

课程大纲 COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	高等实验力学 Advanced Experimental Mechanics
2.	课程性质 Compulsory/Elective	专业核心课 Major Core Courses
3.	课程学分/学时 Course Credit/Hours	3/96
4.	授课语言 Teaching Language	中文 Chinese
5.	授课教师 Instructor(s)	肖思 Si Xiao/赵晓争 Xiaozheng Zhao/刘晓宇 Xiaoyu Liu
6.	是否面向本科生开放 Open to undergraduates or not	否 NO
7.	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.)
8.	教学目标 Course Objectives	
	<p>本课程包括高等固体力学实验与高等流体力学实验两部分, 经过本课程的训练, 学生将掌握以下能力:</p> <ul style="list-style-type: none"> • 掌握高等实验力学测试技术; • 培养实验技能, 重视实验环节, 增强理论与实践相结合的能力; • 能够提炼关键问题, 提高解决科研问题和工程问题的水平; <p>This course includes two parts: advanced solid mechanics experiment and advanced fluid mechanics experiment. Trained by this course, students shall master the following abilities:</p> <ul style="list-style-type: none"> • Be qualified with the testing techniques of advanced experimental mechanics; • Develop experimental skills, attach importance to the experimental process and enhance the ability of combining theory with practice; • Be able to extract key problems and improve the ability of solving scientific research and engineering problems. 	
9.	教学方法 Teaching Methods	
	<p>本课程为实验课, 授课方法为课堂基础知识教学与学生动手实验相结合。 实验将分为三个模块进行, 包括操作实验、演示实验以及专题实验, 分别由负责相应模块的老师进行授课。 受实验设备数量的限制, 为保证良好的教学效果, 实验以小组形式轮流进行, 尽可能地让每位同学都亲自动手操作实验设备。</p> <p>This is an experimental course, and the teaching method is a combination of theory teaching and hands-on experiments. The experiments will be divided into three modules, including operation experiments, demonstration experiments and topical experiments, with different teachers in charge of a corresponding module. Limited by the number of experimental equipment, the experiment is carried out in turn in the form of groups, so as to ensure a good teaching effect and each student can operate the experimental equipment by himself as</p>	

	much as possible.
10.	教学内容 Course Contents
Section 1	实验建模与数据处理 Experimental modeling and data processing
Section 2	应变电测与传感器测量方法与技术 Method and technology of strain electrical measurement and sensor measurement
Section 3	光测力学方法与技术（一） Photomechanics method and technology I
Section 4	光测力学方法与技术（二） Photomechanics method and technology II
Section 5	流体力学测试测量技术介绍 Introduction to measuring and testing techniques of fluid mechanics
Section 6	风洞测试技术与风洞基本参数测量 Wind tunnel measuring and testing techniques of fluid mechanics
Section 7	圆柱绕流实验 Experiment on the flow around a cylinder
Section 8	平板边界层测量 Measurement of boundary layer development on a flat plate
Section 9	对称翼型压力分布及升阻力测量 Pressure distribution along with drag and lift forces measurement on a symmetrical aerofoil
Section 10	流场 PIV 测量实验 PIV measurement on a flow field
Section 11	疲劳的 S-N 曲线测量 S-N curve measurement of fatigue
Section 12	断裂参数测量实验 Experiment of measuring fracture factors
Section 13	特殊条件下检测技术与专题实验 Detection technology and special experiment under special conditions
Section 14	水凝胶材料的非线性大变形专题实验
Section 15	原子力显微镜专题培训实验
Section 16	项目汇报
11.	课程考核 Course Assessment
	考查：课堂表现 40%（出勤 20%+实验操作 20%）+实验报告 60%
12.	教材及其它参考资料 Textbook and Supplementary Readings
	1、尹协振，续伯钦，张寒虹，《实验力学》，高等教育出版社，2012 年。 2、Cesar A. Sciammarella, Federico M. Sciammarella, 《Experimental Mechanics of Solids》, Wiley, 2012。