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	振动理论 Theory of Vibration
2.	授课院系 Originating Department	力学与航空航天工程系 Department of Mechanics and Aerospace Engineering
3.	课程编号 Course Code	MAE318
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	专业选修课 Major Elective Courses
6.	授课学期 Semester	春季 Spring
7.	授课语言 Teaching Language	英文 English
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）	王泉 讲座教授 力学与航空航天工程系 wangq@sustech.edu.cn Wang Quan Chair Professor Department of Mechanics and Aerospace Engineering wangq@sustech.edu.cn
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
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	48				48

12.	先修课程、其它学习要求 **Pre-requisites or Other Academic Requirements**	MAE203 理论力学 I Theoretical Mechanics I MA201a 常微分方程 A Ordinary Differential Equation A 或者 MA201b 常微分方程 B Ordinary Differential Equation B
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**

The objectives of this course are to introduce the fundamentals of mechanical vibrations and develop students' ability to apply the fundamentals of vibrations to solve problems in mechanical, aerospace, and civil engineering

16. **预达学习成果 Learning Outcomes**

After completing this course, the students should learn the basic concepts and principles of vibrations, develop problem-solving skills for applications in different engineering disciplines, and provide sound background for more advanced studies.

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.)

理论课 Lectures

振动引论 2 课时

fundamentals of vibrations 2hours

单自由度系统的自由振动分析 1 4 课时

Free-vibration analysis of SDOF systems Part1 4hours

单自由度系统的自由振动分析 2 2 课时

Free-vibration analysis of SDOF systems Part2 2hours

单自由度系统的强迫振动分析 1 4 课时

Forced-vibration analysis of SDOF systems Part 1 4hours

单自由度系统的强迫振动分析 2 2 课时

Forced-vibration analysis of SDOF systems Part 2 2hours

多自由度系统振动分析 1 4 课时

Vibration analysis of MDOF systems Part 1 4hours

多自由度系统振动分析 2 2 课时

Vibration analysis of MDOF systems Part 2 2hours

涡流引发振动 4 课时

Vortex-induced vibration and galloping 4hours

数值方法 4 课时

Numerical methods 4hours

离散系统振动复习 2 课时

Review of vibrations of discrete system 2hours

结构力学基础 2 课时

Fundamentals of structural mechanics 2hours

连续系统的自由振动分析 4 课时

Free-vibration analysis of CDOF systems 4hours

连续系统的强迫振动分析 4 课时

Forced-vibration analysis of CDOF systems 4hours

连续系统的自由振动分析 4 课时

Free-vibration analysis of CDOF systems 4hours

连续系统的稳定性问题 4 课时

Stability analysis of CDOF systems 4hours

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

S.S. Rao: Mechanical Vibrations. 5th Edition, Pearson Prentice Hall, 2011.

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				
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects				

平时作业 **Assignments**		10		
期中考试 **Mid-Term Test**		40		
期末考试 **Final Exam**		50		
期末报告 **Final Presentation**				
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

力学与航空航天工程系教学指导委员会
The commission of teaching instruction in department of mechanics and aerospace engineering