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**	材料科学创新实验 I Advanced Materials Research I
2.	**授课院系** **Originating Department**	材料科学与工程系 Department of Materials Science and Engineering
3.	**课程编号** **Course Code**	MSE321
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**	秋季 Fall
7.	**授课语言** **Teaching Language**	中英双语 English & Chinese
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）**	田颜清，材料科学与工程系，电子邮箱：tianyq@sustc.edu.cn 叶飞，材料科学与工程系，电子邮箱：yef3@sustc.edu.cn Yanqing Tian, Department of MSE, Email: tianyq@sustc.edu.cn Fei Ye, Department of MSE, Email: yef3@sustc.edu.cn////
9.	**实验员/助教、所属学系、联系方式** **Tutor/TA(s), Contact**	无 NA
10.	**选课人数限额(可不填)** **Maximum Enrolment （Optional）**	无 NA

11.		**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			32		32

12.	先修课程、其它学习要求 **Pre-requisites or Other Academic Requirements**	MSE207 材料科学基础，MSE209 材料科学基础实验 MSE207 Fundamentals of Materials Science, MSE209 Experiments for Fundamentals of Materials Science
13.	后续课程、其它学习规划 **Courses for which this course is a pre-requisite**	无 NA
14.	其它要求修读本课程的学系 **Cross-listing Dept.**	无 NA

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程是材料科学与工程系为培养高素质科技人才开设的特色课程，旨在加深学生对专业知识理解，提高理论计算和实验研究能力，培养学生运用理论知识解决复杂工程问题的能力，团队合作能力，创新意识，以及查阅文献资料和文字表达基本技能。材料科学与工程专业学生在三年级秋季、三年级春季和四年级秋季共三个学期修读。每位参与材料科学创新实验的学生都有一位材料科学与工程系的指导教师，根据导师的研究方向，选择研究课题并自主完成。

This course is characteristic course opened by the department of materials science and engineering to cultivate high-quality talents of science and technology features of the courses. It aims to deepen the understanding of professional knowledge, improve the ability of theoretical calculation and experimental study. It can also cultivate the ability of applying the theoretical knowledge to solve complex engineering problems, the ability of team cooperation, innovation consciousness, and the skills of literature survey and expression. Students majoring in materials science and engineering will study for three semesters in the fall of the third grade, the spring of the third grade and the fall of the fourth grade. Each student has an instructor from the department of materials science and engineering, and select research topics according to the research direction of the instructor, and completes them independently.

16. 预达学习成果 Learning Outcomes

1. 掌握调查研究，文献资料查询和综合分析的能力。
2. 能够针对复杂工程问题进行实验设计，合理选材或设计加工工艺。
3. 了解国内外标准，能够合理分析和评价针对工程问题提出的解决方案对社会、环境、法律等相关因素的影响。
4. 学习掌握本专业常用实验方法、设备应用。
5. 能够在实践过程中遵守工程职业道德规范，正确地执行知识产权保护。
6. 具有与科研团队沟通和合作能力。
7. 具备语言表达、思辨能力，阐述观点准确、清楚回答问题的能力，撰写设计说明书或论文报告的能力。
8. 了解研发活动的一般规律，以及研发项目过程中的各环节管理和决策方法。

1. To master the skills of investigation, literature survey and comprehensive analysis.
2. To design experiment for complex engineering problems, and select materials or design processing technology.
3. To understand domestic and international standards, and to reasonably analyze and evaluate the impact of solutions to engineering problems on social, environmental, legal and other related factors.
4. To learn and master common experimental methods and equipment applications of MSE.
5. To abide by engineering professional ethics in practice and correctly implement intellectual property protection.
6. Have the ability to communicate and cooperate with the scientific research team.
7. To master the ability of language expression and critical thinking, accurate viewpoint elaboration, clear answer to questions, and writing design specifications or reports.
8. To understand the general rules of research and development activities, as well as the management and decision-making methods in the process of research and development projects.

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.)

1. 学生在学术导师指导下选择研究课题并自主完成。
2. 按照指导教师要求，参加课题组组会，并不定期进行口头报告。
3. 广泛阅读文献资料。

1. Students select research topics under the guidance of academic instructor and complete them independently.
2. As required by the instructor, participate in the group meetings of the research group and give non-scheduled oral reports.
3. Read literature extensively.

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

无 NA

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		20		
工作表现 Performance		20		
口头报告 Oral Report		20		
书面报告 Written Report		20		
研究成果 Research Results		20		
其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary)				

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
