

材料科学与工程专业辅修培养方案

Materials Science and engineering minor training program

一、培养目标 Objectives

本辅修专业培养德、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。

This minor is specialized in the development of moral, intellectual, physical and aesthetic. It has social responsibility and sound personality, professional ethics and professionalism, humanistic feelings and scientific literacy, historical vision and global vision, innovative spirit and critical thinking. There are five high-quality materials science and engineering professionals.

二、培养要求 Requirement

本专业立足于学生能力的培养，特别是在工程实践能力、综合创新能力、计算机应用能力和外语应用能力等方面的培养。培养具备宽厚的材料领域的基础知识与技能，能从事科研、技术开发、分析检测、工艺和设备设计、生产经营管理等方面的高素质科技人才，具备国际化竞争能力。学生不仅具有宽厚的基础理论知识和较强的工程实践技能，而且通过将最新科研成果引入教学内容的教学、通过学生参与教师的实际科研项目的特色工程实践活动等教学环节，使本专业的学生具有与国内同类专业学生所不同的特色。

This major is based on the cultivation of students' abilities, especially in the areas of engineering practice, comprehensive innovation, computer application and foreign language application. Cultivate high-quality scientific and technological talents with rich knowledge and skills in the fields of materials, scientific research, technology development, analysis and testing, process and equipment design, production management, etc., with international competitiveness. Students not only have broad basic theoretical knowledge and strong engineering practice skills, but also bring the latest scientific research results into the teaching, through the students participate in the teacher's actual research projects, the characteristic engineering practice activities and other teaching links. It has different characteristics from the same kind of students in China.

三、学分要求 Credits Requirements

选本专业为辅修专业的学生应修学本专业的 32 学分核心课程（可以选择组 1 或组 2），并符合《西南交通大学本科生辅修与双学位管理办法》规定者，方可颁发本专业辅修证书。

Students who choose a major in minors should take the 32-credits that about core courses of the major (you can choose group 1 or group 2), and meet the requirements of the “Southwest JiaoTong University undergraduate minors and double degree management methods” Minor certificate.

四、课程设置 Course Programs

课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	学分 Credits	开课学期 Semester	开课学院 School	备注 Notes
学科基础课程 必修 10 学分 Discipline Foundational Courses Compulsory 10 Credits	材料科学基础 AI Materials Science Basics AI	必修 Compulsory	4	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料科学基础 AII Materials Science Basics AII	必修 Compulsory	3	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料科学基础实验方 法 I Materials Science Basics Experimental Methods I	必修 Compulsory	0.5	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料科学基础实验方 法 II Materials Science Basics Experimental Methods II	必修 Compulsory	0.5	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料分析测试(双语) Materials Characterization and Analysis (Bilingual)	必修 Compulsory	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
专业基础课 必修 6 学分 Professional Foundational Courses Compulsory 6 Credits	材料力学性能 A Mechanical Properties of Materials A	必修 Compulsory	3	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料物理性能 Physical Properties of Materials	必修 Compulsory	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	

	材料性能研究技术 I Materials Performance Study Technology I	必修 Compulsory	0.5	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料性能研究技术 II Materials Performance Study Technology II	必修 Compulsory	0.5	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
专业课 (组 1) 必修 6 学分 限修 10 学分 Professional Courses (Group 1) Compulsory 6 Credits Distributional Elective 10 Credits	工程材料学 Engineering Materials	必修 Compulsory	3	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	金属材料制备技术 Preparation Technology of Metal Materials	必修 Compulsory	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	金属材料制备方法 Preparation Approach of Metal Materials	必修 Compulsory	1	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料热处理 (双语) Heat Treatment of Materials (Bilingual)	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料设计与模拟 Material Design and Simulation	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	复合材料 (双语) Composite Materials (Bilingual)	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	金属功能材料 Metallic Functional Materials	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	粉末冶金原理 Principle of Powder Metallurgy	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料表面技术 B Materials Surface Technology B	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	无损检测技术 Non-destructive Testing Technology	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料失效分析 B Material Failure Analysis B	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	

	摩擦学原理 Tribological Principle	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料腐蚀与防护 Corrosion and Protection of Materials	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料与交通 Materials and Transportations	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	专业外语（材料科学与工程） Professional English (Material Science and Engineering)	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	国家质量基础（NQI）导论 Introduction to National Quality Foundation (NQI)	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
专业课（组2） 必修6学分 限修10学分 Professional Courses (Group 2) Compulsory 6 Credits Distributional Elective 10 Credits	工程陶瓷材料 Engineering Ceramic Materials	必修 Compulsory	3	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	无机非金属材料工艺学 Inorganic Nonmetallic Materials Technology	必修 Compulsory	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	无机非金属材料制备方法 Preparation Approach of Inorganic Nonmetallic Materials	必修 Compulsory	1	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	纳米材料与纳米技术 Nanomaterials and Nanotechnology	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料设计与模拟 Material Design and Simulation	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	复合材料（双语） Composite Materials (Bilingual)	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	功能陶瓷材料 Functional Ceramic Materials	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	

专业课 (组 2) 必修 6 学分 限修 10 学分 Professional Courses (Group 2) Compulsory 6 Credits Distributional Elective 10 Credits	粉末冶金原理 Powder Metallurgy Principle	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料表面技术 B Materials Surface Technology B	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	无损检测技术 Non-destructive Testing Technology	限修 Distributional Elective	2	春季学期 Spring Semester	材料 School of Materials Science and Engineering	
	材料失效分析 B Material Failure Analysis B	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	新能源材料与器件 New Energy Materials and Devices	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	绿色建筑与环境材料 Green Building and Environmental Materials	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	材料与交通 Materials and Transportations	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	专业外语 (材料科学与工程) Professional English (Material Science and Engineering)	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
	国家质量基础 (NQI) 导论 Introduction to National Quality Foundation (NQI)	限修 Distributional Elective	2	秋季学期 Fall Semester	材料 School of Materials Science and Engineering	
总学分 Total Credits			32			