

## 课程详述

### COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	工程技术创新中的管理科学 Management Science in Engineering Technology Innovation
2.	授课院系 Originating Department	机械与能源工程系 Department of Mechanical and Energy Engineering
3.	课程编号 Course Code	ME309
4.	课程学分 Credit Value	1
5.	课程类别 Course Type	专业选修课 Major Elective Course
6.	授课学期 Semester	春季 Spring
7.	授课语言 Teaching Language	中英双语 Chinese/English bilingual
8.	授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	朱强 ZHU Qiang（讲席教授），机械与能源工程系 Department of Mechanical and Energy Engineering, zhuq@sustech.edu.cn
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	30

11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	16	0	0	0	16
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无				
14. 其它要求修读本课程的学系 Cross-listing Dept.	无				

### 教学大纲及教学日历 SYLLABUS

#### 15. 教学目标 Course Objectives

人工智能技术的高速发展，对未来工程技术创新人才培养提出了新的挑战。单纯的学习和掌握基本科学技术知识已经难以满足对未来科学技术人员的要求。高效和迅速地学习、掌握并创新不断发展的新知识的能力变得越来越重要。本课程将在教授工程技术创新中的科学方法和规律的基础上，结合本科生尚缺乏工程技术创新基本训练的事实，通过教授科学的管理理论和方法，以及案例分析和实践演练，建立本科学子工程技术创新管理科学的基因，为学生未来成为工程技术创新的领导者或在研究生阶段进一步开展技术创新夯实基础。

The rapid development of artificial intelligence technology poses new challenges to the cultivation of innovative talents in future engineering and technology. Simply learning and mastering basic scientific and technological knowledge is no longer sufficient to meet the requirements for future scientific and technological personnel. The ability to efficiently and quickly learn and master, and innovate the constantly evolving new knowledge is becoming increasingly important. On the basis of teaching scientific methods and laws in engineering technology innovation, combined with the fact that undergraduate students still lack basic training in engineering technology innovation, this course will establish the genes of engineering technology innovation management science for undergraduate students through teaching scientific management theories and methods, as well as case analysis and practical exercises, to lay a solid foundation for students to become leaders in engineering and technological innovation in the future or to further develop technological innovation during their graduate studies.

#### 16. 预达学习成果 Learning Outcomes

学生掌握工程技术创新中的管理科学基础理论和方法，运用学习的理论知识和工具主导或参与完成至少一项工程技术创新实践，树立科学管理意识。

Students master the basic theories and methods of management science in engineering technology innovation, apply the theoretical knowledge and tools learned to lead or participate in at least one engineering technology innovation practice, and establish a scientific management awareness.

#### 17. 课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）

**Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)**

第一讲：技术创新和技术创新管理的基础理论。课程内容包括技术创新的概念和类型、技术创新过程、技术创新的作用、技术创新的进化理论、技术创新壁垒、技术创新管理的界定与特点、技术创新管理的模型等。2学时。

Lesson 1: Basic theories of technological innovation and technological innovation management. The course content includes the concepts and types of technological innovation, the process of technological innovation, the role of technological innovation, the evolutionary theory of technological innovation, technological innovation barriers, the definition and characteristics of technological innovation management, and the model of technological innovation management. 2 hours.

第二讲：技术创新战略管理。课程内容包括技术创新战略的选择与制定、自主创新、开放式创新、技术创新战略管理工具等。2学时。

Lesson 2: Strategic Management of Technological Innovation. The course content includes the selection and formulation of technological innovation strategies, independent innovation, open innovation, and tools for managing technological innovation strategies. 2 hours.

第三讲：技术创新项目决策和启动过程管理。课程内容包括项目识别和项目选择，以及制定项目章程和识别相关方等。2学时。

Lesson 3: Decision making and initiation management of technological innovation projects. The course content includes project identification and project selection, as well as developing a project charter and identifying stakeholders. 2 hours.

第四讲：技术创新项目规划过程管理。课程内容包括制定项目管理计划、规划范围管理、收集需求、定义范围、创建WBS、规划进度管理、定义活动、排列活动顺序、估算活动持续时间、制定进度计划、规划成本管理、估算成本、制定预算、规划质量管理、规划资源管理、估算活动资源、规划沟通管理、规划风险管理、识别风险、实施定性风险分析、实施定量风险分析、规划风险应对、规划采购管理、规划相关方参与等。2学时。

Lesson 4: Process Management of Technological Innovation Project Planning. The course content includes developing project management plans, planning scope management, collecting requirements, defining scope, creating WBS, planning schedule management, defining activities, sequencing activities, estimating activity duration, developing schedule plans, planning cost management, estimating costs, developing budgets, planning quality management, planning resource management, estimating activity resources, planning communication management, planning risk management, identifying risks. Implement qualitative risk analysis, implement quantitative risk analysis, plan risk response, plan procurement management, plan stakeholder participation. 2 hours.

第五讲：技术创新项目执行过程管理。课程内容包括指导与管理项目工作、管理项目知识、管理质量、获取资源、建设团队、管理团队、管理沟通、实施风险应对、实施采购、管理相关方参与等。2学时。

Lesson 5: Management of the execution process of technological innovation projects. The course content includes guiding and managing project work, managing project knowledge, managing quality, acquiring resources, building and managing teams, managing communication, implementing risk response, implementing procurement, and managing stakeholder participation. 2 hours.

第六讲：技术创新项目监控及收尾过程管理。课程内容包括监控项目工作、实施整体变更控制、确认范围、控制范围、控制进度、控制成本、控制质量、控制资源、监督沟通、监督风险、控制采购、监督相关方参与，以及结束项目或阶段管理等。2学时。

Lesson 6: Monitoring and Closing Process Management of Technological Innovation Projects. The course content includes monitoring project work, implementing overall change control, confirming scope, controlling scope, controlling progress, controlling cost, controlling quality, controlling resources, supervising communication, supervising risks, controlling procurement, supervising stakeholder participation, and ending project or phase management. 2 hours.

第七讲：案例分享。2学时。

Lesson 7: Case Sharing. 2 hours.

第八讲：学生项目路演。2 学时。

Lesson 8: Student project roadshows. 2 hours.

**18. 教材及其它参考资料 Textbook and Supplementary Readings**

[1] 技术创新管理, 王毅、吴贵生, 清华大学出版社

[2] A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Project Management Institute, USA

[3] Fundamentals of Project Management - Fifth Edition. Joseph Heagney.

**课程评估 ASSESSMENT**

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance		10		
课堂表现 Class Performance		10		
小测验 Quiz		0		
课程项目 Projects		30		
平时作业 Assignments		0		
期中考试 Mid-Term Test		0		
期末考试 Final Exam		0		
期末报告 Final Presentation		50		
其它 (可根据需要 改写以上评估方式) Others (The above may be modified as necessary)		0		

**20. 记分方式 GRADING SYSTEM**

- A. 十三级等级制 Letter Grading  
 B. 二级记分制 (通过/不通过) Pass/Fail Grading

**课程审批 REVIEW AND APPROVAL**

**21. 本课程设置已经过以下责任人/委员会审议通过  
This Course has been approved by the following person or committee of authority**



南方科技大学  
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

