

# 建筑环境与能源应用工程专业辅修培养方案

## Supportive training program for Building Environment and Energy Engineering

### 一、培养目标 Objectives

建筑环境与能源应用工程是一个综合性专业，涵盖了健康、能源、环境等社会广泛关注的内容。本专业致力于解决民用、医疗、交通、航天等领域的能源与环境问题，为人们创造健康、舒适的热湿环境、空气质量环境、声光环境等，同时最大限度地减少建筑的能源与资源消耗，保证国家建设和自然环境的协调发展。结合我校交通运输工程一流学科建设和“交通领域特色鲜明的综合性研究型一流大学”的办学定位，专业定位为建设“具有交通领域特色的建筑环境与能源应用工程专业”，培养复合型高级工程技术人才。

Building Environment and Energy Engineering is a comprehensive specialty, which covers public hot concerns including health, energy and environment. This specialty is committed to solve the energy and environment problems in civil, medical, transportation and aerospace, create healthy and comfortable thermal and humid environment, air quality environment and sound and light environment, minimize the energy and resource consumption of buildings and ensure the coordinated development of national construction and natural environment. Combining with the construction of the first-class discipline of transportation engineering and the orientation of the first-class comprehensive research university with distinct characteristics in transportation field, the orientation of the specialty is to build the specialty of Building Environment and Energy Engineering with characteristics in transportation field and to train senior engineers of transportation artificial environment.

### 二、培养要求 Requirement

本专业以培养德、智、体、美、劳全面发展的社会主义建设者和接班人为目标，面向建筑环境与能源应用工程领域发展方向，并紧密结合轨道交通暖通空调行业需求，培养掌握扎实的数学、自然科学和工程科学基础理论以及专业知识，具有良好的人文素养、职业素质、国际视野、创新精神和社会责任感，具备综合运用知识和技能解决建筑环境与能源应用工程领域复杂工程问题的能力，能够胜任建筑环境与能源应用工程相关技术、管理和研发等工作的复合型高级工程技术人才。

With the goal of cultivating socialist builders and successors with all-round development of morality, intelligence, physical education, beauty and labor, this major is oriented to the

development direction in the field of Building Environment and Energy Engineering, and closely combined with the needs of HVAC industry of rail transit. It aims to cultivate compound engineering technology application talents who can master solid basic theories and professional knowledge of mathematics, natural science and engineering science, and have good humanistic quality, professional quality, international vision, innovation spirit and social responsibility, be able to apply comprehensively knowledge and skills to solve complex engineering problems in the field of Building Environment and Energy Engineering, and be competent for post of technology, management, research and development in the field of Building Environment and Energy Engineering.

**毕业 5 年应达到的目标:** 在专业能力和职业素养方面达到高级工程师水平, 能够以工程师、技术骨干或团队领导者的身份解决建筑环境与能源应用工程领域的复杂工程问题, 并具备成长为卓越工程师、行业专家或优秀领导者的潜力。具体目标如下:

The goal to be achieved within 5 years after graduation: to reach the level of engineer in aspect of professional ability and professionalism, to be able to solve complex engineering problems in the field of Building Environment and Energy Engineering as an engineer, technical backbone or team leader, and to have the potential to grow into an outstanding engineer, industry expert or outstanding leader. The specific objectives are as follows:

**目标 1:** 具备担任工程师的知识和能力, 能够综合运用知识、技术和现代工具解决规划设计、研发制造、施工安装、运行管理和系统保障中的复杂工程问题。

Objective 1: Have the knowledge and ability to act as an engineer, and be able to comprehensively use knowledge, technology and modern tools to solve complex engineering problems in planning and design, R&D and manufacturing, construction and installation, operation management and system support.

**目标 2:** 具备将技术性与非技术性因素协调考虑, 以系统思维解决暖通空调工程中复杂工程问题的分析能力、实践能力和创新能力。

Objective 2: Have the ability to analyze, practice and innovate by taking technical and non-technical factors into account in a coordinated manner and solving complex engineering problems in HVAC projects with systematic thinking.

**目标 3:** 具备良好的国际视野和跨文化交流能力、团队精神和组织管理能力, 能以成员或领导者的角色胜任技术和管理工作。

Goal 3: Have a good international vision and cross-cultural communication ability, team spirit and organizational management ability, and be competent for technical and management work as a member or leader.

**目标 4:** 具备优良的思想品德、人文素养、职业素质和社会责任感, 将自我提升与社

会发展融合，为社会主义建设和国家发展服务。

Goal 4: Have excellent ideological and moral character, humanistic quality, professional quality and sense of social responsibility, integrate self-improvement with social development, and serve socialist construction and national development.

### **三、学分要求 Credits Requirements**

选择建筑环境与设备工程专业的学生应修学本专业的 44 学分课程，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 minored in Building Environment and Energy Engineering should study core compulsory courses of 44 credits in this major, and comply with the Regulations of Southwest Jiaotong University on Minor and Dual Degree Management. Then, they can be issued their minor certificates of industrial engineering.

#### 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
专业核心课 35 学分 Specialized Core Course 35 Credits	建环专业导论 B Introduction to Building Environment and Energy Engineering B	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	建筑概论 An Introduction to Architecture	必修 Compulsory	1	春季 Spring	机械工程学院 School of Mechanical Engineering	
	流体力学 A Fluid Mechanics A	必修 Compulsory	4	春季 Spring	机械工程学院 School of Mechanical Engineering	
	工程热力学 B Engineering Thermodynamics B	必修 Compulsory	3	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	传热学 B Heat transfer B	必修 Compulsory	3.5	春季 Spring	机械工程学院 School of Mechanical Engineering	
	建筑环境学 B Built Environment B	必修 Compulsory	2.5	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	热质交换理论与设备 B Heat and Mass Exchange Theory & Equipment B	必修 Compulsory	2.5	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	流体输配管网 B Fluid distribution network B	必修 Compulsory	2.5	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	冷热源工程 Cold and hot source engineering	必修 Compulsory	3	春季 Spring	机械工程学院 School of Mechanical Engineering	
	供热工程 Heating Engineering	必修 Compulsory	2	春季 Spring	机械工程学院 School of Mechanical Engineering	
	通风工程 Ventilation Engineering	必修 Compulsory	2	春季 Spring	机械工程学院 School of Mechanical Engineering	
	空气调节 Air Conditioning	必修 Compulsory	3	春季 Spring	机械工程学院 School of Mechanical Engineering	
	建筑环境与能源系统控制 Building Environment and Energy System Control	必修 Compulsory	3	春季 Spring	机械工程学院 School of Mechanical Engineering	

专业核心课 35 学分 Specialized Core Course 35 Credits	建筑环境测试技术 I Testing Technology for Building Environment I	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	建筑环境测试技术 II Testing Technology for Building Environment II	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
专业必修课 9 学分 Specialized Compulsory Courses 9 Credits	轨道交通暖通空调技术 Application of HVAC in Rail Transit	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	碳中和技术 B Carbon Neutral Technology B	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	工程造价 Engineering Cost Estimation	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	工程项目管理 B Engineering Project Management B	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	建筑电气 Building Electric	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	空气洁净技术 Air Cleaning Technology	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
	燃气应用 C Gas Application	必修 Compulsory	1	春季 Spring	机械工程学院 School of Mechanical Engineering	
	城市能源系统 Urban Energy Systems	必修 Compulsory	1	春季 Spring	机械工程学院 School of Mechanical Engineering	
	建筑节能技术 Building Energy Saving Technology	必修 Compulsory	1	秋季 Autumn	机械工程学院 School of Mechanical Engineering	
总学分 Total Credits			44			