

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.

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| 1. | 课程名称 Course Title | 现代机械工程导论 Introduction to Modern Mechanical Engineering |
| 2. | 授课院系 Originating Department | 机械与能源工程系 Department of Energy and Mechanical Engineering |
| 3. | 课程编号 Course Code | ME113 |
| 4. | 课程学分 Credit Value | 2 |
| 5. | 课程类别 Course Type | 通识选修课程 General Education (GE) Elective Courses |
| 6. | 授课学期 Semester | 秋季 Spring |
| 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) | 路冬 机械与能源工程系 lud@sustech.edu.cn Dong Lu Department of Mechanical and Energy Engineering lud@sustech.edu.cn |
| 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) | |

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| 11. 授课方式 Delivery Method | 讲授 | 习题/辅导/讨论 | 实验/实习 | 其它(请具体注明) | 总学时 |
| | Lectures | Tutorials | Lab/Practical | Other (Please specify) | 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 | 无 NA | | | | |
| 13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite | | | | | |
| 14. 其它要求修读本课程的学系 Cross-listing Dept. | | | | | |

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

通过本课程的学习，使学生了解机械工程的起源、发展现状及发展趋势；机械工程学科在国民经济和国防现代化中的地位和作用。使学生了解现代机械工程学科的内涵与主要研究方向，机械工程专业学生应具备的知识、能力和素质，以及机械工程专业课程体系。通过课程学习使学生了解专业，激发专业兴趣和学习动力，为学生尽早进入专业学习起到积极的引领作用。

Through the study of this course, students will understand the origin, development status and development trend of modern mechanical engineering, as well as the status and role of mechanical engineering in the modernization of national economy and national defense. Students understand the connotation and main research directions of the discipline of mechanical engineering, the knowledge, ability and quality that students majoring in mechanical engineering should possess, and the curriculum system of mechanical engineering. Through course learning, students can understand the major, stimulate professional interest and learning motivation, and play an active leading role for students to enter professional learning as soon as possible.

16. 预达学习成果 Learning Outcomes

通过本课程的学习使学生对“什么是机械工程？”、“为什么要选择机械工程？”、“如何成为一名卓越的机械工程师？”等问题有了自己的体会及答案。让学生对选择专业不再迷茫，并为将来进入机械工程专业学习做好充分的准备。

Through the study of this course, students have their own experience and answers to questions such as "what is mechanical engineering?", "why choose mechanical engineering?", "how to become an excellent mechanical engineer?". Let students no longer be confused about choosing a major, and make full preparations for entering the mechanical engineering major in the future.

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.)

| 课程内容 | 教学要求 | 学时分配 |
|---|---|------|
| 绪论 <ul style="list-style-type: none"> • 工程学的概念 • 现代机械工程的内涵 • 本课程的性质、任务和主要内容 • 课程安排与考核标准 Introduction <ul style="list-style-type: none"> ➢ Concept of Engineering ➢ Connotation of modern mechanical | <ul style="list-style-type: none"> • 了解工程学的基本概念 • 了解现代机械工程的内涵 • 了解本课程在机械工程专业培养方向的地位，了解其目标、任务、内容、课程安排和考核方式 ➢ Understand the history and importance of Design and Manufacturing ➢ Understand the connotation of modern mechanical engineering ➢ Understand the importance of this course to | 2 |



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| <p>engineering</p> <ul style="list-style-type: none"> ➢ The objectives, outcomes and main topics of this course ➢ Schedules and grading policies | <p>mechanical engineering</p> <ul style="list-style-type: none"> ➢ Understand the objectives, expected outcomes, main topics, schedules and grading policies of this course | |
| <p>工程伦理、工程与科学、工程与艺术</p> <ul style="list-style-type: none"> • 工程伦理概念与案例 • 工程与科学、工程与艺术关系 <p>Engineering Ethics, Engineering and Science, Engineering and Art</p> <ul style="list-style-type: none"> ➢ Engineering Ethics ➢ Engineering and Science, Engineering and Art | <ul style="list-style-type: none"> • 了解工程伦理的概念 • 理解工程与科学、工程与艺术的关系 ➢ Understand the concept of engineering ethics ➢ Understand the relationship between engineering and science, engineering and art | 2 |
| <p>工程与工程师</p> <ul style="list-style-type: none"> • 工程师应具备的素质 • 工程师的职责与使命 • 工程师终身学习的意义 <p>Engineering and engineer</p> <ul style="list-style-type: none"> ➢ The qualities that engineers should possess ➢ Engineer's duties and mission ➢ The meaning of lifelong learning for engineers | <ul style="list-style-type: none"> • 了解工程师应具备的素质 • 理解工程师的职责与使命 • 掌握终身学习的方法 ➢ Understand the qualities that engineers should have ➢ Understand the responsibilities and mission of the engineer ➢ Mastering lifelong learning methods | 4 |
| <p>机械学科与其它学科的交叉与融合</p> <ul style="list-style-type: none"> • 机械与力学、材料、数学、控制、计算机、人文、环境及其它学科的交叉与融合 <p>The Intersection and Integration of Mechanics and Other Disciplines</p> <ul style="list-style-type: none"> ➢ Intersection and integration of mechanics and mechanics, materials, mathematics, control, computer, humanities, environment and other disciplines | <ul style="list-style-type: none"> • 了解机械与力学、材料、数学、控制、计算机、人文、环境及其它学科的交叉与融合 ➢ Understand the Intersection and integration of mechanics and mechanics, materials, mathematics, control, computer, humanities, environment and other disciplines | 8 |
| <p>设计与创新</p> <ul style="list-style-type: none"> • 产品开发与设计概念 • 产品开发与设计方法及流程 • 产品开发与设计项目管理 <p>Design and innovation</p> <ul style="list-style-type: none"> ➢ Concepts of Product development and design ➢ Product design methods and processes ➢ Project management | <ul style="list-style-type: none"> • 了解产品开发与设计的概念 • 了解产品开发与设计的方法及流程 • 学习产品开发与设计项目管理方法 ➢ Understand the concept of product development and design ➢ Understand the methods and processes of product development and design ➢ Learning project management methods of product development and design | 4 |
| <p>制造与制作</p> <ul style="list-style-type: none"> • 制造（制作）方法 • 制造（制作）流程 • 可制造（制作）性 • 零件的装配 • 产品测试 <p>Manufacturing and production</p> <ul style="list-style-type: none"> ➢ Methods of manufacturing and production ➢ Process of manufacturing and production ➢ Manufacturability ➢ Assembly of parts ➢ Product testing | <ul style="list-style-type: none"> • 了解制造（制作）方法 • 了解制造（制作）流程 • 了解可制造（制作）性 • 学习零件的装配方法 • 学习产品测试方法 ➢ Understand the methods of manufacturing and production ➢ Understand the process of manufacturing and production ➢ Understand the manufacturability of parts ➢ Learning the assemble methods of parts | 4 |
| <p>产品性能评价</p> <ul style="list-style-type: none"> • 产品质量 • 产品成本 • 用户反馈 <p>Product performance evaluation</p> <ul style="list-style-type: none"> ➢ product quality ➢ Product cost ➢ Customer feedback | <ul style="list-style-type: none"> • 了解产品评价的指标及评价方法 ➢ Understand the indicators and evaluation methods of product evaluation | 4 |
| <p>技术问题的解决与沟通能力</p> <ul style="list-style-type: none"> • 通用技术问题的解决方法 | <ul style="list-style-type: none"> • 掌握通用技术问题的解决方法 • 学习有效数字 | 4 |

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| <ul style="list-style-type: none"> • 有效数字 • 工程中的沟通能力 <p>Technical problem solving and communication skills</p> <ul style="list-style-type: none"> ➢ Solutions to general technical problems ➢ Significant figures ➢ Communication skills in engineering | <ul style="list-style-type: none"> • 锻炼工程中的沟通能力 <ul style="list-style-type: none"> ➢ Master the solutions to general technical problems ➢ Study the significant figures ➢ Practice communication skills in engineering |
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18. 教材及其它参考资料 **Textbook and Supplementary Readings**

1. 盛忠起, 谢华龙, 刘永贤, 译. 机械工程概论, 机械工业出版社, 2017. ISBN: 978-7-111-58154-3.
2. Jonathan Wickert, Kemper Lewis, An Introduction to Mechanical Engineering, Cengage Learning, 2016. ISBN-10:1305635132.

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 | | |
| 课堂表现 Class Performance | | | | |
| 小测验 Quiz | | | | |
| 课程项目 Projects | | | | |
| 平时作业 Assignments | | 30 | | |
| 期中考试 Mid-Term Test | | | | |
| 期末考试 Final Exam | | | | |
| 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) | | | | |

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