 Basic Computer Courses [15 credits]	计算机程序设计 Computer Programming and Design	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	1,5	
	计算机程序设计实验 Experiments of Computer Programming and Design	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	1,5	

	人工智能算法基础 Fundamentals of Artificial Intelligence Algorithms	必修 Compulsory	2	0.5	第 5 学期 Semester 5	信息科学与技术学院 School of Information Science and Technology	3	
	计算机组成原理 C Computer Composition Principle 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	1,3	
	微机与接口技术 B Microcomputer and Interface Technology B	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	
	微机与接口技术实验 Experiments for Microcomputer and Interface Technology	必修 Compulsory	1	1	第 6 学期 Semester 6	计算机与人工智能学院 School of Computing and Artificial Intelligence	4,8	
	计算机网络 C Computer Networks C	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	1,3,5	
电子基础类 Basic Electronics Courses [14 credits]	电路分析 BI (含实验) Circuit Analysis BI (Include 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	
	电路分析 BII (含实验) Circuit Analysis BII (Include 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	
	数字电子技术 B Digital Electronic Technology B	必修 Compulsory	3		第 2 学期 Semester 2	信息科学与技术学院 School of Information Science and Technology	1,2,4	
	数字电子技术实验 Experiment of Digital Electronic Technology	必修 Compulsory	1	1	第 2 学期 Semester 2	信息科学与技术学院 School of Information Science and Technology	1,2	
	模拟电子技术 Analogue Electronic Technology	必修 Compulsory	4		第 3 学期 Semester 3	信息科学与技术学院 School of Information Science and Technology	1,2	
	模拟电子技术实验 Experiments in Analogue Electronic 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	1,2, 4	
通信基础类 Basic Communication Courses [4 credits]	现代通信原理 C Modern Communications Principle 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	2,5	
	轨道交通通信技术 B Rail Transit Communication Technology B	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	6	

专业教育课程 Specialized Courses 共 43 学分，其中必修 39 学分，限修 4 学分，选修 0 学分 A total credits of 43, including 39 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
专业核心课 Specialized Core Course [39 credits]	自动化类专业课程（13 学分） Automation Specialized Course(13 credits)							
	信号与系统 A Signals and Systems A	必修 Compulsory	4	0.5	第 3 学期 Semester 3	信息科学与技术学院 School of Information Science and Technology	1,2,12	
	自动控制原理 B Automatic Control Principle B	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	2,5	
	自动控制原理实验 Experiment of Automatic Control Principle	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	4,9	
	数字信号处理 A Digital Signal Processing A	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	2,3	
	离散数学及其应用 Discrete Mathematics and Application	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	3	
	运输类专业课程（26 学分） Transportation Specialized Courses 26 credits							
	轨道交通控制 Rail Transit Control	必修 Compulsory	2		第 1 学期 Semester 1	信息科学与技术学院 School of Information Science and Technology	2,7,10,11	
	铁路信号运营基础 Operation Base of Railway Signaling	必修 Compulsory	2		第 2 学期 Semester 2	信息科学与技术学院 School of Information Science and Technology	1,3,6	
	铁路信号基础 A Railway Signaling Base A	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	1,3,6	
	铁路信号基础实验 Experiment of Railway Signal Base	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	4,6	

专业核心课 Specialized Core Course [39 credits]	车站信号自动控制 Automatic Control of Railway Station Signal	必修 Compulsory	4		第 5 学期 Semester 5	信息科学与技术学院 School of Information Science and Technology	2,3	
	区间信号自动控制 Automatic Control of Railway Interval Signaling	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	3	
	车站与区间控制实验 Experiment of Railway Station and Interval Control	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	4,5,8	
	编组站自动化 Automation of Marshalling Station	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	2,3	
	城市轨道交通控制 Urban Rail Traffic Control	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	3	
	系统可靠性与安全性 System Reliability and Safety	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	2,11	
	列车运行控制 Automatic Train Control	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	3	
	铁路调度指挥系统 Railway Dispatch System	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	2,3	
	列控与调度系统实验 Experiment of Train Control System and Railway Dispatch System	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	4	
专业限选课 Specialized Restricted Courses [4 credits]	智能控制 Intelligent Control	限修 Distributional Elective	2		第 7 学期 Semester 7	信息科学与技术学院 School of Information Science and Technology	2,3	限修 2 门, 4 学分 Limited to 2 course, 4 credits
	机器学习 B Machine Learning B		2		第 7 学期 Semester 7	信息科学与技术学院 School of Information Science and Technology		

	DSP 原理与应用 DSP Principle and Application		2		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 [14 credits]	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	1	
	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	6,7,8	
	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	4,6,7,9,10,11	
	轨道交通信号与控制专业工程实习 Engineering Practice of Rail transit Signaling and Control Specialty	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	2,3,4,6,8,9,11	
	毕业设计 B Graduation Design 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	2,4,5,10	
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 credits]	创新创业实践 Innovation and Extracurricular Practice	必修 Compulsory	2	2	3-7 学期 Semester 3-7	信息科学与技术学院 School of Information Science and Technology	9	

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		

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	7,8	
	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		轨道交通信号与控制		2023		90	
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	
铁路信号运营基础 ~~轨道交通通信技术~~	/	2	必修	2023-2024 第 2 学期	课程名称变更为 “铁路信号运营 基础（信号）” ~~轨道交通通信技术（信号）~~	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。	
铁路信号基础 A	/	3	必修	2024-2025 第 2 学期	“铁路信号基础 （设备）”	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。	
本专业专家论证意见（可另附表）：							
专业负责人意见： 同意 专业负责人签名：杨扬 年 9 月 10 日 2023		教授委员会意见： 经教授委员会讨论，与会委员表决情况如下： 教授委员会主任签名：邱 年 9 月 10 日 2023			学院/中心 意见： 院长/主任 签名：_____ 学院/中心（盖章）：  年 9 月 12 日		
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：王 年 9 月 12 日 2023							