Instructive Cultivation Plan for the Program of Environmental Engineering

(Grade 2021)

Course code: 082502

1. Orientation

Environmental Engineering aims to train applied senior engineering talents in environmental monitoring and pollution control technology in the field of solid waste (E-waste recycling) who meet the needs of China's modern ecological civilization construction. The program combines theory teaching and skills training to realize industry-teaching integration, dual-certificates recognition and internationalized education.

2. Cultivation Objective

2.1. General Objective

Based on the concept of ecological civilization construction, the program trains all-round applied engineering talents who master basic theories, professional knowledge and engineering technology related to environmental engineering. They are required to have fine professional ethics and strong engineering practice capabilities, and are able to deal with air pollution engaged in environmental planning, engineering design, operation and maintenance, research and development, management consulting, analysis and monitoring in related fields such as control, water pollution control, urban solid waste treatment and disposal, especially electronic waste recycling.

2.2. Value

Environmental problems are highly concerned nationwide. As the saying goes "Green mountains are gold mountains", the environmental pollution control is greatly promoted. This program strives to guide students to pay attention to the concept and practice of green development in the new era, establish an awareness of ecological civilization and environmental protection.

2.3. Five-Year Goal after Graduation:

About 5-10 years after graduation, students shall:

(1) Be competent in environmental planning, engineering design, operation and maintenance, research and development, management consulting, analysis and monitoring related to environmental engineering, and have strong professional competitiveness in the recycling of e-waste;

(2) Bear responsibility and progress in professional development, international vision and lifelong learning ability;

(3) Be able to communicate effectively with domestic and foreign counterparts, professional customers and the public, and adapt to an independent and team work environment;

(4) Have good humanities, social responsibility and professional ethics.

3. Requirement for Graduation

According to the twelve basic requirements put forward by the Chinese Engineering Education Certification Standards, combined with the training objective positioning of this program, the graduation requirements for this program are formulated. The graduation requirements and their index points are broken down as follows:

3.1. Engineering knowledge: be able to use mathematics, natural sciences, engineering foundations and professional knowledge to solve complex environmental engineering problems.

1-1 Master the basic knowledge of natural sciences such as mathematics, physics, chemistry, etc., and be able to use them to describe engineering problems;

1-2 Master engineering technology knowledge and engineering principles such as engineering mechanics, electrical engineering and electronic technology, and be able to use relevant engineering basic knowledge for preliminary engineering design;

1-3 Be able to abstract complex environmental engineering problems such as pollution control and e-waste recycling into mathematical, physical, and chemical problems, and can perform modeling solutions;

1-4 Be able to use basic and professional knowledge to deduce and analyze complex environmental engineering problems, and compare and synthesize various solutions.

3.2. Problem analysis: Be able to apply basic principles of mathematics, natural sciences and engineering sciences to identify, express, and analyze complex environmental engineering problems through literature research to obtain effective conclusions.

2-1 Be able to use the scientific principles of environmental engineering to identify and determine the key links of complex environmental engineering problems;

2-2 Be able to correctly express complex environmental engineering problems based on relevant scientific principles and mathematical model methods, and be able to provide a variety of feasible solutions;

2-3 Be able to use basic principles, use literature research, analyze the influencing factors of the process, and obtain effective conclusions.

3.3. Design/development solutions: be able to design solutions to complex environmental engineering problems, to design systems, units (components) or process flows that meet specific needs, and be able to reflect the sense of innovation in the design process, considering society, health, and safety, legal, cultural and environmental factors.

3-1 Master the basic methods of engineering design, and be able to present design results in the form of reports, drawings or objects;

3-2 Be able to formulate solutions based on the characteristics of complex environmental engineering problems such as e-waste recycling, and be able to design systems, units or processes that meet specific needs;

3-3 In the design, safety, health, law, culture, be able to consider environment and other restrictive factors to reflect a certain sense of innovation.

3.4. Research: Be able to study complex environmental engineering problems based on scientific principles and by using scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

4-1 Be able to investigate and analyze solutions to complex environmental engineering problems based on scientific principles and through literature research or by related methods;

4-2 Be able to choose research routes, design experimental plans, build experimental systems, conduct experiments safely, and collect experimental data correctly according to the characteristics of the object;

4-3 Be able to correctly analyze and interpret experimental data/results, and obtain reasonable and effective conclusions through information synthesis.

3.5. Use modern tools: be able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for complex environmental engineering problems, including the prediction and simulation of complex environmental engineering problems, and be able to understand their limitations.

5-1 Understand the usage principles and methods of modern instruments, information technology tools, engineering tools and simulation software commonly used in environmental engineering, and understand their limitations;

5-2 Be able to select and use appropriate instruments, information resources, engineering tools and professional simulation software to analyze, calculate and design complex environmental engineering issues such as e-waste recycling;

5-3 Be able to use appropriate technology, resources, modern engineering tools and information technology tools to simulate and predict complex environmental engineering problems.

3.6. Engineering and society: Based on the background knowledge of environmental engineering, be able to conduct reasonable analysis, evaluate the impact of professional engineering practices and complex environmental engineering problem solutions on society, health, safety, law and culture, and understand the responsibilities they should bear.

6-1 Understand the technical standards, intellectual property rights, laws and regulations, and industry policies related to environmental engineering, and understand the impact of different social cultures on engineering activities;

6-2 Be able to analyze and evaluate the impact of professional engineering practices and e-waste resource utilization and other complex environmental engineering solutions on society, health, safety, law, and culture;

6-3 Understand the responsibility and have a sense of social responsibility.

3.7. Environment and sustainable development: be able to understand and evaluate the impact of engineering practice for complex environmental engineering problems on environment and sustainable development of society.

7-1 Understand the concepts and connotations of environmental protection and sustainable social development, and be able to practice the concepts of environmental protection and sustainable development when solving complex environmental engineering issues such as e-waste recycling;

7-2 Be able to consider the sustainability of professional engineering practices from perspective of environmental protection and sustainable development, and be able to evaluate the damage and hidden dangers that it may cause to humans and the environment.

3.8. Professional norms: Have humanities and social science literacy, and a sense of social responsibility, be able to understand and abide by engineering professional ethics and norms in engineering practice, and perform responsibilities.

8-1 Have correct values, understand the relationship between individuals and society, and understand China's national conditions;

8-2 Have good humanities and social science literacy, understand the engineering professional ethics and norms of honesty, fairness, and integrity, and be able to consciously abide by them in engineering practice;

8-3 Understand the social responsibility of engineers for the safety, health and well-being of the public, as well as environmental protection, and be able to consciously fulfill their responsibilities in engineering practice.

3.9. Individuals and teams: be able to assume the roles of individuals, team members and leaders in a team with a multidisciplinary background.

9-1 Be able to communicate effectively with members of other disciplines and work together;

9-2 Be able to work independently or cooperatively in a team;

9-3 Be able to organize, coordinate and direct team work in a team with a multidisciplinary background.

3.10. Communication: Be able to effectively communicate and exchange with industry peers and the public on complex environmental engineering issues, including writing reports and design manuscripts, presentations, clear expressions or response instructions, and a certain international perspective, and be able to communicate with each other in a cross-cultural background.

10-1 Be able to accurately express their opinions on professional issues, verbally, manuscripts, diagrams, etc., respond to queries, and understand the differences in communication with industry peers and the public;

10-2 Understand the international development trends and research hotspots in the professional field, understand and respect the differences and diversity of different cultures in the world;

10-3 Have the language and written expression skills for cross-cultural communication, and be able to communicate on professional issues in a cross-cultural context.

3.11. Project management: understand and master engineering management principles and economic decision-making methods, and be able to apply them in a multi-disciplinary environment.

11-1 Master the management and economic decision-making methods involved in environmental engineering projects;

11-2 Understand the cost structure of the entire cycle and process of the project and product, and understand the project management and economic decision-making issues involved;

11-3 Be able to apply engineering management and economic decision-making methods in the process of designing and developing solutions in a multidisciplinary environment.

3.12. Lifelong learning: have the consciousness of independent learning and lifelong learning, and be able to continuously learn and adapt to development.

12-1 Be able to correctly understand the necessity of self-exploration and learning, and have the consciousness of independent learning and lifelong learning;

12-2 Be able to learn independently, including the ability to understand technical problems, the ability to summarize and ask questions, etc.

4. Schooling System

Four-year undergraduate education

5. Length of Study

Generally four years. The length of schooling can be flexible from no less than three years to no longer than six years.

6. Requirements for Graduation and Degree Conferring

Students of this program must complete the minimum credits required for each category of courses and complete all the content specified in extracurricular class according to the requirements of the instructional training plan, and the total credits must reach 158 credits for graduation; those who meet the requirements for bachelor's degree can be conferred bachelor degree in engineering.

7. Discipline

Environmental Science, Environmental Engineering, Chemical Engineering

8. Core Courses

8.1. Solid waste treatment and disposal

This course is one of the main professional courses for environmental engineering programs. The contents of this course include: solid waste pretreatment technologies and methods, including collection, compaction, crushing, sorting, and solidification; solid waste resource recycling technologies and applications, including incineration, pyrolysis, high-temperature composting, biogas fermentation, etc.; principles of solid waste final disposal, techniques and technologies, including marine disposal and land disposal. Through the study of this course, students will be able to systematically master the basic principles and practical knowledge of solid waste treatment and disposal, master solid waste management, treatment, disposal and utilization and other processes and technologies, so that students will lay a foundation for being engaged in technical management and design of solid waste treatment and disposal in the future.

8.2. Water pollution control engineering

This course is a compulsory professional course for environmental engineering programs in higher engineering schools. The course mainly teaches the basic theories and technologies of sewage treatment, such as the physical treatment, chemical treatment, biological treatment and other technical methods of sewage, as well as the treatment and disposal of sludge and the process design of small sewage treatment plants. Through the study of this course and the corresponding practical links, students can understand the basic situation of water pollution, and understand the principles and methods of comprehensive prevention and control of water pollution. Through the study of this course, students will have a more systematic and in-depth understanding of the basic concepts of water pollution control engineering and the basic theories of various control methods, basically master the application scope and conditions of various control methods, be able to apply the basic theories and control methods learned in this course and coordinate with the teaching links of course design and graduation design to conduct plan, design, equipment selection, research and development and operation management of general water pollution control projects.

8.3. Air pollution control engineering

Air pollution control engineering is an important professional course for environmental programs in colleges and universities. The purpose of this course is to introduce the basic concepts, basic principles, basic methods and related design calculation problems of air pollution control engineering, introduce the advanced air pollutant control technology used at home and abroad, so that students can gradually accept and master basic knowledge and cultivate the ability to solve actual air pollution problems, thus laying a good foundation for future air pollution control work.

8.4. Environmental impact assessment

The environmental impact assessment course is based on the basic theories of environmental science, and provides scientific basis for the judgment, adjustment and selection of human social relationship behaviors by evaluating the impact of human economic activities and development on the environment and the value relationship between environmental changes and human social behaviors. Through the study of this course, students can initially grasp the basic principles and methods of environmental impact assessment, thus laying a foundation for future environmental impact assessment work.

8.5. E-waste management and resource technology

The course is the main professional course for environmental engineering programs. This course mainly explains the law of e-waste management and resource-based technology. Through the study of this course, the students will be able to understand and master e-waste management methods and technical policies, focusing on the conventional e-waste recycling technology, so that they can lay a solid foundation for future engineering technology and research and development of urban e-waste recycling and disposal.

8.6. Environmental monitoring

This course is a major professional basic course for environmental engineering programs, and is one of the major professional abilities required for professional training. This course teaches and practices the basic theories and techniques related to environmental monitoring, so that students can use the theories and techniques they have learned to formulate and implement environmental monitoring programs and monitoring techniques, thus laying a solid foundation for learning environmental engineering professional courses and solving practical problems in future.

8.7. Principles of Environmental Engineering

This course is one of the professional core courses. It plays a role in connecting the basic courses and the professional courses, and is an introductory course for the transition from the basic courses of natural science to the professional courses of engineering science. This course systematically analyzes and summarizes the technical principles involved in water treatment engineering, air pollution control engineering, solid waste treatment and disposal engineering, polluted environment purification and ecological restoration engineering, and extracts common basic principles, phenomena and processes, and conduct systematic and in-depth explanation with strong theoretical and systematic nature. Through the study of this course, students will be able to master the basic principles and technical processes of "isolation technology", "separation technology" and "transformation technology" in environmental pollution control, and obtain the comprehensive ability to solve complex environmental pollution problems and the concept of system and overall optimization.

8.8. Environmental fluid mechanics

Environmental fluid mechanics is an important basic course for environmental engineering programs. The purpose of this course is to systematically introduce the mechanical properties of fluids, the basic concepts and viewpoints of fluid mechanics, basic theories and common analysis methods, and related engineering application knowledge; train students to obtain the ability to analyze and solve simple fluid mechanics problems, and master certain experimental skills, thus laying a solid foundation for studying professional courses in the future and engaging in related engineering technology and scientific research.

8.9. Environmental engineering drawing

The environmental engineering drawing course mainly introduces the projection foundation, drawing standards, drawing methods and basic knowledge of computer graphics (CAD) related to engineering drawing, and introduces the reading and drawing methods of professional drawings according to the relevant standards of environmental engineering. This course will cultivate

students' basic ability to draw and read drawings of environmental engineering drawings and environmental protection equipment drawings, and cultivate their patient and meticulous work style and serious work attitude.

8.10. Instrumental analysis

Through learning this course, students will have a more comprehensive understanding of the field of instrumental analysis and basically master various methods of instrumental analysis. In this course, students are required to have a deeper understanding and mastery of the basic principles of these methods, instruments and equipment, their basic structure, method characteristics and applications, and initially obtain the ability to choose appropriate analysis methods to solve problems according to the analysis objects. In addition, through the study of this course, students will understand the new methods, new technologies and development trends newly established in modern instrumental analysis, and enhance their awareness and ability of innovation.

9. Practical Training (Related courses)

Inorganic chemistry experiment, organic chemistry experiment, analytical chemistry experiment, Instrumental analysis experiment, Principles of Environmental Engineering experiment, Environmental monitoring experiment, Air pollution control engineering experiment, Water pollution control engineering experiment, Solid waste treatment and disposal experiment, environmental engineering comprehensive experiment, Professional knowledge internship, professional production internship, Water pollution control engineering course design, e-waste resource recycling course design, innovation and entrepreneurship, graduation practice and graduation design (thesis), etc.

10. Course Structure and Course Hours (excluding extracurricular class)

Category	Total Credit	%	Total Course Hours	Theory Learning	Practical Training
General Education	50.5	32	960	896	64
Basic Course	38	24	608	528	80
Professional Course	30	19	480	476	4
Practical Training	28.5	18	832	0	832
General Course	10	7	160	160	0
Total	**157**	**100**	**3040**	**2060**	**980**
Theory : Practice(%)	68 :32				

XI. Teaching Schedule (1)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
General Education	Required	School of Marxism	b1080001	Basic principles of Marxism	Test	3	48	42	6	Autumn semester 1
	Required	School of Marxism	b1080003	Morality and Laws	Non-test	3	48	42	6	Autumn semester 1
	Required	School of Marxism	b1080006	Outline of Chinese Modern History	Non-test	3	48	42	6	Spring semester 1
	Required	School of Marxism	b1080004	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics I	Test	3	48	42	6	Autumn semester 2
	Required	School of Marxism	b1080007	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics II	Test	2	32	28	4	Spring semester 2
	Required	School of Marxism	-----	Situation and Policy (Module 1～4)	Non-test	2	32	28	4	Autumn semester 1～Spring semester 2
	Required	School of Marxism	b1080008	Labor Education A	Non-test	0.5	16	16		Spring 1
	Required	College of Arts and Sciences	b1020080+	Advanced Mathematics A1	Test	4	64	64		Autumn semester 1
	Required	College of Arts and Sciences	b1020081+	Advanced Mathematics A2	Test	4	64	64		Spring semester 1
	Required	College of Arts and Sciences	b1020064	College Physics A(Module 3)	Test	3	48	48		Spring semester 1
	Required	College of Arts and Sciences	b1020065	College Physics B	Test	2	32	32		Autumn semester 2
	Required	College of Arts and Sciences	b1020066	College Physics C	Non-test	1	32		32	Autumn semester 2
	Required	College of Arts and Sciences	b1020012	Linear algebra	Test	2	32	32		Autumn semester 2
	Required	College of Arts and Sciences	b1020013	Probability Theory and Mathematical Statistics	Test	2	32	32		Spring semester 2
	Required	College of Arts and Sciences	b1020018	College Chinese	Non-test	2	32	32		Spring semester 1
	Required	Department of Physical Education	-----	Physical Education I～VI	Non-test	3	160		160	Autumn semester 1～Autumn semester 4
	Required	Others	b1110003	Military skills	Non-test	0.5	2W			Autumn semester 1
	Required	College of Arts and Sciences	b1110002	Military theory	Non-test	0.5	32	32		Spring semester 1
	Required	College of Arts and Sciences	b1020003	General English III	Test	3	48	48		Autumn semester 1
	Required	College of Arts and Sciences	b1020004	General English IV	Test	3	48	48		Spring semester 1
	Required	College of Arts and Sciences	b1020005	General Academic English A	Test	2	32	32		Autumn semester 2

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
	Required	College of Arts and Sciences	---	English development	Non-test	2	32	32		Spring semester 2
Sub-total (General Education)						**50.5**	**960**	**896**	**64**	
	Required	Art Education Center	b0-----	Aesthetic Education	Non-test	2	32	32		Autumn, Spring
	Selective	Each College	b0-----	Social Science and Humanities Literacy	Non-test	4	64	64		Autumn, Spring
				Natural Science and Technological Innovation	Non-test	2	32	32		Autumn, Spring
	Required	School of Resources and Environmental Engineering	b2013024hj	Scientific paper writing and document retrieval	Non-test	2	32	32		Spring 1
Sub-total (General Course)						**10**	**160**	**160**		

11. Teaching Schedule (2)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Basic Course	Required	School of Resources and Environmental Engineering	b2013025hj	Introduction to Environmental Engineering	Non-test	2	32	32		Autumn semester 1
	Required	School of Resources and Environmental Engineering	b2013127hj	Fundamentals of Computer and Information Technology	Non-test	2	32	32		Autumn semester 1
	Required	School of Resources and Environmental Engineering	b2013172hj	Inorganic Chemistry	Test	3	48	32	16	Autumn semester 1
	Required	School of Resources and Environmental Engineering	b2013093hj	Organic chemistry	Test	3	48	48		Spring semester 1
	Required	School of Resources and Environmental Engineering	b2013173hj	Analytical Chemistry	Test	3	48	32	16	Autumn semester 2
	Required	School of Resources and Environmental Engineering	b2013081hj	Physical Chemistry	Test	4	64	48	16	Spring semester 2
	Required	School of Resources and Environmental Engineering	b2013036hj	Engineering mechanics	Test	2	32	32		Autumn semester 2
	Required	School of Resources and Environmental Engineering	b2013061hj	Environmental Chemistry	Test	2	32	32		Spring semester 2
	Required	School of Resources and Environmental Engineering	b2013064hj	Environmental fluid mechanics	Test	2	32	32		Autumn semester 3
	Required	School of Resources and Environmental Engineering	b2013154hj	Environmental engineering drawing	Test	3	48	32	16	Spring semester 2
	Required	School of Resources and Environmental Engineering	b2013155hj	Instrumental analysis	Test	2	32	32		Spring semester 2

	Required	School of Resources and Environmental Engineering	b2013063hj	Environmental monitoring	Test	2	32	32		Autumn semester 3
	Required	School of Resources and Environmental Engineering	b2013156hj	Principles of Environmental Engineering	Test	3	48	48		Autumn semester 3
	Required	Engineering Training Center	b2090005hj	Electrician and Electronics	Test	3	48	32	16	Autumn semester 3
	Required	School of Resources and Environmental Engineering	b2013157hj	Environmental Engineering Microbiology	Test	2	32	32		Autumn semester 3
Sub-total (Basic Course)						**38**	**608**	**528**	**80**	
Professional Course	Required	School of Resources and Environmental Engineering	b2013160hj	Solid waste treatment and disposal	Test	2	32	32		Spring semester 3
	Required	School of Resources and Environmental Engineering	b2013161hj	Air pollution control engineering	Test	3	48	48		Spring semester 3
	Required	School of Resources and Environmental Engineering	b2013162hj	Water pollution control engineering	Test	3	48	48		Spring semester 3
	Required	School of Resources and Environmental Engineering	b2013082hj	Physical pollution control	Non-test	2	32	32		Autumn semester 3
	Required	School of Resources and Environmental Engineering	b2013065hj	Environmental impact assessment	Non-test	2	32	28	4	Spring semester 3
	Required	School of Resources and Environmental Engineering	b2013028hj	E-waste management and resource technology	Test	2	32	32		Spring semester 3
	Required	School of Resources and Environmental Engineering	b2013046hj	Environmental protection equipment foundation	Test	2	32	32		Autumn semester 4
	Required	School of Resources and Environmental Engineering	b2013169hj	Environmental engineering construction technology	Test	2	32	32		Spring semester 3
	Required	School of Resources and	b2013084hj	Science of Modern Environmental Law	Non-test	2	32	32		Spring semester 2

		Environmental Engineering								
	Required	School of Resources and Environmental Engineering	b2013060hj	Environmental planning and management	Non-test	2	32	32		Autumn semester 2
	Required	School of Resources and Environmental Engineering	b2013170hj	Toxic substances in electronic products and their prevention	Test	2	32	32		Spring semester 3
	Subtotal (required professional courses)					**24**	**384**	**380**	**4**	
	★Selective by module 6 credits	Module A	b2013051hj	Environmental water supply and drainage	Non-test	2	32	32		Autumn semester 4
			b2013054hj	Environmental engineering materials	Non-test	2	32	32		Autumn semester 3
			b2013158hj	Environmental Engineering Instrumentation and Automation	Test	2	32	32		Spring semester 3
			b2013126hj	Principles and Technology of Environmental Remediation	Non-test	2	32	32		Autumn semester 4
		Module B	b2013048hj	Environment, health and safety	Non-test	2	32	32		Autumn semester 4
			b2013089hj	Circular economy and cleaner production	Non-test	2	32	32		Spring semester 3
			b2013171hj	Environmental Engineering Technology Economy	Test	2	32	32		Autumn semester 3
			b2013159hj	Environmental engineering project management	Non-test	2	32	32		Autumn semester 4
	Subtotal (professional module courses)					**6**	**96**	**96**	**0**	
Subtotal (professional courses)						**30**	**480**	**476**	**4**	

11. Teaching Schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Practical Training	Required	School of Resources and Environmental Engineering	b4000010hj	Innovation and Entrepreneurship in Environmental Engineering	Non-test	2	48		48	Summer semester 3
	Required	Engineering Training Center	b4090003hj	Basic Engineering Training C	Non-test	2	48		48	Summer semester 1
	Required	School of Resources and Environmental Engineering	b4013044hj	Professional cognition internship	Non-test	1	24		24	Summer semester 1
	Required	School of Resources and Environmental Engineering	b4013043hj	organic chemistry experiment	Non-test	1	24		24	Summer semester 1
	Required	School of Resources and Environmental Engineering	b4013054hj	Instrumental analysis experiment	Non-test	1	24		24	Summer semester 2
	Required	School of Resources and Environmental Engineering	b4013055hj	Professional production practice	Non-test	4	96		96	Summer semester 2
	Required	School of Resources and Environmental Engineering	b4013085hj	Environmental Engineering Microbiology experiment	Non-test	1	24		24	Autumn semester 3
	Required	School of Resources and Environmental Engineering	b4013028hj	Environmental monitoring experiment	Non-test	1	24		24	Autumn semester 3
	Required	School of Resources and Environmental Engineering	b4013024hj	Principles of Environmental Engineering Experiment	Non-test	1	24		24	Autumn semester 3
	Required	School of Resources and Environmental Engineering	b4013019hj	Solid waste treatment and disposal experiment	Non-test	1	24		24	Spring semester 3
	Required	School of Resources and Environmental Engineering	b4013006hj	Air pollution control engineering experiment	Non-test	1	24		24	Spring semester 3
	Required	School of Resources and	b4013034hj	Water pollution control engineering experiment	Non-test	1	24		24	Spring semester 3

		Environmental Engineering								
	Required	School of Resources and Environmental Engineering	b4013074hj	Air pollution control engineering course design	Non-test	1	24		24	Summer semester 3
	Required	School of Resources and Environmental Engineering	b4013075hj	Water pollution control engineering course design	Non-test	1	24		24	Summer semester 3
	Required	School of Resources and Environmental Engineering	b4013026hj	Comprehensive Environmental Engineering Experiment	Non-test	1	24		24	Summer semester 3
	Required	School of Resources and Environmental Engineering	b4013010hj	Curriculum Design of E-waste Resources	Non-test	2	48		48	Summer semester 3
	Required	School of Resources and Environmental Engineering	b4013088	Labor Education B	Non-test	0.5	16		16	Spring semester 3
	Required	School of Resources and Environmental Engineering	b4013059hj	Graduation Practice and Graduation Design (Thesis) for Environmental Engineering	Non-test	6	288		288	Spring semester 4
Subtotal (Practical Training)						**28.5**	**832**		**832**	
Extracurricular Class	Required	Others	b5110001	Extracurricular Class	Non-test	1	-	-	-	Autumn, Spring, Summer
Total						**158**	**3040**	**2060**	**980**	

★ 1. Guidance for selecting professional module and practical module:

Professional courses are divided into modules according to different ability requirements. Students must select one of the modules and obtain the required credits for that module. Professional practice modules must be selected according to the corresponding professional course modules.

1. Module A: Environmental engineering technology, focusing on introducing environmental pollution control technology, and cultivating environmental engineering construction, pollution control and project development capabilities;

2. Module B: Environmental Economic Management, focusing on introducing environmental economic analysis and engineering management, and training the ability to use environmental economic laws to solve environmental pollution problems.

2. Professional Certificates can be gained after learning following courses:

Students who have passed the courses of Environmental fluid mechanics, Environmental Engineering Microbiology, Environmental monitoring, Environmental planning and management, Physical pollution control, Environmental impact assessment, Science of Modern Environmental Law, etc., can participate in the professional qualification assessment related to the program: Environmental impact Assessment engineer, registered environmental engineer.

Students who have obtained the qualification certificates of Environmental impact assessment engineer and registered environmental engineer can apply for exemption from Environmental fluid mechanics, Environmental Engineering Microbiology, Environmental monitoring, Environmental planning and management, Physical pollution control, Environmental impact assessment, Science of Modern Environmental Law courses and obtain corresponding credits.

12. Prerequisite for Course Study

No.	Course Name	Prerequisite Course	No.	Course Name	Prerequisite Course
1	Environmental Chemistry	Inorganic chemistry	4	Environmental equipment foundation	Air pollution control engineering
		Organic chemistry			Water pollution control engineering
		Analytical chemistry			Solid waste treatment and disposal
2	Environmental monitoring	Analytical chemistry	5	Curriculum Design of E-waste Resources	Toxic substances in electronic products and their prevention
		Instrumental analysis			E-waste management and resource technology
					Physical pollution control
3	Principles of Environmental Engineering	Four major chemistry	6	Comprehensive Environmental Engineering Experiment	Air pollution control engineering experiment
		Environmental fluid mechanics			Water pollution control engineering experiment
					Solid waste treatment and disposal experiment

13. Extracurricular Class

Through taking extracurricular classes, students are encouraged to take part in academic lectures, social practice activities, campus cultural and sports activities, innovative and entrepreneurial activities, voluntary activities, etc. to improve their social adaptability and enhance the competitiveness in the job market. Details are specified in Students' Manual.