

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	柔性储能材料与器件 Flexible Energy Storage Materials and Devices
2.	课程性质 Compulsory/Elective	专业选修课 Major Elective Courses
3.	开课单位 Offering Dept.	系统设计与智能制造学院 School of System Design and Intelligent Manufacturing (SDIM)
4.	课程学分/学时 Course Credit/Hours	2/48
5.	授课语言 Teaching Language	双语 Chinese and English
6.	授课教师 Instructor(s)	李洪飞 Hongfei Li
7.	开课学期 Semester	秋季 Autumn
8.	是否面向本科生开放 Open to undergraduates or not	否 No
9.	先修要求 Pre-requisites	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 无 No Pre-Requisites
10.	教学目标 Course Objectives	<p>(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <p>柔性储能材料与器件是一门交叉学科的课程。通过学习本课程, 学生将掌握柔性电化学储能材料与器件的基本概念、原理和应用, 了解柔性储能器件的技术发展及应用的最新趋势, 掌握柔性储能器件的制备与优化策略, 了解储能器件的发展历程和最新进展。本课程旨在为学生提供柔性能源器件与材料的系统知识, 同时培养学生的实践能力和创新精神, 为未来的科研和实践工作做好准备。</p> <p>Flexible energy storage materials and devices are an interdisciplinary course. By studying this course, students will master the basic concepts, principles, and applications of flexible electrochemical energy storage materials and devices, understand the latest trends in the technological development and application of flexible energy storage devices, master the preparation and optimization strategies of flexible energy storage devices, and understand the development process and latest progress of energy storage devices. This course aims to provide students with comprehensive knowledge in the field of flexible energy materials and devices, while cultivating students' practical ability and innovative spirit to promote their future career.</p>
11.	教学方法 Teaching Methods	<p>(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)</p> <p>讲座、实验、案例分析、文献综述、课程报告与展示。</p> <p>Lectures, experiments, case analysis, literature review, course reports and</p>

presentations

课程考核将通过综合评价和课程报告的形式进行。

Course assessment will be carried out in the style of comprehensive evaluation and course report.

12. 教学内容

Course Contents

(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)

Section 1	1. 绪论 1. Introduction
Section 2	2. 柔性储能系统的理论基础 2. Fundamentals of flexible energy storage materials and devices
Section 3	3. 新型柔性储能材料 3. Novel flexible energy storage materials
Section 4	4. 柔性储能系统分类与反应机制 4. Classification and reaction mechanism of flexible energy storage devices
Section 5	5. 柔性储能器件的性能与测试评价 5. Performance and evaluation of flexible electrochemical energy storage devices
Section 6	6. 柔性储能系统的制备与优化策略 6. Preparation and optimization strategies of flexible energy storage systems
Section 7	7. 柔性储能材料与器件的新型表征技术 7. Characterization techniques in electrochemical energy storage materials and devices
Section 8	8. 柔性储能材料与器件的应用与挑战 8. Application and challenges of flexible energy storage materials and devices
Section 9	9. 新型能源材料与器件最新进展 (一) 9. Advances in electrochemical energy materials and devices (part 1)
Section 10	10. 新型能源材料与器件最新进展 (二) 10. Advances in electrochemical energy materials and devices (part 2)

13. 课程考核

Course Assessment

(①考核形式 Form of examination; ②. 分数构成 grading policy; ③如面向本科生开放, 请注明

区分内容。 If the course is open to undergraduates, please indicate the difference.)

综合评价:

- 平时表现 40% (出勤、小测、报告、实验等);
- 作业 10%
- 期中考察 15%
- 期末考察 35%

Comprehensive evaluation:

- 35% for performance (attendance, quizzes, presentations, lab);
- 15% for homework assignment;
- 15% for the midterm assessment;
- 35% for the final assessment.

14. 教材及其它参考资料

Textbook and Supplementary Readings

1. 巴德 《电化学方法、原理与应用(第二版)》
2. 卡尔·H·哈曼 《Electrochemistry(第二版)》
3. 查全性 《电极过程动力学导论(第三版)》
4. 李荻 《电化学原理(第三版)》
5. Physics of Surfaces and Interfaces, Harald Ibach Springer, 2006
6. Surface science: an introduction, Oura, Kenjiro, et al. Springer Science & Business Media, 2013