Appendix A-2: 2021 Edition of the Training Program for Water Supply and Drainage Science and Engineering

2021 Edition of the Training Program for Water Supply and Drainage Science and Engineering

Major code: 081003

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1. Professional training objectives

This major aims to cultivate students who adapt to China's new urbanization construction and rural revitalization strategy, meet the needs of regional economic and social development, develop morally, intellectually, physically, aesthetically and laborably, master the basic theoretical knowledge, engineering skills and management methods of the virtuous social cycle process of urban water system, have the ability of teamwork, pioneering and innovative and independent learning, practice the core values of socialism, have a sense of social responsibility and sustainable development, have humanistic qualities, professional ethics and innovation and entrepreneurship awareness, and can be able to ensure water quality safety, In the fields of sewage treatment and recycling, comprehensive improvement of water environment, building water supply and drainage, smart water affairs and engineering management, engaged in design, construction, operation, management and preliminary research and development, and can serve high-quality application-oriented engineering and technical talents in water supply and drainage science and engineering and related industries.

Students of this major are expected to achieve the following goals about 5 years after graduation:

(1) Be able to practice the core values of socialism, uphold the concept of sustainable development, actively fulfill social responsibilities, have a sound personality and good humanities and social science literacy, and abide by professional ethics and engineering ethics.

(2) Be able to adapt to the development requirements of the field of water supply and drainage science and engineering, have the professional knowledge related to the comprehensive application of water supply and drainage science and engineering, be

able to engage in the design, construction, operation, management and other work in related fields, have the ability of preliminary research and development, and have the ability to serve as an engineer or professional technical leader.

(3) Have good teamwork spirit and certain organizational and communication skills, and be able to play a team role and management role in the water engineering project team such as engineering planning, design, construction, operation and management;

(4) Have the awareness of innovation and entrepreneurship, independent learning and lifelong learning, and be able to continuously learn and apply new theories, new methods, new technologies and new equipment in the fields of water supply and drainage science and engineering to solve complex engineering problems in related fields.

2. Basic requirements for graduation

Graduates of this programme should meet the following graduation requirements:

Support the leadership of the Communist Party of China, love the socialist motherland, master Marxism, Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics, have a correct world outlook, outlook on life and values, abide by discipline and law, unite and cooperate, love and dedication, and be willing to contribute.

1. Engineering knowledge: have the ability to apply mathematics, natural science, engineering foundation and professional knowledge to solve complex engineering problems such as engineering planning, design, construction, operation and management of water supply and drainage science and engineering.

1.1 Master the mathematical knowledge related to water supply and drainage science and engineering and use it to understand the basic principles of the major;

1.2 Be able to apply the knowledge of physics, chemistry and biology to the expression and interpretation of important phenomena in the complex problems of water supply and drainage science and engineering;

1.3 Be able to apply the knowledge of mechanics and engineering to engineering planning, design, construction and operation management;

1.4 Be able to apply professional knowledge and engineering management

knowledge in the field of water supply and drainage science and engineering to solve complex engineering problems in water supply and drainage engineering.

2. Problem analysis: be able to apply the basic principles of mathematics, natural science, engineering and water supply and drainage science and engineering, identify and analyze complex problems in water supply and drainage science and engineering by consulting literature, and put forward feasible ideas to obtain effective conclusions.

2.1 Be able to comprehensively use the principles and methods of mathematics, natural science, engineering, water supply and drainage science and engineering, and have the ability to identify, judge, analyze and express complex engineering problems;

2.2 By consulting literature databases, standards, norms and manuals, etc., comprehensively analyze the complex engineering problems in the planning, design, construction, operation and management of water projects, and put forward economic and effective countermeasures, so as to obtain practical solutions and conclusions.

3. Design/development solutions: be able to propose effective and reasonable design solutions for complex problems in the field of water supply and drainage science and engineering, design systems, processes or process units that can meet specific needs, and be able to reflect the sense of innovation in the design process, and consider the impact of social, health, safety, legal, cultural and environmental factors.

3.1 Master the analysis methods and design methods of units (components) or processes, formulate reasonable solutions according to the special needs of water supply and drainage science and engineering, and meet the specific needs of actual projects;

3.2 Consider the impact of social, health, safety, legal, cultural and environmental factors on the solution, and be able to reflect a certain sense of innovation in the design process.

4. Research: Be able to design experiments, obtain, analyze and interpret data on complex problems of water supply and drainage science and engineering based on the basic principles of water supply and drainage science and engineering, and obtain reasonable and effective conclusions through information synthesis.

4.1 Be able to use the basic principles of natural science and engineering, master the methods and skills of basic engineering experimental design, testing and testing, design experiments according to engineering problems, select appropriate research platforms, correctly apply analytical testing and testing methods, correctly carry out scientific experiments, and correctly collect, analyze and interpret experimental data;

4.2 For complex water supply and drainage engineering problems, the basic principles of water supply and drainage science can be used to comprehensively analyze data and obtain effective conclusions.

5. Use modern tools: be able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for complex problems in water supply and drainage science and engineering, and be able to use mathematics, engineering, management and other models and methods to simulate, simulate, analyze, predict and optimize complex engineering problems, and understand their limitations.

5.1 Master the use of modern engineering tools, information technology tools, engineering technology and resources, and be able to reasonably select modern tools according to complex engineering problems; Master the basic methods of engineering technology and the development of modern engineering tools.

5.2 Ability to develop, select and use modern tools for simulation, analysis, prediction and optimization using technical, engineering, economic and management models and methods, and understand their limitations.

6. Engineering and Society: Be able to reasonably analyze and evaluate the impact of engineering practices and solutions to complex engineering problems on society, health, safety, law and culture based on the background knowledge of water supply and drainage science and engineering, and understand the responsibilities that should be assumed.

6.1 Be able to use the knowledge of relevant laws and regulations, industrial policies, technical standard systems and other systems of water engineering to reasonably analyze and evaluate the impact of solutions to complex water supply and drainage engineering problems on society, health, safety, law and culture;

6.2 Be able to understand the responsibilities required in the whole process of implementing engineering solutions.

7. Environment and sustainable development: have the awareness of

harmonious development between man and nature, have the knowledge of environmental protection, adhere to the concept of sustainable social development, and be able to understand and evaluate the impact of engineering practice to solve complex engineering problems on social, environmental and economic sustainable development.

7.1 Understand the connotation and significance of environment and sustainable development, and be able to evaluate the impact of water engineering practices on the environment and nature;

7.2 Ability to analyse and evaluate the impact of water engineering practices on social, environmental and economic sustainability with the help of professional knowledge.

8. Professional norms: practice the core values of socialism, have humanities and social science literacy and social responsibility and social responsibility, be able to understand and abide by professional ethics and engineering ethics in the engineering practice of the major, and fulfill responsibilities.

8.1 Practice the core values of socialism, have humanistic literacy and legal awareness, and be able to consciously abide by the practice of water engineering;

8.2 Understand the responsibility of engineers to the safety, health and well-being of the public and environmental protection, and be able to abide by professional ethics and engineering ethics standards, and consciously fulfill their responsibilities.

9. Individuals and teams: be able to assume the roles of individuals, team members and leaders in teams in a multidisciplinary background, with strong collaborative spirit and certain organizational management skills.

9.1 Understand the multidisciplinary internal relationship involved in the field of water engineering, have a sense of teamwork and collaborative spirit, and correctly understand their roles and responsibilities in the team;

9.2 Be able to take responsibility and have the ability to organize and manage as a leader in a team in a multidisciplinary context.

10. Communication: Be able to effectively communicate and exchange with industry peers and the public on complex issues of water supply and drainage science and engineering, including writing reports and design manuscripts, drawings, statements, written or oral expressions or responding to instructions,

mastering a foreign language, having certain listening, speaking, reading and writing skills, and having a certain international vision, and being able to communicate and exchange in a cross-cultural context.

10.1 For the complex problems of water supply and drainage science and engineering, be able to communicate professionally in the form of design drawings, design manuscripts, research reports, statements, etc.; Able to correctly understand the relationship between water supply and drainage science and engineering and multi-disciplines, and be able to respond clearly and accurately to the doubts raised by industry peers and the public;

10.2 Master a foreign language, understand the international development trend and research progress in the field of urban and rural water engineering, understand and respect the influence of different cultural backgrounds on engineering practice, and be able to communicate and exchange effectively in a cross-cultural context.

11. Project Management: Understand and master the management principles and economic decision-making methods of water engineering projects, and be able to apply them in a multidisciplinary environment. Have certain organizational and management skills.

11.1 Master the principles and methods of project management, operation management and economic decision-making in the field of water engineering;

11.2 Be able to apply the principles and methods of project management, operation management, and economic decision-making to the practice of water engineering in a multidisciplinary context, and have certain ability to organize and manage engineering projects.

12. Continuous learning: have the awareness of independent learning and lifelong learning, and have the ability to continuously learn and adapt to their own development needs.

12.1 Be able to correctly understand the importance of self-directed learning and tracking of new knowledge, have a sense of self-directed learning, and be familiar with the ways and methods of knowledge expansion and ability improvement;

12.2 Have the ability of independent learning and lifelong learning, and be able

to combine the development of the industry and their own development needs, and continue to learn, adapt to the society and their own development.

3. Professional characteristics

1. Connect with the main battlefield of new urbanization, focus on the integration of industry and education, and cultivate application-oriented talents with equal emphasis on design and management;

2. Align with the national rural revitalization strategy, focus on the "integration of urban and rural water supply", and cultivate high-quality application-oriented talents in the field of urban construction.

Fourth, the main disciplines

civil engineering

5. Professional core courses

Water Resources Utilization and Protection, Water Supply and Drainage Pipe Network System (1), Water Supply and Drainage Network System (2), Building Water Supply and Drainage Engineering, Water Quality Engineering (1), Water Quality Engineering (2), Water Engineering Construction, Water Process Equipment Foundation, Water Supply and Drainage Engineering Instrumentation and Control

6. Main practical teaching links

Major professional experiments: university physics experiments, water analytical chemistry experiments, water treatment biology experiments, hydraulic experiments, water quality engineering experiments.

Major professional internships (training): understanding internship, electrical and electronic training A, surveying practice, metalworking practice, production practice, graduation internship.

Major professional course design (thesis): pump and pumping station course design, building water supply and drainage engineering course design, water supply pipe network system course design, drainage pipe network system course design, water supply treatment course design, sewage treatment course design, water engineering economics and budget estimation course design, graduation comprehensive training.

7. Duration and degree awarded

Standard duration: 4 years, 3-6 years of study; Those who meet the requirements of the "Implementation Rules for the Conferment of Bachelor's

Degrees by Hunan City University" will be awarded a bachelor's degree in engineering.

VIII. Graduation Credit Requirements and Total Credit Hour Distribution

<table>
<tr><td colspan="2">The minimum number of credits required for graduation of students in this major is 165 credits, and the graduation comprehensive training requirements: pass</td></tr>
<tr><td rowspan="2">111.50 credits (67.58)%;
1818 UI (51.44)%.</td><td>Core 97.5 credits (59.09)%; 1620 hours (45.89)%.</td></tr>
<tr><td>14 credits (8.48)%; 196 UI (5.55)%.</td></tr>
<tr><td colspan="2">53.50 credits (32.42)% of practical teaching; 1714 UI (48.56)%.</td></tr>
</table>

9. Talent training program schedule

1. Lesson schedule

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
1	compulsory	General Education	9123311011	Ideology, morality and the rule of law	3	48	32	8	8	examination	3	One		School of Marxism
2	compulsory	General Education	9124311041	Outline of Modern Chinese History	3	48	32	8	8	examination	3	Two		School of Marxism
3	compulsory	General Education	9121311021	Basic Principles of Marxism	3	48	32	8	8	examination	3	Three		School of Marxism
4	compulsory	General Education	9122311021	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics	5	80	64	8	8	examination	5	Four		School of Marxism
5	compulsory	General Education	9125111050	Situation and policy	2	32	32			examine	2	One-four	8-15 weeks	School of Marxism
6	compulsory	General Education	9054311011	College English(1)	2.5	40	40			examination	4	One		Faculty of Humanities/University English Teaching Department
7	compulsory	General Education	9054311021	College English(2)	3.5	56	56			examination	4	Two		Faculty of Humanities/University English

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
														Teaching Department
8	compulsory	General Education	9054311031	College English Enrichment Series (1)	1.5	24	24			examination	2	Three		Faculty of Humanities/University English Teaching Department
9	compulsory	General Education	9054311041	College English Extension Series (2)	1.5	24	24			examination	2	Four	Those who have passed Level 6 can apply for exemption	Faculty of Humanities/University English Teaching Department
10	compulsory	General Education	9051111050	Practical Writing	1	16	16			examine	2	One		Faculty of Humanities/University English Teaching Department
11	compulsory	General Education	9131311010	Mental health education for college students	1	32	8	20	4	examine	2	Two		Student Affairs Department/Armed Forces Department/Student Affairs Office
12	compulsory	General Education	9151311010	Career Development and Career Guidance for College Students (1)	0.5	20	4	12	4	examine		Four	lecture	Admissions and Employment Office
13	compulsory	General Education	9151311020	Career Development and Career Guidance for College	0.5	18	2	14	2	examine		Six	lecture	Admissions and Employment Office

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
				Students(2)										
14	compulsory	General Education	9163311010	Foundation of innovation and entrepreneurship	1	32	4	24	4	examine	2	Two		Engineering Training Center/School of Applied and Innovation Entrepreneurship
15	compulsory	General Education	9132311020	Military Theory for College Students	2	36	8	24	4	examine		One		Student Affairs Department/Armed Forces Department/Student Affairs Office
16	compulsory	General Education	9063311011	Computer Fundamentals for College Students	1.5	32	16	16		examination	4	One		Faculty of Information and Electronic Engineering
17	compulsory	General Education	9063311021	Computer language (C language).	3	64	32	32		examination	4	Two		Faculty of Information and Electronic Engineering
18	compulsory	General Education	9103811010	University Physical Education and Health (1)	1	32	20	12		examine	2	One		Faculty of Physical Education/University Department of Physical Education
19	compulsory	General Education	9103811020	University Physical Education and Health (2)	1	32	20	12		examine	2	Two		Faculty of Physical Education/University Department of Physical Education
20	compulsory	General Education	9103811030	University Physical Education and Health(3)	0.5	20	20			examine	2	Three		Faculty of Physical Education/University Department of Physical Education
21	compulsory	General	9103811040	University Physical Education	0.5	20	20			examine	2	Four		Faculty of Physical Education/University

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
		Education		and Health (4)										Department of Physical Education
			subtotal		**38.5**	**754**	**506**	**198**	**50**					
22	compulsory	Fundamentals of the discipline	9092112011	Further Mathematics A(1)	4.5	72	72			examination	6	One		Faculty of Science/Faculty of Teacher Education
23	compulsory	Fundamentals of the discipline	9092112021	Further Mathematics A (2)	5	80	80			examination	6	Two		Faculty of Science/Faculty of Teacher Education
24	compulsory	Fundamentals of the discipline	9092112051	linear algebra	2	32	32			examination	5	Three		Faculty of Science/Faculty of Teacher Education
25	compulsory	Fundamentals of the discipline	9092112061	Probability Theory and Mathematical Statistics	2.5	40	40			examination	4	Four		Faculty of Science/Faculty of Teacher Education
26	compulsory	Fundamentals of the discipline	9065112011	College Physics A (1)	3	48	48			examination	4	Two		Faculty of Information and Electronic Engineering
27	compulsory	Fundamentals of the discipline	9065112021	College Physics A(2)	3	48	48			examination	4	Three		Faculty of Information and Electronic Engineering
28	compulsory	Fundamentals of the discipline	9065212030	University Physics Experiments	0.5	16		16		examine	4	Three		Faculty of Information and Electronic Engineering
29	compulsory	Fundamentals of the discipline	9112112111	Engineering Drawing	2.5	40	40			examination	4	One		Faculty of Mechanical and Electrical Engineering
30	compulsory	Fundamentals of the discipline	9021312371	General Chemistry	2	32	24	8		examination	4	One		School of Municipal and Surveying Engineering
31	compulsory	Fundamentals of	9021112010	Introduction to Water Supply	1	16	16			examine	4	One		School of Municipal and

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
		the discipline		and Drainage Science and Engineering										Surveying Engineering
32	compulsory	Fundamentals of the discipline	9021312381	organic chemistry	1.5	24	20	4		examination	2	Two		School of Municipal and Surveying Engineering
33	compulsory	Fundamentals of the discipline	9021312391	physical chemistry	2	32	28	4		examination	4	Three		School of Municipal and Surveying Engineering
34	compulsory	Fundamentals of the discipline	9061312300	Electronics	2	32	28	4		examine	4	Three		Faculty of Information and Electronic Engineering
35	compulsory	Fundamentals of the discipline	9034112101	Engineering mechanics	2.5	40	40			examination	4	Three		Faculty of Civil Engineering
36	compulsory	Fundamentals of the discipline	9021312021	hydraulics	3	56	32	16	8	examination	4	Three		School of Municipal and Surveying Engineering
37	compulsory	Fundamentals of the discipline	9021312401	Water Analytical Chemistry	2.5	48	32	16		examination	4	Four		School of Municipal and Surveying Engineering
38	compulsory	Fundamentals of the discipline	9021112410	Civil engineering foundations	1.5	24	24			examine	4	Four		School of Municipal and Surveying Engineering
39	compulsory	Fundamentals of the discipline	9021112361	Hydrology and Hydrogeology	2	32	32			examination	4	Four		School of Municipal and Surveying Engineering
40	compulsory	Fundamentals of the discipline	9021312041	Pumps & Pumping Stations	2	32	20	4	8	examination	4	Four		School of Municipal and Surveying Engineering
41	compulsory	Fundamentals of the discipline	9021312051	Biology of water treatment	2.5	48	32	16		examination	4	Five		School of Municipal and Surveying Engineering

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
42	compulsory	Fundamentals of the discipline	9021213140	Water quality engineering experiments	1	32	8	24		examine	4	Six		School of Municipal and Surveying Engineering
43	compulsory	Fundamentals of the discipline	9021112421	Economics and budget estimates for water projects	2	32	24		8	examination	4	Six		School of Municipal and Surveying Engineering
			subtotal		**50.5**	**856**	**720**	**112**	**24**					
44	compulsory	Professional core	9021113431	Water resource utilization and conservation	2	32	24		8	examination	4	Four		School of Municipal and Surveying Engineering
45	compulsory	Professional core	9021113081	Water Supply and Drainage Network System(1)	2	32	24		8	examination	4	Five		School of Municipal and Surveying Engineering
46	compulsory	Professional core	9021113091	Water Supply and Drainage Network System(2)	2	32	32			examination	4	Five		School of Municipal and Surveying Engineering
47	compulsory	Professional core	9021313101	Building water supply and drainage works	3	48	48			examination	4	Five		School of Municipal and Surveying Engineering
48	compulsory	Professional core	9021113111	Water Quality Engineering(1)	2.5	40	40			examination	4	Six		School of Municipal and Surveying Engineering
49	compulsory	Professional core	9021113441	Water Quality Engineering(2)	3	48	36		12	examination	4	Six		School of Municipal and Surveying Engineering
50	compulsory	Professional core	9021113450	Water engineering construction	2.0	32	32			examine	4	Six		School of Municipal and Surveying Engineering
51	compulsory	Professional core	9021113460	Fundamentals of water process equipment	2.0	32	32			examine	4	Six		School of Municipal and Surveying Engineering

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
52	compulsory	Professional core	9021113160	Instrumentation and control of water supply and drainage engineering	1.5	24	24			examine	4	Seven		School of Municipal and Surveying Engineering
			subtotal		20.0	320	292		28					
				Students should take no less than 4 credits of the following self-development courses (including cultural quality education and interprofessional elective courses).										
53	Take	Self-development	9024312821	Engineering Surveying	2	32	28	4		examination	4	Three	Limited	School of Municipal and Surveying Engineering
54	Take	Self-development	9021324170	AutoCAD Basics	0.5	16		16		examine	2	Two	Major Elective 1, Choose one of them	School of Municipal and Surveying Engineering
55	Take	Self-development	9021324180	environmental monitoring	0.5	16		16		examine	2	Two		School of Municipal and Surveying Engineering
56	Take	Self-development	9021324190	Computer Application Basics of Water Supply and Drainage Engineering (including BIM Technology)	1	32	8	24		examine	4	Five	Major Elective 2, Choose one of them	School of Municipal and Surveying Engineering
57	Take	Self-development	9080324400	Environmental impact assessment	1	32	8	24		examine	4	Five		School of Materials and Chemical Engineering
58	Take	Self-developme	9021112470	Engineering project	1.5	24	24			examine	4	Seven	Major	School of Municipal and

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
		nt		management									Elective 3, Choose one of them	Surveying Engineering
59	Take	Self-development	9022124440	Building Electrical	1.5	24	24			examine	4	Seven		School of Municipal and Surveying Engineering
60	Take	Self-development	9021113200	Professional English	1	16	16			examine	4	Seven	Major Elective 4, Choose one of them	School of Municipal and Surveying Engineering
61	Take	Self-development	9080124500	Municipal garbage disposal	1	16	16			examine	4	Seven		School of Materials and Chemical Engineering
62	Take	Self-development	9021824210	Interpretation and application of water supply and drainage design code●	0.5	16		16		examine		Five	School-enterprise co-programme, (limited selection)	School of Municipal and Surveying Engineering
63	Take	Self-development	9021824480	Water engineering operation and intelligent management●	1.5	24	24			examine	4	Seven	School-enterprise co-programme, (limited selection)	School of Municipal and Surveying Engineering
64	Take	Self-development	9171824030	Arts and Sports	2	32	32			examine			Natural Science	Registrar's Office

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
65	Take	Self-development	9171824020	Humanities and Social Sciences	2	32	32			examine			majors take 2 credits each in Humanities and Social Sciences, Arts and Sports, and Innovation and Entrepreneurship	Registrar's Office
66	Take	Self-development	9163311020	Innovation and entrepreneurship	2	32	32			examine			For details, please refer to the "Measures for the Recognition and Management of Innovation and Entrepren	Engineering Training Center/School of Applied and Innovation Entrepreneurship

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
													eurship Practice Credits for Undergraduates of Hunan City University "	
			subtotal		14.0	256	196	60					8 credits of major electives; 6 credits for public selection	
67	compulsory	Focused practice	9122311030	Entrance education and military training	0	3 weeks		3 weeks		examine		One	Credits are counted in public courses	Student Affairs Department/Armed Forces Department/Student Affairs Office
68	compulsory	Focused practice	9123315010	Public welfare work	1	1 week		1 week		examine		One-two		Student Affairs Department/Armed Forces Department/Student Affairs Office
69	compulsory	Focused	9141315010	Social Practice and	1	1 week		1 week		examine		holiday	holiday	Communist youth league

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
		practice		Volunteering										
70	compulsory	Focused practice	9161715010	Electronic and Electrician Training A	1	1 week		1 week		examine		Three		Engineering Training Center/School of Applied and Innovation Entrepreneurship
71	compulsory	Focused practice	9024715810	Surveying Practicum	1	1 week		1 week		examine		Three		School of Municipal and Surveying Engineering
72	compulsory	Focused practice	9021615490	Meet the internship	1	1 week		1 week		examine		Four		School of Municipal and Surveying Engineering
73	compulsory	Focused practice	9021415250	Pump & Pumping Station Course Design	1	1 week		1 week		examine		Four		School of Municipal and Surveying Engineering
74	compulsory	Focused practice	9021415260	Design of building water supply and drainage courses	2	2 weeks		2 weeks		examine		Five		School of Municipal and Surveying Engineering
75	compulsory	Focused practice	9021415270	Water supply network course design	2	2 weeks		2 weeks		examine		Five		School of Municipal and Surveying Engineering
76	compulsory	Focused practice	9031415280	Drainage network course design	2	2 weeks		2 weeks		examine		Five		School of Municipal and Surveying Engineering
77	compulsory	Focused practice	9021415300	Water supply treatment course design (including waterworks engineering practice ability training)	2	2 weeks		2 weeks		examine		Six		School of Municipal and Surveying Engineering
78	compulsory	Focused practice	9021415310	Sewage treatment course design (including practical training of sewage treatment plant	2	2 weeks		2 weeks		examine		Six		School of Municipal and Surveying Engineering

serial number	Type of course	Course Categories	Course code	Course name	Credits	Hours	theory Hours	practice Hours	online Hours	assess manner	Weekly hours	Commencement of classes semester	remark	Offering unit
				engineering)										
79	compulsory	Focused practice	9021415500	Water Engineering Economics and Budget Estimation Course Design	1	1 week		1 week		examine		Six		School of Municipal and Surveying Engineering
80	compulsory	Focused practice	9021615510	Production Internship	8	8 weeks		8 weeks		examine		Seven		School of Municipal and Surveying Engineering
81	compulsory	Focused practice	9021715330	Metalworking internship	2	1 week		2 weeks		examine		Seven		School of Municipal and Surveying Engineering
82	compulsory	Focused practice	9021615340	Graduation Internship	2	2 weeks		2 weeks		examine		Seven		School of Municipal and Surveying Engineering
83	compulsory	Focused practice	9021515350	Graduation comprehensive training	13	13 weeks		13 weeks		examine		Eight		School of Municipal and Surveying Engineering
			subtotal		42			45 weeks						
			total		165									

2. Semester start schedule

First academic year												
clause One	Course code	Course name	total Hour	theory Hours	practice Hour	online Hour	**clause Two**	Course code	Course name	total Hours	theory Hour	practice Hours	online Hours
	9123311031	Ideology, morality and the rule of l	48	32	8	8		9124311041	Outline of Modern Chinese Hist	48	32	8	8
	9054311011	College English(1)	40	40				9054311021	College English(2)	56	56		
	9051111050	Practical Writing	16	16				9131311010	Mental health education for college students	32	8	20	4
	9132311020	Military Theory for College Students	36	8	24	4		9163311010	Foundation of innovation and entrepreneurship	32	4	24	4

	9063311011	Computer Fundamentals for	32	16	16			9063311021	Computer language (C language).	64	32	32	
	9103811010	University Physical Education	32	20	12			9103811020	University Physical Education	32	20	12	
	9092112011	Further Mathematics A(1)	72	72				9092112021	Further Mathematics A (2)	80	80		
	9112112111	Engineering Drawing	40	40				9065112011	College Physics A (1)	48	48		
	9021312371	General Chemistry	32	24	8			9021312381	organic chemistry	24	20	4	
	9021112010	Introduction to Water Supply	16	16				9125111050	Situation and Policy (2)	8	8		
	9125111050	Situation and Policy (1)	8	8				9021324170	AutoCAD Basics	16		16	
	9122311030	Entrance education and	3		3			9141315010	Social Practice and Volunteering	1 week		holiday	
	9123315010	labor	1		1								
		A week of practice is counted											
	Total semester hours		500	292	196	12		Total semester hours		440	308	116	16

Second year

clause One	Course code	Course name	total Hours	theory Hours	Practical hours	online Hour	clause Two	Course code	Course name	total Hours	theory Hours	practice Hours	online Hours
	9121311011	Basic Principles of Marxism	48	32	8	8		9122311021	Introduction to Mao Zedong Thought and the Theoretical	80	64	8	8
	9054311031	College English Enrichment	24	24				9125111050	Situation & Policy (4)	8	8		
	9103811030	University Physical Education	20	20				9054311041	College English Extension Series	24	24		
	9092112051	linear algebra	32	32				9151311010	Career Development and Career	20	4	12	4
	9065212030	University Physics	16		16			9103811040	University Physical Education and	20	20		

	9065112021	College Physics A(2)	48	48				9092112061	Probability Theory and	40	40		
	9021312391	physical chemistry	32	28	4			9021312401	Water Analytical Chemistry	48	32	16	
	9061312300	Electronics	32	28	4			9021112361	Hydrology and Hydrogeology	32	32	The first	
	9034112101	Engineering mechanics	40	40				9021312041	Pumps & Pumping Stations	32	28	4	8
	9021312021	hydraulics	56	32	16	8		9021112410	Civil engineering foundations	24	24		
	9024312821	Engineering Surveying	32	28	4			9021113431	Water resource utilization and	32	24	The	8
	9161715010	Electronic and Electrician	1		1			9021615470	Meet the internship	1		1	
	9024715810	Surveying Practicum	1		1			9021415250	Pump & Pumping Station Course	1		1	
	9125111050	Situation & Policy (3)	8	8									
	Total semester hours		452	320	116	16		Total semester hours		424	292	104	28

Third year

clause One	Course code	Course name	total Hour	theory Hours	practice Hours	online Hours	**clause Two**	Course code	Course name	total Hour	theory Hours	practice Hours	online Hours
	9021113081	Water Supply and Drainage	32	24		8		9151311020	Career Development and Career	18	2	14	2
	9021113091	Water Supply and Drainage	32	32				9021213140	Water quality engineering	32	8	24	
	9021313101	Building water supply and	48	48				9021113111	Water Quality Engineering(1)	40	40		
	9021324190	Fundamentals of Computer Application in Water Supply	32	8	24			9021113121	Water Quality Engineering(2)	48	36		12
	9021312051	Biology of water treatment	48	32	16			9021113130	Water engineering construction	24	24		

	9021824210	Interpretation and application	16		16			9021113440	Fundamentals of water process	32	32		
	9021415260	Design of building water	2		2			9021112421	Economics and budget estimates	32	24		8
	9021415270	Water supply network course	2		2			9021415300	Water supply treatment course design (including waterworks	2		2	
	9031415280	Drainage network course	2		2			9021415310	Sewage treatment course design (including practical training of	2		2	
								9021415480	Economics and Budget Estimation for Water Engineering	1 week		1 week	
	Total semester hours		400	144	248	8		Total semester hours		386	166	198	22

Fourth year

clause One le	Course code	Course name	Total credi	Theoretical	practice Hou	Online hour	**clause Two learn**	Course code	Course name	Total	theory Hour	practice Hour	
	9021113160	Instrumentation and control of	24	24				9021515350	Graduation comprehensive	13		13	
	9041124010	Engineering project	24	24					Graduation education	1		1	
	9021113200	Professional English	16	16									
	9021824430	Water engineering operation	24	24									
	9021715450	Metalworking internship	1		1								

	9021615440	Production Internship	8 1		8 1									
	9021615340	Graduation Internship	2 1		2 1									
	Total semester hours		440	88	352	0		Total semester hours		448	0	448	0	

Note: The graduation comprehensive training is the graduation project, and the students mainly complete the municipal water supply direction, municipal drainage direction, and building water supply and drainage engineering direction, and complete the graduation project. The design of pipe network and water plant shall be completed in the direction of water supply and drainage, and the design of building water supply system, building drainage system, building fire protection system, building hot water system and other systems shall be completed.

10. Talent training standard realization matrix

Table 10-1 Supporting matrix of graduation requirements and training goals

Cultivation goals / Graduation Requirements:	Cultivation Goal 1	Cultivation Goal 2	Goal 3	Goal 4
Graduation Requirement 1 (Engineering Knowledge).		H		
Graduation Requirement 2 (Problem Analysis).		H		
Graduation Requirement 3 (Development of Proposals).		H	H	M
Graduation Requirement 4 (Study).		M	M	H
Graduation requirement 5 (use of modern tools).		M		H
Graduation requirement 6 (Engineering and Society).	H		H	
Graduation requirement 7 (Environment and Sustainable Development).	M	M	M	
Graduation Requirement 8 (Professional Specifications).	H		M	
Graduation requirement 9 (Individual vs. Team).			H	
Graduation requirement 10 (communication).			H	M
Graduation requirement 11		H	H	H

(Project Management).				
Graduation requirement 12 (lifelong learning).	L	M		H

The support for graduation requirements and training goals is represented by H (high support), M (medium support), and L (low support), respectively.

Table 10-2 Curriculum System and Graduation Requirements Support Matrix

Graduation Requirements: / Curriculum	Requirement 1 Engineering knowledge				Requirement 2 Problem analysis		Requirement 3 Design/develop solutions		Requirement 4 study		Requirement 5 Use modern tools		Requirement 6 Engineering & Society		Requirement 7 Environment & Sustainability		Requirement 8 Professional norms		Requirement 9 Individuals vs. teams		Ask for 10 communication		Requirement 11 Project Management		Requires 12 lifelong learning	
	1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2	8.1	8.2	9.1	9.2	10.1	10.2	11.1	11.2	12.1	12.2
Ideological and moral cultivation and legal basis														M			L									
Outline of Modern Chinese History																	M									
Basic Principles of Marxism																	H									
Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics																	H									
Situation and policy																									L	
College English(1)																						H			L	

College English(2)																						H			L	
College English Enrichment Series (1)																										
College English Extension Series (2)																										
Practical Writing																					M					
Mental health education for college students																	M								M	
Career Development and Career Guidance for College Students (1)																		L								L
Career Development and Career Guidance for College Students(2)																		L								L
Foundation of innovation and entrepreneurship																			M							M
Military Theory for College																L										

Students																										
Computer Fundamentals for College Students						H					H															
Computer language (C language).			H								H															
University Physical Education and Health (1)																			M							
University Physical Education and Health (2)																			M							
University Physical Education and Health(3)																			M							
University Physical Education and Health (4)																			M							
Further Mathematics A(1)	H																									
Further Mathematics A (2)	H																									

linear algebra	M																									
Probability Theory and Mathematical Statistics	M																									
University Physics (1)		L																								
University Physics(2)		L																								
University Physics Experiments		L																								
Engineering Drawing			L								M															
General Chemistry		M							M																	
Introduction to Water Supply and Drainage Science and Engineering																H									H	
organic chemistry		M								H																
physical chemistry		H								L																

Electronics									M																
Engineering mechanics			L																						
hydraulics			H		L																				
Water Analytical Chemistry					H				H																
Civil engineering foundations													L						L						
Hydrology and Hydrogeology							M								H										
Pumps & Pumping Stations								M															M		
Biology of water treatment					L				M																
Water quality engineering experiments					H				H																
Economics and budget estimates for water projects								H															H		
Water resource utilization and								H							H										

conservation																									
Water Supply and Drainage Network System(1)						M						H													
Water Supply and Drainage Network System(2)						M									H										
Building water supply and drainage works				H	2.1				4.1		5.1		L		7.1		8.1	M							
Water Quality Engineering(1)				H			H						M												
Water Quality Engineering(2)				H	M		H								M										
Water engineering construction														H										H	
Fundamentals of water process equipment													H											L	
Instrumentation and control of water supply and												M							H						

drainage engineering																									
Engineering Surveying			M																	M					
AutoCAD Basics											M														
Fundamentals of Computer Application in Water Supply and Drainage Engineering												M									M				
Engineering project management				L																				L	
Professional English																						H			
Interpretation and application of water supply and drainage design codes																H									
Water engineering operation and intelligent management												L								L					

Entrance education and military training																			M						
Public welfare work																									
Social Practice and Volunteering																									
Electronic and Electrician Training A										M															
Surveying Practicum										H										H					
Meet the internship																					L				
Pump & Pumping Station Course Design								L										L							
Design of building water supply and drainage courses														H							H				
Water supply network course design												L												H		

Drainage network course design																		L						L		
Water treatment course design							M			M																
Sewage treatment course design														H										M		
Water Engineering Economics and Budget Estimation Course Design						H		L																		
Production Internship													H						H		H		L			
Metalworking internship																				M						
Graduation Internship																		H								H
Graduation comprehensive training																M						H		H		H