

## Information Form for SJTU Graduate Profession Courses

| 课程基本信息 Basic Information            |   |                            |   |   |
|-------------------------------------|---|----------------------------|---|---|
| *课程名称<br>Course Name                | (中文 Chinese) 科研与生产实践                                  |                            |   |   |
|                                     | (英文 English) Practice                                 |                            |   |   |
| *学分<br>Credits                      | 1   | *学时<br>Teaching Hours      | 16 (1 学分=16 课时)   |   |
| *开课学期<br>Semester                   | 春季学期 Spring   | *是否跨学期<br>Cross-semester?  | 否 No  | 跨 Spanning over 一个学期 Semesters (含夏季学期)。 |
| *课程类型<br>Course Type                | 专业选修课 Program Elective Course                         | *课程分类<br>Course Type       | 全日制课程 For full-time students                                |   |
| *课程性质<br>Course Category            | 专业课 Specialized Course                                | 课程层次<br>Targeting Students | 硕士课程 Master Level   |   |
| *授课语言<br>Instruction Language       | 中文 Chinese  | 主要授课方式<br>Teaching Method  | 实习实践 Practice   |   |
| *成绩类型<br>Grade                      | 等第制 Letter grading                                    | 主要考核方式<br>Exam Method      | 考查 Tests  |   |
| *开课院系<br>School                     | 材料科学与工程学院 School of Materials Science and Engineering |                            |   |   |
| 所属学科<br>Subject                     | 材料科学与工程 Materials Science and Engineering             |                            |   |   |
| 负责教师<br>Person in charge            | 姓名 Name   | 工号 ID                      | 单位 School   | 联系方式 E-mail                             |
|                                     | 吴国华<br>Guohua Wu                                      |                            | 材料科学与工程学院<br>School of Materials<br>Science and Engineering | ghwu@sjtu.edu.cn                        |
| 课程扩展信息 Extended Information         |   |                            |   |   |
| *课程简介<br>(中文)<br>Course Description | “ ”   |                            |   |   |

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| <p>*课程简介<br/>(English)<br/>Course Description</p> | <p><b>Course orientation</b></p> <p>This course is offered for professional master's degree in material engineering specialty. According to the training program for full-time Master degree students of material engineering, students should be trained as advanced engineering technology and management talents with professional application, scientific research practice and engineering management ability, and meet the needs of enterprise scientific research and engineering management. The purpose of this course is to make the professional master's degree students contact the factories, enterprises and scientific research institutes, understand the needs of the enterprise on technology and management and the latest developments, and feel the various enterprise atmosphere.</p> <p><b>Teaching objectives:</b></p> <p>Set up the concept of engineering education “facing the industry, facing the future, facing the world”. Taking the social demand as the guidance, taking the actual project as the background and taking the engineering technology as the main line, the students' engineering consciousness, engineering quality and engineering practice ability are improved.</p> <p>Organize the teaching content according to the engineering problem, engineering case, and engineering projects. This course will make great efforts to promote a variety of research oriented learning method, such as inquiry learning based on problems, discussion learning based on case, participatory learning based on projects. It emphasizes the cultivation of students' innovative consciousness and innovative spirit, and strengthens the training of innovative thinking of scientific research project organization and management.</p> <p><b>Main teaching contents</b></p> <p>A total of four visits to different ownership and different industries are conducted, including state-owned enterprises, private enterprises, aerospace units, and scientific research enterprises. In addition to a technical level visit to the workshop, the corporate leaders will be invited to report on the management system innovation, and the emphasis is on how to achieve an effective combination of technology and modern management system. The aim is to let students understand modern enterprise management mode from different angles of technology and management, especially how to realize effective management of enterprises by combining technological innovation, and feel the management idea of different types of enterprises. So that students can quickly adapt to different types of enterprise environment after graduation, and meet the needs of the society for engineering applied talents.</p> <p><b>Prerequisite courses</b></p> <p>Fundamentals of mechanical manufacturing process    Fundamentals of Materials Science    Principle of material processing</p> |

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| *教学大纲<br>(中文)<br>Syllabus |  |   |  |   |
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| Teaching week   | Teaching content   | Teaching Hours | Teaching methods   |
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| The first week  | Course overview. Including: Course Introduction (course positioning, teaching objectives, main teaching contents, prerequisite courses, etc.), course outline (main contents, teaching hours, teaching methods, etc.), course requirements (course assessment methods, assessment standards, etc.).  | 2              | classroom teaching |
| the second week | Visiting an Institute of Shanghai Academy of Astronautics enables students to understand the scientific research process of the Institute and feel the rigorous management atmosphere of the Institute. Invite the head of the Institute to make a report, discuss the management system of the Institute and the demand for talents in the field of aerospace research. | 3              | Factory visit      |
| The third       | Visit a factory of Shanghai Academy of   | 3              | Factory visit      |

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|                                    | week  | Astronautics to make students understand the manufacturing process and management system of aerospace products, and feel the atmosphere of large-scale high-tech enterprises. Ask the relevant person in charge to make a report, focusing on the production and quality management system of state-owned enterprises, as well as the demand for talents of Aerospace Enterprises.   |   |                    |
|                                    | The fourth week   | Visit Baoshan Iron and Steel Co., Ltd to make students understand the whole production process of ferrous metals (including smelting, continuous casting, steel rolling, pressure processing, etc.) and feel the management atmosphere of modern enterprises. The relevant persons in charge of Baosteel are invited to make a report and discuss the management system of modern large state-owned enterprises, the basic introduction of international steel and ore markets and the demand for talents. | 3 | Factory visit      |
|                                    | The fifth week  | Visit the non-ferrous metal manufacturing enterprises (private enterprises) so that students can understand the processing process of non-ferrous metals (such as copper alloy) and feel the atmosphere of private enterprises. Invite the relevant person in charge of the enterprise to make a report, focusing on the management system of private enterprises.   | 3 | Factory visit      |
|                                    | The sixth week  | Course discussion, exchange and summary  | 2 | Classroom teaching |
| *课程要求<br>(中文)<br>Requirements      | )   |  |   |                    |
| *课程要求<br>(English)<br>Requirements | <p>Each student submits a research report as the main basis for assessment. At the same time, it also refers to the students' speech in the ordinary classroom discussion as a supplement.</p> <p>The outline of the research report can include the following contents: (1) enterprise background and development history, (2) enterprise management system and mode, (3) the relationship between the characteristics of enterprise products and production mode, (4) the advantages and disadvantages of the management system of enterprises with different systems, (5) the relationship between technological innovation and enterprise development, (6) the requirements of enterprises for talents.</p> |  |   |                    |
| *课程资源<br>(中文)<br>Resources         | <ul style="list-style-type: none"> <li>、 材料加工工艺与设备</li> <li>、 工程材料性能和选用</li> <li>、 材料加工过程质量控制和管理</li> <li>、 工程项目管理</li> </ul>   |  |   |                    |

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| <p>*课程资源<br/>(English)<br/>Resources</p> | <ol style="list-style-type: none"> <li>1. Material processing technology and equipment</li> <li>2. Performance and selection of engineering materials</li> <li>3. Quality control and management of material processing</li> <li>4. Project management</li> </ol>                     |
| <p>备注<br/>Note</p>                       | <p>Note:<br/>Prior to the start of the course, consultation and communication will be conducted with the enterprises or research institutes that plan to visit. There may be some changes in the name of the final visiting enterprises or research institutes and visiting time.</p> |