环境工程专业培养方案

专业名称与代码：环境工程专业 081001（082502）

专业培养目标：培养具有地学、环境工程与环境科学理论基础，能在地质环境保护与治理、环境监测、环境评价、环境规划与管理、环境污染防治等领域从事设计、实施、管理等工作的高级技术人才。

专业培养要求：要求学生系统掌握本专业必需的基础理论、方法和技术，在牢固掌握数学、物理、化学、外语、计算机、地质学知识的基础上，主要学习无机化学及分析化学、物理化学、有机化学、工程制图、水力学、环境工程微生物学、污染控制技术、水文地质学以及环境地质学等课程，培养环境污染调查与监测、工程设计、室内实验、数据处理与分析等基本技能，具有从事本专业的科学研究和分析解决实际问题的初步能力。

毕业生应获得以下几方面的知识和能力：

1．掌握环境工程原理、水污染控制工程、固体废物处理与处置和环境监测等基础理论、基本知识、技能和工作方法；

2．掌握地质学基础、地下水科学理论、环境地质与工程等基础理论知识和基本技能与方法；

3．具备从事水污染控制工程、固体废物处理与处置、环境影响评价、规划等实际工作能力；

3．具备从事地质环境调查、评价、监测的实际工作能力；

4．熟悉国家有关水环境方面的方针、政策和法规；具有一定管理知识和能力；

5．掌握资料查询以及获取信息的基本方法，具有资料归纳、整理和综合分析并加以正确表达的能力。

主干学科：环境科学与工程、地下水科学与工程。

核心课程：无机化学、分析化学、有机化学、水力学、环境微生物学、工程制图、普通地质学、环境工程原理、水污染控制工程、固体废物处理与处置、大气污染控制、环境监测、环境评价、环境规划与管理、水文地质学基础、工程地质学基础、地下水动力学、水文地球化学基础、地下水污染与防治、环境地质学。

主要专业实验：水力学实验、水污染控制工程实验、环境监测实验、水文地质学基础实验、地下水污染与防治实验。

主要实践性教学环节：地球环境生态认识实习、地质学基础实习、污染控制专业课程设计、综合专业教学实习、毕业实习、毕业设计等。

修业年限：四年。

授予学位：工学学士。

相近专业：环境科学、生态学、地下水科学与工程。

Program For Environmental Engineering

Specialty and Code: Environmental Engineering 081001（082502）

Education Objective: The program aims to train engineers and specialists with the knowledge of earth science, environmental science and engineering. The graduates will study the basic and specialized knowledge for environmental protection, contamination control, environmental management and environmental monitoring, and engage in the occupational areas of environmental (especially geo-environmental) evaluation, environmental programming design, management and scientific research.

Education Requirements: The graduates must systematically attain the required basic major theoretical and fundamental knowledge in this field. Based on mathematics, physics, chemistry, geology, a foreign language and computer skills, the students will concentrate on the basic theories and fundamental knowledge of inorganic chemistry, analytical chemistry, physical chemistry, hydraulics, microbiology, pollution control engineering, earth sciences, groundwater, and environmental geology, attain basic skills in environmental monitoring, engineering design and related subjects, and possess essential attributes and related knowledge in order to resolve problems in environmental engineering practice and scientific research.

Graduates Are Required:

1. To master of the basic theories, skills and knowledge of design principles of environmental engineering, water pollution control, solid waste disposal and treatment, and environmental monitoring.
2. To master basic theories, skills and knowledge of earth science, groundwater, environmental geology and engineering.
3. To master basic ability on water pollution control, solid waste disposal and treatment, environmental assessment and planning.
4. To master skills in geological environments investigation, evaluation and monitoring.
5. To master familiar with policies and regulations pertaining to the aquatic environment, and being equipped with management knowledge and ability.
6. To master fundamental methodology for literature search and information acquisition, and possessing an elementary ability for logical conclusions, scientific analysis and correct expression.

Major Disciplines: Environmental Science and Engineering, Groundwater Science and Engineering.

Main Courses: Inorganic Chemistry, Analytical Chemistry, Organic Chemistry, Hydraulics, Environmental Microbiology, Technical Drawing, Physical Geology, Design Principles of Environmental Engineering, Water Pollution Control Engineering, Solid Waste Disposal and Treatment, Atmospheric Pollution Control, Environmental Monitoring, Environmental Assessment, Fundamental Hydrogeology, Engineering Geology, Groundwater Pollution and Prevention, Environmental Geology.

Lab Experiments: Hydraulic Testing, Water Pollution Control Engineering Testing, Environmental Monitoring Assessment, Groundwater Pollution and Prevention Testing.

Practical Work: Cognitive Practice in Terrestrial Environments, Practice for Geology, Specialized Design for Water Pollution Control Engineering, Specialized Design for Solid Waste Disposal and Treatment, Specialized Instructive Practice for Environmental Engineering, Graduation Practice and Design.

Duration: Four years.

Degree Granted: Bachelor of Science.

Related Specialties: Environmental Science, Ecology, Groundwater Science and Engineering.

环境工程专业课程教学计划表

Course Descriptions of Environmental Engineering

课程类别 Classification		课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		学期学分分配 Semester Credits							
						讲课 Lec.	实验 Lab.	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
通识教育课 Liberal Education Courses	必修 Compulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48		3							
		11706500	毛泽东思想与中国特色社会主义理论体系概论 Mao Tse-tung Thought and Introduction to the Theoretical System of Socialism with Chinese Characteristics	4	64	64				4					
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32					2				
		120002＊0	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48		1.5	1.5						
		113027＊0	体育 Physical Education	6	96	96		1.5	1.5	1.5	1.5				
		109005＊0	大学英语 College English	12	192	192		2.5	2.5	3.5	3.5				
		11904100	计算机高级语言程序设计（C） Computer High-level Language（C）	3.5	56	40	16	3.5							
		20413200	水资源与环境专业导论 Introduction to Groundwater and Environmental Sciences	1	16	16		1							
		14300100	军事理论 Military Theory	2	32	32		2							
	选修 Elective	TX35000Z	自然科学类 Natural Science	2	32										
		TX35000G	工程技术类 Engineering	2	32										
		TX35000S	社会科学类 Social Science	2	32										
		TX35000R	人文艺术类 Humanities & Arts	2	32										
		TX35000J	经济管理类 Economy & Management	2	32										
			其他类 Other Courses	2	32										
		小计 Sum		**48.5**	**776**	**760**	**16**	**15**	**5.5**	**9**	**7**				
学科基础课 Disciplinary Fundamental Courses		212028*2	高等数学 B Advanced Mathematics B	11	176	176		4.5	6.5						
		212093*0	大学物理 C College Physics C	7	112	112			3.5	3.5					
		212092*2	物理实验 B Physical Experiments B	3.5	56		56		2	1.5					
		21208803	线性代数 C Linear Algebra C	2.5	40	40			2.5						

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	21209602	概率论与数理统计 B Probability and Mathematics Statistics B	3	48	48				3					
	21114303	测量学 C Surveying C	2	32	32			2						
	20105300	普通地质学 Physical Geology	3	48	48			3.0						
	20105200	矿物岩石学 Mineralogy and Lithology	2.5	40	40				2.5					
	20104002	构造地质学 B Structure Geology B	3	48	48					3				
	20101600	地貌学及第四纪地质学 Geomorphology and Quaternary Geology	2.5	40	40							2.5		
	20408400	水力学 Hydraulics	2.5	40	32	8				2.5				
	20714600	建筑制图 Architecture Drawing	3.5	56	44	12					3.5			
	20302403	大学化学 C College Chemistry C	4	64	50	14		4						
	20311502	分析化学 B Analyze Chemistry B	3	48	48				3					
	20311402	有机化学 B Organic Chemistry B	3.5	56	40	16				3.5				
	20309202	物理化学 B Physics-chemistry B	3	48	48				3					
	20404200	环境工程微生物及实验 Environmental Microbiology and Experiment	3	48	28	20					3			
	20403800	环境工程原理 Principle of Environmental Engineering	2.5	40	40						2.5			
	20407400	生态学 Ecology	2	32	32							2		
	小计 Sum		**67**	**1072**	**946**	**126**	**4.5**	**23.5**	**16.5**	**9**	**9**	**4.5**		
专业主干课 Main Specialty Courses	20409101	水文地质学基础 A The Fundamental of Hydrogeology A	4	64	40	24				4				
	20400801	地下水动力学 A Groundwater Hydraulics A	4	64	40	24					4			
	20408800	水文地球化学/附水分析 Hydro-Geochemistry	3	48	36	12				3				
	20413700	地球科学与环境 Earth Science and Environment	2.5	40	40							2.5		
	20414500	地下水污染与防治 Groundwater Pollution & Prevention	3	48	28	20						3		
	20403400	环境地质学 B Environmental Geology B	2	32	32							2		

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	20414100	大气污染控制 Atmospheric Pollution Control	2	32	32						2			
	20413800	水污染控制工程 Water Pollution Control Engineering	3	48	36	12					3			
	20510002	固体废物处理与处置 B Solid Waste Treatment and Disposal B	2	32	32						2			
	20405302	环境评价 B Environmental Assessment B	3	48	32	16						3		
	20404901	环境监测 A Environmental Monitoring A	4	64	32	32						4		
	20404400	环境规划与管理 Environmental Layout and Management	2	32	32							2		
	20413600	土壤污染和防治 Soil Pollution and Remediation	2.5	40	28	12					2.5			
	小计 Sum		**37**	**592**	**440**	**152**				**7**	**13.5**	**16.5**		
专业选修课 Specialty Elective Courses		具体见专业选修课列表	6	96									6	
合计 Sub-total			**158.5**	**2536**	**2146**	**294**	**21.5**	**27**	**25.5**	**23**	**22.5**	**21**	**6**	
实践环节 Practical Work	40000100	劳动教育 Labor Education	1	1 周			1							
	44300200	军事训练 Military Training	2	2 周			2							
	41904300	计算机高级语言课程设计(C) Course Design for High-level Computer Language (C)	2	1.5 周			2							
	41114402	测量教学实习 B Surveying Practice B	1	0.5 周				1						
	40103300	地质认识实习（北戴河） Primary Field Practice	3	2 周				3						
	40102902	地质教学实习(周口店)B Geological Field Practice B	6	4 周						6				
	40414900	专业教学实习（三峡） Professional Teaching Practice	6	4 周								6		

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	40414800	水污染控制课程设计 Practice for Water Pollution Control Engineering	1.5	1 周							1.5			
	40400400	毕业实习 Practice for Graduation	12	8 周										12
	40400300	毕业设计 Design for Graduation	12	8 周										12
	小计 Sum		**46.5**	**31 周**			**5**	**4**		**6**	**1.5**	**6**		**24**
自主学习 Autonomous Learning	ZZ35S	社会调查 Social Investigation	2											
	ZZ09Y	大学英语(自主学习) College English(Autonomous Learning)	3											
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3											
	小计 Sum		**8**											
总计 Total			**213**	**2536+31 周**	**2146**	**294**	**25**	**33**	**25.5**	**29**	**24**	**27**	**6**	**24**
专业选修课列表 Specialty Elective Courses	21100700	GIS 原理与应用 Principles & Applications of GIS	2.5	40	30	10							2.5	
	20508400	工程地质学 Principles of Engineering Geology	2.5	40	40						2.5			
	20509500	工程招标投标与概预算 Engineering Budget and Bidding	2	32	32								2	
	20404000	环境工程施工技术 Environmental Engineering Construction Techniques	2	32	32									2
	20407100	清洁生产工艺 Clean Manufacturing Techniques	1.5	24	24									1.5
	20402900	环保设备基础 Environmental Equipment	1	16	16									1
	21704500	环境法规 Environmental Law	1.5	24	24								1.5	
	20411800	噪声控制 Yawp Pollution Control	1	16	16									1
	20402300	非点源污染控制 Non-Point Source Pollution Control	1	16	10	6						1		

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	学时 Hrs	学时分类 Class Hours		学期学分分配 Semester Credits							
					讲课 Lec.	实验 Lab.	一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	20414400	水文地质工程地质勘察方法 Investigation and Survey skills for groundwater and geoengineering	2.5	40	40							2.5		
	20405700	环境同位素原理与技术 Environment Isotope Principles	2	32	32								2	
	20508200	工程地质勘察 Geological Engineering Investigation	2	32	32								2	
	20506100	地质灾害防治工程 Control Engineering for Geo-disasters	2.5	40	40								2.5	

注：通识教育选修课和自主学习学分未纳入具体学期。

环境工程专业课程分类统计

	通识教育课程 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	自主学习 Autonomous Learning	学时总计 Total Hours	学分总计 Total Credits
	必修	选修							
学时/学分	584/36.5	192/12	1072/67	592/38	96/6	31 周/46.5	8	2536+31 周	213
学分所占比例	22.8%		31.5%	17.8%	2.8%	21.8%	3.8%		100%