

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	奇幻材料 Magic Materials
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	MSE103
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	中文 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)	叶飞，教学教授，材料系，荔园2栋504 yef3@sustech.edu.cn Ye Fei, Teaching Professor, Department of Materials Science and Engineer, Room 504, Block 2, Lychee Hill 廖成竹，副研究员，材料系，荔园2栋502 liaocz@sustech.edu.cn, 0755-88018761 LIAO Chengzhu, Associate researcher, Department of Materials Science and Engineer, Room 502, Block 2, Lychee Hill 章剑波，工程师，材料系，荔园2栋502 zhangjb@sustech.edu.cn, 0755-88018764 ZHANG Jianbo, Laboratory engineer, Department of Materials Science and Engineer, Room 502, Block 2, Lychee Hill 明静，工程师，材料系，荔园2栋502 MING Jing, Laboratory engineer, Department of Materials Science and Engineer, Room 502, Block 2, Lychee Hill mingj@sustech.edu.cn, 0755-88018944 李艳艳，实验员，材料系，荔园2栋504 liyy@sustech.edu.cn, 0755-88018925 LI Yanyan, Laboratory assistant, Department of Materials Science and Engineer, Room 504, Block 2, Lychee Hill 程化，副研究员，材料系，荔园2栋504

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9. 实验员/助教、所属学系、联系方式

Tutor/TA(s), Contact

10. 选课人数限额(可不填)

Maximum Enrolment (Optional)

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
0	0	32	0	32

学时数

Credit Hours

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**

本实验课程面向全校低年级学生, 设置一系列基础实验, 利用奇妙的材料制备能够在生活中使用的趣味性作品。涉及信息材料、能源材料、生物医用材料、材料先进加工和制造, 以及这些材料和技术在信息、能源、生物医疗、航空航天等领域的应用。通过兼具专业性、趣味性和实用性的实验, 培养学生的基本实验操作技能, 辅助基础理论课程理解。实验内容适当拓展, 即可与书院学生科技活动结合, 为学生开展课外科技创新活动打下基础。同时, 学生将初步了解材料学科的内涵, 以及相关学科的特点, 为学生专业选择提供帮助。

This experimental course is aimed at the junior students. A series of basic experiments are set up, involving information materials, energy materials, biomedical materials, advanced processing and manufacturing of materials, as well as the application of these materials and technologies in information, energy, biomedical, aerospace and other fields. Through both professional and interesting experiments, the basic experimental operation skills of students are cultivated, and the understanding of basic theory courses is improved. If the content of the experiment is properly expanded, it can be combined with the college scientific and technological activities and lay a foundation for students to carry out extracurricular scientific and technological innovation activities. At the same time, students will have a preliminary understanding of the connotation of materials discipline and the characteristics of related disciplines, to help students major selection.

16. 预达学习成果 Learning Outcomes

1. 掌握基本实验技能和方法;
 2. 提高基础理论知识的具象化理解;
 3. 为科技创新活动打下基础;
 4. 了解材料学科和相关专业的特点, 辅助专业选择。
1. To master basic experimental skills and methods.
 2. To improve the concrete understanding of basic theoretical knowledge.
 3. To lay a foundation for scientific and technological innovation activities.
 4. To understand the characteristics of materials discipline and related majors, and to assist in specialty selection.

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.)

(一) 第一讲 (4 学时) Lecture 1 (4 credit hours)

主要内容: 1.课程介绍; 2.安全培训及考试

Content: Introduction, safety training and safety test

(二) 第二讲 (4 学时): Lecture 2 (4 credit hours)

实验一: 医美水凝胶面膜制备 Preparation of Hydrogel Mask

主要内容: 1.了解生物医美水凝胶的成分及各组分作用;

2.了解生物医美水凝胶的制作方法;

3.制备及生物医美水凝胶的应用。

Contents: 1. To understand the composition and action of each component of biomedical hydrogel.

2.To understand the preparation method of biomedical hydrogel.

3.Preparation and application of biomedical hydrogel.

(三) 第三讲 (4 学时): Lecture 3 (4 credit hours)

实验二: 超疏水材料制备及应用 Preparation and Application of Hydrophobic Materials

主要内容: 1.了解超疏水材料的结构及性能;

2.掌握超疏水材料涂料的制备方法;

3.设计制备超疏水材料配方;

4.超疏水材料的实际应用。

Contents: 1. Understand the structure and properties of hydrophobic materials.

2. Master the preparation method of hydrophobic.

3. Design and preparation of hydrophobic material formula.

4. The application of hydrophobic materials.

(四) 第四讲 (4 学时): Lecture 4 (4 credit hours)

实验三: 热致变色材料制备及应用 Preparation and Application of Discoloration Materials

主要内容: 1.学习变色材料的结构及变色原理;

2.设计变色材料的制备配方;

3.制备变色材料产品及应用。

Contents: 1. Learn the structure and principle of discoloration materials.

2. Design the formula of discoloration materials.

3. Preparation and application of discoloration materials.

(五) 第五讲 (4 学时): Lecture 5 (4 credit hours)

实验四: 光固化树脂的制备及应用 Preparation and Application of Light Curing Resin

主要内容: 1.了解光固化树脂的结构及性能特点;

2.合成光固化树脂修复材料;

3.探讨光固化树脂修复液的应用。

Contents: 1. To understand the structure and properties of light curing resin;
2. synthetic light curing resin repair material;
3. discuss the application of light curing resin.

(六) 第六讲 (4 学时): Lecture 6 (4 credit hours)

实验五: 超亲水材料的合成及应用 Synthesis and Application of Hydrophilic Materials

主要内容: 1. 了解超亲水材料的结构及原理;
2. 合成超亲水涂料;
3. 测试超亲水材料的性能

Contents: 1. Understand the structure and principle of hydrophilic materials.
2. Synthesis of hydrophilic coatings.
3. Test the properties of hydrophilic materials

(七) 第七讲 (4 学时): Lecture 7 (4 credit hours)

实验六: 铝空气电池 Aluminum Air Battery

主要内容: 1. 了解铝空气电池的放电原理;
2. 制作并装配铝空气电池;
3. 测试铝空气电池的性能

Contents: 1. Understand the principle of aluminum air battery.
2. Assemble the aluminum air battery.
3. Test the properties of aluminum air battery

(八) 第八讲 (4 学时): Lecture 8 (4 credit hours)

实验七: 材料加工之个性化手机壳 Personalized Cell Phone Shell for Material Processing

主要内容: 1. 了解材料加工的基本方法;
2. 具体讲述激光加工技术;
3. 制作个性化手机壳。

Contents: 1. Understand the basic methods of material processing.
2. Specific description of laser processing technology.
3. Preparation of personalized mobile phone case.

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

自编实验讲义 Experimental Manual

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		40		
小测验 Quiz		0		
课程项目 Projects		50		
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

0	0		
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其它（可根据需要
改写以上评估方
式）

Others (The
above may be
modified as
necessary)

	0		
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20. 记分方式 **grading system**

<input checked="" type="checkbox"/> A. 十三级等级制 Letter Grading <input type="checkbox"/> 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

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