给排水科学与工程

一、培养目标

本专业旨在培养具备健康全面的人文素养和坚实的自然科学知识、扎实的科学研究及工程技术基础以及具有创新精神的给排水工程领域的科学研究和工程技术人才，能从事给排水工程及水环境保护方面的规划、咨询、设计、施工与管理工作。

二、基本规格要求

本专业学生要求掌握以下六项核心能力：

1. 给排水科学与工程的基础理论与方法。
2. 给排水工程的规划与设计能力。
3. 给排水系统的运营与管理能力。
4. 给排水工程的施工与经济分析能力。
5. 健康全面的人文素养和社会科学知识。
6. 科学研究的数理逻辑思维、生化实验分析与计算机应用能力。

三、培养特色

本专业以化学、生物学与水力学为主要支柱学科，注重培养学生具有扎实的基础知识与专业知识，具有先进的设计思想、工程经济观念与创新意识，突出对学生的设计能力、实践能力与创新能力的培养。

四、学制、毕业基本要求及学位授予

1. 本科基本学制 4 年，弹性学习年限 3—6 年，按照学分制度管理。

2. 给排水科学与工程专业学生毕业最低学分数为 175 学分，其中各类别课程及环节要求学分数如下表：

课程类别	通识必修	学门核心	学类核心	专业核心	专业选修	通识选修	集中实践	合计
学分数	27	24	36	26	22	8	32	175

3. 学生修满培养方案规定的必修课、选修课及有关环节，达到规定的最低毕业学分数，并修完规定必修但不记学分的所有课程和环节，德、智、体合格，即可毕业。满足国家学位授予相关文件的，授予工学学士学位。

五、课程设置及学分分布

（一）通识教育课程〔必修 27＋（6）学分＋选修 8 学分〕

通识教育课程包括必修和选修两部分。通识选修课程按《湖南大学通识选修（文化素质教育）课程方案》实施，通识必修课程如下：

编码	课程名称	学分	备注
GE01101	毛泽东思想和中国特色社会主义理论体系概论	3＋（3）	
GE01039	思想道德修养与法律基础	1.5＋（1.5）	
GE01100	形势与政策	0.5＋（1.5）	
GE01102	中国近现代史纲要	2	
GE01103	马克思主义基本原理（上）	2	
GE01104	马克思主义基本原理（下）	2	
GE01012（－15）	大学英语	8	
GE01088	计算机基本能力测试	0.5	
GE01095	计算机导论与程序设计	2.5	
GE01107（－13）	心理素质与生涯发展	1	
GE01089（－92）	体育	4	

（二）学门核心（24 学分）

编码	课程名称	学分	备注
GE03025（26）	高等数学 A	10	
GE03003	线性代数 A	3	
GE03004	概率论与数理统计 A	3	
GE03005（06）	普通物理 A	6	
GE03007（08）	普通物理实验 A	2	

（三）学类核心（36 学分）

编码	课程名称	学分	备注
CE04034	工程图学	4	
CE04035	计算机图形学	1	
CE04011	无机化学 B	3	
CE04047	建筑力学（1）	3	
CE04048	建筑力学（2）	2	
CE04049	流体力学 B	4	
CE04014	物理化学 B	3	
CE04015	有机化学 B	3	
CE04050	水分析化学	3	
CE04016	微生物学	3	
CE04051	电工电子技术	3	
CE04037	工程测量	3	
CE04052	给排水科学与工程概论	1	

（四）专业核心（26 学分）

编码	课程名称	学分	备注
CE05080	泵与泵站	2	
CE05081	给水管道工程	3	
CE05082	排水管道工程	2	
CE05083	水质物理化学净化工程	3.5	
CE05084	水质生物净化工程	3.5	
CE05006	建筑给水排水工程	3	
CE05007	水工程经济与概预算	3	
CE05009	水工艺设备、仪表与控制	3	
CE05085	水资源利用与保护	2	
CE05086	水处理实验技术	1	

（五）专业选修课（22 学分）

建议学生从以下课程中选修 22 个或更多学分，也可从本学院其他专业所列的“专业选修课程”中选修。

编码	课程名称	学分	备注
CE06075	水文学	2	
CE06024	供水水文地质	2	
CE06164	水工程施工	2	
CE06015	给排水科学与工程专业英语	2	
CE06013	给水排水工程结构	4	
CE06165	水工程计算机应用	2	
CE06028	环境保护与可持续发展（双语）	2	
CE06001	城市固体废物处理与处置	2	
CE06099	建筑功能材料	2	限三选一
CE06049	可持续建筑技术	2	
CE06033	建筑概论	2	
CE06088	专业计算方法与最优化	2	
CE06166	计算流体力学	2	
CE06073	水处理新技术	2	
CE06167	消毒技术与消毒副产物	2	
CE06168	给水排水工程设计案例分析	2	

注：在读期间参加学科竞赛、SIT、公开发表学术论文、获专利或软件著作权以及其他经学院教学指导委员会认定的科技实践活动或成果，可替代专业选修课，但最高不超过 3 个学分。

（六）集中实践（32 学分）

编码	课程名称	学分	备注
GE01040	军事训练		
GE09030	中文写作实训	1	
GE09021	电工电子实习 A	2	
CE10035	工程测量实习	2	
CE10009	取水泵房课程设计	1	
CE10093	给水管网课程设计	1	
CE10012	排水管网课程设计	1	
CE10094	城市给水厂课程设计	1.5	
CE10095	城市污水厂课程设计	1.5	
CE10023	建筑给水排水课程设计	1	
CE10004	水工程经济评价课程设计	1	
CE10005	水工程概预算课程设计	1	
CE10008	认识实习	1	
CE10061	专业实习	2	
CE10050	毕业实习	2	
CE10096	导师课程	1	
CE10051	毕业设计	12	

六、课程责任教师一览表

序号	姓名	职称	学历学位	专业特长	课程（专业核心、专业选修、通识选修）
1	施　周	教授	博士	水质净化，水环境化学	水质物理化学净化工程， 给排水科学与工程概论
2	许仕荣	教授	硕士	给排水管网系统，水环境系统	泵与泵站， 水工程计算机应用， 给排水科学与工程概论
3	柯水洲	教授	硕士	水质净化，环境工程	水质生物净化工程， 给排水科学与工程概论
4	余　健	教授	博士	给排水管网系统，环境工程	给水管道工程， 水质生物净化工程， 给水排水工程设计案例分析（给水部分）
5	袁玉梅	副教授	硕士	建筑给水排水工程	建筑给水排水工程， 给水排水工程设计案例分析（建给部分）
6	吴慧英	副教授	博士	水质净化，环境工程	给水处理新技术， 城市固体废物处理与处置
7	王　涛	助理教授	硕士	给排水管网系统，水质净化	水质物理化学净化工程， 排水管道工程， 水处理新技术， 给水排水工程设计案例分析（排水部分）
8	李　伟	助理教授	硕士	建筑给水排水工程，水环境化学	水分析化学， 建筑给水排水工程

续表

序号	姓名	职称	学历学位	专业特长	课程 （专业核心、专业选修、通识选修）
9	童　丽	助理教授	硕士	水质净化，水资源保护与利用及水工程经济	水资源利用与保护， 水工程经济与概预算
10	贺维鹏	助理教授	博士	水质净化，水工程施工及自控技术	水工程施工，水工艺设备，仪表与控制
11	唐　浩	助理教授	博士	消毒副产物的控制，污水处理新技术	给排水科学与工程专业英语，环境保护与可持续发展
12	周石庆	助理教授	博士	给水处理理论与技术，消毒副产物生成与控制	水工程计算机应用，消毒技术与消毒副产物

七、专业责任教授

序号	姓名	职称	学历学位	专业特长	课程
1	施　周	教授	博士	水质净化，水环境化学	水质物理化学净化工程， 给排水科学与工程概论

Water and Wastewater Science and Engineering

Ⅰ. Objective

The program is designed to cultivate students to possess comprehensive knowledge in social science and solid basics in natural science, to master fundamentals in scientific researches and engineering technologies as well as to develop innovative spirit, and eventually, to become professionals being qualified to engage in all disciplines in water and wastewater science and engineering. Upon completion of the program, students will be able to work in sectors of planning, consulting, design, construction and management associated with water supply, wastewater treatment, and water environment protection.

Ⅱ. Core competences

The students are expected to gain the following six core competences:

1. Fundamental theories and methodologies of water and wastewater science and engineering.
2. Planning and design skills for water and wastewater engineering.
3. Operation and management abilities for water and wastewater systems.
4. Construction and economic analysis abilities for water and wastewater engineering.
5. Health and comprehensive knowledge of human and social sciences.
6. Abilities in logic thinking of scientific research, analysis of biological and chemical experiment, and application of computer.

Ⅲ. Training characteristics

The program is inter-disciplinarily based on chemistry, biology and hydraulics, and the professional training primarily focuses on solid fundamentals in science and engineering, advanced engineering design, prepared engineering economics, and creative thinking. Students are specifically trained to develop theirs advanced design idea, engineering economy concept as well as innovation consciousness.

Ⅳ. Educational system and basic requirements for graduation and degree confer

1. Basic schooling is 4 years. Flexible learning about 3-6 years in accordance with the credit system management is allowed.

2. A minimum of 175 credits is required for graduation. The specified credit requirements based on various types of courses as listed in the following table.

Course Category	General Fundamentals (Compulsory)	Engineering Cores (compulsory)	Civil Engineering Cores (Compulsory)	Major Cores (Compulsory)	Major (Electives)	General Fundamentals (Electives)	Practice	Total
Credits	27	24	36	26	22	8	32	175

3. Students, after finishing the required courses, selected courses and related technical elements with provisions of the undergraduate program, obtaining the minimum credits for graduation including some regulation courses or links with no credits, and qualifying with virtue, wisdom, body fit, can

graduate. Students have met the relevant documents of the state grant degrees will be conferred the bachelor's degree.

V. Courses and credits

1. General Education Courses〔required 27＋(6) ＋ elective 8 credits〕

The general education courses consist of required courses and elective courses. General education electives are designed according to the *Curriculum Design of General Education Electives of Hunan University*. Required general education courses are illustrated in the following table.

Code	Course Title	Credit(s)	Remarks
GE01101	Introduction to Maoism and Theoretical System of Socialism with Chinese Characteristics	3＋(3)	
GE01039	Moral Cultivation and Law Basics	1.5＋ (1.5)	
GE01100	Current Situation and Policies	0.5＋ (1.5)	
GE01102	Outline of Modern Chinese History	2	
GE01103	Fundamentals of Marxism Ⅰ	2	
GE01104	Fundamentals of Marxism Ⅱ	2	
GE01012(－15)	College English	8	
GE01088	Computer Proficiency Test	0.5	
GE01095	Introduction to Computer Science and Programming	2.5	
GE01107(－13)	Psychological Health & Career Planning	1	
GE01089(－92)	Physical Education	4	

2. Engineering Cores (24 compulsory credits)

Code	Course Name	Credit(s)	Remarks
GE03025(26)	Advanced Mathematics A	10	
GE03003	Linear Algebra A	3	
GE03004	Probability and Mathematical Statistics A	3	
GE03005(06)	College Physics A	6	
GE03007(08)	Experiments of College Physics A	2	

3. Civil Engineering Cores (36 compulsory credits)

Code	Course Name	Credit(s)	Remarks
CE04034	Engineering Drawing	4	
CE04035	Computer Graphics	1	
CE04011	Inorganic Chemistry B	3	
CE04047	Construction Mechanics Ⅰ	3	
CE04048	Construction Mechanics Ⅱ	2	
CE04049	Fluid Mechanics B	4	
CE04014	Physical Chemistry B	3	
CE04015	Organic Chemistry B	3	
CE04050	Water Analytical Chemistry	3	
CE04016	Microbiology	3	
CE04051	Electrical and Electronic Technology	3	
CE04037	Engineering Survey	3	
CE04052	Introduction to Water and Wastewater Engineering	1	

4. Major Cores (26 compulsory credits)

Code	Course Name	Credit(s)	Remarks
CE05080	Pump and Pump Station	2	
CE05081	Water Network Engineering	3	
CE05082	Wastewater Network Engineering	2	
CE05083	Physico-chemical Processes of Water and wastewater treatment	3.5	
CE05084	Biological Processes of Water and wastewater treatment	3.5	
CE05006	Water and Wastewater Engineering for Buildings	3	
CE05007	Economics and Budgets for Water and wastewater Engineering	3	
CE05009	Equipments, Instruments and Control for Water and wastewater Engineering	3	
CE05085	Utilization and Protection of Water Resources	2	
CE05086	Water Treatment Experiments	1	

5. Major Electives (22 credits)

Students shall choose major elective courses from the table below or from other departments in College of Civil Engineering:

Code	Course Name	Credit(s)	Remarks
CE06075	Hydrology	2	
CE06024	Water Supply Hydrogeology	2	
CE06164	Water Engineering Construction	2	
CE06015	Professional English for Water and Wastewater Science and Engineering	2	
CE06013	Structure for Water and Wastewater Engineering	4	
CE06165	Computer-based Applications for Water Engineering	2	
CE06028	Environmental Protection and Sustainable Development	2	bilingual course
CE06001	Disposal and Treatment of Municipal Solid Waste	2	
CE06099	Functional Materials for Architecture	2	Select 1 from 3
GE06049	Sustainable Architectural Technologies	2	
GE06033	Introduction to Architecture	2	
CE06088	Methodology and Optimization of Professional Algorithms	2	
CE06166	Computational Fluid Mechanics	2	
CE06073	Cutting-edge Water Treatment Technologies	2	
CE06167	Disinfection and Disinfection By-products	2	
CE06168	Case Studies of Water and Wastewater Engineering Design	2	

6. Practice (32 compulsory credits)

Code	Course Name	Credit(s)	Remarks
GE01040	Military Theory and Exercise		
GE09030	Chinese Writing	1	
GE09021	Practice of Electrical and Electronic Technology A	2	
CE10035	Practice of Engineering Survey	2	
CE10009	Course Design Project of Pump Stations	1	
CE10093	Course Design Project of Water Supply Systems	1	
CE10012	Course Design Project of Water Drainage Systems	1	
CE10094	Course Design Project of Water Treatment Plant	1.5	
CE10095	Course Design Project of Municipal Wastewater Treatment Plant	1.5	

Cont

Course No.	Course Name	Credits	Note
CE10023	Course Design Project of Water and Wastewater Engineering for Buildings	1	
CE10004	Course Design Project of Water Engineering Economics	1	
CE10005	Course Design Project of Water Engineering Budgets	1	
CE10008	Cognition Practice	1	
CE10061	Production Practice	2	
CE10050	Graduation Practice	2	
CE10096	Special topic/Group discussion Course	1	
CE10051	Design Project for Graduation	12	

Ⅵ. FACULTY MEMBERS

No.	Name	Title	Degree	Specialty	Course
1	Shi Zhou	Professor	Ph. D	Water Quality Control, Water Environment Chemistry	Physico-chemical Processes of Water and Wastewater Treatment Introduction to Water and Wastewater Engineering
2	Xu Shirong	Professor	M. S.	Water Distribution System, Water Environment System	Pump and Pump Station, Computer-based Applications for Water Engineering, Introduction to Water and Waste Water Engineering
3	Ke Shuizhou	Professor	M. S.	Water Quality Control, Environmental Engineering	Biological Processes of Water and Wastewater Treatment, Introduction to Water and Waste Water Engineering
4	Yu Jian	Professor	Ph. D	Water Distribution System, Environmental Engineering	Water Supply Engineering, Biological Processes of Water and Wastewater Treatment, Case Studies of Water Supply and Drainange Engineering Design.
5	Yuan Yumei	Associate Professor	M. S.	Water Systems for Buildings	Water Supply and Drainage Engineering for buildings, Case Studies of Water Supply and Drainage Engineering Design
6	Wu Huiying	Associate Professor	Ph. D	Water Purification, Environmental Engineering	Cutting-edge Water Treatment Technologies, Disposal and Treatment of Municipal Solid Waste
7	Wang Tao	Assistant Professor	M. S.	Water and Wastewater Network, Water Purification	Water Drainage Engineering, Cutting-edge Water Treatment Technologies, Case Studies of Water Supply and Drainage Engineering Design.
8	Li Wei	Assistant Professor	M. S.	Water Systems for Building, Water Environment Chemistry	Water Analytical Chemistry, Water Supply and Drainage Engineering for Buildings

Cont

No.	Name	Title	Degree	Specialty	Course Taught (Major Cores, Major Electives, General Electives)
9	Tong Li	Assistant Professor	M. S.	Water Purification, Water Resources Protection, Water Engineering Economics	Utilization and Protection of Water Resources, Water Engineering Economics and Budgets
10	He Weipeng	Assistant Professor	Ph. D	Water Purification, Water Engineering Construction and Control Technologies	Water Engineering Construction Water Engineering Equipments, Instruments and Control of Water and Wastewater Engineering
11	Tang Hao	Assistant Professor	Ph. D	Disinfection By-product Control, Wastewater Treatment Technologies	Environmental Protection and Sustainable Development, Professional English for Water and Wastewater Science and Engineering
12	Zhou Shiqing	Assistant Professor	Ph. D	Water Treatment, Disinfection By-product Formation and Control	Computer-based Applications for Water Engineering, Disinfection and Disinfection By-product Control

Ⅶ. FACULTY MEMBER IN CHARGE

No.	Name	Title	Degree	Specialty	Courses Taught
1	Shi Zhou	Professor	Ph. D	Water Quality Control, Water Environmental Chemistry	Physico-chemical Processes of Water and Wastewater Treatment, Introduction to Water and Wastewater Engineering

（翻译人：贺维鹏）