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**	大学物理 A(上) General Physics A (I)
2.	**授课院系 Originating Department**	物理系 Department of Physics
3.	**课程编号 Course Code**	PHY103A
4.	**课程学分 Credit Value**	5
5.	**课程类别 Course Type**	通识必修课程 General Education (GE)Required 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）**	陈伟强，物理系 第二科研楼 213 室 Chen Weiqiang, Department of Physics Rm.213, No.2 Research Bldg. chenwq@sustech.edu.cn 0755-88018205
9.	**实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact**	宋书建，物理系，13267056096，songshujianssj@163.com； 陶应娟，物理系，13825252370，taoyingjuan@stu.xjtu.edu.cn；
10.	**选课人数限额(可不填) Maximum Enrolment （Optional）**	

11.		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
	授课方式 Delivery Method					
	学时数 Credit Hours	80	0	0	0	80

12.	**先修课程、其它学习要求 Pre-requisites or Other Academic Requirements**	High school physics, algebra, trigonometry. Calculus will be adopted in class. 高中物理, 代数, 三角学。课上将利用到微积分。
13.	**后续课程、其它学习规划 Courses for which this course is a pre-requisite**	物理学、应用物理学专业及其它相关理工科专业课程
14.	**其它要求修读本课程的学系 Cross-listing Dept.**	所有系

教学大纲及教学日历 SYLLABUS

15. **教学目标 Course Objectives**

本课程讲授以下的物理内容：牛顿力学、弹性力学、流体力学、振动、波和热学。课程将主要面向物理专业学生，侧重于介绍物理学基本原理的产生和发展过程，以及不同物理学规律间的相互关系，强调利用相关数学工具进行演绎推导能力的培养。

The main objective of this course is to introduce basic physics concepts including Newtonian mechanics, elasticity, fluid dynamics, oscillations, waves and thermal physics. The course focuses on the origin and development of physics laws as well as their relationship from a physicist point of view. Training of relevant mathematical tools is also included.

16. **预达学习成果 Learning Outcomes**

1、掌握牛顿力学、弹性力学、流体力学、振动、波和热学的基本原理，并能够灵活运用这些物理原理来处理与本课程内容相关的实际问题。

2、能够使用微积分和简单的微分方程理论来处理本课程涉及的相关物理问题。

1.Understand the physics laws of Newtonian mechanics, elasticity, fluid dynamics, oscillation and wave, thermal physics, and apply them in practical problems.

2.Able to use calculus, simple differential equations to formulate the physics laws covered in the course.

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.)

1. Week 1: Vectors (矢量)

2. Week 2: Newton's law of motion (牛顿运动定律)

3. Week 3: Frames of reference: Galilean transformation (参考系: 伽利略变换)

4. Week 4: Conservation of energy (能量守恒)

5. Week 5: Conservation of linear and angular momentum (动量守恒和角动量守恒)

6. Week 6: Harmonic oscillator: properties and examples (谐振子: 性质与实例)

7. Week 8-10: Elementary dynamics of rigid bodies (初等刚体力学)

8. Week 11: Inverse-square-law force (平方反比律的力)

9. Week 12: Introduction to waves (波动学介绍)

10. Week 13-14: Introduction to elasticity and fluid dynamics (弹性与流体动力学介绍)

11. Week 14-16: Thermal physics (热物理)

Lectures will include 10-16 hours small class lectures. (讲授过程将包括 10-16 小时小班讲授)

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

课程主要内容参考 Berkeley Physics Course(In SI Units)

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		60%		
课程项目 Projects				
平时作业 Assignments		10%		
期中考试 Mid-Term Test				
期末考试 Final Exam		30%		
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

物理系教学指导委员会
Education Instruction Committee of Physics department