

水文与水资源工程专业培养方案（2015 版）

专业名称与代码： 水文与水资源工程 081102

专业培养目标：

培养知识、能力、素质各方面全面发展，具有良好的人文素养；系统掌握水文与水资源工程专业基本理论、基本方法、基本技能和学科交叉与专业交融的知识，接受相关的工程训练，具有艰苦朴素、求真务实、与时俱进与创新创业精神，能在国土资源、水利水电、能源矿业、交通运输、城乡建设等领域从事水文与水资源工程及相关专业的勘察、设计、评价、施工、监理、检测和管理等工作的具有国际视野的复合应用型工程技术人才。

毕业 5 年后，具有良好的职业道德及高度的社会责任感，能够在社会及水文与水资源工程领域成为业务骨干或技术负责或项目管理人才，具备工程师或与之相当的专业技术能力。

专业培养要求：

本专业学生将在牢固掌握理科基础、外语、计算机技能的基础上，主要学习水文水资源及环境信息的采集及处理、水旱灾害预测及防治、水资源规划、地下水渗流等方面基本理论和基本知识，受到工程制图、运算、实验、测试等方面基本训练，具有应用所学专业分析解决实际问题、科学研究、组织管理的基本能力。

毕业生应获得以下几方面的知识和能力：

1. 基础知识：具有扎实的自然科学基础，良好的工程管理基础；能够将数学、自然科学、工程基础和专业知用于解决复杂工程问题；

2. 专业知识：系统地掌握本专业领域技术基础理论、专业知识技能，熟悉本专业学科前沿和发展趋势；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水文与水资源工程专业中复杂工程问题；

3. 实践能力：获得较好的水文与水资源工程实践训练，具有本专业必需的调查、测试、调研、评价、制图、设计计算等基本技能，熟悉调查、评价、施工工艺，具有综合分析和解决工程实际问题的能力，具有系统的工程实践学习经历；能够设计针对水文与水资源工程专业中复杂工程问题的解决方案，设计满足特定需求的系统、单元(部件)或工艺流程，并能够在设计环节中体现社会和环境等因素；

4. 专业技能：掌握水资源及水环境（尤其是地下水及其环境）方面的专业基础知识和专业理论，能从事地表水、地下水资源及水环境保护的勘测、规划设计、预测、评价与管理等方面的研究和开发；具备综合运用水文与水资源工程专业理论以及发现问题、分析问题并解决复杂工程问题的能力；开发、选择与使用恰当的技术、资源、现代工程工具和信息工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性；具备设计和实施工程实验的能力，并能够对实验结果进行分析；

5. 工程素养：了解与本专业相关的职业和行业的生产、设计、研究与开发、环境保护和可持续发展等方面的方针、政策和法律法规，能正确认识工程对于客观世界和社

会的影响,发扬“艰苦朴素、求真务实”的校训精神;设计中能够综合考虑经济、环境、社会、法律、安全、健康、伦理等制约因素和可持续发展的要求,并理解应承担的责任;

6. 沟通交流:具有良好的沟通能力、组织管理能力和团队合作精神,能够开展管理协调、技术洽谈工作,能够就复杂工程问题与业界同行及社会公众进行有效沟通与交流;具有较强的英语综合运用能力,能熟练阅读本专业的英文技术文献,并具有一定的英语交流能力,具有一定的国际视野和跨文化交流、竞争与合作能力;

7. 终身学习:具有较强的自我获取知识的能力,具备不断拓展自身知识面和终身获取新知识的能力,有不断学习和适应发展的能力;掌握文献检索、资料查询及运用现代信息技术获取相关信息的基本方法;

8. 创新意识:能够基于科学原理并采用科学方法对复杂工程问题进行研究;具有追求创新的态度和意识,掌握基本的创新方法;具有综合运用理论和技术手段进行项目设计、创新和技术改造的能力;

9. 管理: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;

10. 环境和可持续发展:能够理解和评价针对复杂工程问题的专业工程实践对环境、社会可持续发展的影响;

11. 个人和团队: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;

12. 综合素质:具备较高的综合素质,包括身体素质、心理素质、文化素质和专业素质,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。

毕业要求及实现途径:

序号	毕业要求	实现途径(教学过程)
1	基础知识:具有扎实的自然科学基础,良好的工程管理基础;能够将数学、自然科学、工程基础和专业知知识用于解决复杂工程问题。	① 课堂教学 :高等数学A、线性代数B、大学物理C、物理实验B、大学化学B、普通地质学、测量学A、工程力学B、构造地质学A、地质认识实习(北戴河)、地质教学实习(周口店); ② 课外学习 :专题讲座、学术报告等;
2	专业知识:系统地掌握本专业领域技术基础理论、专业知识技能,熟悉本专业学科前沿和发展趋势;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水文与水资源工程专业中复杂工程问题。	① 课堂教学 :高等数学B、概率论与数理统计、水文统计及水文计算、物理实验B、大学化学C、水文地球化学/附水分析水力学、水文学原理与水文测验、水文地质学基础A、地下水动力学A、水资源开发与保护。 ② 课外学习 :课程作业、大学生科研训练、学科前沿调研报告等;
3	实践能力:获得较好的水文与水资源工程实践训练,具有本专业必需	① 课堂教学 :计算机高级语言课程设计(C)流域水文模型课程设计、水资源开发与保护

序号	毕业要求	实现途径（教学过程）
	<p>的调查、测试、调研、评价、制图、设计计算等基本技能，熟悉调查、评价、施工工艺，具有综合分析和解决工程实际问题的能力，具有系统的工程实践学习经历；能够设计针对水文与水资源工程专业中复杂工程问题的解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，并能够在设计环节中体现社会和环境等因素。</p>	<p>课程设计、GIS 原理与应用、地下水数值模拟基础及应用、水文地质工程地质勘察方法环境法规、水资源法规导论、社会调查</p> <p>②课外学习：水资源开发与保护课程设计、专业教学实习（三峡）、地下水数值模拟基础课程设计，参观典型水利工程</p>
4	<p>专业技能：掌握水资源及水环境（尤其是地下水及其环境）方面的专业基础知识和专业理论，能从事地表水、地下水资源及水环境保护的勘测、规划设计、预测、评价与管理等方面的研究和开发；具备综合运用水文与水资源工程专业理论以及发现问题、分析问题并解决复杂工程问题的能力；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与模拟，并能够理解其局限性；具备设计和实施工程实验的能力，并能够对实验结果进行分析。</p>	<p>①课堂教学：计算机高级语言程序设计(C)、电工及电子技术 C、工程技术类、水文统计及水文计算（含概率）、环境同位素原理与技术、水文地质工程地质勘察方法、地下水数值模拟基础、地下水污染与防治、土壤污染与防治</p> <p>②课外学习：课程作业、大学生科研训练、学科前沿调研报告等</p>
5	<p>工程素养：了解与本专业相关的职业和行业的生产、设计、研究与开发、环境保护和可持续发展等方面的方针、政策和法律法规，能正确认识工程对于客观世界和社会的影响，发扬“艰苦朴素、求真务实”的校训精神；设计中能够综合考虑经济、环境、社会、法律、安全、健康、伦理等制约因素和可持续发展的要求，并理解应承担的责任。</p>	<p>①课堂教学：水资源法规导论、水资源与环境专业导论、环境地质学 A、水资源开发与保护、土壤污染与防治、水污染控制工程、三峡实习、生态水文学、环境评价 B</p> <p>②课外学习：引导大学生参加大学生科研立项、大学生科技论文报告会等活动</p>
6	<p>沟通交流：具有良好的沟通能力、</p>	<p>①课堂教学：水资源与环境专业导论、经济</p>

序号	毕业要求	实现途径（教学过程）
	组织管理能力和团队合作精神，能够开展管理协调、技术洽谈工作，能够就复杂工程问题与业界同行及社会公众进行有效沟通与交流；具有较强的英语综合运用能力，能熟练阅读本专业的英文技术文献，并具有一定的英语交流能力，具有一定的国际视野和跨文化交流、竞争与合作能力。	管理类、专业认识实习、三峡实习、周口店实习、毕业实习、毕业设计、大学英语、社会调查、人文艺术类 ② 课外学习 ：自主学习学科竞赛、发明创造、参加科研报告等。
7	终身学习：具有较强的自我获取知识的能力，具备不断拓展自身知识面和终身获取新知识的能力，有不断学习和适应发展的能力；掌握文献检索、资料查询及运用现代信息技术获取相关信息的基本方法。	① 课堂教学 ：劳动教育、军事训练、思想道德修养与法律基础、社会调查、大学英语（自主学习） ② 课外学习 ：自主学习学科竞赛、发明创造、参加科研报告等。
8	创新意识：能够基于科学原理并采用科学方法对复杂工程问题进行研究；具有追求创新的态度和意识，掌握基本的创新方法；具有综合运用理论和技术手段进行项目设计、创新和技术改造的能力。	① 课堂教学 ：水文学原理与水文测验、水文地质学基础A、地下水动力学A、水资源开发与保护课程设计、工程水文地质学 ② 课外学习 ：自主学习学科竞赛、发明创造、参加科研报告等。
9	管理：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。	① 课堂教学 ：经济管理类、工程招标投标与概预算、环境评价B、水资源开发与保护课程设计、流域模型课程设计 ② 课外学习 ：大学生科研训练、参加教师科研项目等。
10	环境和可持续发展：能够理解和评价针对复杂工程问题的专业工程实践对环境、社会可持续发展的影响。	① 课堂教学 ：生态水文学、环境地质学A、地质灾害防治工程、毕业实习、环境监测A、环境评价B、水文地质学基础A、水资源开发与保护、地下水污染与防治 ② 课外学习 ：课程作业、大学生科研训练、专题讲座等。
11	个人和团队：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。	① 课堂教学 ：马克思主义原理、军事理论/军事训练、体育、测量教学实习A、认识实习（北戴河）、基础实习（周口店）B、专业

序号	毕业要求	实现途径（教学过程）
		教学实习（三峡） ②课外学习： 课程作业、大学生科研立项、三下乡实践活动等。
12	综合素质：具备较高的综合素质，包括身体素质、心理素质、文化素质和专业素质，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。	①课堂教学： 军事训练、社会科学类、人文艺术类、马克思主义基本原理、毛泽东思想和中国特色社会主义理论体系概论、中国近现代史纲要、思想道德修养与法律基础、水资源与环境专业导论、劳动教育 ②课外学习： 课程作业、大学生科研立项、三下乡实践活动等。

主干学科：地质工程、土木工程、水利工程、环境工程。

核心课程：水力学、水文学原理与水文测验、水文地质学基础、地下水动力学、水文地球化学/附水分析、水文统计与水文计算、流域水文模型、生态水文学、水资源开发与保护等。

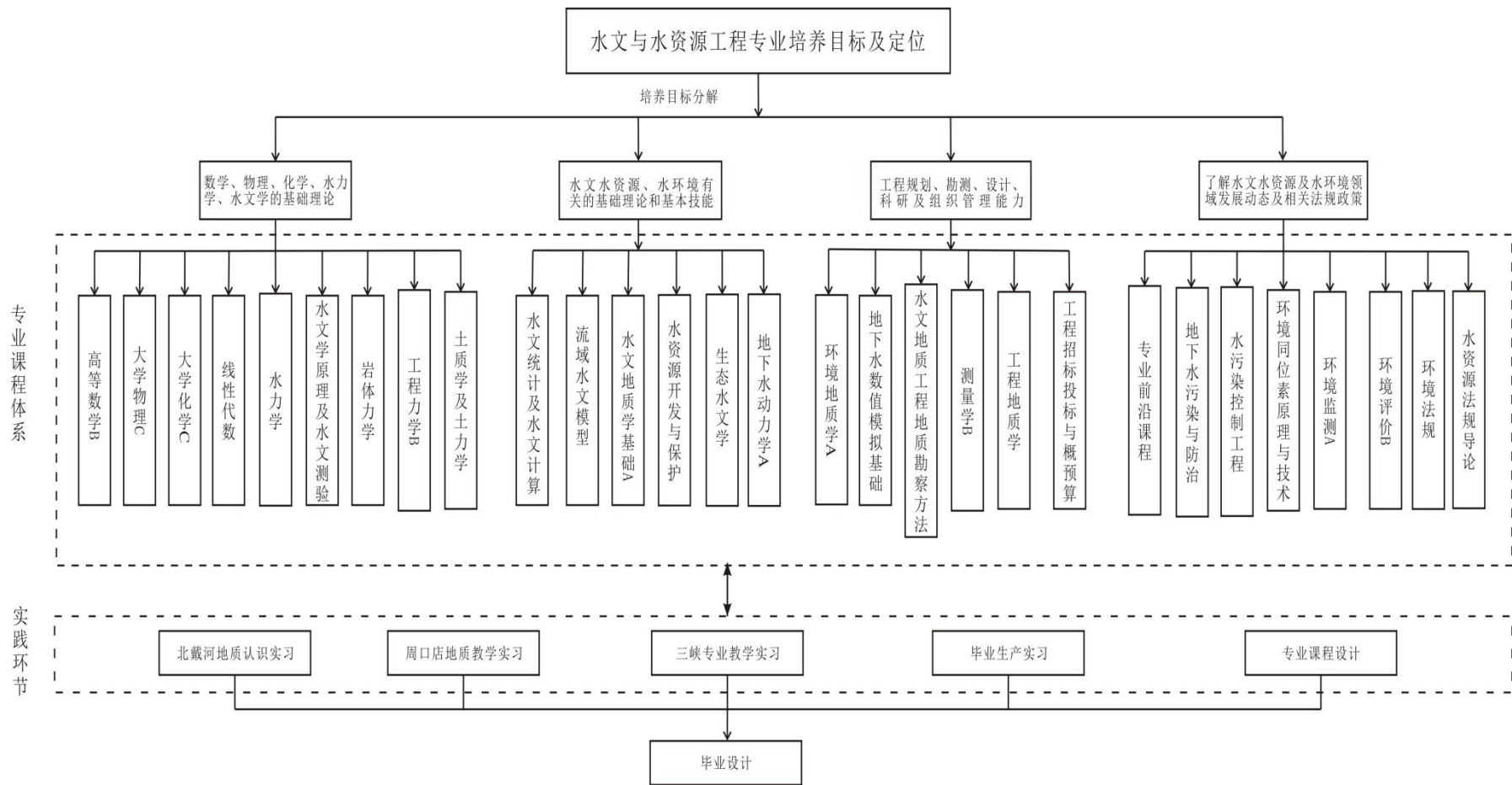
主要专业实验：水力学实验、水文地质学基础实验、地下水动力学实验、环境水化学实验、水分析化学实验等。

主要实践性教学环节：工程测量实习、北戴河地质认识实习、周口店地质教学实习，三峡专业教学实习、计算机语言编程课程设计、水文预报课程设计、地下水开发与防治课程设计、毕业实习与毕业设计等约 33~34 周。

修业年限：四年。

授予学位：工学学士。

相近专业：环境工程、地质工程、地下水科学与工程。



Program for Hydrology and Water Resources Engineering

Specialty and Code: Hydrology and Water Resources Engineering 080802 (081102)

Education Objective:

This major aims to train students to become qualified engineering and technical talents with all around development of moral, intellectual and physical education. They are expected to achieve solid professional theory, method, and knowledge of interdisciplinary in the field of hydrology and water resources. Students are also supposed to have strong innovation consciousness, wide international perspective and intercultural communication, competition and cooperation ability. They are competent for design, evaluation, construction and management in land resources, water resources, energy, mining, transportation, urban and rural construction fields.

Graduates, after about 5 years, are expected to be technology director or business manager in hydrology field, and to obtain medium title at least.

Education Requirements: Students will acquire the knowledge and technology for the data collecting and processing of hydrology and water resources, aquatic environment, forecasting of floods and droughts, water resources planning, groundwater seepage and others related skills based on the mastery knowledge of natural science, a foreign language and computer applications. Students should have the ability to solve practical engineering problems, being actively engaged in undertaking, organizing and managing scientific projects.

Graduation Requirements:

1. Basic engineering knowledge: Students are required to be able to use mathematics, natural science, engineering knowledge to solve complex engineering problems in hydrology and water resources field.
2. Professional knowledge: Students are required to obtain hydrology basic theory, professional knowledge and skills, familiar with the discipline frontier and its development. They are also supposed to be able to identify, express and analyze complex engineering problems in hydrology through literature research, and obtain valid conclusions using basic principles of applied mathematics, natural science.
3. Practice ability: Students are required to achieve hydrology and water resources engineering training, and have the professional survey, drawing, design, construction technology. Also students are asked to be able to provide solutions for complex engineering problems in hydrology, design system, unit (component) or technical process which meet the specific needs, and embody the sense of innovation and consider social, health, safety, law, culture and environment factors in the design processes.
4. Professional skills: Students are supposed to have solid professional theory and

method, and be competent for design, evaluation, construction and management in water resources field. They have to be able to develop, select and use appropriate technology, resources, modern engineering tools and information technology tools to solve out complex engineering problems in hydrology and water resources exploration, including prediction and modeling of complex engineering problems and understanding its limitations.

5. Engineering literacy: Students are required to know the policies, laws and regulations which are associated with the industry production, design, research of hydrology. They should identify the influence of engineering on objective world and society, promote the school motto of "hard work and plain living". In the design processes, they consider the economic, environmental, social, legal, safety, health, ethical and other constraints and the requirements of sustainable development, and understand the responsibility.

6. Communication: Students are asked to be able to effectively communicate and exchange with industry peers and the public on complex engineering problems. Students should also have a strong comprehensive English ability to read English reference, and have certain international perspective, and can exchange and communicate in cross-cultural settings.

7. Life-time learning: Students should have autonomous and lifelong learning consciousness, and possess the ability of continuous learning and development adapting. They also should master reference searching skills, data query and modern technology to obtain relevant information.

8. Innovation: Students can study the complex engineering problem by using scientific theory and method. They pursue the innovation and the basic methods of innovation, can use the integrated theory and technology for project design, innovation and technological transformation.

9. Project management: Students are asked to be able to understand and master the engineering management principles and economic decision-making methods, and apply them in multi discipline environment.

10. Environment and sustainable development: Students are supposed to be able to understand and evaluate impacts of professional engineering practice for the complex engineering problems in hydrology and water resources on environment and sustainable development of society.

11. Individual and team work: Students are required to be able to assume the role of individual, team member, and the person in charge.

12. Comprehensive quality: Students are required to have high comprehensive quality, including physical quality, psychological quality, cultural quality and professional quality, and can fulfill the responsibility and abide ethics in the engineering practice.

Graduation requirements and ways to achieve:

No.	Graduation Requirements	Ways to achieve (Teaching Process)
1	<p>Basic engineering knowledge: Students are required to be able to use mathematics, natural science, engineering knowledge to solve complex engineering problems in hydrology and water resources field.</p>	<p>① Classroom Teaching: Advanced Mathematics A, College Physics C, Physics Experiments B, College Chemistry B, Linear Algebra C, Physical Geology, Surveying A, Engineering Mechanic B, Structural Geology B, Primary Field Training (Beidaihe), Geological Field Training (Zhoukoudian)</p> <p>② Out-of-class Learning: Lectures, academic report</p>
2	<p>Professional knowledge: Students are required to obtain hydrology basic theory, professional knowledge and skills, familiar with the discipline frontier and its development. They are also supposed to be able to identify, express and analyze complex engineering problems in hydrology through literature research, and obtain valid conclusions using basic principles of applied mathematics, natural science.</p>	<p>① Classroom Teaching : Advanced Mathematics A, Probability and Statistics C, Hydrological Statistic and Analysis, Physical Experiments B, College Chemistry C, Hydro-Geochemistry, The Principles of Hydrology, The Fundamental of Hydrogeology A, Groundwater Hydraulics A, Water Resources Exploitation and Protection</p> <p>② Out-of-class Learning: Course assignments, college students' scientific research training, Research report, etc</p>
3	<p>Practice ability: Students are required to achieve hydrology and water resources engineering training, and have the professional survey, drawing, design, construction technology. Also students are asked to be able to provide solutions for complex engineering problems in hydrology, design system, unit (component) or technical process which meet the specific needs, and embody the sense of innovation and consider social, health, safety, law,</p>	<p>① Classroom Teaching: Professional Course Project Design A, Professional Course Project Design, Professional Course Project Design, Principles & Applications of GIS (Bilingual), Groundwater Modeling, Engineering Hydrogeology, Introduction to Water Resources Regulation, Social Investigation</p> <p>② Out-of-class Learning : Professional Teaching Practice (Sanxia), Visit the typical water conservancy project</p>

No.	Graduation Requirements	Ways to achieve (Teaching Process)
	culture and environment factors in the design processes.	
4	Professional skills: Students are supposed to have solid professional theory and method, and be competent for design, evaluation, construction and management in water resources field. They have to be able to develop, select and use appropriate technology, resources, modern engineering tools and information technology tools to solve out complex engineering problems in hydrology and water resources exploration, including prediction and modeling of complex engineering problems and understanding its limitations.	<p>① Classroom Teaching: Computer High-level Language A, Hydrological Statistic and Analysis, Investigation and Survey skills for groundwater and geoengineering, Environment Isotope Principles, Groundwater Modeling, Methods and Technology of Groundwater Protection</p> <p>② Out-of-class Learning: Course assignments, college students' scientific research training, Research report, etc</p>
5	Engineering literacy: Students are required to know the policies, laws and regulations which are associated with the industry production, design, research of hydrology. They should identify the influence of engineering on objective world and society, promote the school motto of "hard work and plain living". In the design processes, they consider the economic, environmental, social, legal, safety, health, ethical and other constraints and the requirements of sustainable development, and understand the responsibility.	<p>① Classroom Teaching: Introduction to Water Resources Regulation, Environmental Law, Environmental Geology B, Soil Pollution and Remediation, Water Pollution Control Engineering, Environmental Assessment B</p> <p>② Out-of-class Learning: research projects and academic presentations.</p>

No.	Graduation Requirements	Ways to achieve (Teaching Process)
6	<p>Comunication: Students are asked to be able to effectively communicate and exchange with industry peers and the public on complex engineering problems. Students should also have a strong comprehensive English ability to read English reference, and have certain international perspective, and can exchange and communicate in cross-cultural settings.</p>	<p>① Classroom Teaching : Introduction to Groundwater and Environmental Sciences , Primary Field Training , Geological Field Training B, Professional Teaching Practice, Practice for Graduation, Social Investigation</p> <p>②Out-of-class Learning: Contest, Invention, Innovation and Research Presentation</p>
7	<p>Life-time learning: Students should have autonomous and lifelong learning consciousness, and possess the ability of continuous learning and development adapting. They also should master reference searching skills, data query and modern technology to obtain relevant information.</p>	<p>① Classroom Teaching: Military Theory, Physical Education, College English, Social Investigation</p> <p>②Out-of-class Learning: Contest, Invention, Innovation and Research Presentation</p>
8	<p>Innovation: Students can study the complex engineering problem by using scientific theory and method. They pursue the innovation and the basic methods of innovation, can use the integrated theory and technology for project design, innovation and technological transformation.</p>	<p>① Classroom Teaching : The Principles of Hydrology, The Fundamental of Hydrogeology A , Professional Course Project Design , Engineering Hydrogeology</p> <p>②Out-of-class Learning: Contest, Invention, Innovation and Research Presentation</p>
9	<p>Project management: Students are asked to be able to understand and master the engineering management principles and economic decision-making methods, and apply them in multi discipline environment.</p>	<p>① Classroom Teaching: Engineering Budget and Bidding, Environmental Assessment B, Professional Course Project Design , Professional Course Project Design</p> <p>② Out-of-class Learning : Contest, Innovation and Research Presentation</p>
10	<p>Environment and sustainable development: Students are supposed to be able to understand and evaluate impacts of professional engineering practice for the complex engineering</p>	<p>① Classroom Teaching : Eco-hydrology , Environmental Geology B , Control Engineering for Geo-disasters , Practice for Graduation , Environmental Monitoring C ,</p>

No.	Graduation Requirements	Ways to achieve (Teaching Process)
	problems in hydrology and water resources on environment and sustainable development of society.	Environmental Assessment B , The Fundamental of Hydrogeology A , Water Resources Exploitation and Protection , Methods and Technology of Groundwater Provention ②Out-of-class Learning: Lectures on special topics, Academic report, etc.
11	Individual and team work: Students are required to be able to assume the role of individual, team member, and the person in charge.	① Classroom Teaching : Principles of Marxism, Military Theory, Physical Education, Primary Field Training , Geological Field Training B, Professional Teaching Practice ②Out-of-class Learning: Lectures on special topics, Academic report, etc.
12	Comprehensive quality: Students are required to have high comprehensive quality, including physical quality, psychological quality, cultural quality and professional quality, and can fulfill the responsibility and abide ethics in the engineering practice.	① Classroom Teaching: Military Theory, Physical Education, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, The Essentials of Modern Chinese History, Morality Education and Fundamentals of Law, Water Resources Exploitation and Protection ②Out-of-class Learning: Lectures on special topics, Academic report, etc.

Major Disciplines: Geotechnical Engineering, Civil Engineering, Hydraulic Engineering and Environmental Engineering.

Main Courses: Hydraulics, The Principles of Hydrology & Gauging, The Fundamental of Hydrogeology, River Dynamics, Groundwater Hydraulics, Hydro-Geochemistry, Hydrological Statistic and Analysis, Watershed Hydrologic Model, Eco-hydrology, Water Resources Exploitation and Protection.

Lab Experiments: Hydraulic Testing, Hydrodynamics Testing, Hydrochemistry Testing, Soil Mechanics Testing, Phreatic Water and Confined Water Simulation, Groundwater Flow Net Simulation.

Practical Work: Engineering Survey Practice, Primary Field Practice (at Beidaihe), Instructive Practice in Geology (at Zhoukoudian), Instructed Practice for Major (at the Three Gorges), Computer Program Design Practice, Hydrological Forecast Course

Project Design, Hydrological Forecast Course Project Design, Graduation Practice and Design. 33~ 34 Weeks in total.

Duration: Four years.

Degree Granted: Bachelor of Science.

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

水文与水资源工程专业课程教学计划表

Course Descriptions of Hydrology and Water Resources 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		先修课程 Prerequisite courses	学期学分分配 Semester Credits										
					讲课 Lec.	实验 Lab.		一	二	三	四	五	六	七	八			
								1st	2nd	3rd	4th	5th	6th	7th	8th			
通识教育课 Liberal Education Courses	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 Introduction to Mao Tse-tung Thought and the Theoretic al 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	4	144	144				1	1	1	1						
	109005*0	大学英语 College English	12	192	192				3	3	3	3						
	11904100	C 语言程序设计 A 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	总计 12 学分, 含创新创业选修课学分, 跨学科选修课不低于 6 学分。“形势与 政策”课程作为限选课, 由马克思主义 学院实施。	12	192													
	小计 Sum		46.5	824	616	16		11.5	9	8	6	0	0	0	0	0	0	
学科基础课 Disciplinary Fundamental Courses	212028*2	高等数学 B Advanced Mathematics B	10	160	160			4	6									
	212093*0	大学物理基础 College Physics C	3.5	56	56				3.5									
	212092*2	物理实验 B Physical Experiments B	2	32		32			2									
	20302403	大学化学 C College Chemistry C	4	64	50	14					4							
	21208803	线性代数 C Linear Algebra C	2	32	32						2							
	21202202	概率论与数理统计 C Probability and Statistics C	2	32	32						2							
	21114302	测量学 B Surveying B	2.5	40	40					2.5								

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		先修课程 Prerequisite courses	学期学分分配 Semester Credits								
					讲课 Lec.	实验 Lab.		一	二	三	四	五	六	七	八	
								1st	2nd	3rd	4th	5th	6th	7th	8th	
	小计 Sum		33	528	442	86		0	0	5	4	7	9	8	0	
专业选修课 Specialty Elective Courses		具体见专业选修课列表	20	320								6	4.5	5.5		
合计 Sub-total			145.5	2408	1728	168		18.5	23	27.5	20.5	7	9	8	0	
实践环节 Practical Work	44300200	军事训练 Military Training	2	2周				2								
	41919001	C语言课程设计A Professional Course Project Design A	1.5	1.5周					1.5							
	41120901	测量教学实习A Surveying Practice B	1	1周					1							
	40115200	地质认识实习(北戴河) Primary Field Training	2	2周					2							
	40115602	地质教学实习(周口店)B Geological Field Training B	4	4周							4					
	40421400	专业教学实习(三峡,含地下水井流试验课程设计) Professional Teaching Practice (the Three Geoges, Including Design and Practice of Groundwater Well Test)	5	5周										5		
	40421500	水资源开发与保护课程设计 Course Design for Water Resources Exploitation and Protecting	2	2周											2	
	40421800	流域水文模型课程设计 Course Design for Hydrologic Model of Basin	1	1周											1	
	404521900	地下水防治方法与技术课程设计 Course Design for Methods and Technology of Groundwater Prevention and Control	1.5	1.5周												1.5
	40422000	毕业实习及毕业设计 Practice and Design for Graduation	16	16周												16
	小计 Sum		36	36周				2	4.5	0	4	0	8	1.5	16	
创新 Learning	ZZ35S	社会调查 Social Investigation	2													

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		先修课程 Prerequisite courses	学期学分配 Semester Credits									
					讲课 Lec.	实验 Lab.		一	二	三	四	五	六	七	八		
								1st	2nd	3rd	4th	5th	6th	7th	8th		
	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 C Environmental Assessment C	2	32	24	8									2		
	20405103	环境监测 C Environmental Monitoring C	2	32	24	8									2		

注：通识教育选修课学分和创新创业自主学习学分未列入具体学期。

水文与水资源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	创新创业自主学习 Autonomous Study	学时总计 Total Hours	学分总计 Total Credits
	必修	选修							
学时/ 学分	632/34.5	192/12	736/46	528/33	320/20	36 周/36	5	2408+36 周	186.5
学分 所占 比例	24.93%		24.06%	17.69%	10.72%	19.3%	2.68%		100%