**材料类英文授课体系硕士培养方案**

**International Master Programme of Materials Science and Engineering**

**1. 研究方向 Research Fields**

 (1)金属和陶瓷材料 Metal and Ceramics Materials

 (2)表面工程 Surface Engineering

(3)空间环境下材料行为 Behavior of Materials under Space Environment and Test Technologies

 (4)聚合物基复合材料 Polymer Matrix Composite Materials

 (5)复合材料细观力学 Micromechanics of Composite Materials

 (6)信息功能材料与器件 Information Function Material and Device

 (7)生物医学材料与器件 Biomedical Materials and Device

 (8)凝固科学与液态成形技术Science and Solidification of Liquid Forming Technology

 (9)塑性成形理论与技术 Plastic Forming Theory and Technology

 (10)材料连接科学与技术 Science and Technology of Materials Joining

**2. 课程设置 Course**

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| --- | --- | --- | --- | --- | --- | --- |
| **类别****Type** | **课程编号****Course No.** | **课程名称****Course name** | **课程英文名称****English Course name** | **学时****Hours** | **学分****Credits** | **学期Semester** |
| **学位课****Degree Courses** | SYW00001Q | 初级汉语口语Ⅰ | The Course of Primary Chinese Oral | 64 | 2 | 秋Autumn |
| SYW00001C | 初级汉语口语Ⅱ | The Course of Primary Chinese Oral | 64 | 2 | 春Spring |
| SYW15001Q | 中国文化与跨文化沟通 | Chinese culture and cross-cultural communication | 32 | 2 | 秋Autumn |
| S0612067Q | 数值分析 | Numerical Analysis | 32 | 2 | 秋Autumn |
| S0612034Q | 数理统计 | Equations of Mathematics and Physics  | 32 | 2 | 春Spring |
| SYW03001Q | 材料热力学 | Thermodynamics and Kinetics of Materials | 36/6 | 2 | 秋Autumn |
| SYW03002Q | 固态相变 | Solid state phase transformation | 27 | 1.5 | 秋Autumn |
| SYW03003C | 材料表面与界面 | Surfaces and Interfaces in Materials | 27/6 | 1.5 | 春Spring |
| SYW03004Q | 材料空间环境效应 | Space Environmental Effects of Materials | 18 | 1 | 秋Autumn |
| SYW03005Q | 传热与流动数值模拟 | Numerical heat transfer and fluid flow | 18/8 | 1 | 秋Autumn |
| SYW03006C | 塑性成形工艺及数值模拟 | Plastic forming technique and numerical simulation | 36 | 2 | 春Spring |
| SYW03007C | 液压成形技术与控制 | Hydroforming technology and process control | 18/4 | 1 | 春Spring |
| SYW03008Q | 材料连接中的界面行为 | Interfacial behavior of joining and bonding | 27 | 1.5 | 秋Autumn |
| SYW03009Q | 电子封装中的微连接基础 | Fundamentals of Microjoining in Electronics Packaging Technology | 18 | 1 | 秋Autumn |
| SYW03014C | 材料表面物理化学 | Physics and Chemistry of Materials Surface | 36/4 | 2 | 春Spring |
| **选修课****Optional****Courses** |  |  |  |  |  |  |
| SYW03010Q | 材料先进表征技术 | Advanced Materials Characterization Techniques | 36 | 2 | 秋Autumn |
| SYW03011C | 纳米材料的制备及性能 | Synthesis and properties of nanomaterials | 27 | 1.5 | 春Spring |
| SYW03012Q | 半导体器件物理基础 | Fundament of Semiconductor－device Physics  | 18 | 1 | 秋Autumn |
| SYW03013C | 陶瓷材料学 | Ceramic Materials | 36 | 2 | 春Spring |
| SYW03015C | 生物材料 | Biomaterials | 27 | 1.5 | 春Spring |
| SYW03016C | 钛铝金属间化合物及钛基复合材料 | TiAl intermetallic and titanium matrix composites | 18 | 1 | 春Spring |
| SYW03017Q | 先进激光焊接技术 | Advanced Laser Welding Technology | 27 | 1.5 | 秋Autumn |
| SYW03018C | 焊接热过程及应力变形的有限元分析 | Finite element analysis for heat transfer, stress and deformation | 18/6 | 1 | 春Spring |
| SYW03019Q | 高能束焊接 | High energy beam welding | 18 | 1 | 秋Autumn |
| SYW03020C | 空间摩擦学 | Space Tribology | 18 | 1 | 春Spring |
| SYW03021C | 智能和纳米复合材料 | Smart Nanocomposites | 36 | 2 | 春Spring |
| SYW03022C | 扫描探针技术 | Scanning probe Microscopy | 27 | 1.5 | 春Spring |
| **专题课****Special Topic** | SYW03023C | 新材料制造 | Fabrication of new materials | 36 | 2 | 春Spring |
| **必修环节****Required****Parts** | S0300XSJL | 学术交流 | Academic Communication | 18 | 1 | 春Spring |
| S0300KTBG | 开题报告 | Thesis Proposal | 18 | 1 | 秋Autumn |
| S0300ZQJC | 中期检查 | Interim Inspection | 18 | 1 | 春Spring |

**3. 培养规定 Regulations**

材料科学与工程学科：专业学位课不少于14学分，专业选修课不少于8学分，专题课2学分。

For master candidates specialized in **Materials Science and Engineering**:

Degree courses for more than 14 credits, specialized optional courses for more than 8 credits, special topic course for 2 credits.