上海交通大学研究生课程开设申请表

New Graduate Course Application Form, SJTU

<table>
<tr><th colspan="6">课程基本信息 Basic Information</th></tr>
<tr><td rowspan="2">*课程名称
Course Name</td><td colspan="5">（中文 Chinese） 材料科学与工程前沿专题讲座</td></tr>
<tr><td colspan="5">（英文 English） Special Lectures on Frontiers of Materials Science and Engineering</td></tr>
<tr><td>*学分
Credits</td><td>3</td><td>*学时
Teaching Hours</td><td colspan="3">48 （1 学分≥16 课时）</td></tr>
<tr><td>*开课学期
Semester</td><td>春季
Spring</td><td>*时否跨学期
Cross-semester?</td><td>否</td><td colspan="2">跨 Spanning over 个 学期 Semesters。</td></tr>
<tr><td>*课程性质
Course Category</td><td>专业课
Major Course</td><td>*课程分类
Course Type</td><td colspan="3">全日制
Full-time</td></tr>
<tr><td>*授课语言
Instruction Language</td><td colspan="5">中文 Chinese</td></tr>
<tr><td>*成绩类型
Grade</td><td colspan="5">等级制 Letter Grade</td></tr>
<tr><td>*开课院系
School</td><td colspan="5">(050)材料科学与工程学院
School of Materials Science & Engineering</td></tr>
<tr><td>所属学科
Subject</td><td colspan="5">0805 材料科学与工程</td></tr>
<tr><td rowspan="2">负责教师
Person in charge</td><td>姓名 Name</td><td>工号 ID</td><td>单位 School</td><td colspan="2">联系方式 E-mail</td></tr>
<tr><td>金学军</td><td>07023</td><td></td><td colspan="2">jin@sjtu.edu.cn</td></tr>
<tr><th colspan="6">课程扩展信息 Extended Information</th></tr>
<tr><td>*课程简介
(中文)
Course Description</td><td colspan="5">本课程围绕材料科学未来十五年的国际前沿发展趋势和中国实现从材料大国走向材料强国的可持续性发展策略两方面主题开展了广泛调研和深入论证。本课程全面系统地介绍了各类先进材料的设计、制造原理、服役行为、性能测评原理，以案例分析为特点，回溯材料领域关键知识的产生背景和重大工程应用案例，给工程硕博士未来的研究工作以启发。每节的例证和节后的科创问题为该节知识的拓展应用提供了实际需求方面的思考方向，也为材料科学与工程教学和研究人员提供了有价值的研究思路。本课程把先进材料的基础理论、性能与应用、合成与制备、测量与检验、分析与计算、评价与应用等方方面面的知识全面地、系统地、科学地阐述，具有十分重要的意义，课程的开展有利于调动高校和企业的积极性，创新人才培养模式，推进高水平科技自立自强。</td></tr>
<tr><td>*课程简介
（English）
Course Description</td><td colspan="5">This course conducts extensive research and in-depth argumentation around the international cutting-edge development trends of materials science in the next fifteen years and China's</td></tr>
</table>

sustainable development strategy of transitioning from a material powerhouse to a material powerhouse. This course comprehensively and systematically introduces the design, manufacturing principles, service behavior, and performance evaluation principles of various advanced materials. With case analysis as the characteristic, it traces the background of key knowledge in the field of materials and major engineering application cases, providing inspiration for future research work of engineering master's and doctoral students. The examples in each section and the scientific and technological innovation issues after each section provide practical thinking directions for the expansion and application of knowledge in that section, as well as valuable research ideas for materials science and engineering teaching and researchers. This course comprehensively, systematically, and scientifically elaborates on the basic theory, performance and application, synthesis and preparation, measurement and inspection, analysis and calculation, evaluation and application of advanced materials, which is of great significance. The implementation of the course is conducive to mobilizing the enthusiasm of universities and enterprises, innovating talent training models, and promoting high-level technological self-reliance and self-improvement.

*教学大纲
(中文)
Syllabus

章节	主要内容	课时数	教学方式	章节是否有课程思政内容。如有，请详述
第一章	引言	3	讲授	无
第二章	先进材料设计	3	讲授	无
第三章	先进材料制造原理	3	讲授	无
第四章	先进材料服役行为	6	讲授	无
第五章	先进材料性能测评原理	3	讲授	无
第六章	先进结构材料应用案例	12	讲授/参观教学	无
第七章	先进功能材料应用案例	18	讲授/参观教学	无

*教学大纲
(English)
Syllabus

Chapter	Main Contents	Hours	Teaching Style	Whether there is ideological and political content
Chapter 1	Introduction	3	Lecture	There isn't
Chapter 2	Advanced Material Design	3	Lecture	There isn't
Chapter 3	Principles of Advanced Material Manufacturing	3	Lecture	There isn't
Chapter 4	Advanced Material Service Behavior	6	Lecture	There isn't
Chapter 5	Principles of Advanced Material Performance Evaluation	3	Lecture	There isn't
Chapter 6	Application Cases of	12	Lecture/ Visit and	There isn't

		Advanced Structural Materials		internship	
	Chapter 7	Application Cases of Advanced Functional Materials	18	Lecture/ Visit and internship	There isn't
*课程要求（中文）Requirements	(1)考察出席率,过程考核为主； (2)考察课程报告，针对讲座提交两个报告，面试考核。				
*课程要求（English）Requirements	(1) Assess attendance rate, with process assessment as the main focus; (2) Review the course report, submit two reports for the lecture, and conduct an interview assessment.				
课程资源（中文）Resources	（1）教材使用，将选用教育部新材料领域工程硕博士核心课程《先进材料及应用技术》教材作为专修课程的主干教材；（2）实践性教学环境，宝钢研究院、中信集团、洛阳中重铸锻有限责任公司、上海电气集团等企业将为教学实践提供必要的条件；（3）网络教学环境，上海交通大学材料学院可随时为课程提供多媒体教室和计算机教室，可以随时进行网上教学。				
课程资源（English）Resources	(1) The use of textbooks will select the core course "Advanced Materials and Applied Technology" of the Ministry of Education's new materials engineering master's and doctoral program as the main teaching material for the specialized courses; (2) Practical teaching environment, Baosteel Research Institute, CITIC Group, Luoyang Zhongzhong Casting and Forging Co., Ltd., Shanghai Electric Group and other enterprises will provide necessary conditions for teaching practice; (3) In the online teaching environment, the School of Materials Science and Technology at Shanghai Jiao Tong University can provide multimedia classrooms and computer classrooms for courses at any time, allowing for online teaching at any time.				
备注 Note					