**环境工程专业培养方案**

**Curriculum for Undergraduate of** **Environmental Engineering Major**

**一、培养目标**

本专业培养德、智、体、美、劳全面发展，具有可持续发展理念，具备环境工程学科的基本理论、基本知识和基本技能，掌握相关专业的专门知识，能在环境保护及相关领域从事污染控制工程的设计与运营管理、环境评价、环境管理、教育与研究开发等工作，富有实践能力和创新创业精神，具有国际视野的高素质应用型人才，期待毕业生五年左右达到以下目标：

1、具有良好的人文素养与道德水准，具有良好的表达及沟通协调能力、团队意识和合作精神；

2、掌握环境工程领域的基础理论和专业知识，具有环境工程设计、制图、施工、环保产品开发、生产及设备运行管理的能力；

3、具有污染物监测和分析、环境质量评价、环境规划与管理的实际应用能力，有意愿创新实践，并有能力服务社会；

4、具有终身学习的意识，具备不断学习和适应发展的能力；

5、具有一定的国际视野和良好的外语应用能力。

**I.Training objectives**

This major trains undergraduate students to be high-quality applied talents with all-round development of morality, intelligence, physique, aesthetics and labor, who have the ability of engineering practice and innovation. Students need to grasp basic theoretical knowledge, skill and specialized knowledge of environmental engineering. With the innovation and entrepreneurial spirit, practical ability and international vision, students will be qualified for design and operation of pollution control engineering, environmental assessment, environmental management, education and research etc. in environmental protection and related fields. Graduates of this major are supposed to achieve the following aims in about five years:

**1.**Having good humanistic quality and excellent moralities, good language expression and communication skills, team spirit and cooperation spirit.

**2.**Mastering basic theory and professional knowledge of environmental engineering, and acquiring the skills of environmental engineering design, engineering drawing, engineering construction, product exploitation, operation and management of environmental protection facilities.

**3.**The abilities of monitoring and analysis of pollutant, environmental assessment, planning and management. Be willing to make innovation practice and having an ability to serve for the society.

**4.**Having a sense of lifelong learning and the ability to keep on learning and adapting to development.

**5.** Having certain international vison and good ability to use foreign language.

**二、毕业要求**

1、工程知识：掌握环境工程领域相关的数学、自然科学、工程基础和专业知识，并能用于解决复杂的环境工程问题。

2、问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂的环境工程问题，以获得有效结论。

3、设计/开发解决方案：具有创新意识，能够应用环境工程相关的基本原理和技术手段，设计复杂环境工程问题的解决方案，设计过程中考虑社会、健康、安全、法律、文化以及环境等因素。

4、实验设计与信息处理：能够基于科学原理并采用科学方法对复杂环境工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。

5、现代工具的应用：能够针对复杂的环境工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测和模拟，并能够理解其局限性。

6、工程师社会责任意识：能够基于环境工程相关背景知识进行合理分析，评价环境专业工程实践和复杂环境工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

7、环境和可持续发展：能够理解和评价针对复杂环境工程问题的工程实践对环境、社会可持续发展的影响。

8、职业道德与规范：具有人文社会科学素养、社会责任感，能够在环境工程实践中理解并遵守工程职业道德和规范，履行责任。

9、团队合作：能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

10、沟通：能够就复杂的环境工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。

11、项目管理：具有一定的组织管理能力，理解并掌握工程管理原理与经济决策方法，并能在多学科环境中应用。

12、终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

**II.Requirements**

**1.**Engineering knowledge: grasping mathematics, natural science, engineering basic and professional knowledge, and using them to solve complex problems of environmental engineering.

**2.**Problem analysis: being able to use the fundamentals of mathematics, natural science and engineering science to identify and analyze complex environmental engineering problems by literatures and acquire valid conclusions.

**3.**Designing and exploiting solution: being able to use the fundamentals and technological means of environmental engineering to design solution of complex problems with consciousness of innovation. Considering the factors of society, health, safety, law, culture and environment et al. in the processing.

**4.**Experimental design and information processing: being able to study complex environmental engineering problems with scientific principle and method, including experiment design, data analysis and explanation, and acquire valid conclusion by synthetical information.

**5.**Application of modern tools: being able to develop, choose and use proper technology, resources, modern engineering tool and information technology tool to solve complex environmental engineering problems, including forecast and simulation of the problems, and understand their limitation.

**6.**The social responsibility awareness of engineer: being able to analyze and assess the influence of solution of environmental engineering practice and complex problems on society, health, safety, law and culture based on environmental background knowledge, and understand the responsibilities.

**7.**Environment and sustainable development: being able to understand and assess the influence of environmental engineering practice on environmental and social sustainable development.

**8.**Professional moral and standard: having humanistic social and scientific literacy and social responsibility. Being able to understand and obey professional ethics and standard of environmental engineering.

**9.**Teamwork: being able to be individual, team member and manager in a group with multidisciplinary background.

**10.**Communication: being able to communicate complex environmental engineering problems with public, including report writing, manuscript design and statement. Having an international view and being able to communicate in cross-cultural fields.

**11.**Project management: having the ability of organization and management. Being able to understand and master principle of engineering management and economic decision-making method, and use them.

**12**.Lifelong learning: having the awareness of self-study and lifelong study, and the ability of continuous learning and adapting 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 | 培养目标6 |
| 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 |  |  |  | √ |  |  |
| 毕业要求10 |  |  |  | √ |  | √ |
| 毕业要求11 |  | √ |  | √ |  |  |
| 毕业要求12 |  |  |  |  | √ |  |

**三、专业主干课程**

工程流体力学、环境化学、环境工程原理、大气污染控制工程、环境工程微生物学、水污染控制工程、噪声污染控制、环境影响评价、固体废物处理与处置、环境监测。

**III．Core courses**

Engineering Fluid Mechanics, Environmental Chemistry, Principles of Environmental Engineering, Air Pollution Control Engineering, Environmental Engineering Microbiology, Water Pollution Control Engineering, Noise Pollution Control, Environmental Assessment, Solid Waste Treatment and Disposal, Environmental Monitoring.

**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、通识教育平台课程 | 46 | 3、专业课程模块 | 58 |
| 必修课程 | 42 | 必修课程 | 37 |
| 选修课程 | 4 | 选修课程 | 21 |
| 2、学科基础平台课程 | 46.5 |
| 必修课程 | 42.5 | 4、实践教学模块 | 18.5 |
| 选修课程 | 4 | 5、素质拓展模块 | 7 |

\*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.Courses of general education | 46 | 3. Specialized Courses | 58 |
| Required courses | 42 | Core specialized courses | 37 |
| Elective courses | 4 | Elective courses | 21 |
| 2. General disciplinary courses  | 46.5 |
| Required Courses | 42.5 | 4.Practicum and Internship Courses | 18.5 |
| Elective Courses | 4 | 5.Quality Evelopment Courses | 7 |

**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 | 147 | 83.52% |
| 选修 | 29 | 16.48% |

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 | 30.40% |
| 实践教学模块 | 18.5 |
| 素质拓展模块 | 7 |

**八、毕业要求实现矩阵**

**VIII. Graduation Realization Matrix**

| **课程名称** | **环境工程专业毕业要求** |
| --- | --- |
| （1） | （2） | （3） | （4） | （5） | （6） | （7） | （8） | （9） | （10） | （11） | （12） |
| 军事课 |  |  |  |  |  | √ |  | √ |  |  |  |  |
| 大学英语 |  |  |  |  | √ |  |  |  |  | √ |  | √ |
| 体育 |  |  |  |  |  |  |  |  |  |  |  | √ |
| 毛泽东思想与中国特色社会主义理论体系概论 |  |  |  |  |  | √ |  | √ |  |  |  |  |
| 马克思主义基本原理 |  |  |  |  |  | √ |  | √ |  |  |  |  |
| 中国近现代史纲要 |  |  |  |  |  | √ | √ | √ |  |  |  |  |
| 思想道德修养与法律基础 |  |  | √ |  |  | √ |  | √ |  |  |  |  |
| 人文社科类课程 |  |  |  |  |  |  | √ | √ |  |  |  |  |
| 经济管理类课程 |  |  |  |  |  |  |  |  | √ |  | √ |  |
| 高等数学 | √ | √ | √ | √ | √ |  |  |  |  |  |  |  |
| 大学物理 | √ | √ | √ | √ | √ |  |  |  |  |  |  |  |
| 物理实验 |  |  |  | √ |  |  |  |  |  |  |  |  |
| 大学计算机基础 | √ |  |  | √ | √ |  |  |  |  |  |  |  |
| 线性代数 | √ | √ |  |  |  |  |  |  |  |  |  |  |
| 工程制图  |  |  | √ | √ |  |  |  |  |  |  |  |  |
| 机械设计基础 | √ | √ |  |  |  |  |  |  |  |  |  |  |
| 无机化学 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 无机化学实验 |  |  |  | √ |  |  |  |  |  |  |  |  |
| 物理化学 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 物理化学实验 |  |  |  | √ |  |  |  |  |  |  |  |  |
| 有机化学 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 有机化学实验 |  |  |  | √ |  |  |  |  |  |  |  |  |
| 分析化学 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 分析化学实验 |  |  |  | √ |  |  |  |  |  |  |  |  |
| 环境热点案例讨论 | √ | √ | √ | √ |  | √ | √ |  | √ | √ |  |  |
| 工程流体力学 | √ | √ |  |  |  |  |  | √ |  |  |  | √ |
| 大气污染控制工程 | √ | √ | √ | √ | √ |  | √ | √ |  | √ | √ | √ |
| 环境工程微生物学 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 环境化学 | √ | √ |  | √ |  | √ | √ | √ |  |  |  |  |
| 水污染控制工程（一） |  | √ | √ | √ |  | √ | √ |  |  |  |  |  |
| 水污染控制工程（二） | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 噪声污染控制 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 环境影响评价 | √ | √ |  |  | √ | √ |  |  | √ |  |  |  |
| 固体废物处理与处置 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 环境监测 |  | √ | √ | √ | √ | √ | √ |  |  |  |  |  |
| 环境工程原理 | √ | √ | √ | √ |  |  |  |  |  |  |  |  |
| 环境工程导论 | √ | √ | √ |  |  |  | √ | √ |  |  |  | √ |
| 二次资源综合利用 | √ | √ | √ | √ |  | √ | √ |  |  |  |  |  |
| 清洁生产 | √ | √ | √ |  |  | √ | √ | √ | √ |  |  |  |
| 大气污染控制设备与设计 |  |  | √ | √ | √ |  | √ |  |  |  |  |  |
| 工业水污染控制技术与设备 |  |  | √ | √ |  |  |  |  |  |  |  |  |
| 环境生态工程 | √ | √ | √ | √ |  |  | √ |  |  |  | √ |  |
| 环境管理 |  |  |  |  |  | √ | √ | √ |  |  | √ | √ |
| 环境仪器分析 |  | √ |  | √ | √ |  |  |  |  |  |  |  |
| CAD技术 |  |  |  | √ | √ |  |  |  |  |  |  | √ |
| 环保设施运营管理 |  |  | √ |  |  | √ | √ |  |  |  | √ |  |
| 环境材料基础 |  | √ | √ | √ |  |  | √ |  |  |  |  | √ |
| 环境法 |  |  |  |  |  | √ | √ | √ |  |  |  |  |
| 专业英语 |  | √ |  |  | √ |  |  |  |  | √ |  | √ |
| 专业课程设计 |  |  | √ | √ | √ |  |  |  | √ |  |  |  |
| 认识实习 | √ | √ |  |  |  | √ | √ |  | √ | √ |  |  |
| 生产实习 | √ | √ |  |  |  | √ | √ |  | √ | √ |  |  |
| 毕业实习 | √ | √ |  |  |  | √ | √ |  | √ | √ |  |  |
| 毕业设计（论文） | √ | √ | √ | √ | √ |  |  |  | √ | √ |  | √ |

**九、课程修读进程表**

大学计算机

基础

计算机程序

设计基础

环境工程导论

工程制图

环境工程

微生物学

环境化学

环境热点

案例讨论

大学英语2

环境生态工程

大气污染控制

工程课程设计

选修课程的课内实验

水污染控制

课程设计

环境监测

水污染控制工程

环境监测

各类专业选修课

有机化学实验

物理化学2

无机化学

环境影响评价

大气污染

控制工程

环境工程原理

机械设计基础

固体废物

处理与处置

噪声污染控制

工程流体力学

生产实习

认识实习

暑期社会实践2

暑期社会实践1

毕业实习

有机化学

分析化学

军事理论、马克思主义基础原理等思想政治类课程

公共类、基础类选修课程

大学英语1

大学英语3

大学英语4

体 育1

体 育2

体 育3

体 育4

高等数学1

高等数学2

线性代数

概率论与

数理统计

毕业设计(论文)

大学物理1

大学物理2

工程力学

物理化学1

二次资源综合

利用

电工技术

无机化学实验

物理实验

物理化学实验2

机械设计基础

课程设计

电工技术

金工实习

大学计算机基础

计算机程序设计

基础

物理化学实验1

分析化学实验

**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** | **先修课程/备注** |
| **讲课** | **实验** | **上机** |
| 平台 | 通识教育平台课程 | 必修 | 1303601 | 大学计算机基础AComputer Foundation A | 3 | 48 | 30 | 0 | 18 | 0 | 1 |  |
| 1401840 | 大学英语（一）College English (I) | 3 | 48 | 48 | 0 | 0 | 0 | 1 |  |
| 1401841 | 大学英语（二）College English (II) | 3 | 48 | 48 | 0 | 0 | 0 | 2 |  |
| 1401842 | 大学英语（三）College English (III) | 3 | 48 | 48 | 0 | 0 | 0 | 3 |  |
| 1401843 | 大学英语（四）College English (IV) | 3 | 48 | 48 | 0 | 0 | 0 | 4 |  |
| 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 |  |
| 2501006 | 军事课Military Course | 4 | 148 | 36 | 0 | 0 | 112 | 1,2 |  |
| 2501002 | 公益劳动Community Service | 1 | 16 | 0 | 0 | 0 | 16 | 4 |  |
| 2501004 | 大学生心理健康教育Mental Health Education | 1 | 16 | 16 | 0 | 0 | 0 | 1 |  |
| 2501005 | 职业生涯规划与就业创业指导Career Planning and Employment Entrepreneurial Guidance | 1 | 16 | 16 | 0 | 0 | 0 | 2 |  |
| 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 |  |
| 5102001 | 马克思主义基本原理Fundamentals of Marxism | 3 | 48 | 44 | 0 | 0 | 4 | 3 |  |
| 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 |  |
| 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 |  |
| 5106001 | 形势与政策World Affairs and State Policy | 2 | 64 | 64 | 0 | 0 | 0 | 1,2,3,4,5,6,7,8 |  |
| 选修 |  | 人文社科类1学分Humanity and Social Science 1 Academic Credits |
|  | 艺术体育类1学分Artistic and Sports 1 Academic Credits |
|  | 自然科学类1学分Natural Science 1 Academic Credits |
|  | 经济管理类1学分Economic and Management 1 Academic Credits |
| 学科基础平台课程 | 必修 | 0302609 | 工程制图BEngineering Drawing B | 3 | 48 | 40 | 0 | 8 | 0 | 2 |  |
| 0304603 | 机械设计基础CBasics of Mechanical Design C | 3.5 | 56 | 50 | 6 | 0 | 0 | 5 |  |
| 0702026 | 线性代数Linear Algebra | 2 | 32 | 32 | 0 | 0 | 0 | 3 |  |
| 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 |  |
| 0703605 | 大学物理B(一)College Physics B(I) | 2.5 | 40 | 40 | 0 | 0 | 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BExperiments of College Physics B | 1.5 | 24 | 0 | 24 | 0 | 0 | 3 |  |
| 2206665 | 无机化学BInorganic Chemistry B | 3 | 48 | 48 | 0 | 0 | 0 | 1 |  |
| 2206666  | 无机化学实验BExperiments in Inorganic Chemistry B | 1 | 16 | 0 | 16 | 0 | 0 | 1 |  |
| 2206667 | 物理化学A(一)Physical Chemistry A(I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 3 |  |
| 2206668 | 物理化学A(二)Physical Chemistry A (II) | 2 | 32 | 32 | 0 | 0 | 0 | 4 |  |
| 2206669 | 物理化学实验A(一)Experiments in Physical Chemistry A(I) | 2 | 32 | 0 | 32 | 0 | 0 | 3 |  |
| 2206670 | 物理化学实验A(二)Experiments in Physical Chemistry A(II) | 1.5 | 24 | 0 | 24 | 0 | 0 | 4 |  |
| 2206679 | 有机化学BOrganic Chemistry B | 2.5 | 40 | 40 | 0 | 0 | 0 | 3 |  |
| 2206680 | 有机化学实验BOrganic Chemical Experiment B | 1 | 16 | 0 | 16 | 0 | 0 | 3 |  |
| 2206681 | 分析化学BAnalytical Chemistry B | 2 | 32 | 32 | 0 | 0 | 0 | 3 |  |
| 2206682 | 分析化学实验BAnalytical Chemical Experiment B | 1.5 | 24 | 0 | 24 | 0 | 0 | 3 |  |
| 选修 | 0401001 | 电工技术Electrotechnics | 2 | 32 | 24 | 8 | 0 | 0 | 3 |  |
| 0701605 | 工程力学AEngineering Mechanics A | 4.5 | 72 | 66 | 6 | 0 | 0 | 4 |  |
| 0702303 | 概率论与数理统计AProbability and Mathematical Statistics(A) | 3 | 48 | 48 | 0 | 0 | 0 | 4 |  |
| 1303604 | 计算机程序设计基础(C)Basics of Computer Programming(C) | 4 | 64 | 40 | 0 | 24 | 0 | 2 |  |
| 1303605 | 数据库技术及应用Database Technology and Applications | 3 | 48 | 24 | 0 | 24 | 0 | 3 |  |
| 1601004 | 信息检索与利用Information Retrieval | 1 | 16 | 6 | 0 | 10 | 0 | 4 |  |
| 模块 | 专业课程模块 | 专业核心课程 | 必修 | 0101068 | 工程流体力学Engineering Fluid Mechanics | 3 | 48 | 48 | 0 | 0 | 0 | 5 |  |
| 0105005 | 大气污染控制工程Air Pollution Control Engineering | 4 | 64 | 54 | 10 | 0 | 0 | 7 |  |
| 0105015 | 环境工程微生物学Environmental EngineeringMicrobiology | 3 | 48 | 40 | 8 | 0 | 0 | 5 |  |
| 0105018 | 环境化学Environmental Chemistry | 3 | 48 | 42 | 6 | 0 | 0 | 5 |  |
| 0105620 | 水污染控制工程（一）Water Polution Control Engineeing(I) | 2 | 32 | 32 | 0 | 0 | 0 | 5 |  |
| 0105621 | 水污染控制工程（二）Water Polution Control Engineeing(II) | 4.5 | 72 | 62 | 10 | 0 | 0 | 6 |  |
| 0105036 | 噪声污染控制Noise Pollution Control  | 2.5 | 40 | 36 | 4 | 0 | 0 | 5 |  |
| 0105050 | 环境影响评价Environmental Assessment | 2.5 | 40 | 34 | 0 | 6 | 0 | 6 |  |
| 0105104 | 环境监测Environmental Monitoring | 3 | 48 | 38 | 10 | 0 | 0 | 6 |  |
| 0105110 | 环境工程原理Principles of Environmental Engineering  | 3.5 | 56 | 50 | 6 | 0 | 0 | 5 |  |
| 0105160 | 固体废物处理与处置Solid Waste Treatment and Disposal | 3.5 | 56 | 48 | 8 | 0 | 0 | 5 |  |
| 0105618 | 环境热点案例讨论Discussion of Environmental Case | 1.5 | 24 | 24 | 0 | 0 | 0 | 6 |  |
| 0105619 | 环境工程导论Introduction to Environmental Engineering | 1 | 16 | 16 | 0 | 0 | 0 | 2 |  |
| 专业任选课程 | 选修 | 0105016 | 环境管理Environmental Management | 2.5 | 40 | 32 | 0 | 8 | 0 | 6 |  |
| 0105059 | 专业英语Specialized English | 2 | 32 | 32 | 0 | 0 | 0 | 5 |  |
| 0105084 | 清洁生产Clean Production | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |
| 0105092 | 大气污染控制设备与设计Air Pollution Control: Equipment and Design | 2 | 32 | 32 | 0 | 0 | 0 | 7 |  |
| 0105113 | 环保设施运营管理Operation and Management of Environmental Protection Facilities | 2 | 32 | 32 | 0 | 0 | 0 | 7 |  |
| 0105114 | 环境法Environment Law | 2 | 32 | 32 | 0 | 0 | 0 | 4 |  |
| 0105117 | 环境仪器分析Instrument Analysis | 2.5 | 40 | 26 | 14 | 0 | 0 | 6 |  |
| 0105122 | 工业水污染控制技术与设备Industrial Water Pollution Control Technology and Equipment | 2 | 32 | 32 | 0 | 0 | 0 | 7 |  |
| 0105123 | 环境生态工程Ecological Engineering  | 2 | 32 | 32 | 0 | 0 | 0 | 4 |  |
| 0105615 | 环境材料基础Basics of Environmental Materials | 2 | 32 | 32 | 0 | 0 | 0 | 5 |  |
| 0107050 | 矿物化学提取Chemical Extraction of Mineral | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |
| 0107056 | 二次资源综合利用Comprehensive Utilization of Secondary Resources | 2 | 32 | 28 | 0 | 4 | 0 | 6 |  |
| 0107070 | 废水资源化综合利用Comprehensive Utilization of Wastewater | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |
| 0108001 | CAD技术CAD Technology | 2 | 32 | 16 | 0 | 16 | 0 | 7 |  |
| 0108014 | 地理信息系统Geographic Information System | 2 | 32 | 24 | 0 | 8 | 0 | 7 |  |
| 0108053 | 建设项目管理Management of Construction Project | 2.5 | 40 | 40 | 0 | 0 | 0 | 7 |  |
| 0105124 | 环境工程土建施工Environmental Civil Engineering | 2 | 32 | 32 | 0 | 0 | 0 | 6 |  |
| 0108080 | 工程概预算Project Budget | 2.5 | 40 | 40 | 0 | 0 | 0 | 7 |  |
| 实践教学模块 | 必修 | 0105057 | 认识实习Introductory Practice Experience | 2 | 2周 | 0 | 0 | 0 | 2周 | 5 |  |
| 0105058 | 生产实习Production Practice | 2 | 2周 | 0 | 0 | 0 | 2周 | 7 |  |
| 0105097 | 毕业实习Pre-graduation Internship | 2 | 2周 | 0 | 0 | 0 | 2周 | 8 |  |
| 0105098 | 毕业设计（论文）Undergraduate Project (Thesis) | 8 | 15周 | 0 | 0 | 0 | 15周 | 8 |  |
| 0105105 | 大气污染控制工程课程设计Design on Air Pollution Control | 1 | 2周 | 0 | 0 | 0 | 2周 | 7 |  |
| 0105106 | 水污染控制课程设计Design on Water Pollution Control | 1 | 2周 | 0 | 0 | 0 | 2周 | 6 |  |
| 0304005 | 机械设计基础课程设计Course Project in Basics of Mechanical Design | 1 | 1周 | 0 | 0 | 0 | 1周 | 5 |  |
| 1701005 | 金工实习BMetalworking Practice B | 1.5 | 48 | 0 | 0 | 0 | 48 | 3 |  |
| 素质拓展模块 | 必修 | 创新创业教育 | 创新创业课程1学分（创新创业课程群）Innovation Course 1 Academic Credits |
| 创新创业实践2学分Innovative Practices 2 Academic Credits |
| 第二课程 | 第二课堂3学分Second Classroom 3 Academic Credits |
| 心理健康 | 心理健康教育实践1学分Practices of Mental Health Education 1 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 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | × | × | ● | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 | 　 |
| 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