

课程大纲 COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	PHY5010/薄膜物理 Physics of Thin Films
2.	课程性质 Compulsory/Elective	专业选修课 Elective Course
3.	课程学分/学时 Course Credit/Hours	3/48
4.	授课语言 Teaching Language	英文 English
5.	授课教师 Instructor(s)	王干 Gan Wang
6.	是否面向本科生开放 Open to undergraduates or not	是 YES
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.) 固体物理 PHY321-15 Solid State Physics, 热力学与统计物理 I PHY204 Thermodynamics and Statistical Physics I.
8.	教学目标 Course Objectives	(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.) 本课程详细介绍了薄膜科学的各个方面的知识, 包括真空技术、薄膜沉积技术以及原子过程、薄膜的结构与性能表征等主要内容。本课程适合一年级应用物理系或者材料系研究生选修。 The course covers all contents of thin films science and technology, including vacuum science and technology, the atomic deposition methods and nucleation processes as well as the structures of thin films. It is suitable for advanced undergraduate and first year postgraduate students majoring in applied physics or material science.
9.	教学方法 Teaching Methods	(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.) 课堂讲座。 Lectures.
10.	教学内容 Course Contents	(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.)
	Section 1	材料科学回述 A Review of Material Science (6)
	Section 2	真空科学和技术 Vacuum Science and Technology (6)

	Section 3	薄膜蒸发过程 Thin-film Evaporation Processes (6)
	Section 4	化学气相沉积 Chemical Vapor Deposition (6)
	Section 5	衬底表面和成核过程 Substrate Surfaces and Thin-Film Nucleation (6)
	Section 6	外延和薄膜结构 Epitaxy and Film Structures (6)
	Section 7	薄膜表征 Characterization of Thin Films and Surfaces (6)
11.	课程考核 Course Assessment	
	<p>(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>课程报告 30% + 作业 30% + 口头报告 40%</p> <p>Projects 30% + Assignments 30% + Final presentation 40%</p>	
12.	教材及其它参考资料 Textbook and Supplementary Readings	
	Textbook: Material Science of Thin Films (2nd Edition), MILTON Ohring	