

环境生态工程专业培养方案

一、专业培养目标

本专业面向国家生态文明建设重大需求，培养德、智、体、美、劳全面发展，具备较高人文素养、扎实数理基础和较强计算机与外语水平，掌握生态学、环境科学及环境工程等学科基本理论和工程治理基础知识，熟悉我国生态环境保护方针、政策和法规，具备环境生态工程的设计、施工、研发及运营管理能力，同时具备创新意识和创新能力，满足社会主义现代化建设需要的环境生态工程领域高素质复合型人才。毕业后能够在企事业、科研单位和教育等相关部门从事生态环境研究、规划与设计、保护与修复及管理、研究和教育等工作。经过5年的实际工作，能够成为专业骨干，具备工程师或与之相当的专业技术能力，并能通过不断学习适应发展。

二、毕业要求

1. **工程知识：**掌握数学、物理、化学、计算机、环境科学、生态学与工程学等方面的基础知识、基本原理和基本技术方法；具备分析和解决复杂环境生态工程问题的知识储备。

- 1.1 具备解决环境生态工程问题的数学、物理、化学、计算机等方面的基础知识。
- 1.2 具备解决环境生态工程问题的环境科学、生态学与工程学等方面的基础知识。
- 1.3 具备分析和解决环境生态工程问题的知识储备。

2. **问题分析：**能够应用环境科学、生态学和工程学的基本原理，识别和正确描述环境生态工程问题；能够通过中外文文献资料查询、文献检索等基本方法，了解本专业的发展动态，寻求解决环境生态工程问题的多种可行方案，以获得有效结论。

- 2.1 能够应用环境科学、生态学和工程学的基本原理，识别和判断环境生态工程问题的关键环节，正确表达环境生态工程问题。
- 2.2 能够通过中外文文献资料查询、文献检索等基本方法，了解环境生态工程的发展动态，寻求解决环境生态工程问题的多种可行方案，获得有效结论。

3. **设计/开发解决方案：**能够设计针对不同环境生态问题的解决方案，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境生态等因素；具有一定开展实验设计，创造实验条件，归纳、整理、分析实验结果的能力，能够分析复杂的环境生态工程问题，以获得有效结论。

- 3.1 能够设计针对不同环境生态问题的解决方案，体现创新意识，考虑社会、健康、安全、法律、文化以及环境生态等因素。
- 3.2 具有一定开展实验设计，创造实验条件，归纳、整理、分析实验结果的能力，能够分析复杂的环境生态工程问题，以获得有效结论。

4. **研究：**在问题分析的基础上，能够基于科学原理并采用科学方法对不同的环境生态问题进行研究，包括设计实验、分析与解释数据，通过信息综合得到合理有效的结论，探讨解决问题的方法；初步具备撰写论文，参与学术交流的能力。

- 4.1 能够基于科学原理并采用科学方法对不同的环境生态问题进行研究，包括设计实验、分析与解释数据，通过信息综合得到合理有效的结论，探讨解决问题的方法。

- 4.2 初步具备撰写论文，参与学术交流的能力。
5. **使用现代工具：**能够针对环境生态问题，利用新理论、新技术对其进行有效处理，实时追踪环境生态监测、评价、规划、管理、技术方法等方面的新理论、新思想、新举措。
- 5.1 能够针对环境生态问题，利用新理论、新技术对其进行有效处理。
- 5.2 实时追踪环境生态监测、评价、规划、管理、技术方法等方面的新理论、新思想、新举措。
6. **工程与社会：**了解与环境生态相关的国家法律法规和行业标准规范，能够基于环境生态工程相关背景知识分析和评价环境生态方面的工程方案对社会、健康、安全、法律以及文化的影响，以及这些制约因素对工程项目实施的影响，并理解应承担的责任。
- 6.1 了解与环境生态相关的国家法律法规和行业标准规范，理解社会文化对工程活动的影响。
- 6.2 能分析和评价环境生态工程实践对社会、健康、安全、法律以及文化的影响，以及这些制约因素对项目实施的影响，并理解应承担的责任。
7. **环境和可持续发展：**能够理解和评价环境生态保护与修复方案对环境、社会可持续发展的影响。
- 7.1 能够理解和评价环境生态保护与修复方案对环境、社会可持续发展的影响。
- 7.2 在具体工程设计中，具有环境生态保护意识，并考虑可持续发展的因素。
8. **职业规范：**具有人文社会科学素养、社会责任感，能够在工程实践中理解并遵守工程职业道德和规范，履行责任。
- 8.1 具备正确的人生观、价值观和良好的人文素养。
- 8.2 在工程实践中，理解并遵守工程职业道德和规范，具有工程安全意识，能够认真履行职责，具有社会责任感。
9. **个人和团队：**通过实践教学环节、大学生创新实验计划项目以及毕业设计（论文）等，使学生懂得团队的重要性以及各种角色的责任和义务，培养学生的团队合作与协调意识，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。
- 9.1 具有良好的团队合作意识和协作精神。
- 9.2 能够在多学科背景下的团队中根据需要承担相应的责任。
10. **沟通：**能够就环境生态保护与修复方案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。较熟练地掌握一门外语，达到国家四级水平，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。
- 10.1 能够就环境生态保护与修复方案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。
- 10.2 了解专业领域的国际发展趋势、研究前沿和热点。
- 10.3 较熟练地掌握一门外语，达到国家四级水平，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：**理解并掌握环境生态工程领域的工程管理原理、经济决策方法，并能

在多学科情景中应用工程项目管理的理论和方法。

11.1 理解并掌握环境生态工程领域的工程管理原理、经济决策方法。

11.2 能够在多学科情景中正确应用工程项目管理的理论和方法。

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。

12.1 具有自主学习和终身学习的意识。

12.2 能够采用合适的方法，提高自主学习能力，适应环境生态工程及社会发展需要的能力

三、主干学科

主干学科为环境科学与工程。

四、学制与学位

学制四年，学生修满所规定的最低毕业学分，达到培养目标规定的各项要求后，授予工学学士学位。

五、核心课程

核心课程包括：环境学、环境生态监测与评价、水文与生态水文学、环境生态规划与管理、环境生态工程原理、生态毒理与环境风险、环境土壤学、环境微生物学、污染生态学、专业英语（环境类）、生态修复工程和矿山污染修复等。

主要实践性教学环节包括：物理实验，化学实验，北戴河野外实习、专业认识实习、环境遥感应用与制图、测量实习、环境生态监测与评价设计、环境生态规划与管理设计、环境生态工程设计、环境生态工程综合实践、环境生态工程生产实习、毕业实习、金工实习等。

Undergraduate Program in Environmental and Ecological Engineering

1. Academic Objectives

To meet the main needs of ecological civilization construction of China, the major of Environmental and Ecological Engineering aims to cultivate professionals that have comprehensive development of moral, intellectual, physical, aesthetic and labor; have good humanistic quality, solid mathematical foundation, strong computer and foreign language levels; have knowledge in ecology, environmental science and engineering, and pollution prevention and management; are familiar with the policy, regulation, laws in ecological and environmental protection in China; have the ability of design, construction, R&D and operation management of projects in fields of environmental and ecological engineering; and have the innovation consciousness and innovation ability. Graduates can work in enterprises, institutions and other related agencies on ecological environment research, environmental planning and design, resource protection, remediation and management, and education. The graduates are expected to become professional backbones who are able to hold middle-class professional titles of engineers after five years of practical work and can adapt to the development through continuous learning.

2. Academic Requirements

1 Engineering knowledge: To master basic knowledge, basic principles, and basic working methods in mathematics, physics, chemistry, computer, environmental science, ecology and engineering; Have the knowledge to analyze and solve complex environmental and ecological engineering problems.

1.1 Possess the basic knowledge in mathematics, physics, chemistry and computer for solving complex environmental and ecological engineering problems.

1.2 Possess the basic knowledge in environmental science, ecology and engineering for solving the complex environmental and ecological engineering problems.

1.3 Possess professional knowledge for analyzing and solving complex environmental and ecological engineering problems.

2 Problem analysis: To be able to apply the basic principles of environmental science, ecology and engineering, identify and precisely describe environmental and ecological engineering problems, and effectively follow the development trend in environmental and ecological engineering by using the methodology in literature inquiry and literature retrieval; To be able to seek a variety of feasible solutions to solve environmental and ecological engineering problems and make effective conclusions.

2.1 To be able to apply the basic principles in environmental science, ecology and engineering, identify the key processes and precisely describe environmental and ecological engineering problems

2.2. To be able to effectively follow the scientific advances in environmental and

ecological engineering by using the methodology in literature inquiry and literature retrieval; To be able to seek a variety of feasible solutions to solve environmental and ecological engineering problems and make effective conclusions

3 Design and develop solutions: To be able to design solutions for different environmental and ecological engineering problems, and embody innovative consciousness in the design process, with considering social, health, safety, legal, cultural and environmental factors; Have the ability to perform the experimental design, to set up experimental conditions, to summarize, sort out and analyze experimental results, and to analyze complex environmental and ecological engineering problems in order to make effective conclusions.

3.1 To be able to design solutions for different environmental and ecological problems, and embody innovative consciousness in the design process with considering social, health, safety, legal, cultural and environmental factors; Have the ability to perform experimental design, set up experimental conditions, summarize, sort out and analyze experimental results, and analyze complex environmental and ecological engineering problems in order to make effective conclusions.

3.2 Have the ability to perform experimental design, set up experimental conditions, summarize, sort out and analyze experimental results, and analyze complex environmental and ecological engineering problems in order to make effective conclusions

4 Research: To be able to research environmental and ecological problems based on scientific principles with scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis; Have the ability to write scientific papers and participate in academic exchanges.

4.1 To be able to research environmental and ecological problems based on scientific principles with scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis

4.2 Have the ability to write scientific papers and participate in academic exchanges

5 Using modern tools: To have the ability to effectively deal with environmental and ecological engineering problems by using new theories and technologies, and to track new theories, ideas and measures in environmental monitoring, evaluation, planning and management in real-time.

5.1 To have the ability to effectively deal with environmental and ecological engineering problems by using new theories and technologies

5.2 To be able to track new theories, ideas and measures in environmental monitoring, evaluation, planning and management in real-time

6 Engineering and society: To understand the national laws, regulations and industry standards related to environment and ecology; To analyze and evaluate the impact of environmental and ecological engineering practices on society, health, safety, law and culture, as

well as the impact of these constraints on project implementation, and understand the corresponding responsibilities that should be undertaken.

6.1 To understand the national laws, regulations, and industry standards related to the environment and ecology, and understand the potential impacts of social culture on engineering practices.

6.2 To be able to analyze and evaluate the impact of environmental and ecological engineering practices on society, health, safety, law and culture, as well as the impact of these constraints on project implementation, and understand the corresponding responsibilities that should be undertaken.

7 Environment and sustainable development: To be able to understand and evaluate the impact of protection and remediation schemes for environmental and ecological problems on the sustainable development of the environment and society.

7.1 To be able to understand and evaluate the impact of protection and remediation schemes for environmental and ecological problems on the sustainable development of the environment and society.

7.2 In the practical engineering designs, possess environmental and ecological protection consciousness and consider the factor of the social sustainable development.

8 Professional norms: To have humanistic, social science literacy and social responsibility, be able to understand and abide by engineering professional ethics and norms in engineering practice, and fulfill responsibilities.

8.1 Have the correct outlook on life, values and good humanistic attainment.

8.2 In engineering practice, understand and comply with the engineering ethics and norms, possess engineering safety consciousness, be able to earnestly perform their duties, and have a social sense of responsibility.

9 Individuals and teams: To understand the importance of a team and the responsibilities and obligations of various roles, cultivate students' awareness of team cooperation and coordination, and undertake the roles of the individual, team member and person in charge of the team under multidisciplinary background through practical teaching, college students' innovative experimental program and graduation design (thesis).

9.1 Have a good team cooperation consciousness and cooperation spirit.

9.2 Be able to assume corresponding responsibility as required in a team with multi-subject backgrounds.

10 Communication: To be able to effectively communicate and exchange with peers in the industry and the public on the protection and remediation schemes for environmental and ecological engineering, including writing reports and designing manuscripts, making statements, expressing clearly or responding to instructions. Proficient in mastering a foreign language, reaching the national level 4, having a certain international perspective, and being able to communicate and communicate under a cross-cultural background.

10.1 To be able to effectively communicate and exchange with peers in the industry and the public on the protection and remediation schemes for environmental and ecological engineering, including writing reports and designing manuscripts, making statements, expressing clearly or responding to instructions.

10.2 To understand the international development trends, scientific advances, and hot topics in the environmental and ecological engineering field

10.3 Proficient in mastering a foreign language, reaching the national level 4, having a certain international perspective, and being able to communicate and communicate under a cross-cultural background.

11 Project management: To understand and master the engineering management principles and economic decision-making methods in the field of environmental and ecological engineering, and be able to apply them in multidisciplinary environments.

11.1 Understand and master the principle of Engineering Management.

11.2 Be able to apply to multi subjects.

12 Lifelong learning: To have the consciousness of autonomous learning and lifelong learning, and have the ability to continue learning and adapting to development.

12.1 Have the awareness of autonomous learning and lifelong learning.

12.2 Be able to use appropriate methods to improve the abilities of autonomous learning, and adapting to the environment and ecological engineering and social development.

3. Main disciplines

The main discipline is Environmental Science and Technology.

4. Length of Schooling and Degree

Duration of the Program: Four years

Degree Offered: Bachelor of Engineering

5. Core Courses

Core Courses: Environmentology, Environmental Ecological Monitoring and Assessment, Hydrology and Ecological Hydrology, Environmental Ecological Planning and Management, Principles of Environmental and Ecological Engineering, Ecological Toxicology and Environmental Risk, Environmental Edaphology, Environmental Microbiology, Pollution Ecology, Specialized English for Environmental and Ecological Engineering, Ecological Remediation Engineering, Mine Pollution Remediation

Major Practice Teaching: Physics Experiments (1), Chemistry Experiments, Physics Experiments (2), Surveying Practice, Design of Environmental Ecological Monitoring and Assessment, Design of Environmental Ecological Planning and Management, Fundamentals of GIS and its Application in Water and Environmental Engineering, Design of Environmental and Ecological Engineering, Military Theory and Practice, Social Practice of Ideology and Politics, Geological Survey Field Trip in Beidaihe, Major Introductory Practice, Metalworking Practice,

Environmental and Ecological Engineering Practice Composite, Environmental and Ecological Engineering Experiments, Environmental and Ecological Engineering Production Practice, Environmental Remote Sensing Application and Drawing, Graduation Practice, Undergraduate Dissertation or Project, etc.

六、最低毕业总学分要求及学分分配 (Minimum Required Credits and Distribution)

课程模块 Module	课程类别 Course	学时数 Hour	学分 Credit	学 期 Semester										
				1	2	1 夏	3	4	2 夏	5	6	3 夏	7	8
通识教育 Liberal Education	通识教育必修课程 Required Courses of General Education	730	40	11.25	9.25		8.25	5.25	1	3.25	1.25		0.25	0.25
	通识教育选修课程 Elective Courses of General Education	192	12											
专业教育 Professional Education	学科基础课程 Disciplinary Fundamental Courses	784	49	12	10.5		8.5	10.5		5.5	2			
	专业核心课程 Specialized Fundamental Courses	408	25.5					7		10	4		4.5	
	专业拓展课程 Specialized Development	184	15.5~16.5		4			3.5		0~5	2~6	2	0~3	
实践教育 Practical Education	课程实践 Course Practice	38 周+168 学时	40.5		3	8	1	2	6	1	2.5	6	2	9
	课外实践 Extracurricular Practice		6											
必修课总学分				155										

Required course credits	
选修课总学分 Elective course credits	33.5~34.5
最低毕业总学分 Total Credits	188.5

七、课程设置 (Curriculum)

1、通识教育必修课程 (Required Courses of General Education) : 730 学时(730 Hours), 40 学分(40 Credits)

课程代码 Course Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR181009	思想道德与法治 Ideological Morality and Rule of Law	48	3	40	8		考试 Exam	1	
GR181008	中国近现代史纲要 Essentials of Modern Chinese History	48	3	40	8		考试 Exam	2	
GR182014	马克思主义基本原理 Fundamental Principles of Marxism	48	3	40	8		考试 Exam	3	
GR183004	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thoughts and Theoretical System of the Chinese Characteristic Socialism	64	4	48	16		考试 Exam	4	
GR181012	习近平新时代中国特色社会主义思想概论	32	2	28	4		考试	5	

课程代码 Course Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
	Introduction to Xi Jinping Thoughts on Socialism with Chinese Characteristics in the New Era						Exam		
GR181013	形势与政策 (1) Situation and Policy (1)	4	0.25	4			考查 Term paper	1	
GR181014	形势与政策 (2) Situation and Policy (2)	4	0.25	4			考查 Term paper	2	
GR181015	形势与政策 (3) Situation and Policy (3)	4	0.25	4			考查 Term paper	3	
GR181016	形势与政策 (4) Situation and Policy (4)	4	0.25	4			考查 Term paper	4	
GR181017	形势与政策 (5) Situation and Policy (5)	4	0.25	4			考查 Term paper	5	
GR181018	形势与政策 (6) Situation and Policy (6)	4	0.25	4			考查 Term paper	6	
GR181019	形势与政策 (7) Situation and Policy (7)	4	0.25	4			考查 Term paper	7	
GR181020	形势与政策 (8) Situation and Policy (8)	4	0.25	4			考查 Term paper	8	
GR301004	大学生职业生涯规划与就业指导 (1) Career Planning and Employment Guidance for University Students (1)	20	1	16	4		考试 Exam	2	
GR303005	大学生职业生涯规划与就业指导 (2) Career Planning and Employment Guidance for	18	1	12	6		考试 Exam	6	

课程代码 Course Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
	University Students (2)								
GR301005	大学生心理素质教育 (1) Mental Health (1)	16	1	16			考查 Term paper	1	
GR303006	大学生心理素质教育 (2) Mental Health (2)	16	1	16			考查 Term paper	5	
GR302008	军事理论 Military Theory	36	1	36			考试 Exam	2 夏	
GR081071	大学英语 (1) College English (1)	64	4	64			考试 Exam	1	
GR081072	大学英语 (2) College English (2)	32	2	32			考试 Exam	2	
GR081067	大学英语素质拓展课 Competence-oriented Education for College English	32	2	32			考试 Exam	2	
GR141005	体育 (1) (系列课程) Physical Education (1)	32	1		32		考试 Exam	1	
GR141006	体育 (2) (系列课程) Physical Education (2)	32	1		32		考试 Exam	2	
GR141007	体育 (3) (系列课程) Physical Education (3)	32	1		32		考试 Exam	3	
GR141008	体育 (4) (系列课程) Physical Education (4)	32	1		32		考试 Exam	4	
GR041001	大学计算机 College Computer	32	2	16	16		考试 Exam	1	

课程代码 Course Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR041003	程序设计基础 A Fundamentals of Programming A	64	4	24	24	16	考试 Exam	3	
总计 Total		730	40	492	222	16			

2、通识教育选修课程 (Selective Courses of General Education) : 192 学时 (192 Hours), 12 学分 (12 Credits)

序号 No.	课程类别 Courses Classification	课程名称 Courses Name	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
1	人文社科类 (含在线课程) Humanities and Social Sciences Courses (Inc. Online Courses)	见附件 1	7	考查 Term paper	2-8	4 个类别中选修 7 个学分, 其中《大学生安全教育》(1 学分) 必选。
2	自然科学类 (含在线课程) Natural Science Courses (Inc. Online Courses)	见附件 2		考查 Term paper	2-8	
3	自然文化类 Natural Culture Courses	见附件 3		考查 Term paper	2-8	
4	体育与健康类 Sports and Health Courses	见附件 4		考查 Term paper	5-8	

5	创新创业教育类（含在线课程） Innovation and Entrepreneurship Courses (Inc. Online Courses)	见附件 5-6	3	考查 Term paper	2-8	选修 3 个学分，其中《新生研讨课》 (1 学分) 必选。
6	审美与艺术类 Aesthetics and Art Courses	见附件 7	2	考查 Term paper	2-4	
总计 Total			12			

3、学科基础课程（Disciplinary Fundamental Courses）：784 学时(hours)，49 学分(Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学 时 Lec.	实验 学时 Exp.	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
DR051100	环境生态工程专业 导论课 Introduction to Environmental and Ecological Engineering	16	1	16			考查 Term Paper	2	必选 1 学分
DR191001	高等数学 A1 Advanced Mathematics (A1)	96	6	96			考试 Examination	1	
DR191010	大学化学	48	3	48			考试	1	

	College Chemistry						Examination		
DR021002	工程图学 Engineering Graphics	48	3	48	0		考试 Examination	1	
DR191002	高等数学 A2 Advanced Mathematics (A2)	96	6	96			考试 Examination	2	
DR191008	大学物理一 College Physics (1)	56	3.5	56			考试 Examination	2	
DR192005	线性代数 Linear Algebra	32	2	32			考试 Examination	3	
DR192009	大学物理二 College Physics (2)	56	3.5	56			考试 Examination	3	
DR192006	概率论与数理统计 Probability and Mathematics Statistics	48	3	48			考试 Examination	3	
DR122001	测量学 A Surveying A	40	2.5	24	16		考试 Examination	4	
DR052300	普通生物学 General Biology	48	3	48			考试 Examination	4	
DR052301	生态学基础 Fundamentals of Ecology	48	3	48			考试 Examination	4	
DR052001	分析化学(环境类) Analytical Chemistry	32	2	24	8		考试 Examination	4	

DR052002	有机化学 (环境类) Organic Chemistry (Environment)	32	2	32			考试 Examination	5	
DR021029	工程力学 Engineering Mechanics	56	3.5	52	4		考试 Examination	5	
DR053092	土建项目管理与技 术经济 Civil engineering project management and Economy-Technology	32	2	32			考试 Examination	6	
总计 Total		784	49	756	28				

4、专业核心课程 (Specialized Core Courses) : 408 学时(hours), 25.5 学分(Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学 时 Lec.	实验学 时 Exp.	线上学 时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
SR053020	环境学 Environmentology	32	2	32			考试 Examination	4	
SR052201	环境生态监测与评价 Environmental Ecological Monitoring and Assessment	32	2	32			考试 Examination	4	
SR052202	水文与生态水文学 Hydrology and Ecological Hydrology	48	3	48			考试 Examination	4	
SR053203	环境生态规划与管理	32	2	32			考试	5	

	Environmental Ecological Planning and Management						Examination		
SR053204	环境生态工程原理 Principles of Environmental and Ecological Engineering	32	2	32			考试 Examination	5	
SR053205	生态毒理与环境风险 Ecological Toxicology and Environmental Risk	32	2	32			考试 Examination	5	
SR053206	环境土壤学 Environmental Edaphology	32	2	32			考试 Examination	5	
SR053022	环境微生物学 Environmental Microbiology	32	2	32			考试 Examination	5	
SR053207	污染生态学 Pollution Ecology	32	2	32			考试 Examination	6	
SR053029	专业英语（环境类） Specialized English (Environment)	32	2	32			考试 Examination	6	
SR124144	生态修复工程 Ecological Remediation Engineering	40	2.5	32	8		考查 Term Paper	7	
SR054208	矿山污染修复 Mine Pollution Remediation	32	2	32			考试 Examination	7	
总计 Total		408	25.5	400	8				

5、专业拓展课程 (Specialized Development Courses) : 248~264 学时(hours), 15.5~16.5 学分(Credits)

课程代码 Code	课程名称 Courses Name	总学时 Hours	学分 Credits	讲课学 时	实验 学时	线上 学时	考核方式 Assessment	开课学期 Semester	备注 Notes
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				Lec.	Exp.	Online			
DR011036	地球科学概论 Introduction to Earth Science	64	4	32	32		考试 Exam	2	必选
DR053007	水文地质学基础 Fundamentals of Hydrogeology	56	3.5	48	8		考试 Exam	4	必选
DR054005	水文地球化学 (环境类) Hydrogeochemistry (Environment)	32	2	32			考试 Exam	5	必选
SR053016	土壤与地下水污染控制工程 Soil and Groundwater Pollution Control Engineering	32	2	32			考试 Exam	6	必选
SR053079	水生态与水环境保护 Hydroecology and Water Environment	32	2	32			考试 Exam	5	选 2~3 门, 满足 4~5 学分
SR053015	水污染控制工程 Water Pollution Control Engineering	48	3	48			考试 Exam	6	
SR054019	固体废物处理处置工程 Solid Waste Treatment and Disposal Engineering	32	2	32			考试 Exam	7	
SS050042	环境科学与工程学科前沿 Frontiers of Environmental Science and Engineering	16	1	16			考查 Term Paper	5,7	
SS050076	土壤/地下水污染修复前沿 Advances in soil/groundwater remediation	16	1	16			考查 Term Paper	6	
SR123063	水土保持学	32	2	28	4		考查	5	

	Soil and Water Conservation						Term Paper	
DR123035	土地生态学 Land Ecology	48	3	40	8		考试 Exam	5
总计 Total		248~264	15.5~16.5	200~224	40~52			

6、课程实践 (Course Practice) : 38 周+ 168 学时(38 weeks and 168 hours), 40.5 学分(Credits)

课程代码 Code	课程名称 Courses Name	周数 (学时) Week (hour)	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
PR311003	军事技能训练 Military Theory and Practice	2 周	2	考查 Term Paper	1 夏	
PR181010	思想政治社会实践 Political Social Practices	32 学时	2	考试 Exam	1 夏	
PR011044	北戴河地质实习 Geological Survey Field Trip in Beidaihe	2 周	2	考查 Term Paper	1 夏	
PR051095	专业认识实习 Major Introductory Practice	2 周	2	考查 Term Paper	1 夏	
PR191045	实验物理 (1) Physics Experiments (1)	24 学时	1	考试 Examination	2	
PR191047	实验化学 Chemistry Experiments	48 学时	2	考试 Examination	2	
PR022152	金工实习 Metalworking Practice	1 周	1	考查 Term Paper	2 夏	

PR052254	环境生态工程综合实践 Environmental and Ecological Engineering Practice Composite	3 周	3	考查 Term Paper	2 夏	
PR052255	环境生态工程综合实验一 Environmental and Ecological Engineering Experiments Composite 1	2 周	2	考查 Term Paper	2 夏	
PR192046	实验物理 (2) Physics Experiments (2)	24 学时	1	考试 Examination	3	
PR053256	环境生态工程生产实习 Environmental and Ecological Engineering Production Practice	2 周	2	考查 Term Paper	3 夏	
PR053257	环境生态工程综合实验 2 Environmental and Ecological Engineering Experiments Composite 2	2 周	2	考查 Term Paper	3 夏	
PR053258	环境遥感应用与制图 Environmental Remote Sensing Application and Drawing	2 周	2	考查 Term Paper	3 夏	
PR122059	测量实习 Surveying Practice	1 周	1	考查 Term Paper	4	
PR052251	环境生态监测与评价设计 Design of Environmental Ecological Monitoring and	1 周	1	考查 Term Paper	4	

	Assessment					
PR053252	环境生态规划与管理设计 Design of Environmental Ecological Planning and Management	1 周	1	考查 Term Paper	5	
PR053086	GIS 基础及水工环应用 Fundamentals of GIS and its Application in Water and Environmental Engineering	40 学时	2.5	考查 Term Paper	6	
PR054253	环境生态工程设计 Design of Environmental and Ecological Engineering	2 周	2	考查 Term Paper	7	
PR054063	毕业实习 Graduation Practice	3 周	3	考查 Term Paper	8	
PR054064	毕业论文/设计 Undergraduate Dissertation or Project	12 周	6	考查 Term Paper	8	
总计 Total		38 周+168 学时	40.5			

7、课外实践（Extracurricular practice）：6 学分(6Credits)

包括主题教育活动、社会实践、志愿服务、勤工助学、学科竞赛、文体活动、创新创业活动、劳动实践等，其学分的认定按照教务处相关规定执行。

Extracurricular practice include Theme Education, Social Practice, Volunteer Service, Work-study Program, Discipline Competition, Cultural and Sports Activities, Innovative and Entrepreneurial Activities, Labor Practice and so on. The recognition of the credits for extracurricular practice shall be implemented according to the regulations of Academic Affairs Office.

八、毕业要求与培养目标矩阵

毕业要求	培养目标			
	人文素养：德、智、体、美、劳全面发展，具备较好的人文素质	基础知识：具备扎实的数理化与工程基础和较强的计算机、外语水平	专业知识：掌握生态学、环境科学及环境工程等学科基本理论和工程治理基础知识	专业能力：具备环境生态工程的设计、施工、研发及运营管理能力，具备创新意识和创新能力
1. 工程知识		√	√	
2. 问题分析		√	√	√
3. 设计 / 开发		√	√	√
4. 研究		√	√	√
5. 使用现代工具		√	√	√
6. 工程与社会		√	√	√

7. 环境和可持续发展		√	√	√
8. 职业规范	√	√		√
9. 个人与团队	√	√		√
10. 沟通	√		√	√
11. 项目管理				√
12. 终身学习				√

九、课程与毕业要求关系矩阵（工程教育认证专业类专业参考）

求 课程名称	毕业要 (1) 工程知 识	(2) 问题分 析	(3) 设计/开 发解决 方案	(4) 研究	(5) 使用现 代工具	(6) 工程与 社会	(7) 环境和 可持续 发展	(8) 职业规 范	(9) 个人和 团队	(10) 沟通	(11) 项目管 理	(12) 终身学 习
思想道德与法治								H		L		H
毛泽东思想和中国特色 社会主义理论体系概论								H				H
中国近现代史纲要								L				L
马克思主义基本原理								M			L	M
习近平新时代中国特色 社会主义思想概论							H					H
思想政治社会实践				H						M		
形势与政策								M		M		
大学生心理素质教育									H	L		L
大学英语										H		L

体育										L			H
大学计算机		H	M		H						M	H	
程序设计基础		M	H		L								
大学生职业发展与就业指导										M			M
新生研讨课										L			
军事技能训练										H			
高等数学		H		L									
线性代数		M		L									
概率论与数理统计		H		L									
大学物理		M		L									
大学化学	H												
分析化学（环境类）	H												
有机化学（环境类）	H												
工程图学					M								
测量学	L				H								
工程力学				M									
普通生物学	M			M									
生态学基础	M			M									
专业导论课										L			
土建项目管理与技术经济			M										
环境生态工程原理	H		H	M		L	L						

思想政治社会实践						H		L				L
实验物理	L											
实验化学	L											
通识教育选修课程						H	H	H	H	H	H	H