|  |  |  |  |
| --- | --- | --- | --- |
| 院教学指导委员主任（院长） | 学院分管教学副院长 | 审核人  （专业责任教授负责人） | 执笔人 |
| 叶义成电子签名 | 冯涛院长电子签名 |  |  |

**矿物加工工程专业“卓越工程师”培养方案**

**Curriculum for Undergraduate of Mineral processing Engineering Major “Excellent Engineer Training Program”**

**一、培养目标**

本着“面向工业界、面向未来、面向世界”的工程教育理念，本专业立足矿物加工、资源综合利用、钢铁冶金和环境工程等相关领域，培养德、智、体、美、劳全面发展，社会责任感强，具有良好的人文和科学素养、合理的知识结构、厚实的基础理论知识，具备从事生产、工艺和设备设计、研究与开发、技术管理和经营的基本能力，工程实践能力强，具有一定的国际视野，能解决复杂工程问题的高素质创新型人才。

1. 具有良好的人文社会科学素养及较强的适应社会和环境的能力，具有良好的语言表达及沟通协调能力、团队意识和合作精神；

2. 具有社会责任感，坚守工程职业道德，具有与工作相关的质量意识、环境保护意识和安全意识；

3. 能熟练运用矿物加工工程及相关领域科学研究、工程设计和技术服务等工作所需的基础理论知识和现代技术手段研究复杂工程问题；

4. 在工作中能利用矿物加工过程的基础理论和工程实践知识分析、解决实际工程问题，在新技术与新产品研发、工程设计和生产组织管理方面具备突出能力；

5. 具有较强的信息获取、理解能力，能及时了解本专业相关学科前沿及发展动态，具有终身学习的能力。

**I.Training objectives**

Based on the engineering education philosophy of facing industry, facing future, and facing world, aiming at preparing all-rounded, a strong sense of social responsibility, good humanistic quality and international vision talents with certain innovation ability, team management and coordination ability, lifelong learning ability, this program is designed to provide a thorough grounding specialized knowledge and rich engineering practice ability in the fields of mineral processing, comprehensive utilization of resources, metallurgical and environmental engineering. Students with engineering science basic theory and specialized knowledge can solve complex engineering problems and qualified for production, design, research and development and management. Students of this major are supposed to achieve the following aims after graduated 5 years:

**1.** Good human and social science literacy and environmental and social adjustment and adaptability, good language expression and communication skills, team spirit and cooperation spirit.

**2.** A sense of social responsibility; adhere to the professional ethics of the project, with quality awareness, environmental awareness and safety awareness.

**3.** Be familiar with the basic theory of mineral processing engineering and related fields, such as scientific research, engineering design and technical service, and modern technology method to study complicated engineering problem.

**4.** An ability to use the specialized knowledge of the mineral processing process solving the practical engineering problems and an excellent ability in the production of the new technology and new product development, engineering design and production organization management.

**5.** An ability to acquire information, understand the forefront and development trends of mineral processing and lifelong learning.

**二、毕业要求**

**1：**具有良好的人文社会科学素养和高度的社会责任感、理解并遵守工程职业道德。（覆盖通用标准基本要求8：职业道德与规范）

**2：**掌握数学、自然科学、工程基础知识和技术经济管理知识，并能用于解决矿物加工复杂工程问题。（覆盖通用标准基本要求1：工程知识）

**3：**掌握矿物加工工程的基本理论及专业知识并能用于描述和分析矿物加工复杂工程问题，以获得有效结论。（覆盖通用标准基本要求2：问题分析）

**4：**具有对矿物加工工程及相关复杂工程问题进行实验、设计、研究和建模等工程综合知识和突出的工程实践能力，能够解决矿物加工复杂工程问题，具有创新意识。（覆盖通用标准基本要求3、4：设计/开发解决方案、实验设计与信息处理）

**5：**具备熟练使用信息获取工具和现代工程工具的能力，能够对矿物加工工程设计和研究中的复杂问题进行模拟和预测。（覆盖通用标准基本要求5：现代工具的应用）

**6：**能够在解决矿物加工工程相关问题时考虑生产、设计、研究与开发、安全和环境保护等方面的国家宏观发展相关产业政策与法律法规，正确认识和评价工程实践对环境、社会可持续发展的影响。（覆盖通用标准基本要求6、7：工程师社会责任意识、环境和可持续发展）

**7：**具有开放包容的心态，积极沟通与分享，具有团队合作精神、组织管理能力。具有较强的书面和语言表达能力。（覆盖通用标准基本要求9、10、11：团队合作、沟通、项目管理）

**8：**了解学科前沿发展趋势，关注本专业与其他学科衍生交叉的新理论、新方法和新技术，能熟练运用一门以上的外语，具备一定的国际视野和跨文化的交流、竞争与合作能力。（覆盖通用标准基本要求10：沟通）

**9：**具有自主学习和终生学习的意识，能主动并持续更新核心知识以适应专业或职业发展。（覆盖通用标准基本要求12：终身学习）

**II.Requirements**

**1.** Have a good social literacy and social responsibility, understand and abide by the professional ethics of the project.

**2.** Master mathematics, natural science, engineering knowledge, economic management knowledge and specialized knowledge, and can be used to solve the complex problems of mineral processing.

**3.** Have an ability to describe and analyze the complex engineering problems of mineral processing using theory and professional knowledge of mineral processing engineering.

**4.** Have a sense of innovation, the engineering knowledge and excellent engineering practice ability of mineral processing to experiment, design, research and model for solving complex engineering problems in mineral processing.

**5.** Have ability to use information acquisition tools and modern engineering tools and apply it to model and predict in the design and research of mineral processing engineering.

**6.** Understand the national industrial policies and laws related design, production, research and explore, safety and environmental protection in mineral processing, have ability to understand and evaluate the effect of engineering practice to the development of environment and society.

**7.** Have an open and inclusive attitude, ability of organizing and managing, expressing and communicating.

**8.** Understand the forefront of mineral processing, pay attention to the new theory, new method and new technology of the professional cross and other subjects derived, proficiency in the use of more than one foreign language as well as international vision and ability to compete and cooperate in cross-cultural communication.

**9.** Have a sense of self-study and lifelong learning to update the core knowledge for adapt to professional development.

**附：培养目标实现矩阵**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 培养目标1 | 培养目标2 | 培养目标3 | 培养目标4 | 培养目标5 |
| 毕业要求1 | √ | √ |  |  |  |
| 毕业要求2 |  |  | √ | √ |  |
| 毕业要求3 |  |  | √ | √ |  |
| 毕业要求4 |  |  | √ | √ |  |
| 毕业要求5 |  |  | √ | √ | √ |
| 毕业要求6 |  | √ |  |  | √ |
| 毕业要求7 | √ |  |  |  |  |
| 毕业要求8 | √ |  |  |  | √ |
| 毕业要求9 | √ |  |  |  | √ |

**三、专业主干课程**

流体力学、分析化学、物理化学、冶金物理化学、固体物料分选学、造块学、矿物加工研究方法、矿物分选综合实验、造块工艺学系统实验、矿物加工工程设计、科技创新、工程实践与创新等。

**III．Core courses**

Fluid Mechanics, Analytical Chemistry, Physical Chemistry, Metallurgical Physical Chemistry, Solid Materials Separation, Agglomeration, Research Techniques of Mineral Processing, Systematic Experiments of Mineral Processing, Systematic Experiments of Agglomeration Technology, Design of Mineral Processing, Technology Innovation, and Engineering training and innovations.

**四、基本学制：四年**

**IV.Recommended length of the program：4 years**

**五、授予学位：工学学士**

**V. Degree: Bachelor of Engineering**

学生修满所规定的最低毕业学分，符合武汉科技大学授予学士学位规定，授予工学学士学位。

**六、毕业学分要求：176学分**

|  |  |  |  |
| --- | --- | --- | --- |
| 课程类型 | 学分要求 | 课程类型 | 学分要求 |
| 1、公共课程平台课程 | 48 | 3、专业课程模块 | 51.5 |
| 必修课程 | 44 | 必修课程 | 36 |
| 选修课程 | 4 | 选修课程 | 15.5 |
| 2、学科基础平台课程 | 43 |
| 必修课程 | 36 | 4、实践教学模块 | 27.5 |
| 选修课程 | 7 | 5、素质拓展模块 | 6 |

\*通识教育选修课4学分包括：人文社科类1学分、艺术体育类1学分、自然科学类1学分、经济管理类 1学分

**VI. Credits required for graduation：176 credits**

|  |  |  |  |
| --- | --- | --- | --- |
| Type of courses | Academic credits | Type of courses | Academic credits |
| 1.Common Courses | 48 | 3. Specialized Courses | 51.5 |
| Required courses | 44 | Required courses | 36 |
| Elective courses | 4 | Elective courses | 15.5 |
| 2. General disciplinary courses | 43 |
| Required Courses | 36 | 4.Practicum and Internship Courses | 27.5 |
| Elective Courses | 7 | 5.Quality Development Courses | 6 |

**七、学分比例**

**VII. Ratio of Credits**

1. **必修选修学分比例**

**The proportion of compulsory elective credits**

|  |  |  |
| --- | --- | --- |
| 类别 | 学分 | 占总学分比例 |
| 必修 | 149.5 | 84.94% |
| 选修 | 26.5 | 15.06% |

1. **实践教学环节学分比例**

**The Proportion of credits in practice teaching**

|  |  |  |  |
| --- | --- | --- | --- |
| 实践教学环节 | 实验教学学分 | 28.25 | 35.09% |
| 实践教学模块 | 27.5 |
| 素质拓展模块 | 6 |

1. **毕业要求实现矩阵**

**VIII. Graduation Realization Matrix**

| **课程名称** | **矿物加工工程(卓越工程师)专业毕业要求** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| （1） | （2） | （3） | （4） | （5） | （6） | （7） | （8） | （9） |
| 思想道德修养与法律基础 | √ |  |  |  |  | √ |  |  |  |
| 中国近现代史纲要 | √ |  |  |  |  |  |  |  |  |
| 马克思主义基本原理 | √ |  |  |  |  |  |  |  |  |
| 毛泽东思想与中国特色社会主义理论体系概论 | √ |  |  |  |  | √ |  |  |  |
| 军事课 | √ |  |  |  |  |  | √ |  |  |
| 大学生心理健康教育 | √ |  |  |  |  |  | √ |  | √ |
| 职业生涯规划与就业创业指导 | √ |  |  |  |  |  | √ |  | √ |
| 大学综合英语 |  |  |  |  | √ |  | √ | √ | √ |
| 体育 | √ |  |  |  |  |  | √ |  |  |
| 公益劳动 | √ |  |  |  |  |  | √ |  |  |
| 形势与政策 | √ |  |  |  |  | √ |  | √ |  |
| 创业学基础 | √ |  |  |  |  |  |  |  | √ |
| 大学计算机基础A |  |  |  | √ | √ |  | √ |  | √ |
| 计算机程序设计基础(C) |  |  |  | √ | √ |  |  |  |  |
| 人文社科类公选课 | √ |  |  |  |  | √ | √ | √ |  |
| 经济管理类公选课 |  | √ |  |  |  | √ | √ |  |  |
| 自然科学类公选课 |  | √ |  |  |  |  |  | √ |  |
| 艺术体育类公选课 | √ |  |  |  |  |  | √ | √ |  |
| 机械制图B |  | √ |  | √ | √ |  |  |  |  |
| 机械设计基础B |  | √ |  | √ | √ |  |  |  |  |
| 电工技术 |  | √ |  | √ |  |  |  |  |  |
| 电子技术 |  | √ |  | √ |  |  |  |  |  |
| 高等数学B |  | √ |  | √ | √ |  |  |  |  |
| 线性代数 |  | √ |  | √ | √ |  |  |  |  |
| 概率论与数理统计B |  | √ |  | √ | √ | √ |  |  |  |
| 大学物理B |  | √ |  | √ |  |  |  |  |  |
| 大学物理实验B | √ | √ |  | √ |  |  | √ |  |  |
| 工程力学A |  | √ |  | √ |  |  |  |  |  |
| 无机化学A |  | √ |  | √ |  |  |  |  |  |
| 无机化学实验A | √ | √ |  | √ |  |  | √ |  |  |
| 有机化学B |  | √ |  | √ |  |  |  |  |  |
| 有机化学实验B | √ | √ |  | √ |  |  | √ |  |  |
| 物理化学A |  | √ |  | √ |  |  |  |  |  |
| 物理化学实验A | √ | √ |  | √ |  |  | √ |  |  |
| 分析化学B |  | √ |  | √ |  |  |  |  |  |
| 分析化学实验B | √ | √ |  | √ |  |  | √ |  |  |
| 冶金物理化学 |  | √ |  | √ |  |  |  |  |  |
| 流体力学 |  | √ |  | √ | √ |  |  |  |  |
| 矿物加工概论 |  |  | √ |  |  |  |  | √ |  |
| 物料准备与储运 |  |  | √ | √ |  |  |  | √ |  |
| 矿物加工专业英语 |  |  |  |  |  |  | √ | √ | √ |
| 造块学1: 烧结理论与工艺 |  |  | √ | √ |  | √ |  | √ |  |
| 造块学2: 团矿理论与工艺 |  |  | √ | √ |  | √ |  | √ |  |
| 固体物料分选学 |  |  | √ | √ |  | √ |  | √ |  |
| 矿物加工研究方法 |  |  | √ | √ | √ | √ |  | √ | √ |
| 矿物加工工程设计 |  |  | √ | √ | √ | √ | √ | √ |  |
| 造块工艺学系统实验 | √ |  | √ | √ |  |  | √ |  | √ |
| 矿物分选综合实验 | √ |  | √ | √ |  |  | √ |  | √ |
| 矿物加工技术前沿 |  |  |  |  |  |  |  | √ |  |
| 矿物加工机械设备 |  |  | √ | √ |  |  |  | √ |  |
| 矿物材料 |  |  | √ | √ |  | √ |  | √ |  |
| 技术经济与投资分析 |  | √ |  | √ |  | √ | √ | √ |  |
| 矿山企业管理 |  | √ |  | √ |  | √ | √ |  |  |
| 二次资源综合利用 | √ |  | √ | √ |  | √ |  | √ |  |
| 矿物显微结构学 |  | √ | √ | √ | √ |  |  |  |  |
| 炼铁学 |  |  | √ | √ |  | √ |  | √ |  |
| 计算机在矿物加工中的应用 |  |  |  | √ | √ |  | √ | √ |  |
| 热工测量与控制 |  | √ |  | √ | √ |  |  |  |  |
| 矿物加工过程检测与控制 |  |  |  | √ | √ |  |  | √ |  |
| 矿物化学提取 |  |  | √ | √ |  | √ |  | √ |  |
| CAD技术 |  |  |  | √ | √ |  | √ |  |  |
| 环境影响评价 | √ | √ |  |  |  | √ |  |  |  |
| 冶金炉原理 |  | √ |  | √ |  |  |  |  |  |
| 采矿概论 |  |  |  |  |  | √ |  | √ |  |
| 选矿药剂 |  |  | √ | √ | √ | √ |  | √ |  |
| 信息检索与利用 |  |  |  |  | √ |  |  |  |  |
| 金工实习B | √ |  |  | √ |  |  | √ |  |  |
| 机械设计基础课程设计 | √ | √ |  | √ | √ |  | √ |  |  |
| 认识实习 | √ | √ | √ | √ |  |  | √ | √ | √ |
| 生产实习 | √ | √ | √ | √ |  | √ | √ | √ | √ |
| 矿物加工工程典型案例分析 | √ |  | √ | √ | √ | √ |  |  |  |
| 矿物加工课程设计 | √ | √ | √ | √ |  |  | √ |  | √ |
| 毕业实习 | √ | √ | √ | √ |  | √ | √ | √ | √ |
| 毕业设计（论文） | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 创新创业教育 | √ |  |  |  |  |  |  |  | √ |
| 第二课堂 | √ |  |  |  |  |  | √ |  | √ |

**九、课程修读进程表**



**十、教学环节设置及学分分布表**

X.Offered Course and Distribution of Academic Credits

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **课程类型** | | | **课程性质** | **课程编码** | **课程名称** | **学分** | **合计** | **课内学时** | | | **实践学时** | **学期** | **是否双学位** | **先修课程/备注** |
| **讲课** | **实验** | **上机** |
| 平台 | 公共课程平台课程 | 公共基础课程 | 必修 | 5105001 | 思想道德修养与法律基础  Moral Cultivation and Basics of Law | 3 | 48 | 42 | 0 | 0 | 6 | 1 |  |  |
| 5103001 | 中国近现代史纲要  An Outline of Modern and Contemporary History of China | 3 | 48 | 42 | 0 | 0 | 6 | 2 |  |  |
| 5102001 | 马克思主义基本原理  Fundamentals of Marxism | 3 | 48 | 44 | 0 | 0 | 4 | 3 |  |  |
| 5101001 | 毛泽东思想与中国特色社会主义理论体系概论  Theoretical system of socialism with Chinese characteristics | 5 | 80 | 64 | 0 | 0 | 16 | 4 |  |  |
| 1401604 | 大学综合英语(一)  College English (I) | 3 | 64 | 64 | 0 | 0 | 0 | 1 |  |  |
| 1401605 | 大学综合英语(二)  College English (II) | 3 | 64 | 64 | 0 | 0 | 0 | 2 |  |  |
| 1401606 | 大学综合英语(三)  College English (III) | 3 | 64 | 64 | 0 | 0 | 0 | 3 |  |  |
| 1501882 | 体育(一)  Physical Education(I) | 1 | 26 | 26 | 0 | 0 | 0 | 1 |  |  |
| 1501883 | 体育(二)  Physical Education(II) | 1 | 34 | 34 | 0 | 0 | 0 | 2 |  |  |
| 1501884 | 体育(三)  Physical Education(III) | 1 | 34 | 34 | 0 | 0 | 0 | 3 |  |  |
| 1501885 | 体育(四)  Physical Education(IV) | 1 | 34 | 34 | 0 | 0 | 0 | 4 |  |  |
| 5106001 | 形势与政策  World Affairs and State Policy | 2 | 64 | 64 | 0 | 0 | 0 | 1-8 |  |  |
| 通识教育课程 | 必修 | 1306001 | 大学计算机基础A  Computer Foundation A | 3 | 48 | 30 | 0 | 18 | 0 | 1 |  |  |
| 2501002 | 公益劳动  Community Service | 1 | 16 | 0 | 0 | 0 | 16 | 4 |  |  |
| 2502006 | 大学生心理健康教育  Mental Health Education | 2 | 32 | 32 | 0 | 0 | 0 | 1 |  |  |
| 2503001 | 职业生涯规划与就业创业指导  Career Plan and Vocational Guidance | 1 | 16 | 16 | 0 | 0 | 0 | 2 |  |  |
| 2504003 | 军事课  Military Course | 4 | 148 | 36 | 0 | 0 | 112 | 1,2 |  |  |
| 8001001 | 创业学基础  Fundamentals of entrepreneurship | 1 | 16 | 16 | 0 | 0 | 0 | 2 |  |  |
| 选修 |  | 人文社科类1学分  Humanity and Social Science 1 Academic Credits | | | | | | | | | |
|  | 经济管理类1学分  Economic and Management 1 Academic Credits | | | | | | | | | |
|  | 自然科学类1学分  Natural Science 1 Academic Credits | | | | | | | | | |
|  | 艺术体育类1学分  Artistic and Sports 1 Academic Credits | | | | | | | | | |
| 学科基础平台课程 | 专业学科基础课程 | 必修 | 0702603 | 高等数学B(一)  Advanced Mathematics B (I) | 4 | 64 | 64 | 0 | 0 | 0 | 1 |  |  |
| 0702604 | 高等数学B(二)  Advanced Mathematics B (II) | 5 | 80 | 80 | 0 | 0 | 0 | 2 |  |  |
| 2206661 | 无机化学A(一)  Inorganic Chemistry A (I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 1 |  |  |
| 2206662 | 无机化学A(二)  Inorganic Chemistry A (II) | 1.5 | 24 | 24 | 0 | 0 | 0 | 2 |  |  |
| 2253018 | 无机化学实验A(一)  Experiments in Inorganic Chemistry A (I) | 1 | 16 | 0 | 16 | 0 | 0 | 1 |  | 无机化学A(一) |
| 2253019 | 无机化学实验A(二)  Experiments in Inorganic Chemistry A (II) | 1 | 16 | 0 | 16 | 0 | 0 | 2 |  | 无机化学A(一) |
| 0703605 | 大学物理B(一)  College Physics B(I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 2 |  |  |
| 0302607 | 机械制图B(一)  Mechanical Drawing B (I) | 2.5 | 40 | 34 | 0 | 6 | 0 | 1 |  |  |
| 0302608 | 机械制图B(二)  Mechanical Drawing B (II) | 2 | 32 | 28 | 0 | 4 | 0 | 2 |  |  |
| 0703606 | 大学物理B (二)  College Physics B(II) | 2 | 32 | 32 | 0 | 0 | 0 | 3 |  |  |
| 0703607 | 大学物理实验B  Experiments in College Physics B | 1.5 | 24 | 0 | 24 | 0 | 0 | 3 |  |  |
| 0401001 | 电工技术  Electrotechnics | 2 | 32 | 24 | 8 | 0 | 0 | 3 |  | 大学物理A（一） |
| 0401004 | 电子技术  Electronic Technology | 3 | 48 | 36 | 12 | 0 | 0 | 4 |  | 大学物理A |
| 0702026 | 线性代数  Linear Algebra | 2 | 32 | 32 | 0 | 0 | 0 | 4 |  | 高等数学A |
| 0304602 | 机械设计基础B  Basics of Mechanical Design B | 3.5 | 56 | 50 | 6 | 0 | 0 | 5 |  |  |
| 选修 | 1306008 | C语言程序设计基础  Basics of C Programming Language | 4 | 64 | 40 | 0 | 24 | 0 | 2 |  | 大学计算机基础A |
| 2206679 | 有机化学B  Organic Chemistry B | 2.5 | 40 | 40 | 0 | 0 | 0 | 3 |  | 需同时选修 |
| 2253027 | 有机化学实验B  Experiments in Organic Chemistry | 1.5 | 24 | 0 | 24 | 0 | 0 | 3 |  |
| 0702304 | 概率论与数理统计B  Probability Theory and Mathematical Statistics B | 2.5 | 40 | 40 | 0 | 0 | 0 | 3 |  | 高等数学A |
| 0701605 | 工程力学A  Engineering Mechanics A | 4.5 | 72 | 66 | 6 | 0 | 0 | 4 |  | 大学物理B(一) |
| 模块 | 专业课程模块 | 专业必修课程 | 必修 | 2206667 | 物理化学A(一)  Physical Chemistry A (I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 3 |  | 高等数学B |
| 2206668 | 物理化学A(二)  Physical Chemistry A (II) | 2 | 32 | 32 | 0 | 0 | 0 | 4 |  | 高等数学B |
| 2253021 | 物理化学实验A(一)  Experiments in Physical Chemistry A (I) | 2 | 32 | 0 | 32 | 0 | 0 | 3 |  | 物理化学A |
| 2253022 | 物理化学实验A(二)  Experiments in Physical Chemistry A (I) | 1.5 | 24 | 0 | 24 | 0 | 0 | 4 |  | 物理化学A |
| 0107046 | 矿物加工概论  A Survey of Mineral Processing | 2 | 32 | 32 | 0 | 0 | 0 | 4 |  |  |
| 0107079 | 矿物加工技术前沿  Advanced Mineral Processing Technology | 1.5 | 24 | 24 | 0 | 0 | 0 | 5 |  |  |
| 0107065 | 冶金物理化学  Metallurgical Physical Chemistry | 2 | 32 | 32 | 0 | 0 | 0 | 5 |  | 物理化学A |
| 0107058 | 造块学1: 烧结理论与工艺  Agglomeration 1 Sintering Theory and Techniques) | 2.5 | 40 | 36 | 4 | 0 | 0 | 5 |  | 矿物加工概论 |
| 0107059 | 造块学2: 团矿理论与工艺  Agglomeration (Pelletizing Theory and Techniques) | 2.5 | 40 | 36 | 4 | 0 | 0 | 5 |  | 矿物加工概论 |
| 0107009 | 流体力学  Fluid Mechanics | 2 | 32 | 32 | 0 | 0 | 0 | 5 |  | 高等数学B、大学物理B |
| 0107033 | 固体物料分选学  Solid Materials Separation | 3.5 | 56 | 50 | 6 | 0 | 0 | 6 |  | 矿物加工概论 |
| 0107054 | 矿物加工研究方法  Research Techniques of Mineral Processing | 3 | 48 | 42 | 6 | 0 | 0 | 6 |  | 造块学、固体物料分选学 |
| 0107067 | 造块工艺学系统实验  Systematic Experiments of Agglomeration Technology | 1.5 | 24 | 0 | 24 | 0 | 0 | 6 |  | 造块学 |
| 0107080 | 矿物加工专业英语  Specialty English | 2.5 | 40 | 40 | 0 | 0 | 0 | 6 |  | 矿物加工概论 |
| 0107066 | 矿物分选综合实验  Systematic Experiments of Mineral Processing | 1.5 | 24 | 0 | 24 | 0 | 0 | 6 |  | 固体物料分选学 |
| 0107053 | 矿物加工工程设计  Design of Mineral Processing | 3.5 | 56 | 48 | 0 | 8 | 0 | 7 |  | 造块学、固体物料分选学 |
| 专业选修课 | 选修 | 0107086 | CAD技术  CAD | 2 | 32 | 18 | 0 | 14 | 0 | 4 |  |  |
| 2206681 | 分析化学B  Analytical Chemistry B | 2 | 32 | 32 | 0 | 0 | 0 | 3 |  | 无机化学A |
| 2253028 | 分析化学实验B  Experiments in Analytical Chemistry B | 1.5 | 24 | 0 | 24 | 0 | 0 | 3 |  | 需与分析化学B同时选修 |
| 0107084 | 中国矿冶科技史  History of Mining & Metallurgy in China | 2 | 32 | 32 | 0 | 0 | 0 | 3 |  |  |
| 1601004 | 信息检索与利用  Information Retrieval and Utilizing | 1 | 16 | 16 | 0 | 0 | 0 | 4 |  |  |
| 0101194 | 矿物显微结构学  Studies of mineral microstructure | 2.5 | 40 | 30 | 10 | 0 | 0 | 5 |  |  |
| 0107036 | 物料准备与储运  Preparation and Transportation of Minerals | 2 | 32 | 28 | 4 | 0 | 0 | 5 |  | 矿物加工概论 |
| 0107081 | 矿物加工机械设备  Mineral Processing Machinery | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  | 造块学，固体物料分选学 |
| 0107035 | 炼铁学  Ironmaking | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0107050 | 矿物化学提取  Chemical Extraction of Mineral | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0107073 | 矿山企业管理  Mine Corporation Management | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0101088 | 技术经济与投资分析  Techno-economics and Investment Analysis | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0101152 | 采矿概论  A Survey of Mining Engineering | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0107078 | 矿物加工过程检测与控制  Detection and Control of Mineral Processing | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0107026 | 冶金炉原理  Principles of Metallurgical Furnace | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |  |
| 0107056 | 二次资源综合利用  Comprehensive Utilization of Secondary Resources | 2 | 32 | 32 | 0 | 0 | 0 | 7 |  | 造块学，固体物料分选学 |
| 0106028 | 环境影响评价  Environmental Assessment | 2.5 | 40 | 34 | 0 | 6 | 0 | 7 |  |  |
| 0107051 | 计算机在矿物加工中的应用  Computer Application of Mineral Processing | 2.5 | 40 | 30 | 0 | 10 | 0 | 7 |  |  |
| 0107052 | 矿物材料  Mineral Material | 2 | 32 | 32 | 0 | 0 | 0 | 7 |  |  |
| 0107074 | 选矿药剂  Mineral Processing Reagents | 2 | 32 | 32 | 0 | 0 | 0 | 7 |  |  |
| 0107087 | 矿物加工工程典型案例分析  Typical Cases Analysis of Mineral Processing Engineering | 1.5 | 24 | 24 | 0 | 0 | 0 | 7 |  |  |
| 实践教学模块 | 专业实践课程 | 必修 | 1701008 | 工程训练B  [Engineering](javascript:;) [Training](javascript:;) B | 1.5 | 48 | 0 | 0 | 0 | 48 | 3 |  |  |
| 0107062 | 科技创新  Technology Innovation | 4 | 4周 | 0 | 0 | 0 | 4周 | 4-7 |  |  |
| 0107030 | 认识实习  Introductory Practice | 2 | 2周 | 0 | 0 | 0 | 2周 | 5 |  | 矿物加工概论 |
| 0304010 | 机械设计基础课程设计  Course Project in Basics of Mechanical Design | 1 | 2周 | 0 | 0 | 0 | 2周 | 5 |  | 机械设计基础 B |
| 0107063 | 工程实践与创新  Engineering training and innovations | 4 | 4周 | 0 | 0 | 0 | 4周 | 6 |  |  |
| 0107031 | 生产实习  Production Practice | 3 | 3周 | 0 | 0 | 0 | 3周 | 7 |  |  |
| 0107061 | 矿物加工课程设计  Course Project in Mineral Processing | 1 | 2周 | 0 | 0 | 0 | 2周 | 7 |  |  |
| 0107097 | 毕业实习  Pre-graduation Practice Experience | 3 | 3周 | 0 | 0 | 0 | 3周 | 8 |  |  |
| 0107096 | 毕业设计(论文)  Graduation Project (Thesis) | 8 | 14周 | 0 | 0 | 0 | 14周 | 8 |  |  |
| 素质拓展模块 | 创新创业教育 | 必修 |  | 创新创业实践3学分  Innovation Practices 3 AcademicCredits | | | | | | | | | |
| 第二课程 |  | 第二课堂3学分  Second Classroom 3 Academic Credits | | | | | | | | | |

**十一、教学进程安排表**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 学期 | 周 次 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 1 | ♀ | ♀/★ | ⊙/★ | ★ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● |  |  |  |  |  |  |  |  |  |
| 2 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● |  |  |  |  |  |  |  |  |  |
| 3 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● |  |  |  |  |  |  |  |  |  |
| 4 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● |  |  |  |  |  |  |  |  |  |
| 5 | ╬ | ╬ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | × | × | ● |  |  |  |  |  |  |  |  |  |
| 6 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | E | E | E | Ε | ● | E | E |  |  |  |  |  |  |  |
| 7 | ∕ | ∕ | ∕ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | × | × | ● |  |  |  |  |  |  |  |  |  |
| 8 | ＃ | ＃ | ＃ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | √ | ┼ |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

符号说明：

1、♀ 入学前机动 2、⊙ 入学教育 3、★ 军训 4、□理论教学 5、√ 机动时间 6、●考试 7、×课程设计 8、Ε专业实验或实习 9、—假期

10、▲ 学年论文 11、Ｇ技能训练 12、※ 毕业设计（论文） 13、┼毕业鉴定 14、＃毕业实习 15、Ｓ写生 16、∕ 生产实习(金工实习)

17、Τ教材教法 18、☆ 教育实习 19、○技能教育实习 20、◎ 专题讲座 21、◆ 公益劳动 22、△ 社会调查 23、╬ 认识实习