

## 课程大纲 COURSE SYLLABUS

1.	<b>课程代码/名称 Course Code/Title</b>	PHY5002/固体理论 Solid State Theory
2.	<b>课程性质 Compulsory/Elective</b>	专业必修课 Degree Required Course
3.	<b>课程学分/学时 Course Credit/Hours</b>	4/64
4.	<b>授课语言 Teaching Language</b>	中文 Chinese
5.	<b>授课教师 Instructor(s)</b>	陈伟强 Weiqiang Chen
6.	<b>是否面向本科生开放 Open to undergraduates or not</b>	否 NO
7.	<b>先修要求 Pre-requisites</b>	(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.) 高等量子力学 PHY5001 Advanced Quantum Mechanics 物理学中的群论 PHY5011 Group Theory for Physicists
8.	<b>教学目标 Course Objectives</b>	(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.)  在本门课程中我们将对固体理论中的基本模型、物理概念、以及理论处理方法进行介绍。力争使学生理解这些模型和物理概念, 特别是元激发的概念, 并掌握固体理论中的一些常用的计算方法。  In this course, we will briefly introduce some basic models, physical concepts, and mathematical treatments in solid state physics. The students will have a basic understanding on these models and concepts, especially the concepts of elementary excitations, and grasp some standard theoretical methods in solid state physics.
9.	<b>教学方法 Teaching Methods</b>	(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.)  本课程为理论课程, 教学以课堂讲授为主。  This course will be taught mainly with lectures in classroom.
10.	<b>教学内容 Course Contents</b>	(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.)
	<b>Section 1</b>	1. 周期性结构。Periodic structures.
	<b>Section 2</b>	2. 声子。Phonon.
	<b>Section 3</b>	3. 电子态。Electronic State.

<b>Section 4</b>	4. 等离子激元。Plasmon.
<b>Section 5</b>	5. 磁性。Magnetism.
<b>Section 6</b>	6. 超导。Superconductivity.
<b>11. 课程考核 Course Assessment</b>	
<p>(①考核形式 Form of examination; ②.分数构成 grading policy; ③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.)</p> <p>作业 Homework 20 % 项目报告 Project 50% 现场报告 Presentation 30%</p>	
<b>12. 教材及其它参考资料 Textbook and Supplementary Readings</b>	
<p>(1) 李正中, 固体理论 (第二版), 高等教育出版社。Zhengzhong Li, Solid State Theory (the second edition), Higher Education Press.</p> <p>(2) J. M. Ziman, Principles of the theory of solids, Cambridge University Press.</p> <p>(3) Joseph Callaway, Quantum theory of the solid state, Academic Press.</p> <p>(4) Ashcroft/Mermin, Solid state physics, World Book Publishing Company.</p>	