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Undergraduate Program for the Specialty of Environmental Engineering

I Educational Objectives

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This specialty aims to train the talents with complex engineering skills who are in accordance with national, regional or ethnic minority economic and social development needs, who have the good ideology and morality, humanistic quality, professional ethics and professional dedication, who master the basic knowledge and practical skills of environmental engineering systematically, who have the ability to innovate and continue learning, who adapt to the industry science and technology progress constantly, who can bear the environmental engineering projects and environmental protection management and who can solve the problem of complex environmental

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According to the requirements for cultivation of environmental engineering specialty in our university, we make the graduates in specialty of environmental engineering reach the basic requirements through the study of humanistic and social science, basic engineering, professional basic and professional courses as well as the lectures, social activities, culture activities,

natural science and environmental engineering to recognize, explain and analyze for requiring effective conclusions;

2.1 Able to use the rationales and professional knowledge of mathematics, natural science and environmental engineering to recognize complex problems of environmental engineering;

2.2 Able to use the concepts, rationales and methods of mathematics, natural science and environmental engineering to analyze and explain the key links and parameters of environmental pollution prevention and control projects;

2.3 Able to use the basic theory and knowledge of environmental engineering as well as references to analyze the factors and related technologies in the process of environmental pollution prevention and make effective conclusions.

3) Designing/developing solutions: Able to use the rationales and methods of water pollution control, air pollution control as well as treatment, disposal and recycling of solid waste to develop and design the technological process and treatment units;

3.1 Able to put forward solutions of complex problems of environmental engineering according to characterizations and prevention requirements of environmental pollution;

3.2 Familiarize and grasp the technical standards, intellectual properties as well as policies and regulations of industry and can do feasibility studies to designing schemes through techno-economic appraisal under the constraint condition of reality;

3.3 Able to design the technology system of pollution control and treatment units, take the factors of society, health, security, law and culture into the design, reflect the sense of innovation and then optimize the design scheme.

4) Research: Able to use the scientific methods and treatments based on principles of environmental engineering to forecast and analyze the problems in technologies of environmental pollution treatments and engineering and provide proper conclusion for solving the complex engineering problems in the practices of environmental pollution treatments;

4.1 Grasp modern analytical method, can recognize the constraint conditions in the complex engineering problems and analyze the basic characterizations of research objects;

4.2 Able to choose proper research routes and design feasible research projects based on professional theories of environmental engineering as well as the characterizations of polluted objects;

4.3 Able to collect and clear up the research data correctly, analyze and deal with the research results and obtain the proper conclusions.

5) Usage of modern tools: Able to develop, choose and use correct technologies and tools of computer aided design in the area of environmental engineering, expertly use modern analytical

instruments and able to forecast, simulate and optimize complex engineering problems in the practices of environmental pollution prevention;

5.1 Able to choose, use and develop correct modern tools such as the computer language programs and software of computer aided design;

5.2 Able to use modern analytical instruments, forecast, simulate and evaluate complex engineering problems, and make clear the boundedness of methods.

6) Engineering and society: Able to solve complex engineering problems based on background knowledge of environmental engineering while simultaneously analyze and evaluate the influences of designing project to society, health, safety, law and culture and understand the responsibility;

6.1 Have practice experiences of environmental engineering and senses of engineering and society;

6.2 Be familiar with the relevant technical regulations, laws and ethnic regional policies in the area of environmental engineering, able to evaluate the influences to society, health, security, law and culture in the process of prevention for environmental pollutions, and understand the responsibilities in the process of prevention for environmental pollutions.

7) Environment and sustainable development: able to understand and evaluate the influences of engineering practices of environmental pollutions prevention to the sustainable progress of environment and society;

7.1 Understand the connotation and meaning of environmental protection and sustainable development of society and know the relevant policies and laws of environmental protection well;

7.2 Able to correctly understand and evaluate the impacts of engineering practices on sustainable development of environment and society in the process of production, operation and maintenance for environmental pollution prevention and control project.

8) Professional norms: have the literacy of humanity and social science as well as responsibility for society, able to understand and comply with the professional ethics and regulations in projects and fulfill the duty;

8.1 Have the scientific world outlook, correct view of life, values and patriotism and have the literacy of humanity and social science as well as responsibility for society;

8.2 understand the core idea of engineering ethics, be familiar with the profession and responsibility of environmental engineer, can comply with the professional ethics and regulations in projects and fulfill the duty.

9) Individuals and teams: have the team spirit in the multi-disciplinary teams of science research, engineering design and practices, ability for organization, management and coordination as well as the adaptive capacities for different roles in the work;

9.1 Able to undertake the roles in the multi-disciplinary teams, Listen to different opinions, have certain ability of organization and management, able to sum up the conclusions of team members and make a proper decision;

9.2 Have strong team work and interpersonal skills, can communicate with other members effectively and properly deal with internal and external relationships of the organization.

10) Communication: have great writing and communicating skills, debate competences, listening skills, application ability for language, able to effectively communicate with industry peers and publics for complex engineering problems, have a certain international vision and able to communicate in a cross-cultural context;

10.1 Have good abilities for writing, communicating and listening;

10.2 Able to express ideas and opinions orally or in writing and effectively communicate with industry peers and publics for complex engineering problems;

10.3 Able to study the international developments of environmental engineering and relevant areas and can have a communication in a cross-cultural context.

11) Project management: able to understand and grasp the principles of engineering management and methods of economic decision and apply the professional knowledge of environmental engineering into the design, operation and management of projects for prevention of environmental pollutions;

11.1 Understand and grasp the principles of engineering management and methods of economic decision in the practices of environmental projects;

11.2 Able to apply the principles of engineering management and methods of economic decision to the design, operation and management of projects for prevention of environmental pollutions.

12) Lifelong learning: have the sense of independent study and lifelong learning as well as the ability for self-improvement and adaptive development;

12.1 Able to realize the necessity of continuous discovery and study as well as the senses of independent study and lifelong learning;

12.2 Grasp the methods of independent study and pathway to expand knowledge and improve ability as well as the ability for self-improvement.

III Graduation requirement realization matrix

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		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7.1	7.2	8.1	8.2	9.1	9.2	10.1	10.2	10.3	11.1	11.2	12.1	12.2
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IV Core Courses

Microbiology of Environmental Engineering B Environmental Monitoring B Environmental Engineering Principle Physical Pollution Control Engineering Air Pollution Control Engineering A1 Water Pollution Control Project (A1) Environmental Planning and Management A2 Water Pollution Control Project (A2) Solid Waste Treatment and Disposal Environmental Impact Assessment.

V Main Internship and Practical Training

Principle Experiments of Environmental Engineering Experiments of Environmental Monitoring Experiments of Environmental Engineering Microbiology Experiments of Water Pollution Control Engineering Experiments of Solid Waste Treatment and Disposal Course Design of Environmental Engineering Principles Course Design of Air Pollution Control Engineering Course Design of Water Pollution Control Engineering Course Design of Treatment and Disposal of Solid Wastes Engineering Surveying Practice Metalworking Practice Cognition Practice Production Practice Graduation Practice Graduation Design (Thesis)

VI Hours/Credits

Table of Hours and Credits

Courses Classified	/ Period/Weeks	Credits		Proportion of Credits
		Theory	Practice	

Division of Credits of Each Term

Division of Credits of Each Term / Courses Classified		Term							
		1st	**2nd**	**3rd**	**4th**	**5th**	**6th**	**7th**	**8th**
General Courses Platform	General Compulsory	9.5	10	7	6	5	1	0.5	
	General Elective suggestive		5	0					
Basic Courses Platform	Compulsory	16	10.5	19	13.5	1.5			
	Elective								
Major Courses Platform	Compulsory					17.5	17		
	Elective				1.5		3	3	
Practical Teaching Platform	Compulsory		0.5		2	2	2	2	12
	Elective								
Amount		25.5	26	26	23	26	23	5.5	12
Innovation and Entrepreneurship Platform	Innovation Credits	3							
	Entrepreneurship Credits	2							
The Lowest Graduate Credits		**172**							

VII Teaching Schedule Form

/ Form I:General Course Platform

A /Form I (A):General Compulsory Courses(General Required)

Course Code	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
				The.	Exp.	Pra..	Ueb		
109100000418	Military Theory	2	36	36				1	1-18
109110000318	Military Training	2	36			36		1	1-2
	National Security Education	1	32	32				1	/
20W100000613	1 English 1	2	32	32				1	4-11
218110000313	1 Physical Education 1	0/1	26			26		1	4-15
	Computer Base	1/0.5	32	16	16			1	
217100000313	Cultivation of Morals and Fundamentals of Law	2.5/0.5	52	40		12		2	1-14
217100000413	Situation and Policy	2	32	32		0		2	1-16
225100000118	Education of Chinese Minzu Community Consciousness	1.5/0.5	32	24		12		2	1-8
20W100000713	2 English 2	2	32	32				2	1-8/9-16
218110000213	2 Physical Education 2	0/1	32			32		2	1-16
2171000122	Essentials of China Modern and Contemporary History	2.5/0.5	52	40		12		3	1-14
20W100000813	3 English 3	2	32	32				3	1-8/9-16

Course Code	Course Names	Period Classification	
		Crs.	Hrs.

Form II. Basic Course Platform

Course Classi-fied	Numbers of courses	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
					The.	Exp.	Pra..	Ueb		
Require Basic Courses	2241000066	Introduction to Ethnic Resources and Environmental Protection	1.5	24	24				1	
		Inorganic Chemistry	3	48	48				1	
		Inorganic Chemistry Experiments	/0.5	16		16			1	
		Analytical Chemistry	2	32	32				1	
		Analytical Chemistry Experiments	1	32		32			1	
		A(1) Higher Mathematics A (1)	4	80	64			16	1	
		Linear Algebra	2	48	32			16	1	
	224100000913	& Descriptive Geometry & Engineering Drawing	2	32	32				2	
	210102000413	A(2) Higher Mathematics A (2)	5	96	80			16	2	
		B(1) College Physics B (1)	3	56	48			8	2	
	211112000113	B(1) University Physics B(1) Experiments	0.5	16		16			2	
	2241000067	Engineering Surveying	2	32	32				2	

Course Classi-fied	Numbers of courses	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
					The.	Exp.	Pra..	Ueb		
		Probability Theory and Mathematical Statistics	2.5	56	40			16	3	
	211100011218	B 2	2.0	40	32			8	3	
	211112000213	B 2	0.5	16		16			3	
	213100035218	Organic Chemistry	3	48	48				3	
	213110036118	Organic Chemistry Experiments	1	32		32				

Require Basic Courses

Course Classi-fied	Numbers of courses	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
					The.	Exp.	Pra..	Ueb		
	213103016813	Fluid Mechanics	3	48	48				4	
Require Basic Courses	213113016913	Experiments of Fluid Mechanics	0.5	16		16			4	
	2241000133	Microbiology of Environmental Engineering	2	32	32				4	
	2241100132	Environmental Engineering Microbiology Experiments	0.5	16		16			4	
	213103013213	Engineering Mechanics	2.5	40	40				4	
	2241000072	Foundation of Civil Engineering	2	32	32				4	
	213103012113	Project Management	1.5	24	24				5	
:60.5 Demand of Credits:Credits: 60.5										

Form III: Major Courses Platform

Course Classified	Course Code	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
					The.	Exp.	Pra.	Ueb		
Required Courses	213103017113	Environmental Engineering Principle	4	64	64				5	
	213113016213	Principle Experiments of Environmental Engineering	1	32		32			5	
	213103011313	Air Pollution Control Engineering	3	48	48				5	
	2241100127	Experiments of Air Pollution Control Engineering	0.5	16		16			5	
	213103021513	B Environmental Monitoring (B)	2	32	32				5	
	213113023813	B Environmental Monitoring Experiments (B)	1	32		32			5	
	2241000124	Physical Pollution Control Engineering	2	32	32				5	
	213103029713	Environmental Planning and Management	2	32	32				5	
	213103018313	A1 Water Pollution Control Project (A1)	2	32	32				5	
	213103018613	A2 Water Pollution Control Project (A2)	3.5	56	56				6	1-14
	214113019613	Water Pollution Control Engineering Experiments	1	32		32			6	

Course Classi-fied	Course Code	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
					The.	Exp.	Pra.	Ueb		
	2241000137	Solid Waste Treatment and Disposal	2.5	40	40				6	
Required Courses	2241100136	Solid Waste Treatment and Disposal Experiments	0.5	16		16			6	
	213103017613	Environmental Engineering Equipment	2	32	32				6	
	213103018013	Environmental Engineering Design	2	32	32				6	
	224100005113	Environmental Impact Assessment	2	32	32				6	
	213113018513	Comprehensive Experiments of Environmental Engineering	2	64		64			6	
	2241000131	Budget Estimates For Environmental Engineering	1.5	24	24				6	
Elective courses	2241000075	English for Environmental Engineering	1.5	24	24				6	7.5 4 1.5 3.0
	2241000128	Environmental Protection Policies, Regulations and Standards	1.5	24	24				4	
	2241000077	Remediation of Soil and Groundwater Pollution	1.5	24	24				6	
	224101006013	Cleaner Production and Circular Economy	1.5	24	24				6	

Course Classi-fied	Course Code	Course Names	Crs.	Hrs.	Period Classification				Semester	Notes
					The.	Exp.	Pra.	Ueb		
	213103018913	Microbial Engineering for Pollution Control	1.5	24	24				6	
	213103023613	Advanced oxidation technology	1.5	24	24				6	
	213103017413	Water-related Disaster Prevention and Control	1.5	24	24				7	
	213103020613	Water Supply and Drainage and Environmental Engineering Construction	1.5	24	24				7	
	213103024313	Membrane Treatment Technology	1.5	24	24				7	
	213103021013	Treatment of Water Supply	1.5	24	24				7	
	213103014513	Hydrochemistry	1.5	24	24				7	
	213103021413	Ecohydrology	1.5	24	24				7	
	213103022213	B Environmental Ecology (B)	1.5	24	24				7	
	213103008413	GIS GIS and Environmental Modelling	1.5	24	24				7	
	2241000078	Document Retrieval and Scientific Paper Writing	1.5	32	16	16			7	
: 42 34.5 7.5 Demand of Creditx:Credits: 42 Required: 34.5 Elective: 7.5										

Form IV: Practical Teaching Platform

Category		Course Code	Practical Teaching Name	Crs.	Total Period	Type of Period		Semester	Place
						Exp.	Pra.		
Teaching Practice	Project Design	2241100079	Course Design of Environmental Engineering Principles	1.0	1.0W			5	At School
		213113026613	Course Design of Air Pollution Control Engineering	1.0	1.0W			5	At School
		2241100135	Course Design of Treatment and Disposal of Solid Wastes	1.0	1.0W			6	At School
		213113028013	Course Design of Water Pollution Control Engineering	1.0	1.0W			6	At School
	Preliminary			4	4W				
Teaching Exercitation	Teaching Exercitation	2241100080	Engineering Surveying Practice	0.5	0.5W			2	At School
		224110000213	Engineering Training	1	1W			4	Out of School
		224110006213	Cognition Practice	1	1W			4	Out of School

Category	Course Code	Practical Teaching Name	Crs.	Total Period	Type of Period		Semester	Place
					Exp.	Pra.		
	2241100130	Production Practice	2	2W			7	Out of School
Graduation Practice	2241100134	Graduation Practice	2	2W			8	Out of School
Graduation Project Thesis	224110000113	Graduation Project Thesis	10					