

工程管理专业人才培养方案 (英语授课)

Undergraduate Program for Engineering Management Major

学科门类 管理学

Discipline Type: Management

类 别 管理科学与工程

Type: Management Science and Engineering

专业名称 工程管理

Title of the Major: Engineering Management

一、学制与学位 Length of Schooling and Degree

学制：四年

Duration: Four years

学位：管理学学士

Degree: Bachelor of Management

二、培养目标 Educational Objectives

培养品德优良、身心健康，熟悉中国国情和文化基本知识，了解中国政治制度和外交政策，理解中国社会主流价值观和公共道德观念，具有良好的法治观念和道德意识，理论基础扎实、创新意识强、具有一定的国际视野和良好发展潜力，掌握现代管理科学理论、方法和手段以及工程技术基本知识，熟悉能源电力工程项目管理内容、原则及方法，具有向工程管理相关领域扩展渗透的能力，能从事建设项目投资管理、工程项目管理、建设监理、投资经济评估及施工管理等专业技术工作的高级专门人才。

This major aims to cultivate students to become senior management talents with diversified abilities: They have good moral character, mental and physical health, familiar with China's national conditions and basic knowledge of culture, understand China's political system and foreign policy, understand China's mainstream social values and public moral concepts, have a good sense of the rule of law and moral consciousness. They own the solid foundation of theories, strong sense of innovation, and have international outlook and strong potential. These are indispensable skills for students to grasp the theories and methods of modern management sciences and construction engineering technology, being familiar with the contents, principles, and characteristics of electric power engineering project management, and extend the relevance of engineering management to other fields. They have capacities to deal with technical works such as project investment management, construction project management, construction supervise, construction investment assessment, construction management and so on in government departments, power enterprises, construction units, design organizations or other relevant industries.

学生毕业 5 年左右能够达到的职业和专业成就：

(1) 具备良好的理工基础与人文素养，具有健全的人格和正确的价值观，能够正确认识工程实践对环境、社会可持续发展的影响；

(2) 能够系统运用工程管理理论与技术，综合考虑社会、健康、安全、法律、文化以及环境等因素，针对能源电力相关行业工程管理领域复杂工程问题，设计开发相应的解决方案；

(3) 具有良好的团队合作精神与项目管理能力，遵守法律法规，具有工程职业道德，遵守职业规范，有社会责任感；

(4) 能够跟踪工程管理领域的前沿理论方法和能源电力相关行业国内外发展趋势，具备良好的主动发展意识、创新精神与自主终身学习能力；

(5) 具备良好的表达与沟通能力，能够承担国际交流与对外合作工作。

Graduates are expected to have the following professional achievements after 5 years of work practice:

(1) They will have a good scientific and technological foundation and humanistic literacy, and have a sound personality and correct values;

(2) They can systematically apply engineering management theory and technology to provide solutions to complex engineering problems in the engineering management field of energy and power related industries, and has the ability to undertake engineering projects;

(3) They will have a good teamwork spirit and management coordination ability, have a sense of social responsibility and engineering ethics, and abide by professional standards;

(4) They are able to track cutting-edge technologies in the field of engineering management and development trends at home and abroad in energy and power-related industries, and have a good sense of active development, innovative spirit and independent lifelong learning ability;

They will have good expression and communication skills, and be able to undertake international exchanges and foreign cooperation.

三、专业培养基本要求 Skills Profile

本专业学生毕业时应达到以下要求：

1. 基础与专业知识：具有扎实的基础与专业知识，能够将数学、自然科学、工程基础和专业知用于解决工程管理类专业的复杂工程问题；

2. 问题总结分析：具有一定问题发现与分析能力，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工程管理类专业的复杂工程问题，以获得有效结论；

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系统、单元（部件）或工艺流程，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；

4. 综合研究：能够基于科学原理并采用科学方法对工程管理类专业的复杂工程问题进行研究，包括设计实验、分析与解释数据、通过信息综合得到合理有效的结论并应用于工程实践；

5. 现代技术与工具应用：学习掌握现代技术与工具，能够针对复杂工程问题，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，包括对复杂工程问题的预测与模拟，并能够理解其局限性；

6. 工程与社会：能够基于工程管理相关的背景知识和标准进行合理分析，评价项目的设计、施工和运行的方案，以及复杂工程问题的解决方案，包括其对社会、健康、安全、法律以及文化的影响，并理解应承担的责任；

7. 环境和可持续发展：能够理解和评价针对工程管理类专业的复杂工程问题的工程实践对环境、社会可持续发展的影响；

8. 职业道德与规范：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；

9. 个人和团队协作：能够在多学科组成的团队中承担个体、团队成员以及负责人的角色；

10.沟通与组织：能够就工程管理类专业的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；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；能够进行一定的活动组织，具有一定组织思维与能力；

11. 项目管理知识应用：理解并掌握工程管理基本理论与原理、经济决策方法及相关知识运用，并能在多学科环境中应用；

12. 学习与成长：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，在不同工作环境学习与成长。

1. Basic and professional knowledge: Mastering the basic disciplines and professional knowledge, able to use mathematics, natural science, engineering foundation and professional knowledge to solve complex engineering problems in engineering management;

2. Problem analysis: Identify, formulate, research literature and analyse complex engineering management problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;

3. Design/ development of solutions: Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health, and safety, cultural, societal and environmental considerations;

4. Investigation: Conduct investigations of complex engineering management problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;

5. Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modelling, to complex electrical engineering problems, with an understanding of the limitations;

6. The engineer and society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems;

7. Environment and sustainability: Understand and evaluate the sustainability and impact of professional engineering management work in the solution of complex engineering problems in societal and environmental contexts;

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice;

9. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings;

10. Communication: Communicate effectively on complex engineering management activities with the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions;

11. Project management knowledge application: Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work as a member and leader in a team, to manage projects and in multi-disciplinary environments;

12. Life-long learning: Recognise the need for, and have the preparation and ability to engage in, independent and life-long learning in the broadest context of technological change.

四、专业主干课程 **Main Courses**

1.学科基础骨干课：高等数学、高级语言程序设计（C）、信息技术基础、线性代数、概率论与数理统计 B

2.学科技术基础骨干课：工程制图、工程力学

3.学科专业基础骨干课：管理学、管理运筹学、计量经济学、会计学、微观经济学

4.学科专业骨干课：工程经济学、项目管理、运营管理、绿色建筑与能效管理、数据驱动的能源管理、项目管理软件应用、数学建模与 MATLAB 应用、电力负荷预测理论与应用、能源系统模型

1.Subject Foundation Main Courses: Advanced Mathematics, Advanced Language programming(C), Fundamentals of Information Technology, Linear Algebra, Probability and Mathematical Statistics B

2.Subject Technology Foundation Main Courses: Engineering Graphics, Engineering Mechanics

3.Subject Specialty Foundation Main Courses: Management, Managerial operation research, Econometrics, Accountings, Microeconomics

4.Subject Specialty Main Courses: Engineering Economics, Project Management, Operations Management, Green building and energy efficiency, Data-dirven energy management, Project Management Software Application, Mathematical modeling with MATLAB, Load forecasting theory and application, Energy system modelling

工程管理专业 (英语授课留学生) 必修课

Table of Teaching Schedule for Required Course

类别 Type	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester
公共基础类课程 Public basic courses		中国概况 Introduction of China	2	32	32			1
		汉语综合(1) Chinese Comprehension (1)	4	64	64			1
		汉语综合(2) Chinese Comprehension (2)	4	64	64			2
		汉语综合(3) Chinese Comprehension (3)	4	64	64			3
		汉语综合(4) Chinese Comprehension (4)	4	64	64			4
		学术英语	2	32	32			2
	公共基础课程小计 Subtotal of public basic courses			20	320	320		
学科门类基础课程 Disciplines basic courses	00900130	高等数学 B(1) Advanced Mathematics B(1)	5.5	90	90			1
	00900140	高等数学 B(2) Advanced Mathematics B(2)	6	96	96			2
	00900462	线性代数 Linear Algebra	3	48	48			2
	00900111	概率论与数理统计 B Probability and Mathematical Statistics B	3.5	56	56			3
	00600200	高级语言程序设计 (C) Advanced Language programming (C)	3.5	56	30		26	1
	00600750	信息技术基础 Fundamentals of Information Technology	2.5	40	40		28	1
	00600230	工程制图 Engineering Drawing	3	48	48			1
		管理学 Management	2	32	32			2
		微观经济学 Microeconomics	3	48	48			3
	00300431	工程力学 Engineering Mechanics	4	64	64	4		4
	学科门类基础课程小计 Subtotal of disciplines basic courses			36	578	552	4	54
专业类基础课程 Professional basic courses		人力资源管理 Human resource management	1.5	24	24			3
		管理运筹学 Managerial operation research	1.5	24	24			3
		会计学 Accounting	2.5	40	40			3
		大数据处理及应用 Big data processing and application	3	48	48			3
		计量经济学 Econometrics	3	48	48			4

类别 Type	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester
		项目管理 Project Management	2	32	32			4
		工程经济学 Engineering Economics	2	32	32			4
	专业类基础课程小计 Subtotal of professional basic courses		15.5	248	248			
专业核心课程 Professional core courses		电力市场 Electricity market	2	32	32			3
		运营管理 Operations Management	2	32	32			4
		绿色建筑与能效管理 Green building and energy efficiency	1.5	24	24			5
		数据驱动的能源管理 Data-driven energy management	1.5	24	24			5
		项目管理软件应用 Project Management Software Application	1.5	24	24			5
		数学建模与 MATLAB 应用 Mathematical modeling with MATLAB	2.5	40	40			5
		电力负荷预测理论与应用 Load forecasting theory and application	2	32	32			5
		能源系统模型 Energy system modelling	2	32	32			6
	专业核心课程小计 Subtotal of professional core courses		15	240	240			
必修课小计 Subtotal of required courses			86.5	1386	1360	4	54	

工程管理专业 (英语授课留学生) 选修课

Table of Teaching Schedule for Specialty Elective Course

课程编号	课程名称	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester	课程 模块	选课 要求
	风险管理 Risk management	1.5	24	24			5	专业选修	至少选 22.5 学分
	电力系统分析基础 Fundamentals of Power System Analysis	4	64	64			5		
	成本管理 Cost management	2.5	40	40			5		
	组织行为学 Organizational behavior	1.5	24	24			6		
	物流系统分析与设计 Logistics System Analysis and Design	2	32	32			6		
	供应链管理 Supply Chain Management	2	32	32			6		
	商务谈判 Business Negotiation	2	32	32			6		
	能源政策 Energy Policy	1.5	24	24			6		
	用户用电行为分析 Power Consumption Behavior Analysis	2	32	32			7		
	消费者行为 Consumer Behavior	1.5	24	24			7		
	中国能源治理 Energy Governance in China	2	32	32			7		
	商业伦理与社会责任 Business Ethics and Social Responsibility	2	32	32			7		
	公司理财 Corporate finance	2.5	40	40			7		
	财务报表分析 Financial statement analysis	2.5	40	40			7		
	新能源概论 The Introduction of new energy	2	32	32			7		
	市场营销学原理 Principle of Marketing	2	32	32			2		
选修	汉语综合(5) Chinese Comprehension (5)	4	64	64			5	公共选修课	至少选 14 学分
选修	汉语综合(6) Chinese Comprehension (6)	4	64	64			6		
选修	中国文化与当代中国 Chinese Culture and Contemporary China	1	16	16			3		
选修	中华武术	2	36	30		6			
选修	乒乓球	2	36	30		6			

选修	跨文化交际	2	32	32					
00600330	软件技术基础 Fundamentals of Software Technique	2	32	32					
00600190	多媒体应用基础 Fundamentals of Multimedia Application	2	32	32					
00200850	新能源发电技术 New Energy Generation Technology	1.5	24	24					
	公司金融 corporate finance	3	48	48					
	国际经济学 international economics	3	48	48					
	电子商务 Electronic Commerce	2	32	32					7
	国际商务 International Business	2	32	32					7
	国际金融学 International Monetary Finance	2	32	32					
00600680	网络技术基础 Computer Network	2	32	32				10	
选修课小计 Subtotal of elective courses		68	1096	1084				22	

工程管理专业 (英语授课留学生)

独立开设的实践教学环节

Table of Teaching Schedule for Major Practical Training

必修	课程编号	教学环节名称	学分	周数/ 学时	各学期周数分配								
					1	2	3	4	5	6	7	8	
	00290300	毕业实习 Graduation Practice	4	4									4
	00290030	毕业设计 Graduation Project	13	14									13
各类实践环节小计 Subtotal of major practical training			17	18									17

学分组成：必修课：86.5 专业选修课：22.5 公共选修课：14 实践环节：17
总计：140