

## 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>	科学与社会 Science and Society
2.	授课院系 <b>Originating Department</b>	物理系 Department of Physics
3.	课程编号 <b>Course Code</b>	PHYS006
4.	课程学分 <b>Credit Value</b>	1
5.	课程类别 <b>Course Type</b>	专业选修课 Major Elective Courses
6.	授课学期 <b>Semester</b>	夏季 Summer
7.	授课语言 <b>Teaching Language</b>	中英双语 Bilingual
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)	Wang Xuesen, Associate Professor, Department of Physics, National University of Singapore, 2 Science Drive 3, Singapore 117542 (+65) 6516 2961, phywxs@nus.edu.sg
9.	实验员/助教、所属学系、联系方式 <b>Tutor/TA(s), Contact</b>	待公布 To be announced
10.	选课人数限额(可不填) <b>Maximum Enrolment (Optional)</b>	

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	14	1	0	1 (Test)	16

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无 N/A
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 N/A
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 N/A

### 教学大纲及教学日历 SYLLABUS

#### 15. 教学目标 Course Objectives

In modern world, science is no longer just the business of scientists. Because of its great success in providing knowledge about the nature and life, and the enormous penetration of technology developed based on science in our social, economic and daily lives of general public, science and technology are important affairs in our society. On the other hand, science is not an endeavor of scientists working in isolation today. The scientific community has expanded tremendously since 1900, and it is seeking huge financial and other resources from governments, industry, and the public to support research activities. Properly informed government officials and citizens must be able to understand and critique the claims made by scientists, the limitations of scientists and science, as well as being able to judge what research projects are worth supporting. The healthy social dynamics within the scientific community is also essential to its adequate function. Issues like conflict of interest, ethical violation, misconducts and frauds in scientific research need to be identified and dealt with. In addition, for the benefit of the whole society, it is necessary for the scientific community to lead the public in the fighting against pseudoscience, science-denial and anti-science. Currently, scientific community should play a crucial role in resolving various urgent issues related to the sustainable development of human society. These social aspects of science will be discussed in this short course.

#### 16. 预达学习成果 Learning Outcomes

本课程将主要在以下几个方面进行讨论：1. 什么是科学和科学方法，2. 科学活动中的意义、价值、道德和伦理问题，3. 科学界内部的社会关系，4. 病态及不端科学行为，5. 如何区分科学与伪科学，6. 科技与公共政策及政治的关联，7. 科技决策中的专家与公众的作用和参与方式。通过本课程，希望同学们能在宏观上正确认识科学与社会之间的关系及科学活动本身的社会关系，认识科学/科学工作者对社会的贡献与局限性；促进形成较全面的科学观和科研素养；提高分辨伪科学及反科学事物的能力；为今后从事科研和涉及科技的社会发展管理工作及参与有关社会事务做准备。

The particular topics to be discussed in this course include: 1. What are science and scientific methods; 2. The meaning, value, moral and ethical issues in scientific activities; 3. The social dynamics within scientific community; 4. Pathological science and misconducts in science; 5. Demarcation of science from pseudoscience; 6. The interplay between science, politics and public policy; 7. The roles of experts & public in scientific & technological decision-making. The aim of this course is let the students gain knowledge about the relation between science and the society, and the social dynamics within the scientific society; understand the great contributions to the society from science and scientists, as well as their

limitations; form a comprehensive perspective about science; establish the capability of distinguish pseudoscience from science. Learning these will be beneficial to the future career of students not only as scientists, but also as public servants and social workers dealing with science & technology issues in our society.

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.)**

Lecture 1: Science & Society: Introduction (2 hours);  
 Lecture 2: What are Science and Scientific Methods, How has Science been Evolving (2 hours);  
 Lecture 3: Philosophy and the Demarcation of Science (2 hours);  
 Lecture 3: The Meaning, Value and Ethics of Scientific Activities (2 hours);  
 Lecture 4: The Social Dynamics Within Scientific Community (2 hours);  
 Lecture 5: Pathological Science and Misconducts in Science (2 hours);  
 Lecture 6: The Interplay Between Science, Politics and Public Policy (2 hours);  
 Lecture 7: The Roles of Experts & Public in Scientific & Technological Decision-making (2 hours);  
 Lecture 8: Discussion (1 hour) and Test (1 hour)

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

1. Sergio Sismondo, An introduction to science and technology studies (2nd ed., Wiley-Blackwell, 2010).
2. **Frederick Grinnell, Everyday practice of science: Where intuition and passion meet objectivity and logic** (Oxford University Press, 2009).
3. S. Yearley, Make Sense of Science: Understanding the Social Study of Science (SAGE, London, 2005).
4. 殷登祥:《科学、技术与社会概论》, 广东教育出版社, 2007.

**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		20%		
课堂表现 Class Performance		20%		Asking questions and participating discussion
小测验 Quiz				

课程项目 <b>Projects</b>			
平时作业 <b>Assignments</b>			
期中考试 <b>Mid-Term Test</b>			
期末考试 <b>Final Exam</b>	60%		
期末报告 <b>Final Presentation</b>			
其它（可根据需要 改写以上评估方 式） <b>Others (The above may be modified as necessary)</b>			

20. 记分方式 **GRADING SYSTEM**

<input checked="" type="checkbox"/> A. 十三级等级制 <b>Letter Grading</b> <input type="checkbox"/> B. 二级记分制（通过/不通过） <b>Pass/Fail Grading</b>
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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
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