

材料成型及控制工程专业培养方案

Undergraduate Program of Materials Forming and Control Engineering

I. 专业介绍 Introduction

本专业面向轨道交通、核电、航空航天、电子封装等高端装备制造领域，培养德智体美劳全面发展，掌握机械、材料、电气控制、信息等多学科交叉和材料成形原理、工艺、结构、质量控制等专业知识。本专业培养能够在智能焊接、增材制造与修复再制造、电子封装及微连接等新兴学科方向，从事科技研发、设计制造、生产组织与管理的复合型高级工程技术人才。

This major is aimed at high-end equipment manufacturing fields such as rail transit, nuclear power, aerospace, and electronic packaging, cultivating comprehensive development of morality, intelligence, physical fitness, aesthetics, and labor, mastering interdisciplinary knowledge of mechanics, materials, electrical control, information, and material forming principles, processes, structures, quality control, and other specialized knowledge. This major cultivates composite senior engineering and technical talents who can engage in scientific research and development, design and manufacturing, production organization and management in emerging disciplines such as intelligent welding, additive manufacturing and repair remanufacturing, electronic packaging, and micro connection.

专业代码：080503

Program Code: 080503

专业名称：材料成型及控制工程

Program Name: Materials Forming and Control Engineering

II. 培养目标 Objectives

培养德、智、体、美全面发展的有社会担当和健全人格，有职业操守和专业才能，有人文情怀和科学素养，有历史眼光和全球视野，有创新精神和批判思维的“五有”高素质材料科学与工程专业人才。

本专业毕业生毕业后达到以下目标：

目标 1：德智体美劳全面发展，具有良好的人文、科学素养，职业操守和社会责任感；

目标 2：能够综合运用机械、材料、电气控制、信息等学科基础知识和材料成形原理、工艺、结构、质量控制及装备设计等专业知识制定材料成型加工工艺，开展工艺评定；

目标 3：能够在智能焊接、增材制造与修复再制造、电子封装及微连接等新兴学科方向，胜任技术开发、设计制造、生产组织与管理等工作，具备从事科研工作的基本能力；

目标 4: 具有较强的工程实践能力和创新能力, 并具备随社会和科技的进步不断自主学习以适应社会和职业发展的能力。

Students enrolled in the major of Materials Science and Engineering are expected to develop in all aspects of morality, specialty, health and aesthetics, have a perfect personality and the will to bear social responsibility, possess professional ethic and expertise, being full of culture awareness and higher scientific quality, perceive with both historical and geographical vision, and progress with novelty and criticalness.

Students who graduate from this major should be able to meet below requirements:

Objective 1: Good humanistic and scientific quality, professional ethics and social responsibility.

Objective 2: Enable to comprehensively apply basic knowledge of mechanical, material, electrical control, information and other disciplines, as well as professional knowledge of material forming principle, process, structure, quality control and equipment design to formulate material forming process and carry out process evaluation.

Objective 3: Capable of technical development, design and manufacturing, production organization and management in advanced welding, additive manufacturing, electronic packaging and micro connection industries.

Objective 4: Strong engineering practice ability and innovation ability, and the ability to adapt to society and professional development with the progress of society, science and technology.

III. 专业毕业要求 Graduation Requirements

1. 知识结构要求——包含自然科学知识、人文及管理科学知识、专业技术基础知识、专业知识以及工具性知识。能够将以上知识用于解决相关领域的复杂工程问题。

毕业要求 1: 具备自然科学基础知识、人文社科及管理基础知识;

1.1 掌握数学、物理、化学等自然科学知识, 并能够将其应用于解决材料成型制造领域的复杂工程问题的建模、分析和求解;

1.2 具备政治、语言及文学等人文社科基础知识, 具有良好的人文素养。能够以口头、PPT 陈述、文稿等方式准确表达自己的观点、成果并回应相应质询;

1.3 具有良好的个人品质、具备基本的法律知识, 拥有良好的身体素质及心理素质。

毕业要求 2: 具备材料科学与工程及材料成型与控制工程专业基础理论知识, 掌握智能焊接、增材制造、电子封装及微连接领域的设备、工艺、方法等专业知识, 并能利用相关知识解决以上工程领域复杂问题;

2.1 掌握材料的分类、成分、组织、性能特点, 具备材料组织结构理论知识;

2.2 掌握材料成型的原理、设备、方法, 熟悉材料成型质量检测、评定相关知识及检测流程, 并能利用所学知识解决相关的检测、分析及质量评价问题;

2.3 掌握计算机、电工、电子技术、装备控制知识, 能够解决材料成型过程控制中的相关问题;

2.4 掌握机械制图中相关理论知识,能够对图纸中的信息进行准确识别、绘制。掌握至少一种绘图软件,能够用软件进行材料成型与控制工程中相关图纸的设计及绘制。

2.能力结构要求——包含问题分析、设计/开发解决方案、进行专业领域研究、使用现代工具、有效沟通及终身学习等能力。

毕业要求 3: 问题分析能力—能够应用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智能焊接、增材制造、电子封装及微连接领域的材料、工艺及装备中的复杂工程问题,以获得有效结论;

3.1 能够运用数学、物理化学等自然科学的基本原理,识别和判断成型过程中的传热、扩散及力学等相关原理,能够利用已知的数学、物理模型,分析成型制造过程中的温度场、应力及变形等复杂工程问题;

3.2 能够运用材料科学专业基础知识、机械、电气控制及成型专业知识。针对该领域的轻量化设计、装备智能控制、制造工艺优化设计等复杂工程问题进行科学描述,提出表达该工程问题的数学模型;

3.3 掌握信息检索工具使用方法,具备阅读及撰写科技论文和技术报告的能力。了解材料成型与控制工程专业重要资料来源及获取方法,理解复杂工程问题中获取相关信息的必要性和基本方法。

毕业要求 4: 设计/开发解决方案能力—针对智能焊接、增材制造、电子封装及微连接领域中涉及的材料、机械及电气等领域复杂工程问题,能考虑社会、健康、安全、法律、文化以及环境等因素,设计满足特定需求的工艺设计及设备的方案,并能体现创新意识;

4.1 针对材料成型过程中存在的复杂工程问题,根据特定需求,确定设计目标和技术方案,综合考虑社会、健康、安全、环境及法律等现实约束条件,论证技术方案的可行性;

4.2 综合运用材料科学、机械及电气等专业知识,通过实验、模拟或理论计算分析,设计/开发该领域复杂工程问题的解决方案;

4.3 掌握基本的创新方法、具有追求创新的态度、意识和能力,并能在实验、项目、设计及解决问题中体现创新意识。

毕业要求 5: 专业领域研究能力—能够基于科学原理并采用科学方法对材料、工艺及电气控制中的工程问题进行研究,包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论;

5.1 具备基于科学原理,采用科学方法开展实验和实验数据分析的能力;

5.2 能够根据文献及市场调研等,设计实验方案并开展实验研究。

5.3 能够对实验数据进行分析、处理与解释,并通过信息检索,与相关研究进行对比,获得有效结论。

毕业要求 6: 使用现代工具能力—能够针对智能焊接、增材制造、电子封装及微连接领域中涉及的材料、机械及电气等工程问题,开发、选择与使用恰当的技术、资源、现代工程

工具和信息技术工具，包括对工程问题的预测与模拟，并能够理解其局限性；

6.1 掌握主要网络及信息检索工具的使用方法，了解本专业重要资料来源及获取方法，具备根据工程问题收集相关技术信息的能力；

6.2 掌握交通运输装备制造及铁路工程建设等工程领域主要行业软、硬件的开发使用技术，掌握主要工程工具的使用方法，并能够用于解决实际工程问题；

6.3 理解所使用技术、资源及工具在解决复杂工程问题中的局限性。

毕业要求 7：工程与社会——能够基于工程相关背景知识进行合理分析，评价智能焊接、增材制造、电子封装及微连接领域中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；

7.1 掌握材料成型与控制工程专业相关背景知识和社会、健康、安全、法律以及文化等基础知识；

7.2 能够基于材料成型与控制工程专业背景知识，分析、评价并综合考虑材料成型领域中工程问题解决方案和工程项目实践对社会、健康、安全、法律以及文化造成的影响。

7.3 理解工程技术人员在复杂工程问题解决方案的制定和工程项目实践中应承担的责任。

毕业要求 8：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。

8.1 理解个人与团队的关系以及团队合作的重要性，具备良好的团队合作意识和能力；

8.2 理解团队中不同角色的作用，在 multidisciplinary 背景的团队中能够主动与其他成员沟通、合作、开展工作，能够承担个体、团队成员或团队负责人等角色。

毕业要求 9：沟通——能够就交通运输装备制造及铁路工程建设等领域的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。

9.1 具备良好的表达、沟通和人际交往能力，能够通过口头和书面方式就材料成型领域的复杂工程问题与同行及社会公众进行有效沟通和交流；

9.2 具备正确、熟练、规范地运用汉语撰写技术报告、设计文稿、陈述发言或回应指令的能力；

9.3 掌握一门外语，能熟练阅读和翻译材料成型领域相关的技术资料 and 文献，具备一定的口语交流和书面表达能力，能够在跨文化背景下进行沟通和交流。

毕业要求 10：项目管理——理解并掌握工程管理的基本原理与经济决策的基本方法，并能在多学科环境中应用。

10.1 了解工程管理和经济学原理在工程项目组织实施中的作用，掌握工程管理的基本原理和基本方法，掌握基本的经济分析方法和决策方法；

10.2 针对材料成型领域复杂工程项目的多学科特性，初步具备在工程项目管理过程中运用工程管理方法和经济决策方法的能力。

毕业要求 11：终身学习—具有自主学习的能力和终身学习的意识，有不断学习和适应社会和职业发展的能力。

11.1 正确认识自我探索和学习的必要性和重要性，具有自主学习和终身学习的意识。

11.2 能够运用科学的学习方法，拓展知识和能力，具备通过自主学习不断提高以适应交通装备制造及铁路工程建设等工程领域科技发展的能力。

3.素质结构要求——具备思想道德素质、文化素质、专业素质和身心素质。

毕业要求 12：职业规范—具有人文社会科学素养、社会责任感，能够在装备制造及铁路工程建设等领域工程实践中理解并遵守工程职业道德和规范，履行责任；

12.1 热爱祖国，了解国情，具有人文社会科学素养，具有推动民族复兴和社会进步的责任感；

12.2 理解并严格遵守材料成型制造中的职业道德和规范，具有刻苦与奉献的敬业精神和科学严谨、求真务实的工作作风。

毕业要求 13：环境和可持续发展—能够理解和评价智能焊接、增材制造、电子封装及微连接领域中涉及到的材料、结构设计及电气控制等技术可能引发的环境、社会可持续发展问题；

13.1 了解与材料成型领域相关的环境保护与可持续发展等方面的方针、政策、法律、法规。

13.2 能够采用科学的评价方法，针对该工程领域工程实践对环境和社会可持续发展的影响进行评价。

1. Requirements of knowledge structure - including natural science knowledge, humanities and management science knowledge, basic professional technology knowledge, professional knowledge and instrumental knowledge. The above knowledge can be used to solve complex engineering problems in related fields.

Graduation Requirement 1: Possess basic natural sciences knowledge, humanities and social sciences knowledge, and basic management knowledge;

1.1 Master natural science knowledge such as mathematics, physics, chemistry, etc., and apply it to the modeling, analysis and solution of complex engineering problems in the fields of material forming and manufacturing;

1.2 Possess basic humanities and social sciences knowledge such as politics, language and literature, and possess a good humanistic quality. Ability to accurately express own opinions and achievements in a verbal, presentation in slides, manuscript, etc. and respond to the corresponding questions;

1.3 Possess good personal qualities, basic legal knowledge, good physical and psychological qualities.

Graduation Requirement 2: Possess basic theoretical knowledge in materials science and engineering & material forming and control engineering, and master the professional knowledge of

intelligent welding, additive manufacturing, electronic packaging and micro connection, and use relevant knowledge to solve complex problems in the above engineering fields;

2.1 Master the classification, composition, organization and performance characteristics of materials, and possess theoretical knowledge of material organization structure;

2.2 Master the principles, equipment and methods of material forming, know the quality inspection, relevant assessment knowledge and testing process of material forming well, and use the knowledge learned to solve related testing, analysis and quality evaluation problems;

2.3 Master computer, electrical, electronic technology, equipment control knowledge, can solve related problems in material forming and control process;

2.4 Master the relevant theoretical knowledge in mechanical drawing, and accurately identify and draw according to structure. Master at least one item of drawing software that can be used to design and draw related drawings in material forming and control engineering.

2. Requirements of ability structure - including problem analysis, design/development solutions, professional field research, modern tools application, effective communication and life-long learning.

Graduation Requirement 3: Problem analysis abilities - ability to apply the basic principles of natural sciences and engineering sciences to identify, express, and analyze complex engineering problems in intelligent welding, additive manufacturing, electronic packaging and micro connection;

3.1 Ability to use the basic principles of natural sciences such as mathematics and physical chemistry to identify and judge the related principles of heat transfer, diffusion and mechanics in the materials forming process. Ability to analyze the complex engineering problems such as the temperature field, stress and deformation of materials forming process by mathematical and physical models.

3.2 Ability to apply basic knowledge in materials science, mechanical, electrical control. Scientific descriptions of complex engineering problems such as lightweight design, equipment intelligent control, and structures optimization design in this fields, and mathematical models for expressing the engineering problems are proposed;

3.3 Master the use of information retrieval tools, with the ability to read and write scientific papers and technical reports. Know the important sources and acquisition methods of material forming and control engineering, and understand the necessity and basic methods of obtaining relevant information in complex engineering problems.

Graduation Requirement 4: Design/Development Solution abilities—Design processes and equipment that meet specific needs in consideration of social, health, safety, legal, cultural, and environmental factors for complex engineering issues in materials, mechanical, and electrical fields involved in intelligent welding, additive manufacturing, electronic packaging and micro connection;

4.1 For the complex engineering problems existing in the materials forming process, determine the design objectives and technical solutions according to specific needs, and comprehensively consider restrictions in realities such as social, health, safety, environment and legal etc., and

demonstrate the feasibility of the technical solutions;

4.2 Comprehensive use of materials science, mechanical and electrical expertise to design/develop solutions for complex engineering problems in the field through experiments, simulations or theoretical calculations;

4.3 Master basic innovation methods, attitudes, awareness and ability to pursue innovation, and reflect innovation awareness in experiments, projects, design and problem solving.

Graduation Requirement 5: Research in professional fields ability—ability to conduct research on engineering issues in materials, processes, and electrical control based on scientific principles and scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis;

5.1 Ability to conduct experimental and experimental data analysis using scientific methods based on scientific principles;

5.2 Ability to design experimental program and conduct experimental research based on literature and market research.

5.3 Ability to analyze, process and interpret experimental data, and compare it with relevant research through information retrieval to obtain valid conclusions.

Graduation Requirement 6: Use modern tools abilities – ability to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for engineering, materials, mechanical and electrical engineering issues involved in intelligent welding, additive manufacturing, electronic packaging and micro connection, including predictions and simulations of engineering problems, and able to understand its limitations;

6.1 Master the use of major network and information retrieval tools, understand the important sources and acquisition methods of this major, and possess the ability to collect relevant technical information based on engineering issues;

6.2 Master the development and use of software and hardware in major industries such as transportation equipment manufacturing and railway engineering construction, master the use of major engineering tools, and be able to solve practical engineering problems;

6.3 Understand the limitations of the technologies, resources, and tools used in solving complex engineering problems.

Graduation Requirement 7: Engineering and Society – ability to conduct a reasonable analysis based on the relevant background knowledge of the project, evaluate the impact of complex engineering problem solutions in the construction of intelligent welding, additive manufacturing, electronic packaging and micro connection on social, health, safety, law and culture, and understand the responsibility should be taken;

7.1 Master the background knowledge of materials forming and control engineering and basic knowledge of society, health, safety, law and culture;

7.2 Ability to analyze, evaluate and comprehensively consider the impact of engineering problem solutions and engineering project practices on social, health, safety, legal and cultural

aspects in the fields of materials forming process based on the background knowledge of material forming and control engineering.

7.3 Understand the responsibility of engineers and technicians should be taken in the formulation of complex engineering problem solutions and the practice of engineering projects.

Graduation Requirement 8: Individuals and Teams – Ability to assume the roles of individuals, team members, and responsible individuals in a multidisciplinary team.

8.1 Understand the relationship between individuals and teams and the importance of teamwork, with a good sense of teamwork and ability;

8.2 Understand the influence of different roles in the team, and be able to actively communicate, collaborate, and work with other members in a multi-disciplinary team, and be able to assume roles such as individuals, team members, or team leaders.

Graduation Requirement 9: Communication—ability to communicate effectively with industry peers and the public on engineering issues in the areas of transportation equipment manufacturing and railway engineering construction, including writing reports and design contributions, presenting statements, articulating or responding to instructions. Possess a certain international perspective and can communication a cross-cultural environment.

9.1 Possess good presentation, communication and interpersonal skills, be able to effectively communicate and communicate with peers and the public through verbal and written methods on complex engineering issues in the field of materials forming process;

9.2 Possess the ability to use correct, proficient and standardized use of Chinese to write technical reports, design contributions, state statements or respond to instructions;

9.3 Master a foreign language, be proficient in reading and translating technical materials and literature related to engineering fields. Possess a certain ability of oral communication and written expression, and be able to communication a cross-cultural environment.

Graduation Requirement 10: Project Management—Understand and master the basic principles of engineering management and the basic methods of economic decision-making, and be able to apply in a multi-disciplinary environment.

10.1 Understand the role of engineering management and economic principles in the implementation of engineering projects, master the basic principles and basic methods of project management, and master basic economic analysis methods and decision-making methods;

10.2 For the multi-disciplinary feature of complex engineering projects in the engineering field. To a certain extent, possess the ability to apply engineering management methods and economic decision-making methods in the project management process.

Graduation Requirement 11: Life-long Learning – Possess the ability to learn independently and the sense of life-long learning, possess the ability to continuously learn and adapt to social and professional development.

11.1 Correctly understand the necessity and importance of self-exploration and learning, and possess the awareness of independent learning and lifelong learning.

11.2 Ability to use scientific learning methods to expand knowledge and abilities, and to improve the ability to adapt to the development of science and technology in the fields of transportation equipment manufacturing and railway engineering construction through independent learning.

3. Quality structure requirements - possess ideological and moral quality, cultural quality, professional quality and physical and mental quality.

Graduation Requirement 12: Professional Norms—Possess a humanities and social science literacy and a sense of social responsibility, be able to understand and abide by engineering professional ethics and norms in the engineering practice of equipment manufacturing and railway engineering construction, and fulfill their responsibilities;

12.1 Love the motherland, understand the national conditions, possess a humanities and social science literacy, and possess a sense of responsibility to promote national rejuvenation and social progress;

12.2 Understand and strictly abide by the professional ethics and norms in materials forming process, with a dedication and dedication of professionalism and scientific rigor, truth-seeking and pragmatic work style.

Graduation Requirement 13: Environment and Sustainable Development - Ability to understand and evaluate environmental and social sustainability issues that may arise from materials, structural design and electrical control technologies involved in intelligent welding, additive manufacturing, electronic packaging and micro connection;

13.1 Understand the guidelines, policies, laws and regulations related to environmental protection and sustainable development in the fields of materials forming process.

13.2 ability to use scientific evaluation methods to evaluate the impact of engineering practice on environmental and social sustainability in this engineering field.

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：材料科学与工程、机械工程

Main Subject: Materials Science and Engineering, Mechanical Engineering

主干课程：材料科学基础、焊接方法与设备、弧焊电源、焊接冶金、材料焊接性、焊接结构、材料成型加工基础、材料成型控制基础、传热及传质、材料成型工装设计

Main Course: Fundamentals of Materials Science, Welding Methods and Equipment, Power Source of Arc Welding, Welding Metallurgy, Weldability of Materials, Welded structure, Fundamentals of Materials Forming and Processing, Fundamental of Materials Forming and Control, Heat and Mass Transfer, Equipment Design in Materials Forming and Control Engineering

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）							6
	多元化课程 Diversified Courses							
	国际课程 International Courses					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	16						16
	物理类 Physics Courses	8	2					10
	计算机基础类 Basic Computer Courses	4.8	1.2					6
	化学类 Chemistry Courses	2	1					3
	机械类 Mechanical courses	10	1					11
	材料类 Materials courses	9.5	2.5					12
	电工类 Electrical Engineering Courses	6	2					8
	力学类 Mechanics courses	5.5	1.5					7
专业教育课程 Specialized Courses	专业核心课 Specialized Core Course	21.5	0.5					22
	专业限选课 Specialized Restricted Courses			6				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		16					16
	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	1.3/4.1/12.2	
	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	1.3/4.1/4.3/12.2	
	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	4.1/10.1/10.2/12.1	
	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 4 学期 Semester 4	马克思主义学院 School of Marxism	10.1/10.2/12.1	
	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 Semester 6	马克思主义学院 School of Marxism	10.1/10.2/12.1	
	形势与政策 I Situation and Policy I	必修 Compulsory	0	0	第 1 学期 Semester 1	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
	形势与政策 II Situation and Policy II	必修 Compulsory	0	0	第 2 学期 Semester 2	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
	形势与政策 III Situation and Policy III	必修 Compulsory	0	0	第 3 学期 Semester 3	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
	形势与政策 IV Situation and Policy IV	必修 Compulsory	0	0	第 4 学期 Semester 4	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
	形势与政策 V Situation and Policy V	必修 Compulsory	0	0	第 5 学期 Semester 5	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
	形势与政策 VI Situation and Policy VI	必修 Compulsory	0	0	第 6 学期 Semester 6	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
	形势与政策 VII Situation and Policy VII	必修 Compulsory	0	0	第 7 学期 Semester 7	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	

	形势与政策Ⅷ Situation and Policy Ⅷ	必修 Compulsory	2	0	第 8 学期 Semester 8	马克思主义学院 School of Marxism	1.3/4.1/4.3/12.2	
军事类 Military Courses	军事理论 Military Theories	必修 Compulsory	2	0	第 1 学期 Semester 1	武装部 Security Office	1.2/8.1/8.2/9.1	
	军事技能 Military Skills	必修 Compulsory	2	2	短 1 学期 Short Semester 1	武装部 Security Office	1.2/8.1/8.2/9.1	
外语类 Foreign Language Courses	英语 I College English I	必修 Compulsory	2	0	第 1 学期 Semester 1	外国语学院 School of Foreign languages	1.2/8.1/8.2/9.1/9.3	
	英语 II College English II	必修 Compulsory	2	0	第 2 学期 Semester 2	外国语学院 School of Foreign languages	1.2/8.1/8.2/9.1/9.3	
	通用学术英语 English for General Academic Purposes	必修 Compulsory	2	0	第 3 学期 Semester 3	外国语学院 School of Foreign languages	1.2/8.1/8.2/9.1/9.3	
	职场英语 Workplace English	限修 Distributional Elective	2	0	第 4 学期 Semester 4	外国语学院 School of Foreign languages	1.2/8.1/8.2/9.1/9.3	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	12.1	
	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	12.1	
	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	12.1	
	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	12.1	
	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	12.1	
	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	12.1	

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	0	2-8 学期 Semester 2-8	全校 The whole school	3.3/4.3/6.3/7.1	
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	0	2-8 学期 Semester 2-8	全校 The whole school	3.3/4.3/6.3/7.1	
公共艺术课程 Public Art Courses	公共艺术课程 Public Art Courses	必修 Compulsory	2	0	2-8 学期 Semester 2-8	全校 The whole school	3.3/4.3/6.3/7.1	

学科与专业基础课程 Discipline and Specialty foundational Courses 共 73 学分，其中必修 73 学分，限修 0 学分，选修 0 学分 A total credits of 73, including 73 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	0	第 1 学期 Semester 1	数学学院 School of Mathematics	1.1/3.1/5.2/5.3 /11.1/11.2	
	高等数学 II Advanced Mathematics III	必修 Compulsory	5	0	第 2 学期 Semester 2	数学学院 School of Mathematics	1.1/3.1/5.2/5.3 /11.1/11.2	
	线性代数 B Linear Algebra B	必修 Compulsory	3	0	第 1 学期 Semester 1	数学学院 School of Mathematics	1.1/3.1/5.2/5.3 /11.1/11.2	
	概率论与数理统计 Probability and Statistics	必修 Compulsory	3	0	第 5 学期 Semester 5	数学学院 School of Mathematics	1.1/3.1/5.2/5.3 /11.1/11.2	
物理类 Physics Courses	大学物理 AI University Physics AI	必修 Compulsory	4	0	第 2 学期 Semester 2	物理科学与技术学院 School of Physics	1.1/3.1/5.1/5.2 /11.1/11.2	
	大学物理 AII University Physics AII	必修 Compulsory	4	0	第 3 学期 Semester 3	物理科学与技术学院 School of Physics	1.1/3.1/5.1/5.2 /11.1/11.2	
	大学物理实验 I University Physics Experiments I	必修 Compulsory	1	1	第 2 学期 Semester 2	物理科学与技术学院 School of Physics	1.1/3.1/5.1/5.2 /11.1/11.2	
	大学物理实验 II University Physics Experiments II	必修 Compulsory	1	1	第 3 学期 Semester 3	物理科学与技术学院 School of Physics	1.1/3.1/5.1/5.2 /11.1/11.2	
计算机基础类 Basic Computer Courses	计算机程序设计基础 Fundamentals of computer programming	必修 Compulsory	3	1	第 2 学期 Semester 2	计算机与人工智能学院 School of Computing and Artificial Intelligence	6.2	
	微机原理及应用 Microcomputer Theory and Application	必修 Compulsory	3	0.2	第 5 学期 Semester 5	材料科学与工程学院 School of Materials Science and Engineering	4.3/6.2	
化学类 Chemistry Courses	工程化学 A Engineering Chemistry A	必修 Compulsory	3	1	第 1 学期 Semester 1	化学学院 School of Chemistry	1.1/3.1/5.2/5.3 /11.1/11.2	
机械类 Mechanical courses	机械制图 A Mechanical Drawing A	必修 Compulsory	4	0.5	第 1 学期 Semester 1	机械工程学院 School of Mchanics	2.4	
	机械制造技术基础 Fundamentals of Mechanical Manufacturing Technology	必修 Compulsory	2	0	第 2 学期 Semester 2	机械工程学院 School of Mechanical	2.4/5.2/5.3	
	机械设计基础 A Fundamentals of Mechanical Design A	必修 Compulsory	5	0.5	第 4 学期 Semester 4	机械工程学院 School of Mchanics	2.4/5.2/5.3/11.1/11.2	

材料类 Materials courses	物理化学 A Physical Chemistry A	必修 Compulsory	3	0	第 2 学期 Semester 2	材料科学与 工程学院 School of Materials Science and Engineering	1.1/3.1/5.1/5.2 //11.1/11.2	
	物理化学 A 实验 Physical Chemistry A Experiments	必修 Compulsory	1	1	第 2 学期 Semester 2	化学学院 School of Chemistry	1.1/3.1/5.1/5.2 //11.1/11.2	
	材料科学基础 AI Fundamentals of Materials Science AI	必修 Compulsory	3	0	第 4 学期 Semester 4	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/3.1/3.2 /4.2	
	材料科学基础 AII Fundamentals of Materials Science AII	必修 Compulsory	2	0	第 5 学期 Semester 5	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/3.1/3.2 /4.2	
	材料科学基础实验方法 I Experiments in Material Science I	必修 Compulsory	0.5	0.5	第 4 学期 Semester 4	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/5.1/5.2 /5.3	
	材料科学基础实验方法 II Experiments in Material Science II	必修 Compulsory	0.5	0.5	第 5 学期 Semester 5	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/5.1/5.2 /5.3	
	材料力学性能 B Mechanical Properties of Materials B	必修 Compulsory	2	0.5	第 5 学期 Semester 5	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/3.2/4.2 /9.1	
力学类 Mechanics courses	理论力学 B Theoretical Mechanics B	必修 Compulsory	4	1	第 3 学期 Semester 3	力学与航空 航天学院 School of Mechanics, Aeronautics and Astronautics	1.1/3.2/4.2/11. 1/11.2	
	材料力学 E Mechanics of Materials E	必修 Compulsory	3	0.5	第 4 学期 Semester 4	力学与航空 航天学院 School of Mechanics, Aeronautics and Astronautics	3.2/4.2/5.2/5.3 /11.1/11.2	
电工类 Electrical Engineering Courses	电工技术 A Electrotechnics A	必修 Compulsory	4	1	第 3 学期 Semester 3	电气工程学 院 School of Electrical Engineering	2.3	
	电子技术 A Electronic Technique A	必修 Compulsory	4	1	第 4 学期 Semester 4	电气工程学 院 School of Electrical Engineering	2.3	

专业教育课程 Specialized Courses 共 28 学分，其中必修 22 学分，限修 6 学分，选修 0 学分 A total credits of 28, including 22 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	轨道交通材料导论 Introduction to Rail Transit Materials	必修 Compulsory	2	0	第 2 学期 Semester 2	材料科学与工程学院 School of Materials Science and Engineering	7.1/7.2/7.3/9.1/9.2/12.1	
	材料成型加工基础（双语） Fundamentals of Materials Forming and Processing(bilingual teaching)	必修 Compulsory	2	0	第 5 学期 Semester 5	材料科学与工程学院 School of Materials Science and Engineering	2.1/2.2/5.2/9.3	
	材料成型工装设计 Equipment Design in Materials Forming and Control Engineering	必修 Compulsory	2	0.5	第 7 学期 Semester 7	材料科学与工程学院 School of Materials Science and Engineering	2.4/4.3/6.2/9.1	
	焊接方法与设备 Welding methods and equipment	必修 Compulsory	2	0	第 6 学期 Semester 6	材料科学与工程学院 School of Materials Science and Engineering	3.2/4.2/6.2/6.3	
	弧焊电源 Power source of arc welding	必修 Compulsory	2	0	第 6 学期 Semester 6	材料科学与工程学院 School of Materials Science and Engineering	2.3/4.3/7.3/13.2	
	焊接结构 Welded structure	必修 Compulsory	3	0	第 6 学期 Semester 6	材料科学与工程学院 School of Materials Science and Engineering	1.1/3.2/4.2/5.2	
	焊接冶金 Welding Metallurgy	必修 Compulsory	3	0	第 6 学期 Semester 6	材料科学与工程学院 School of Materials Science and Engineering	3.1/3.2/4.2/6.3	
	材料焊接性 Welding Metallurgy	必修 Compulsory	2	0	第 7 学期 Semester 7	材料科学与工程学院 School of Materials Science and Engineering	2.1/2.2/3.2/4.2/7.1	
	传热及传质 Heat and Mass Transfer	必修 Compulsory	2	0	第 5 学期 Semester 5	材料科学与工程学院 School of Materials Science and Engineering	3.1/3.2/4.2/6.3	
	无损检测（双语） Nondestructive Test (bilingual teaching)	必修 Compulsory	2	0	第 7 学期 Semester 7	材料科学与工程学院 School of Materials Science and Engineering	2.1/2.2/7.1/9.2	

专业限修课 Specialized Restricted Courses	智能焊接 技术模块 Intelligent welding technology	材料成型控制 基础 Fundamental of Material Forming and Control	限修 Distribution al Elective	2	0.2	第 6 学期 Semester 6	材料科学与 工程学院 School of Materials Science and Engineering	2.3/3.2/4.2/4.3	三个课程 体系中选 修一个 限修 6 学 分 Choose one of the three course systems。 Limited to 6 credits
		材料成型数值 模拟 Simulation of Material Forming	限修 Distribution al Elective	2	0	第 7 学期 Semester 7	材料科学与 工程学院 School of Materials Science and Engineering	6.2/7.3/13.2	
		智能焊接基础 Fundamentals of Intelligent Welding	限修 Distribution al Elective	2	0	第 7 学期 Semester 7	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/6.2	
	增材制造 技术模块 Additive manufacturing technology	增材制造工艺 方法与原理 Additive manufacturing process methods and principles	限修 Distribution al Elective	2	0	第 6 学期 Semester 6	材料科学与 工程学院 School of Materials Science and Engineering	2.2/3.2/4.2/4.3	
		增材制造检测 技术 Additive manufacturing testing technology	限修 Distribution al Elective	2	0	第 7 学期 Semester 7	材料科学与 工程学院 School of Materials Science and Engineering	5.1/5.3/13.2	
		增材制造材料 Additive manufacturing materials	限修 Distribution al Elective	2	0	第 7 学期 Semester 7	材料科学与 工程学院 School of Materials Science and Engineering	2.1/2.2/6.2	
	电子封装 及微纳连 接技术模 块 Electronic ackaging and micro nano connection technology	微连接原理及 方法 Principles and methods of microconnectio n	限修 Distribution al Elective	2	0	第 6 学期 Semester 6	材料科学与 工程学院 School of Materials Science and Engineering	2.2/3.2/4.2/4.3	
		微纳加工技术 Micro nano processing technology	限修 Distribution al Elective	2	0	第 7 学期 Semester 7	材料科学与 工程学院 School of Materials Science and Engineering	5.1/5.3/13.2	
		电子封装可靠 性数值模拟 Numerical simulation of electronic packaging reliability	限修 Distribution al Elective	2	0	第 7 学期 Semester 7	材料科学与 工程学院 School of Materials Science and Engineering	6.2/7.3/13.2	

实践教学环节 Practice Courses 共 18 学分，其中必修 18 学分，限修 0 学分，选修 0 学分 A total credits of 18, including 18 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 B Engineering Training B	必修 Compulsory	1.5	1.5	第 3 学期 Semester 3	工业中心 Industrial Center	3.2/4.2/6.3/7.1/7.2/13.1	
	实验室安全与规范（材料成型与控制工程） Lab Safety and Standards(Material Forming and Control Engineering)	必修 Compulsory	0	0	第 3 学期 Semester 3	材料科学与工程学院 School of Materials Science and Engineering	3.3/7.1/7.2/13.1	
	电子实习 Electronic Practice	必修 Compulsory	0.5	0.5	短 2 学期 Short Semester 2	电气工程学院 School of Electrical Engineering	2.3	
	认识实习 Acquaint Practice	必修 Compulsory	0.5	0.5	短 2 学期 Short Semester 2	材料科学与工程学院 School of Materials Science and Engineering	1.3/4.1/6.3/12.2	
	专业实习 Specialized Practice	必修 Compulsory	1.5	1.5	短 3 学期 Short Semester 3	材料科学与工程学院 School of Materials Science and Engineering	2.1/2.2/6.3/9.1/12.2	
	机械零件课程设计 Course Design of Machinery Elements	必修 Compulsory	1.5	1.5	短 3 学期 Short Semester 3	机械工程学院 School of Mechanical Engineering	2.4/4.3/6.2	
	材料成型控制综合实验 Comprehensive Experiment of Materials Forming and Control	必修 Compulsory	1	1	第 6 学期 Semester 6	材料科学与工程学院 School of Materials Science and Engineering	6.1/6.3	
	焊接结构综合实验 Comprehensive Experiment of Welded Structures	必修 Compulsory	0.5	0.5	第 7 学期 Semester 7	材料科学与工程学院 School of Materials Science and Engineering	1.2/3.1/5.1/8.1	
	焊接与再制造综合实验 Comprehensive Experiment of Welding and Remanufacture	必修 Compulsory	1	1	第 7 学期 Semester 7	材料科学与工程学院 School of Materials Science and Engineering	4.3/6.1	
	毕业设计（论文） Graduation Design(Thesis)	必修 Compulsory	8	8	第 8 学期 Semester 8	材料科学与工程学院 School of Materials Science and Engineering	3.3/5.1/5.2/6.1/7.2/12.2/13.1	

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	第 7 学期 Semester 7	材料科学与工程学院 School of Materials Science and Engineering	3.3/4.3/5.1/9.2	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 School of Foreign languages
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	0	1-8 学期 Semester 1-8	校团委 Communist Youth League Committee	12.1	

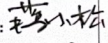
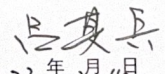
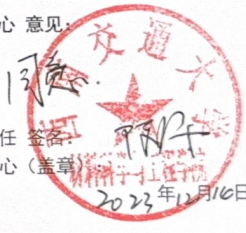
大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness	大学生综合素质提升 Comprehensive Quality Improvement Courses for College Students	必修 Compulsory	0	0	1-8 学期 Semester 1-8	校团委 Communist Youth League Committee	12.1	
	学生体质达标测评 Assessment of Students' Physical Fitness	必修 Compulsory	0	0	秋季学期 Fall semester	体育学院 School of Physical Education	12.1	
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	
材料科学与工程学院		材料成型及控制工程专业		23 级及之后年级			
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	
材料成型控制综合实验	MASE003713	1.0	必修	第 6 学期	学分由 1.0 增加至 1.5	新培养方案调整	
焊接结构综合实验	MASE003813	0.5	必修	第 7 学期	学分由 0.5 增加至 1.0	新培养方案调整	
焊接与再制造综合实验	MASE003913	1.0	必修	第 7 学期	学分由 1.0 增加至 1.5	新培养方案调整	
无损检测（双语）	MASE002912	2.0	必修	第 7 学期	课内实践学分增加 0.25	新培养方案调整	
材料成型控制基础	MASE002012	2.0	限修	第 6 学期	课内实践学分增加 0.25	新培养方案调整	
材料成型数值模拟	MASE003112	2.0	限修	第 7 学期	课内实践学分增加 0.25	新培养方案调整	
增材制造工艺方法与原理	MASE020612	2.0	限修	第 6 学期	课内实践学分增加 0.5	新培养方案调整	
微连接原理及方法	MASE020912	2.0	限修	第 6 学期	课内实践学分增加 0.25	新培养方案调整	
电子封装可靠性数值模拟	MASE021112	2.0	限修	第 7 学期	课内实践学分增加 0.25	新培养方案调整	

微机原理及应用	MASE001212	3.0	必修	第 5 学期	课内实践学分增加 0.25	新培养方案调整
焊接结构	MASE017512	3.0	必修	第 6 学期	学分由 3.0 减少至 2.0; 课程名称变为焊 接结构 B	新培养方案调整
焊接冶金	MASE017612	3.0	必修	第 6 学期	学分由 3.0 减少至 2.0; 课程名称变为焊 接冶金 B	新培养方案调整
物理化学 A 实验	CHEM000612	1	必修	第 2 学期	课程名称变更为物 理化学实验 A	新培养方案调整
焊接方法与设备	MASE017712	2	必修	第 6 学期	课程名称变更为焊 接方法与设备 B	新培养方案调整

本专业专家论证意见（可另附表）：同意培养方案整体变更！

专业负责人意见： 同 意 专业负责人签名：  2023 年 12 月 14 日	教授委员会意见： 经 2023 年 12 月 4 日教授委员会讨论，与会委员 表决情况如下： 同 意 教授委员会主任签名：  2023 年 12 月 16 日	学院/中心 意见： 同 意 院长/主任 签名：  学院/中心（盖章）  2023 年 12 月 16 日
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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：

年 月 日

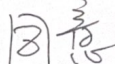
西南交通大学培养方案变更申请表

申请单位		专业（方向）		涉及年级		涉及学生人数	
材料科学与工程学院		材料成型及控制工程专业		23 级及以后年级		100	
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	
实验室安全与规范 （材料成型与控制工程）	MASE003413	0	必修	第 3 学期	学分由 0 增加至 0.5	新培养方案调整 课程名称变更为《实验室安全规范》	
本专业专家论证意见（可另附表）：同意培养方案整体变更！							
专业负责人意见： 专业负责人签名：蒋小松 2023 年 12 月 16 日		教授委员会意见： 经 2023 年 12 月 16 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：吕其兵 年 月 日		学院/中心 意见： 院长/主任 签名：[Signature] 学院/中心（盖章）：[Stamp] 年 月 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：年 月 日							

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	
材料科学与工程学院		材料成型及控制工程专业		23 级及以后年级		100	
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	
材料科学基础 AI	MASE005712	3.0	必修	第 4 学期	课程名称变为材料科学基础 BI	新培养方案调整	
材料科学基础 AII	MASE005812	2.0	必修	第 5 学期	课程名称变为材料科学基础 BII	新培养方案调整	

本专业专家论证意见（可另附表）：同意培养方案整体变更！

专业负责人意见：  专业负责人签名：_____ 2023 年 12 月 14 日	教授委员会意见： 经 2023 年 12 月 11 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 12 月 14 日	学院/中心 意见：  院长/主任 签名：_____ 学院/中心（盖章） 
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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：_____ 年 月 日