

研究生课程教学大纲 (Syllabus)

课程代码 Course Code	PHY9507H	*学时 Teaching Hours	48	*学分 Credits	3
*课程名称 Course Name	规范场论 Gauge Field Theory				
*授课语言 Instruction Language	英文				
*开课院系 School	物理与天文学院				
先修课程 Prerequisite					
授课教师 Instructors	姓名 Name	职称 Title	单位 Department	联系方式 E-mail	
	何红建	教授	物理与天文学院	hjhe@sjtu.edu.cn	
*课程简介 (中文) Course Description	<p>This is an advanced Quantum Field Theory (QFT) course, with focus on Gauge Field Theory, but my course will provide you the most basic concepts and knowledge about QFT and related research frontiers. It is desirable that you already have taken Quantum Mechanics and Electrodynamics, but not essentially necessary. You may find my course fully understandable as long as you take the basic course of College Physics (大学物理/普通物理) during the first 1-2 years of your undergraduate studies.</p>				
*课程简介 (English) Course Description	<p>This is an advanced Quantum Field Theory (QFT) course, with focus on Gauge Field Theory, but my course will provide you the most basic concepts and knowledge about QFT and related research frontiers. It is desirable that you already have taken Quantum Mechanics and Electrodynamics, but not essentially necessary. You may find my course fully understandable as long as you take the basic course of College Physics (大学物理/普通物理) during the first 1-2 years of your undergraduate studies.</p>				

	周次 Week	教学内容 Content	授课 学时 Hours	教学方式 Format	授课教师 Instructor
*教学安排 Schedules	1	Why Gauge Field Theories (week 1-3)	8	课堂教学	何红建
	2	Symmetries and Conservation Laws (week 3-5)	9	课堂教学	何红建
	3	Symmetries and Their Breaking (week 6-9)	11	课堂教学	何红建
	4	Path Integral Quantization: Gauge Fields (week 9-13)	9	课堂教学	何红建
	5	Renormalization of Gauge Theories (week 13-16)	11	课堂教学	何红建
*考核方式 Grading Policy	<p>1. 提交 Term Paper, 要求学生根据课程教学内容和课程参考文献以及自己的兴趣, 选择一个合适的 Topic 进行专研, 写出一篇报告。 Submit a Term Paper based on the contents and references contained in my Lectures.</p> <p>2. 根据主讲老师推荐, 阅读一本关于理论物理的入门书或科普书(特别是跟量子场论及规范场相关的书), 期末写出一篇读书报告。 Submit a Reading Report based on the after-class-books I provided which is usually some best-selling popular book on QFT and Theoretical Physics.</p> <p>老师根据这两项完成的质量评分, 并结合课堂表现给出期末成绩。 These two terms will be base of the Final Score of this course.</p>				
*教材或参考 资料 Textbooks & References	1. My Lecture Notes (in English). 2. Introduction to Quantum Field Theory (by M. E. Peskin&D. V. Schroeder). 3. Quantum Field Theory (by M. Srednicki). 4. Quantum Field Theory in a Nutshell (by A. Zee).				
备注 Notes					

备注说明:

1. 带*内容为必填项;
2. 课程简介字数为 300-500 字; 教学内容、进度安排等以表述清楚教学安排为宜, 字数不限。