

## 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 <b>Course Title</b>	大学物理 C(上) General Physics C (I)
2.	授课院系 <b>Originating Department</b>	物理系 Department of Physics
3.	课程编号 <b>Course Code</b>	PHY103C
4.	课程学分 <b>Credit Value</b>	3
5.	课程类别 <b>Course Type</b>	通识必修课程 General Education (GE) Required Courses
6.	授课学期 <b>Semester</b>	春季 Spring / 秋季 Fall
7.	授课语言 <b>Teaching Language</b>	英文 English / 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） <b>Instructor(s), Affiliation &amp; Contact</b> (For team teaching, please list all instructors)	1. 黄丽, 助理教授, 物理系 第二科研楼 212 室 HUANG Li, Assistant Professor, Department of Physics Rm.212, No.2 Research Bldg. huangl@sustech.edu.cn 0755-88018268
9.	实验员/助教、所属学系、联系方式 <b>Tutor/TA(s), Contact</b>	宋书建, 物理系, 13267056096, songshujiassj@163.com; 陶应娟, 物理系, 13825252370, tao_yingj@163.com; 文娟辉, 物理系, 13058097597, crystaljuanhui@163.com; 李克华, 物理系, 18273911983, 414600575@qq.com; 李承阳, 物理系, 13554887847, 747621919@qq.com; 庄琳玲, 物理系, 18617151756, 844546674@qq.com; 吴彩妮, 物理系, 13417499047, wucaini.1988@163.com。
10.	选课人数限额(可不填) <b>Maximum Enrolment (Optional)</b>	150 人/教室

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	48	0	0	0	48

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.
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	非理工科专业相关课程
14. 其它要求修读本课程的学系 Cross-listing Dept.	非理工科专业

### 教学大纲及教学日历 SYLLABUS

#### 15. 教学目标 Course Objectives

<p>本课程将针对非理工科专业学生简单介绍以下的物理内容：运动学、牛顿力学、流体力学*、振动、波和热学。</p> <p>This course aims to introduce basic physics concepts including kinematics, Newtonian mechanics, fluid dynamics*, oscillations, waves and thermal physics, to non-science or non-engineering majors.</p> <p>* 按进度增减 *optional</p>
--

#### 16. 预达学习成果 Learning Outcomes

<ol style="list-style-type: none"> <li>1. 能掌握并运用课程中的重要专业术语和定义。</li> <li>2. 在一些熟悉的情况下应用牛顿力学、流体力学*、波和热学中的物理定律。</li> </ol> <ol style="list-style-type: none"> <li>1. Recognize and use appropriately physics terms and definitions relevant to the major topics in the course.</li> <li>2. Apply the physics laws of Newtonian mechanics, fluid dynamics*, oscillations, waves and thermal physics in familiar situations.</li> </ol> <p>* 按进度增减 *optional</p>
---

#### 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.)**

The main contents are chapters 1-20 from textbook (Principles of Physics, David Halliday, et al.). Some topics are excluded as the course is aimed for non-science/engineering majors.

Week 1-2: Kinematics (chapter 1-4).

Unit and dimension of quantities, vector algebra, motion-related quantities, 1D and 2D motion, equation of motion.

Week 2-3: Force and motion (chapter 5-6)

Newton's laws and their application, gravity, normal force, friction, drag force, spring force, centripetal force.

Week 4: Energy (chapter 7-8)

Kinetic energy, work, work-kinetic energy theorem, power, potential energy, mechanical energy, conservation of energy

Week 5: Linear momentum (chapter 9)

Center of mass, linear momentum, conservation of linear momentum, collision.

Week 6-8: Rotation (chapter 10-11)

Angular quantities in rotation, angular kinematics, rotational kinetic energy, rotational inertia, torque and rotational dynamics, angular momentum, conservation of angular momentum.

Week 9: Equilibrium, Elasticity, Fluids\* (chapter 12, 14)

Equilibrium conditions, fluids at rest: hydrostatic pressure\*, Pascal's principle\*, Archimedes' principle\*; fluids in motion: equation of continuity\*, Bernoulli's equation\*.

Week 10: Gravitation (chapter 13)

Newton's law of gravitation, gravitational potential energy.

Week 11: Oscillation (chapter 15)

Simple harmonic oscillation, linear oscillator, angular oscillators, physical pendulum.

Week 12-13: Waves (chapter 16-17)

Sinusoidal wave, wave along string and sound wave: wave speed, wave equation, Interference of waves, standing wave.

Week 14-16: Thermal physics (chapter 18-20)

Temperature, zeroth law of thermodynamics, thermal expansion, heat and heat transfer, Thermodynamic process, work, 1st law of thermodynamics, kinetic theory of ideal gas and entropy.

Lectures will include 10-16 hours small class lectures.

\* 按进度增减 \*optional

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

David Halliday, Robert Resnick, Jearl Walker, Principles of Physics Extended International Student Version (10th edition), Wiley 2014.

### 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	每次 3-4 分钟	0-5%		以随机的课堂小测验方式作为间接考勤的一种方式。
课堂表现 Class Performance	同上			
小测验 Quiz	2-3 次, 按需求制定	55-60%		
课程项目 Projects	无			
平时作业 Assignments		10%		平均每章有 5 到 8 道作业题。
期中考试 Mid-Term Test	包含在 quiz 当中			
期末考试 Final Exam	2 小时	30%		
期末报告 Final Presentation	无			
其它 (可根据需要 改写以上评估方式) Others (The above may be modified as necessary)	无			

### 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



南方科技大学  
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

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

