

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	先进制造实践 Advanced Manufacturing Practice				
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	ME308				
4.	课程学分 Credit Value	2				
5.	课程类别 Course Type	专业核心课 Major Core Courses				
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)	路冬 机械与能源工程系 13732970595 lud@sustech.edu.cn				
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	曾千里/机械与能源工程系/zengql@sustech.edu.cn 黄渊建/机械与能源工程系/huangyj@sustech.edu.cn				
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
	学时数 Credit Hours			64		64

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	ME302 机械制造基础 Fundamentals of Manufacturing
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

教学目标是机械工程专业的学生提供一个实践平台，将在课堂上学到的有关先进制造的知识有效、综合地应用在解决实际问题上，锻炼学生定义问题、分析问题，自主学习相关知识，团队合作等方面的能力及为解决实践问题提供相对完整解决方案的能力。

This course is based on fundamentals of advanced manufacturing. In this course, students can learn how to solve the problems of manufacturing engineering and improve their communication ability and learn the spirit of cooperation.

16. 预达学习成果 Learning Outcomes

设计先进制造实践主题项目，每个主题完整地完一个从定义问题、技术调查到分析问题、解决问题的项目过程，使学生的交流能力、团队精神以及自主学习能力有明显的提升。

Design the subject project of advanced manufacturing practice. For every subject complete a project from the definition of the problem, technical investigation, to problem analysis and problem solving, so that students' communication skills, team spirit and self-learning ability are improved significantly.

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.)



项目序号	项目内容	教学要求 Objectives	学时(h)
1	基于精度理论的零件加工 Machine parts based on the theory of precision	<ul style="list-style-type: none"> ● 熟悉精度的概念及评价方法; ● 加工出满足精度要求的零件。 ➢ Familiar with the concept of accuracy and evaluation methods; ➢ Machining parts that meet the accuracy requirements 	12
2	产品的机械物理性能评定 Evaluation of mechanical and physical properties of products	<ul style="list-style-type: none"> ➢ 熟悉产品机械物理性能评定方法; ➢ 对项目 1 加工的零件进行机械物理性能评定。 ➢ Familiar with the mechanical physical property evaluation method of products; ➢ Evaluate the mechanical physical property of the parts processed in project 1. 	10
3	切削过程仿真 Simulation of cutting process	<ul style="list-style-type: none"> ➢ 熟悉切削过程仿真的概念及方法; ➢ 结合项目 1 的加工参数对切削过程仿真, 预测切削过程中的切削力、切削热、切削应力等。 ➢ 通过切削仿真优化切削参数。 ➢ Familiar with the concept and method of cutting process simulation; ➢ Combine the machining parameters of the project 1 to simulate the cutting process, and predict the cutting force, cutting heat, cutting stress, etc. ➢ Optimize cutting parameters by cutting simulation. 	10
4	难加工材料加工 Machining of difficult-to-cut material	<ul style="list-style-type: none"> ● 熟悉难加工材料的概念及其加工方法; ● 采用合适的加工方法加工一种典型的难加工材料。 ➢ Familiar with the concept of difficult-to-machine materials and their processing methods; ➢ Processing a typical difficult-to-machine material with a suitable processing method. 	10
5	极限尺寸/精度零件的加工 Machining of parts with limit size / precision	<ul style="list-style-type: none"> ● 熟悉极限尺寸/精度零件的定义及其加工方法; ● 采用合适的加工方法加工一个极限尺寸/精度零件。 ➢ Familiar with the definition of extreme size/precision parts and their processing methods; ➢ Machining a extreme size/precision part with a suitable processing method. 	12
6	三维测量与反求工程 Three dimensional measurement and reverse engineering	<ul style="list-style-type: none"> ● 熟悉三维测量与反求的概念及其方法; ● 采用三维测量的方式对项目 1, 项目 2, 项目 3-5 所加工的零件加工精度进行评定。 ➢ Familiar with the concept and method of 3D measurement and reverse seeking; ➢ The accuracy of the parts processed in Project 1, Project 2, and Project 3-5 is evaluated by means of 3D measurement. 	10

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

参考资料:

1. 《工程创新实践》, 张继祥主编, 国防工业出版社, 2011 年 6 月第 1 版.
2. 《机械制造技术实验教程》, 张晓洪主编, 西南交通大学出版社, 2011 年 1 月第 1 版.
3. 《机械制造技术基础课程设计指南》, 崇凯主编, 化学工业出版社, 2015 年 8 月第 2 版.

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				
课程项目 Projects		50		
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation		30		
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