

上海交通大学研究生专业课程信息收集表

Information Form for SJTU Graduate Profession Courses

课程基本信息 Basic Information				
	(中文 Chinese) 知识工程及其在塑性成形中的应用			
	(英文 English) Knowledge based engineering and its application in plastic forming			
*学分 Credits	2	*学时 Teaching Hours	32 (1 学分=16 课时)	
*开课学期 Semester	春季学期 Spring	*是否跨学期 Cross-semester?	否 No	跨 Spanning over 一个学期 Semesters (含夏季学期)。
*课程类型 Course Type	专业选修课 Program Elective Course	*课程分类 Course Type	全日制课程 For full-time students	
*课程性质 Course Category	专业课 Specialized Course	课程层次 Targeting Students	硕博共用 All graduates	
*授课语言 Instruction Language	中文 Chinese	主要授课方式 Teaching Method	课堂教学 In class teaching	
*成绩类型 Grade	等第制 Letter grading	主要考核方式 Exam Method	论文 Essay	
*开课院系 School	050 材料科学与工程学院 School of Material Science and Engineering			
所属学科 Subject	材料科学与工程 Material Science and Engineering			
负责教师 Person in charge	姓名Name	工号 ID	单位 School	联系方式E-mail
	赵震		材料科学与工程学院	zzhao@sjtu.edu.cn
课程扩展信息 Extended Information				
*课程简介 (中文) Course Description	<p>(分段概述课程定位、教学目标、主要教学内容、先修课程等；不少于 200 字。)</p> <p>课程定位：是面向塑性成形方向研究生的专业选修课。</p> <p>教学目标：让学生掌握智能化是材料塑性成形最重要的发展趋势之一，基于知识的工程是实现塑性成形工艺与模具智能设计制造的重要途径。</p> <p>主要教学内容：围绕知识工程的基本概念及系统组成架构，介绍知识表示与推理、知识获取与数据挖掘（包括分类规则法、决策分析法、多元线性回归分析、自学习型神经网络等）、数据仓库建模等知识工程关键技术。在此基础上，以案例形式讲解知识工程在材料塑性成形工艺与模具设计中的应用。</p> <p>先修课程：无</p>			

<p>*课程简介 (English) Course Description</p>	<p>(须与中文一致, 翻译请力求信达雅。)</p> <p>Course orientation: Program Elective Course for the graduates majored in the field of plastic forming</p> <p>Course target: To make the students clear that intelligentization is one of the most important development trends of materials plastic forming, and the knowledge-based engineering (KBE) is an important way to realize the intelligent design and manufacturing of plastic forming process and tooling.</p> <p>Main content: This course focuses on the concept and system framework of KBE, and will introduce the key technologies of KBE such as knowledge representation and reasoning, knowledge acquisition and data mining (e.g. classification rule method, decision analysis method, multiple linear regression analysis, self-learning neural network, etc.), data warehouse modelling. Based on the knowledge introduced, the application of KBE in the process planning and tool design for materials plastic forming will be introduced by some cases.</p> <p>Prerequisites: none</p>
<p>*教学大纲 (中文) Syllabus</p>	<p>(建议列表形式, 各列内容: 章节、主要内容、课时数、教学方式等)</p> <ol style="list-style-type: none"> 1. 概述, 2 课时, 课堂教学 2. 知识表达与推理, 2 课时, 课堂教学 3. 优化方法与灵敏度分析, 4 课时, 课堂教学 4. 数据仓库建模, 4 课时, 课堂教学 5. 数据挖掘技术 1 – 分类规则法, 4 课时, 课堂教学 6. 数据挖掘技术 2 – 决策分析方法, 2 课时, 课堂教学 7. 数据挖掘技术 3 – 多元线性回归分析, 2 课时, 课堂教学 8. 数据挖掘技术 4 – 自学习型神经网络, 2 课时, 课堂教学 9. 应用 – 基于优化算法的力学模型构建, 3 课时, 课堂教学 10. 应用 – 基于图表法的结构材料优选, 3 课时, 课堂教学 11. 应用 – 精冲工艺设计系统建构技术, 2 课时, 课堂教学 12. 课程作业汇报, 2 课时, 课堂教学
<p>*教学大纲 (English) Syllabus</p>	<p>(须与中文一致, 翻译请力求信达雅。)</p> <ol style="list-style-type: none"> 1. General introduction, 2 Hours, Teaching 2. Knowledge representation and reasoning, 2 Hours, Teaching 3. Optimization and sensitivity analysis, 4 Hours, Teaching 4. DW modelling, 4 Hours, Teaching 5. Data mining technology 1 – Classification, 4 Hours, Teaching 6. Data mining technology 2 – Decision analysis, 2 Hours, Teaching 7. Data mining technology 3 – Multiple linear regression, 2 Hours, Teaching 8. Data mining technology 4 – Self learning neural network, 2 Hours, Teaching 9. Sample application – Mechanical modelling based on optimization, 3 Hours, Teaching 10. Sample application – Material selection with property charts, 3 Hours, Teaching

	<p>11. Sample application – Fine blanking process planning system, 2 Hours, Teaching</p> <p>12. Course assignment report, 2 Hours, Presentation</p>
<p>*课程要求 (中文) Requirements</p>	<p>(课程考核方式、考核标准等; 不少于 50 字)</p> <p>课程考核方式: 学生根据课程授课内容完成一份课程大作业, 另外准备 PPT 进行课堂内的展示和答辩。</p> <p>考核标准: 60% (大作业) + 25% (课堂展示与答辩) + 15% (平时表现)</p>
<p>*课程要求 (English) Requirements</p>	<p>(须与中文一致, 翻译请力求信达雅。)</p> <p>Course assessment: Each student should finish a course assignment according to the course content, and prepare the PPT for in-class presentation.</p> <p>Criteria of assessment: 60% (Assignment) + 25% (Presentation) + 15% (Performance)</p>
<p>*课程资源 (中文) Resources</p>	<p>(教材、教参、网站资料等。)</p> <p>彭颖红, 胡洁. KBE 技术及其在产品中的应用. 上海: 上海交通大学出版社, 2007.</p>
<p>*课程资源 (English) Resources</p>	<p>(须与中文一致, 请力求信达雅。)</p> <p>PENG Yinghong, HU Jie. KBE technology and its application in product design. Shanghai Jiao Tong University Press, 2007.</p>
<p>备注 Note</p>	