

# 上海交通大学研究生课程开设申请表

## New Graduate Course Application Form, SJTU

课程基本信息 Basic Information				
<b>*课程名称</b> Course Name	(中文 Chinese) 增材制造技术			
	(英文 English) Additive Manufacturing Technologies			
<b>*学分</b> Credits	3	<b>*学时</b> Teaching Hours	48 (1 学分≥16 课时)	
<b>*开课学期</b> Semester	秋季学期 Fall	<b>*是否跨学期</b> Cross-semester?	否 No	跨 Spanning over 个学期 Semesters (含夏季学期)。
<b>*课程性质</b> Course Category	专业课 Specialized Course	<b>*课程分类</b> Course Type	全日制课程 For full-time students	
<b>*授课语言</b> Instruction Language	中文 Chinese	<b>主要授课方式</b> Teaching Method	课堂教学 In class teaching	
<b>*成绩类型</b> Grade	等第制 Letter grading	<b>主要考核方式</b> Exam Method	论文 Essay	
<b>*开课院系</b> School	材料科学与工程学院			
<b>所属学科</b> Subject	材料加工			
<b>负责教师</b> Person in charge	姓名 Name	工号 ID	单位 School	联系方式 E-mail
	冯凯		材料科学与工程学院	fengkai@sjtu.edu.cn
课程扩展信息 Extended Information				
<b>*课程简介</b> (中文) Course Description	(分段概述课程定位、教学目标、主要内容、先修课程等；不少于 200 字。)			
	<p>增材制造技术是近年来快速发展的制造技术之一，当前已在航空、航天、医疗器械、汽车等多个制造领域得到了应用。《增材制造技术》作为一门专业选修课程，在培养学生创造思维，加深学生对新型制造技术的理解，提高学生工程创新和综合实践能力等方面具有重要意义。</p> <p>本课程通过课堂授课、实验室教学、课堂交流讨论和课外实践等多个教学环节，将增材制造技术从技术门类、金属与非金属增材、具体材料增材特性等多角度进行介绍，使学生掌握增材制造技术的基本理论、基本知识和基本技能，掌握常用增材制造技术的材料类型、工艺方法、应用需求等相关知识的一般性规律，培养学生增材制造工艺与装备的创新开发与应用能力，能够采用增材制造技术解决工程实践过程中遇到的实际问题，使学生的创新能力与综合实践能力得到提高。</p> <p>课程目标及能力要求具体如下：</p> <ol style="list-style-type: none"> <li>1. 掌握增材制造技术的基本理论、基本知识、基本技能，培养学生学科交叉创新思维能力；</li> <li>2. 掌握增材制造工艺材料类型、工艺方法、装备、应用需求等相关知识的一般性规律与最新前沿进展，具备增材制造工艺与装备的创新开发与应用能力；</li> <li>3. 通过课程内实验与相关的课程小项目研究，引导学生运用增材制造技术解决工程实践过程中遇到的实际问题，培养学生的创新能力与综合实践能力；</li> <li>4. 通过增材制造专业知识学习以及实践操作训练，引导学生了解增材制造技术对社会生产及生活模式的影响规律，培养学生的社会服务意识。</li> </ol>			
<b>*课程简介</b> (English) Course Description	(须与中文一致，翻译请力求信达雅。)			
	<u>Additive Manufacturing (AM) is one of the fastest developing manufacturing technologies in recent years. Corresponding applications have been conducted to various manufacturing industry areas such as aviation, aerospace, automotive and medical instrument. As a professional elective course, "Additive Manufacturing" focuses on and significantly meaningful to bringing up</u>			

	<p>students' creative thinking, deepening students' understanding of innovative manufacturing technology, and improving students' engineering innovation and comprehensive practice capabilities.</p> <p>The present course clarifies the AM technologies via multi angles including technique category, metal/polymer AM and AM material characteristics. Such arrangements aim to teach the students fundamental theories, knowledge and skill of AM concept and instruments, therefore letting the course participants acquire the capabilities of categorizing the AM techniques and choosing the appropriate AM technique to solve the specific problem.</p> <p>The course targets are listed as follows:</p> <p>1. Acquiring the AM fundamental theory, knowledge and skill, thus to bring up the students' interdisciplinary innovative thinking ability;</p> <p>2. Understanding the material processing procedures of different AM techniques, being able to operate corresponding AM instruments and being informed of the cutting-edge AM applications in industries;</p> <p>3. Guiding the students to solve real industrial problems using the learned AM technologies by experimental classes and small research projects;</p> <p>4. Letting the students understand the impact of AM technologies on manufacturing industry and human daily life by professional knowledge learning and AM instruments practicing, therefore leading the students be aware of social services.</p>																																																			
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*课程要求 (中文) Requirements	<p>(课程考核方式、考核标准等; 不少于 50 字)</p> <p>平时考勤 (20%) + 课程实验 (30%) + 课程设计及报告 (50%)</p>
*课程要求 (English) Requirements	<p>(须与中文一致, 翻译请力求信达雅。)</p> <p>Attendance (20%) + Experiments (30%) + Reports (50%)</p>
课程资源 (中文) Resources	<p>(教材、教参、网站资料等。)</p> <p>1. 《增材制造与3D打印技术及应用》, 清华大学出版社, 杨占尧、赵敬云, 2017;</p> <p>2. Wohlers T., Wohlers report 2016 executive summary. America: Wohlers Associates, Inc, 2016.</p> <p>3. Gibson I., Rosen D.W., Stucker B., Additive Manufacturing Technologies, Springer, 2010.</p>
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