Hunan City University

ASIIN Accreditation Self-Assessment Report

Civil Engineering and Water Supply and Drainage Science and Engineering

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Content

About the SAR: A Brief Overview

Dear ASI IN Team,

Thank you for giving us the opportunity to participate in the International ASIIN Program Accreditation. We are very pleased to submit the Self-Assessment Report for an International ASIIN Program Accreditation for the Majors of Civil Engineering and Water Supply and Drainage Science and Engineering. A brief overview of our University, School, and Major is introduced as follows:

Hunan City University (HNCU) is a full-time undergraduate institution supported by the Hunan Provincial Government. Our mission is to cultivate high-quality applied talents, guided by our "1234" system for applied talent education. This framework emphasizes the development of student capabilities while integrating ideological and political education, as well as innovation and entrepreneurship education, throughout the training process. For further details, please visit our website: https://english.hncu.edu.cn/.

1. School of Civil Engineering

The School of Civil Engineering currently has 7 undergraduate majors in civil engineering, including civil engineering, and has a national first-class undergraduate major construction point in civil engineering. The college focuses on the academic frontier of the industry, benchmarking the requirements of new technologies, new processes and new business models for the quality of new engineering talents. In 2018, it will fully launch the engineering education evaluation (certification) of civil engineering majors, establish a new education and teaching talent training model based on the OBE concept, and focus on the cultivation of students' innovation consciousness and innovation ability. For details, please refer to the website: https://tmgc.hncu.net/xygk/xyjj.htm

The Civil engineering is divided into three directions: construction engineering, road and bridge engineering and urban rail transit engineering. Based on the needs of regional economic and social development, it faces the main battlefield of new urbanization construction and rural revitalization, and cultivates high-quality applied talents who can adapt to the strategic needs of national capital construction development, systematically master civil engineering professional knowledge, have solid engineering practice ability and lifelong learning ability, have a sense of innovation, be competent in design, construction, management and other positions in the field of civil engineering, and have good professional quality and social responsibility. For details, please refer to the website: https://tmgc.hncu.net/info/1258/5962.htm

2. School of Municipal and Geomatics Engineering

The School of Municipal and Geomatics Engineering at Hunan City University was established in 1984. With a rich history, our school is distinguished by its application-oriented focus in urban construction and its deep integration of industry and education.

The Water Supply and Drainage Science and Engineering program, part of the Municipal Engineering discipline, was initiated in 1984. It has since been recognized as a "First-Class Program" in Hunan Province, a pilot program for comprehensive reform under the "13th Five-Year Plan," and a provincial characteristic program. The undergraduate program commenced student enrollment in 2003, and in 2012, we launched a joint graduate training program with Shantou University and Shenyang Jianzhu University. In June 2021, the program received accreditation from the Ministry of Housing and Urban-Rural Development. Graduates of this program possess a strong foundation in mathematics and natural sciences. All relevant program accreditation documents can be accessed online at https://szch.hncu.edu.cn/ASIINrz/Water_Supply_and_Drainage_Science_and_Engineering/pymb_Objectives.htm.

Self-Assessment Report for an International ASIINProgram Accreditation

for the Bachelor Degree of College of Civil Engineering and College of Municipal and Geomatics Engineering

Section A of the SAR includes tables in which basic data concerning the accreditation procedure.

Section B contains basic data concerning the submitted study programmes.

Section C contains the Self-Assessment section organised according to the ASIIN Criteria

A About the Accreditation Procedure

General data

Website of the Higher Education Institution	www.hncu.edu.cn
Faculty/Department offering the Degree Programme	College of Civil Engineering, College of Municipal and Geomatics Engineering Majors of Civil Engineering and Water Supply and Drainage Science and Engineering

Seals applied for

Name of the degree programme (in original language)	**(Official) English translation of the name**	**Labels applied for**	**Previous accreditation**	**Involved Technical Committees (TC)**
土木工程	Civil Engineering	ASIIN Seal for a bachelor's degree programme	/	TC03
给水与排水科学工程	Water Supply and Drainage Science and Engineering	ASIIN Seal for a bachelor's degree programme	Evaluation Committeef or the Higher Education in Water Supply and Drainage Science and Engineering of the Ministry of Housing and Urban-Rura l Development 05.2024-05.02030	TC03

B Characteristics of the Degree Programme (s)

Name	Final degree (original/English translation)	Areas of Specialisation	Corresponding level of the EQF	Mode of Study	Double/Joint Degree	Duration	Credit points/unit	First time of offer
Civil Engineering	工学学士 / B. Eng.	Civil Engineering	6	Full time	/	8 semesters	232	September 1, 2002
Water Supply and Drainage Science and Engineering	工学学士 / B. Eng.	Civil Engineering	6	Full time	/	8 semesters	230	September 1, 2003

Name	Intake rhythm	Intake Capacity per cohort	Average starting cohort size	Average number of graduates per cohort	Average time required to complete studies
Civil Engineering	Annually	Max. 400 students	277 students	343 students	4 years
Water Supply and Drainage Science and Engineering	Annually	Max. 150 students	112 students	85 students	4 years

C Self-assessment for the ASIIN-Seal

1. The Degree Programme: Concept, Content & lmplementation

1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)

1.1.1 Civil Engineering

Civil Engineering major is based on the regional economic and social development needs, aiming at the construction of new-type urbanization and rural revitalization. It trains professionals who meet the national infrastructure development needs, with solid engineering practice skills, autonomous learning ability, cooperative communication skills, and innovation capabilities. These professionals are prepared to work in construction, management, and design roles in areas such as road and bridge engineering, building engineering, and urban rail transit engineering, possessing strong professional ethics and social responsibility.

The knowledge, skills, and abilities of the program's graduates are designed to achieve the following objectives:

Training Objective 1: Master basic knowledge in mathematics, natural sciences, and information technology to lay a solid foundation for subsequent coursework, applying the learned knowledge to solve engineering problems.

Training Objective 2: Master fundamental knowledge in civil engineering and use this knowledge to identify and analyze complex engineering problems, building a solid foundation for further solving complex civil engineering issues.

Training Objective 3: Master professional knowledge in civil engineering, capable of investigating, designing, and analyzing complex engineering problems in related fields, and proposing solutions that meet the specific needs of complex civil engineering challenges.

Training Objective 4: Master cutting-edge knowledge and skills in civil engineering, able to track the development trends in the field and pursue further self-development.

Training Objective 5: Master cross-cultural and international cooperation and communication skills that are adaptable to social development and globalization.

Training Objective 6: Understand China's current social model and norms, demonstrating good social behavior, teamwork spirit, and humanistic care. Develop comprehensively in moral, intellectual, physical, and psychological aspects.

The training objectives of the Civil Engineering major can be viewed on **Appendix 1-1** or the English homepage of the College of Civil Engineering (https://tmgc.hncu.edu.cn/ASIINrz/Civil_Engineering/pymb_Objectives.htm).

1.1.2 Water Supply and Drainage Science and Engineering

Water Supply and Drainage Science and Engineering major aims to cultivate talents who can adapt to China's new urbanization and rural revitalization strategies, meet the developmental needs of regional economies and societies, and achieve holistic development in moral, intellectual, physical, aesthetic, and labor education. Students will master the foundational theories, engineering skills, and management methods necessary for the benign social cycling of urban water systems. They will have the capacity for teamwork, innovation, and self-directed learning, embody the core values of socialism, possess a sense of social responsibility and a sustainable development mindset, and have cultural literacy, professional ethics, and an entrepreneurial spirit. Graduates will be able to engage in design, construction, operation, management, and preliminary R&D in fields such as water quality assurance, sewage treatment and resource recovery, comprehensive water environment management, building water supply and drainage, smart water services, and engineering management, serving as high-quality, application-oriented engineering technical talents in water supply and drainage science and engineering and related industries.

Upon graduation, students in this major are expected to achieve the following objectives:

Training Objective 1: Understand China's current social patterns and norms, possessing good social behavior, team spirit, and awareness of humanistic care. To develop comprehensively in moral, intellectual, physical, and psychological aspects.

Training Objective 2: Master foundational knowledge in mathematics and natural sciences to establish a solid foundation for subsequent course studies and apply this knowledge to solve engineering problems.

Training Objective 3: Master the foundational knowledge of Water Supply and Drainage Science and Engineering, apply this knowledge to identify and analyze complex engineering problems within the field, and lay a solid foundation for further resolving complex engineering issues in Water Supply and Drainage Science and Engineering.

Training Objective 4: Master a broad range of foundational engineering and professional knowledge to lay the groundwork for future specialized course studies.

Training Objective 5: Master professional knowledge in Water Supply and Drainage Science and Engineering, capable of investigating, designing, and analyzing complex engineering issues in related fields, and proposing solutions that meet the specific needs of complex water supply and drainage engineering problems.

Training Objective 6: Possesses awareness of self-directed and lifelong learning, and the ability to continuously learn and adapt to personal development needs.

The professional training objectives can be found in the Professional Training Plan **Appendix 1-2** or viewed on the homepage of the School of Municipal and Geomatics Engineering: (https://szch.hncu.edu.cn/ASIINrz/Water_Supply_and_Drainage_Science_and_Engineering/pymb_Objectives.htm)

1.1.3 Course Learning Outcomes (Knowledge, Skills, and Abilities)

Civil Engineering

(1) Basic Scientific Literacy and Engineering Abilities

- Ability to understand and apply mathematics and natural sciences to solve practical engineering problems;
- Ability to understand and participate in general industry processes, meeting potential job and technical requirements;
- Ability to track the development trends of modern science and technology and their application prospects.

(2) Civil Engineering Professional Knowledge and Abilities

- Ability to acquire and apply civil engineering professional knowledge;
- Possession of strong professional practice skills and vocational abilities;
- Ability for further study, advanced degree pursuit, and research.

(3) International Communication Ability

- Possession of sufficient English language knowledge to communicate with international peers;
- Ability to work and collaborate in foreign countries or multinational companies； supported by a solid foreign language and cross-cultural background.

(4) Computer and Information Application Ability

- Ability to use computer software and networks;
- Familiarity with common methods of literature, information, and data retrieval, with the ability to acquire and utilize information (including literature);
- Ability to integrate professional knowledge with computers, such as computer-aided design and simulation.

(5) Engineering and Professional Practice Ability

- Ability to design solutions to complex engineering problems in the field of civil engineering;
- Ability to design buildings, bridges, and rail systems that meet specific needs, incorporating innovation in the design process and considering social, health, safety, legal, cultural, and environmental factors;

- Ability to design, construct, and operate building, road, bridge, and rail engineering systems according to regulations, as well as to analyze and evaluate practical engineering problems and provide valuable solutions.

(6) Teamwork and Management Ability

- Good mental health and personal integrity;
- Strong legal awareness and social responsibility;
- Teamwork spirit and some management abilities;
- Ability to thrive in competitive environments and challenging work conditions.

Water Supply and Drainage Science and Engineering

(1) Foundational Scientific and Engineering Literacy

- Ability to apply mathematics, physics, chemistry, and biology to solve water-related engineering problems (e.g., pipe flow calculations, water quality analysis).
- Understanding of industry workflows (e.g., water treatment processes, urban drainage systems) and their technical requirements.
- Awareness of current trends in sustainable water technologies (e.g., rainwater harvesting, smart water networks).

(2) Core Professional Knowledge and Skills

- Mastery of fundamental theories in water supply systems, drainage engineering, hydraulics, and environmental hydrology.
- Ability to design and operate water infrastructure (e.g., pump stations, sewage treatment units) under supervision.
- Skill in applying national standards (e.g., drinking water safety codes, drainage design specifications) to practical projects.
- Capacity to learn independently and adapt to new technologies in water engineering.

(3) Digital Tools and Data Application

- Proficiency in industry software for hydraulic modeling and system design.
- Ability to retrieve and analyze data from technical documents, environmental databases, and academic resources.
- Skill in integrating computational tools into tasks like network simulation or project documentation.

(4) Practical Problem-Solving in Engineering

- Ability to design water supply/drainage systems that meet technical, economic, and environmental constraints.
- Competence in troubleshooting common issues (e.g., pipe blockages, water quality fluctuations) through systematic methods.

- Awareness of social impacts (e.g., public health, community needs) in engineering decisions.
- Skill in evaluating cost-effectiveness and safety of small-scale water infrastructure
- projects.

(5) Global Communication and Collaboration

- Basic English proficiency to read technical manuals, collaborate in multicultural teams, and present project outcomes.
- Understanding of international frameworks in local engineering contexts.

(6) Professional Ethics and Teamwork

- Commitment to ethical practices (e.g., environmental protection, transparency in project execution).
- Ability to work effectively in teams, contribute to task division, and communicate technical ideas clearly.
- Resilience in handling routine challenges (e.g., fieldwork conditions, project deadlines).

1.2 Name of the degree programme

The Civil Engineering major at Hunan City University (HNCU) originated from the Industrial and Civil Engineering major of the former Hunan City Construction College (formerly a university directly under the Hunan Provincial Construction Committee, Enrollment in 1984). The Civil Engineering major began undergraduate admissions in 2002 and was approved as a first-class undergraduate program construction point in Hunan Province in 2019, and as a national first-class undergraduate program construction point in 2020. The Water Supply and Drainage Science and Engineering major was established in 1984, the major began enrolling undergraduate students in 2003, was recognized as a Hunan Province Distinguished Major for Ordinary Colleges in 2009, and was approved as a first-class undergraduate program construction point in Hunan Province in 2019. Above majors closely aligns with China's rapidly developing civil engineering industry. The educational approach combines theory with practice, training high-quality professionals who possess a broad foundational knowledge, strong professional expertise, and the ability to apply their knowledge and skills to solve basic engineering problems. These graduates are "engineering-oriented, application-focused, and internationally-minded" talents. Graduates demonstrate strong comprehensive innovation awareness, independent working ability, and teamwork spirit in the field of engineering science and technology. They also exhibit a high cultural level, good professional ethics, a strong sense of social responsibility, an international perspective, and excellent social competitiveness and creativity. They are equipped to meet the demands of civil engineering-related industries and sectors, fulfilling the requirements for internationally recognized engineering qualifications and professional engineer credentials. In China, the training of professionals in Civil Engineering and Water Supply

and Drainage Science and Engineering has been in place for decades, and a large number of graduates have been employed in the engineering, so the expectations of both students and employers are consistent with the name of the programme.

1.3 Curriculum

1.3.1 Structure of Civil Engineering

The undergraduate training plan for this program is a four-year system. Overall, the course system is divided into ten ability domains, with the learning content in each domain being interconnected in chronological order. Regarding credit and the distribution of hours across the various ability domains, language courses and general foundational courses are scheduled in the first to fourth semesters, including English, ideological and political education, physical education, etc., to familiarize students with relevant English, humanities, and law, thereby improving their cross-cultural communication skills and humanistic literacy.

Mathematics, physics, and information technology courses are scheduled in the first to fourth semesters, allowing students to become familiar with basic knowledge and skills, providing a foundation for studying subsequent professional courses. For example, advanced mathematics is scheduled in the 1st-2nd semesters, linear algebra and probability theory and mathematical statistics are scheduled in the 3rd-4th semesters; university physics is scheduled in the 2nd-3rd semesters; information technology courses are scheduled in the 1st-3rd semesters, to ensure that students can master the knowledge and skills of computer science and information technology.

Engineering fundamentals courses are scheduled in the 1st-5th semesters, including courses related to engineering knowledge and skills, such as descriptive geometry, civil engineering drawing (including CAD), theoretical mechanics, mechanics of materials, structural mechanics, civil engineering materials, etc., laying the foundation for subsequent engineering applications and professional courses.

Engineering application courses are scheduled in the 5th-7th semesters, including the specialized courses of this program. These courses are crucial in the entire curriculum system, as they deepen and expand the professional knowledge and application in the field of civil engineering.

Professional practice and integrated application courses are primarily scheduled in the 4th-8th semesters. Most of the topics in the integrated application courses come from real engineering projects of enterprises. Professional practice and integrated application courses help students accumulate a substantial amount of practical engineering experience, enhancing their employment competitiveness. According to the course arrangement, students will ultimately earn 232 credits after completing the 8-semester program.

1.3.2 Modules of Civil Engineering

According to the training objectives, all courses include ten modules, with expected learning outcomes and corresponding courses as follows:

Module 1: Mathematics and Physics Courses

Expected learning outcomes: Master basic knowledge and principles of mathematics, physics, and other natural sciences, deepen the understanding of natural sciences, and improve scientific literacy in problem-solving, laying the foundation for subsequent engineering fundamentals courses.

Basic requirements: Able to apply the learned basic theories of natural sciences to analyze scientific problems in engineering practice.

Corresponding courses: Advanced Mathematics, Linear Algebra A, Probability Theory and Mathematical Statistics A, University Physics, General Chemistry A, Mathematical Modeling.

Module 2: Information Technology Courses

Expected learning outcomes: Master basic knowledge of information technology and computer science, and be able to apply computer and information technology tools to effectively solve practical problems in the field of science and technology, laying the foundation for future learning.

Basic requirements: Able to use computer and information technology methods to solve practical problems in scientific and technological fields related to the learned major.

Corresponding courses: Computer Fundamentals for College Students, Computer Languages.

Module 3: Engineering Fundamentals Courses

Expected learning outcomes: Master a broad range of engineering fundamental knowledge, laying a solid foundation for subsequent engineering application courses.

Basic requirements: Master engineering mechanics, engineering materials, and other professional fundamental knowledge; be able to apply basic principles of engineering science to identify complex engineering problems in civil engineering, analyze these problems, and determine the key aspects for solving them; be able to use engineering principles to analyze factors influencing the problem-solving process from multiple perspectives, effectively express the analysis process and conclusions, and use them to guide the formulation of solutions.

Corresponding courses: Descriptive Geometry, Civil Engineering Drawing (including CAD), Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Soil Mechanics, Fluid Mechanics, Civil Engineering Materials, Engineering Surveying B, Engineering Geology, Electrical and Electronic Training A, Metalworking Training A, Engineering Geology Orientation Internship, Surveying Internship.

Module 4: Professional Foundation Courses

Expected learning outcomes: Master professional knowledge and skills in civil engineering and related fields, enabling the analysis and solution of complex engineering problems.

Basic requirements: Master engineering fundamentals such as foundation engineering, principles of concrete structure design, and basic principles of steel structures; be able to apply basic engineering science principles to identify complex civil engineering problems, analyze these problems, and determine the key aspects for problem-solving; be capable of using engineering principles to analyze factors influencing the problem-solving process through various approaches, and effectively communicate the analysis process and conclusions to guide the formulation of solutions.

Corresponding courses:

Foundation Engineering, Principles of Concrete Structure Design, Engineering Economics and Construction Regulations, Introduction to Civil Engineering, Basic Principles of Steel Structures, Introduction to Seismic Engineering, Orientation Internship.

Module 5: Professional Application Courses

Expected learning outcomes: Master professional knowledge in civil engineering, including areas such as building, road and bridge, and rail engineering design, construction, and management.

Basic requirements: Able to complete the design of structures and components (nodes) that meet specific civil engineering needs, and develop construction plans for specific complex engineering problems. Familiar with modern tools related to civil engineering, understanding their limitations, and possessing the ability to select and use appropriate tools. In design and construction planning, able to fully consider constraints such as social, health, safety, legal, cultural, and environmental factors. Able to use modern tools to model and calculate complex civil engineering problems, and analyze the validity and limitations of the results. Master the operation of basic software required for the development of informatization in the construction industry, and possess the ability to build and apply information models.

Corresponding courses:

Engineering Project Management, Construction Principles and Methods, Engineering Structure Load and Reliability Theory.

Road and Bridge Direction: Bridge and Culvert Hydrology, Road Survey and Design, Subgrade and Pavement Engineering, Bridge Engineering (1), Bridge Engineering (2), Road and Bridge Engineering Construction Technology, Road and Bridge Engineering Budgeting, Traffic Engineering.

Building Engineering Direction: High-rise Building Structures, Building Architecture, Steel Structure Design, Masonry Structures, Concrete Structure Design, Prefabricated Buildings, Building Engineering Budgeting, Building Engineering Construction.

Urban Rail Transit Direction: Urban Rail Transit Network Planning and Route Design, Track Engineering, Tunnel and Underground Engineering, Railway Bridges, Urban Rail Transit Stations, Railway Subgrades, Urban Rail Engineering Budgeting, Road and Railway Engineering Construction Technology.

Module 6: Professional Practice Courses

Expected learning outcomes: Master professional knowledge in civil engineering, including areas such as building, road and bridge, and rail engineering design, construction, management, and experimentation.

Basic requirements: Able to complete the design of structures and components (nodes) that meet specific civil engineering needs, and develop construction plans for specific complex engineering problems. Familiar with modern tools related to civil engineering, understanding their limitations, and possessing the ability to select and use appropriate tools. In design and construction planning, able to fully consider constraints such as social, health, safety, legal, cultural, and environmental factors. Able to use modern tools to model and calculate complex civil engineering problems, and analyze the validity and limitations of the results. Master the operation of basic software required for the development of informatization in the construction industry, and possess the ability to build and apply information models. The goal of laboratory courses is to cultivate students' hands-on practical ability, problem analysis and solving skills, and a scientifically rigorous experimental attitude, while also fostering teamwork skills.

Corresponding courses:

Road and Bridge Direction: Road Survey and Design Course Design, Subgrade and Pavement Engineering Course Design, Retaining Wall Course Design, Bridge Engineering Course Design, Mechanics of Materials Experiment, Building Materials Experiment, Soil Mechanics Experiment, and Civil Engineering Structural Testing Technology.

Building Engineering Direction: Architectural Design Course, Ribbed Beam Floor Course Design (including Masonry), Single-story Industrial Plant Course Design, Steel Structure Course Design, Mechanics of Materials Experiment, Building Materials Experiment, Soil Mechanics Experiment, and Civil Engineering Structural Testing Techniques.

Urban Rail Transit Direction: Urban Rail Transit Line Course Design, Track Engineering Course Design, Railway Bridge Course Design, Tunnel and Underground Engineering Course Design, Mechanics of Materials Experiment, Building Materials Experiment, Soil Mechanics Experiment, and Civil Engineering Structural Testing Techniques.

Module 7: Professional Development Courses

Expected Learning Outcomes: Master the methods for tracking and learning the dynamic developments and knowledge in the forefront and emerging fields of civil engineering.

Basic Requirements: Recognize the importance of lifelong learning, actively track developments in the major and related fields, and possess the ability for self-directed learning. Be able to apply the acquired professional knowledge widely, combining it with cutting-edge developments. Possess the ability to adapt to new developments in the civil engineering industry.

Corresponding Courses: Fundamentals of Innovation and Entrepreneurship, Literature Search and Research Methods, Basics of BIM, New Technologies in Civil Engineering, Civil Engineering Structural Testing Technologies.

Module 8: Integrated Application Courses

Expected Learning Outcomes: Master the methods for tracking and learning the dynamic developments and knowledge in the forefront and emerging fields of civil engineering.

Basic Requirements: Recognize the importance of lifelong learning, actively track developments in the major and related fields, and possess the ability for self-directed learning. Be able to apply the acquired professional knowledge widely, combining it with cutting-edge developments. Possess the ability to adapt to new developments in the civil engineering industry.

Corresponding Courses: Production Internship, Graduation Internship, Comprehensive Graduation Training.

Module 9: Foreign Language Courses

Expected Learning Outcomes: Possess cross-cultural communication skills necessary for international cooperation, better adapting to social development and globalization.

Basic Requirements: Be able to read professional literature in English and perform mutual translation between Chinese and English. Have a basic understanding of the international status of civil engineering disciplines and related industries, and possess initial communication and exchange abilities in a cross-cultural context.

Corresponding Courses: College English (1), College English (2), College English Extension Courses (1), College English Extension Courses (2), College English Practice (1), College English Practice (2), Professional English.

Module 10: Humanities and Social Sciences Courses

Expected Learning Outcomes: Master knowledge of Modern Chinese History, Basic Principles of Marxism, Military Theory, etc., and engage in patriotism education, physical education, and military training.

Basic Requirements: Understand social phenomena, stay informed about and adapt to social development, possess communication and collaboration abilities, demonstrate good teamwork spirit, and promote physical and mental well-being and self-improvement. Have sound character and good psychological qualities. Understand China’s national conditions, have humanistic and social science literacy, and social responsibility, enabling adherence to professional ethics and conduct in engineering practices, shouldering responsibilities, contributing to the nation, and serving society.

Corresponding Courses: Ethics and the Rule of Law, Outline of Modern Chinese History, Basic Principles of Marxism, Introduction to Thought and Theoretical System of Socialism with Chinese Characteristics, Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a

New Era, Situation and Policy, College Student Mental Health Education, Career Development and Employment Guidance for College Students, Military Theory for College Students, University Physical Education and Health, Introduction to Life Sciences, Introduction to Environmental Science, Orientation Education and Military Training, Social Practice and Volunteer Service.

1.3.3 Structure of Water Supply and Drainage Science and Engineering

The current curriculum for this major implements the 2021 training plan, with talent training programs from 2019 and 2021 versions used over the past three years. Taking the course system from the 2021 training plan as an example, the curriculum has been meticulously designed to meet the proportional requirements of general standards. All detailed requirements of the additional professional standards, such as course setup, practical components, and graduation projects, are incorporated into the course system. During the design process of the course system, input from industry and business experts was invited to ensure the effective achievement of graduation requirements.

The undergraduate training program for this major is structured as a four-year course, divided into five parts: General Education, Discipline Foundations, Professional Core, Autonomous Development, and Concentrated Practice. The curriculum system is further subdivided into six modules: Mathematics and Natural Science courses, General Education courses in Humanities and Social Sciences, Basic Engineering courses, Fundamental Professional courses, Specialized courses, and Engineering Practice and Graduation Projects (Thesis).

In terms of credit distribution and instructional hours across various competency areas, General Education courses in Humanities and Social Sciences are scheduled from the 1st to the 6th semester. These include Ideological, Moral and Legal Studies, Outline of Modern and Contemporary Chinese History, Basic Principles of Marxism, Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics, An Introduction to Xi Jinping’s Thought on Socialism with Chinese Characteristics for a New Era, Current Affairs and Policies, College English, Extended College English Series, Practical Writing, College Student Psychological Health Education, College Student Career Development and Employment Guidance, Basics of Innovation and Entrepreneurship, College Military Theory, College Sports and Health, Arts and Physical Education, Humanities and Social Sciences, Innovation and Entrepreneurship, Orientation and Military Education, Public Welfare Labor, and Social Practice and Volunteer Services, all aimed at enhancing students’ cross-cultural communication skills and cultural literacy.

Mathematics and Natural Science courses are scheduled during the 1st to 4th semesters, including Advanced Mathematics, Linear Algebra, Probability Theory and Mathematical Statistics, College Physics, General Chemistry, Organic Chemistry, Analytical Chemistry, and Physical Chemistry along with their laboratory experiments, laying the foundation for subsequent specialized courses.

Basic Engineering courses are arranged from the 1st to 6th semesters, providing students with fundamental engineering literacy. Fundamental Professional courses are mainly scheduled between the 3rd and 5th semesters, serving as a bridge between basic and specialized courses. Core Professional courses are scheduled from the 4th to 7th semesters, which are crucial within the entire curriculum system to deepen and expand students' expertise and application skills in the field of water supply and drainage engineering. Concentrated Practical courses are arranged from the 3rd to 8th semesters, allowing students to promptly apply theoretical knowledge to the practical aspects of water supply and drainage, helping them accumulate a wealth of practical engineering experience and enhancing their employability. The comprehensive graduation training in the Concentrated Practical courses is scheduled for the 8th semester, with most topics derived from faculty-involved enterprise cooperative design projects. According to the curriculum, students will ultimately earn 230 ECTS credits after eight semesters of study.

1.3.4 Modules of Water Supply and Drainage Science and Engineering

According to the course arrangement, the entire curriculum system is divided into six modules: Humanities and Social Sciences General Education; Mathematics and Natural Science; Fundamental Professional; Basic Engineering; Specialized; and Engineering Practice.

Module 1: Humanities and Social Sciences General Education Courses

Expected Learning Outcomes: Equip students with professional norms, practice socialist core values, possess literacy in humanities and social sciences, and a sense of social responsibility. They are expected to conscientiously observe these norms in water engineering practice, understanding engineers' responsibilities toward public safety, health, welfare, and environmental protection. Students should adhere to professional ethics and engineering ethical standards, and willingly fulfill their responsibilities. They should be able to take on individual, team member, and leadership roles in multidisciplinary teams, displaying strong collaboration skills and some organizational abilities. Additionally, students should master a foreign language, understand international trends and research advancements in urban and rural water engineering, respect the impact of different cultural backgrounds on engineering practice, and effectively communicate and interact across cultural backgrounds.

Basic Requirements: As team members, enhance physical fitness to maintain physical and mental health, fostering self-actualization and team spirit. Engage in various social practices to understand relevant knowledge in humanities and social sciences, adapt to social development, and assume social responsibilities.

Courses included: Ideological & Moral Cultivation and Legal Basis, Outline of Modern and Contemporary Chinese History, Basic Principles of Marxism, Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics, An Introduction to Xi Jinping's

Thought on Socialism with Chinese Characteristics for a New Era, College Military Theory and Training, Current Affairs and Policy, College Student Psychological Health Education, College Student Career Development and Employment Guidance (1), Student Career Development and Employment Guidance (2), Basics of Innovation and Entrepreneurship, College English (1), College English (2), Extended College English Series (1), Extended College English Series (2), Practical Writing, Public Welfare Labor, College Sports and Health.

Module 2: Mathematics and Natural Science Courses

Expected Learning Outcomes: Enable students to master mathematical knowledge related to Water Supply and Drainage Science and Engineering and apply it to understand the fundamental principles of the major; utilize natural science knowledge to describe and explain important phenomena in complex problems within Water Supply and Drainage Science and Engineering.

Basic Requirements: Ability to apply the basic theoretical knowledge of mathematics and natural sciences learned to analyze scientific problems in engineering practice.

Courses Included: (1) Mathematics: Advanced Mathematics A(1), Advanced Mathematics A(2), Linear Algebra, and Probability Theory and Mathematical Statistics; (2) Physics: College Physics A(1), College Physics A(2), and College Physics Laboratory; (3) Chemistry: General Chemistry, Organic Chemistry, and Physical Chemistry.

Module 3: Fundamental Professional Courses

Expected Learning Outcomes: Enable students to apply knowledge from mechanics, engineering, etc., for engineering planning, design, construction, and operational management; to use an integrated approach with mathematics, natural sciences, engineering, and Water Supply and Drainage Science and Engineering principles and methods, capable of identifying, judging, analyzing, and articulating complex engineering problems; to use fundamental principles of Water Supply and Drainage Science and employ scientific methods to comprehensively analyze data and reach effective conclusions; to master the use of modern engineering tools, information technology tools, engineering technologies, and resources, and make appropriate choices for modern tools in complex engineering scenarios; to grasp the basic methods of developing engineering technologies and modern engineering tools.

Basic Requirements: Capable of applying fundamental principles of engineering science to identify complex engineering problems in Water Supply and Drainage Science and Engineering, analyze these problems, and determine key solutions.

Courses Included: Introduction to Water Supply and Drainage Science and Engineering, Hydraulics, Water Analytical Chemistry, Hydrology and Hydrogeology, Water Treatment Biology, AutoCAD Fundamentals, Computer Applications in Water Supply and Drainage Engineering (including BIM Technology), Professional English

Module 4: Basic Engineering Courses

Expected Learning Outcomes: Enable students to utilize fundamental principles of natural sciences and engineering, master methods and skills in basic engineering experimental design, testing, and measurement, design experiments based on engineering problems, choose appropriate research platforms, apply analytical testing and measurement methods correctly, conduct scientific experiments accurately, and properly collect, analyze, and interpret experimental data.

Basic Requirements: Capable of using engineering principles to analyze the factors influencing the problem-solving process through multiple approaches, effectively communicate the analysis process and conclusions, and guide the formulation of solutions.

Courses Included: College Computer Basics, Computer Programming (C Language), Engineering Drawing, Electrical and Electronic Engineering, Engineering Mechanics, Basics of Civil Engineering, Economics and Preliminary Budgeting in Water Engineering, Engineering Geomatics, Engineering Project Management

Module 5: Core Professional Courses

Expected Learning Outcomes: Enable students to master the analytical and design methods for components or process flows, develop reasonable solutions tailored to the specific needs of Water Supply and Drainage Science and Engineering, and meet the particular requirements of actual engineering projects; consider the impacts of social, health, safety, legal, cultural, and environmental factors on solutions, and possess a certain level of innovative thinking; capable of using technology, engineering, economic, and management models and methods to develop, select, and use modern tools for simulation, analysis, prediction, and optimization to solve complex engineering problems, and understand their limitations; possess awareness of harmonious development between humans and nature, have knowledge of environmental protection, adhere to the concept of sustainable social development, and be able to understand and evaluate the impact of solving complex engineering problems on the sustainable development of society, the environment, and the economy.

Basic Requirements: Master the professional knowledge and skills of Water Supply and Drainage Science and Engineering and its sub-disciplines, understand the professional knowledge involved in interdisciplinary and new fields, and possess the professional working skills required for the Water Supply and Drainage Science and Engineering industry.

Courses Included: Pumps and Pumping Stations, Water Resources Utilization and Protection, Water Supply and Drainage Network Systems (1), Water Supply and Drainage Network Systems (2), Building Water Supply and Drainage Engineering, Water Quality Engineering (1), Water Quality Engineering (2), Water Engineering Construction, Water Quality Engineering Laboratory, Water Process Equipment Fundamentals, Water Supply and Drainage Engineering Instrumentation and Control, Professional English, Engineering Project Management, Introduction to Water Supply and

Drainage Science and Engineering, Interpretation and Application of Water Supply and Drainage Design Standards, Water Engineering Operations and Smart Management.

Module 6: Engineering Practice Courses

Expected Learning Outcomes: Train students to address complex problems in Water Supply and Drainage Science and Engineering through professional communication and exchanges such as design drawings, design manuscripts, research reports, and presentations; accurately understand the relationship between Water Supply and Drainage Science and Engineering and other disciplines, and respond clearly and accurately to queries from industry peers and the public; understand and master the management principles and economic decision-making methods of water engineering projects, and apply them within a multidisciplinary environment. Possess certain organizational and management skills; Have the ability to engage in self-directed and lifelong learning, continuously adapting and learning in line with industry developments and personal growth needs.

Basic Requirements: Capable of using theoretical knowledge and practical skills to solve real-world problems, consolidate fundamental theoretical knowledge, deepen understanding of the application fields of Water Supply and Drainage Science and Engineering, and enhance innovation capabilities.

Courses Included: Electrical and Electronics Training A, Geomatics Internship, Introductory Internship, Production Internship, Metalworking Internship, Graduation Internship, Course Design for Pumps and Pumping Stations, Course Design for Building Water Supply and Drainage, Water Supply Network Design, Drainage Network Design, Wastewater Treatment Design, Water Treatment Design, Water Engineering Economics and Preliminary Budgeting, and Comprehensive Graduation Training.

Details on the instructional hours and credits for each module's courses can be found in the Undergraduate Talent Training Program of Civil Engineering and Water Supply and Drainage Science and Engineering (**Appendix 1-1 and 1-2**). The support matrix that the relationship between training objects (learning outcomes) and graduation requirement is built.

1.3.5 Objective Matrix

Table 1-1 Civil Engineering Major Objective Matrix

Expected Learning Outcomes of the Curriculum (Knowledge/Skills/Abilities)	Objective and Corresponding modules

Knowledge: Master the fundamentals of mathematics, natural sciences, information technology, and computer basics. **Skills**: Be able to apply mathematical and natural science language to formally present complex civil engineering problems. **Abilities**: Be able to observe, analyze, and solve technical problems using mathematical and informational viewpoints and methods of thinking. Based on the characteristics of mathematics and information technology, conduct continuous analysis, synthesis, computation, judgment, and reasoning on engineering phenomena, possessing the fundamental abilities to solve engineering problems.	**Training Objective:** Master foundational knowledge in mathematics, natural sciences, and information technology to establish a solid foundation for subsequent coursework and apply this knowledge to solve engineering problems. **Modules:** **Mathematics and Physics** **Information Technology**
Knowledge: Master fundamental engineering knowledge such as engineering mechanics, engineering materials, as well as specialized knowledge in steel structures and concrete structures. **Skills**: Apply basic principles of engineering science to identify complex civil engineering problems, analyze these problems, and determine the key aspects for solving the issues. **Abilities**: Use engineering principles to analyze the influencing factors in the problem-solving process from multiple angles, effectively express the analysis process and conclusions, and use them to guide the formulation of solutions.	**Training Objective:** Master the fundamental knowledge of civil engineering, apply the learned knowledge to identify and analyze complex civil engineering problems, and lay a solid foundation for further solving complex civil engineering problems. **Modules:** **Engineering Fundamentals** **Professional Foundation**
Knowledge: Master specialized knowledge related to building, road and bridge, and rail engineering design, construction, management, and other aspects in civil engineering. **Skills**: Able to complete the design of structures and components (nodes) that meet specific civil engineering needs, and able to develop construction plans for specific complex engineering problems. Familiar with modern tools related to civil engineering, understanding their limitations, and possessing the ability to select and use appropriate tools. **Abilities**: In design and construction planning, able to fully consider constraints such as social, health, safety, legal, cultural, and environmental factors. Able to use modern tools to model and calculate complex civil engineering problems, and analyze the validity and limitations of the results. Master the operation of basic software required for the development of informatization in the construction industry, and possess the ability to build and apply information models.	**Training Objective:** Master professional knowledge in civil engineering, enabling the investigation, design, and analysis of complex engineering problems in related fields, and the development of solutions to meet the specific needs of complex civil engineering issues. **Modules:** **Professional Application** **Professional Practice**
Knowledge: Master methods for tracking and learning the latest developments and knowledge in the forefront and emerging fields of civil engineering. **Skills**: Recognize the importance of lifelong learning, actively track developments in the major and related fields, and possess the ability for self-directed learning. **Abilities**: Apply acquired professional knowledge widely, combining it with cutting-edge developments. Possess the ability to adapt to new developments in the civil engineering industry.	**Training Objective:** Possess awareness of autonomous learning and lifelong learning, with the ability to track the development trends in the related fields of the major and complete further self-development. **Modules:** **Professional Development** **Integrated Application**
Knowledge: Master one foreign language.	**Training Objective:** Master cross-cultural and international cooperation and communication

Skills: Read professional literature in English and perform mutual translation between Chinese and English. **Abilities**: Have a basic understanding of the international status of civil engineering disciplines and related industries, and possess initial communication and exchange abilities in a cross-cultural context.	skills to adapt to social development and globalization. **Modules:** **Foreign Language**
Knowledge: Master knowledge of modern Chinese history, basic principles of Marxism, military theory, etc., and engage in patriotism education, physical education, and military training. **Skills**: Understand social phenomena, stay informed about and adapt to social development, possess communication and collaboration abilities, demonstrate strong teamwork spirit, and promote physical and mental well-being and self-improvement. **Abilities**: Possess sound character and good psychological qualities. Understand China's national conditions, have humanistic and social science literacy, and social responsibility, enabling adherence to professional ethics and conduct in engineering practices, shouldering responsibilities, contributing to the nation, and serving society.	**Training Objective:** Understand the current social model and social norms in China, demonstrate good social behavior, teamwork spirit, and humanistic care awareness. Develop comprehensively in moral, intellectual, physical, and psychological aspects. **Modules:** **Humanities and Social Sciences**

Table 1-2 Water Supply and Drainage Science and Engineering major Objective Matrix

Intended learning outcomes for the programme -Knowledge -Skills -Competences	**Objective and Corresponding modules**
Knowledge: Master knowledge of modern Chinese history, basic principles of Marxism, military theory, implement patriotic education, physical education, and military training, and master a foreign language. **Skills:** Understand social phenomena, pay attention to and adapt to social development, possess the ability to communicate and collaborate with others, have a good team spirit, and promote personal physical and mental health and self-improvement. **Abilities:** Possess a well-rounded personality and good psychological quality. Understand China's national conditions, have literacy in humanities and social sciences, and a sense of social responsibility, able to understand and abide by professional ethics and behavioral norms in engineering practice, take responsibility, contribute to the nation, serve the society, and possess a certain international perspective.	**Training Objective:** Understand China's current social patterns and norms, possessing good social behavior, team spirit, and awareness of humanistic care. To develop comprehensively in moral, intellectual, physical, and psychological aspects. **Modules:** **Humanities and Social Sciences General Education Courses**
Knowledge: Master foundational knowledge in mathematics and natural sciences. **Skills:** Utilize knowledge of mathematics and natural sciences to understand and accurately articulate real engineering problems, and develop basic models to solve various practical issues in technology and engineering applications. **Ability:** Capable of observing, analyzing, and solving technical problems using the perspectives and thinking methods of mathematics and natural sciences. Continuously analyze, synthesize, calculate, judge, and reason about engineering phenomena based on the characteristics of mathematics and natural sciences to solve engineering problems.	**Training Objective:** Master foundational knowledge in mathematics and natural sciences to establish a solid foundation for subsequent course studies and apply this knowledge to solve engineering problems. **Modules:** **Mathematics and Natural Science Courses**
Knowledge: Master foundational engineering knowledge such as AutoCAD basics and computer applications in water supply and drainage engineering, as well as fundamental expertise in hydraulics and water chemistry analysis. **Skills:** Able to apply basic engineering science principles to identify complex engineering problems in water supply and drainage science and engineering, and capable of analyzing these problems to determine the critical elements needed for resolution. **Ability:** Capable of using engineering principles to analyze the factors affecting the problem-solving process from multiple angles, effectively express the analysis process and conclusions, and use these to guide the development of solutions.	**Training Objective:** Master the foundational knowledge of Water Supply and Drainage Science and Engineering, apply this knowledge to identify and analyze complex engineering problems within the field, and lay a solid foundation for further resolving complex engineering issues in Water Supply and Drainage Science and Engineering. **Modules:** **Fundamental Professional Courses**
Knowledge: Master foundational knowledge in information technology, computer science, and related engineering basics such as engineering drawing and engineering mechanics. **Skills:** Capable of applying knowledge in mechanics and engineering to engineering planning, design, construction, and operational management. Master the use of modern engineering tools, information technology tools, engineering techniques, and resources, and able to reasonably select modern tools for complex engineering problems; understand the basic methods for developing engineering techniques and modern engineering tools.	**Training Objective:** Master a broad range of foundational engineering and professional knowledge to lay the groundwork for future specialized course studies.

Ability: Consider the impacts of social, health, safety, legal, cultural, and environmental factors on solutions, and possess a certain level of innovative thinking.	**Modules:** **Basic Engineering Courses**
Knowledge: Master the professional knowledge involved in the design, construction, and management of water supply, drainage, and building water supply and drainage engineering. **Skills:** Capable of designing units (components) or process flows that meet specific needs of water supply and drainage science and engineering, and can develop construction plans for specific complex engineering problems. Familiar with modern tools related to water supply and drainage science and engineering, understands their limitations, and has the ability to discern and select appropriate tools. **Ability:** In the design and construction planning process, able to fully consider constraining factors such as society, health, safety, law, culture, and the environment. Able to use modern tools to model and compute complex engineering problems in water supply and drainage science and engineering, and can analyze the effectiveness and limitations of the results.	Training Objective: Master professional knowledge in Water Supply and Drainage Science and Engineering, capable of investigating, designing, and analyzing complex engineering issues in related fields, and proposing solutions that meet the specific needs of complex water supply and drainage engineering problems. Modules: Core Professional Courses Engineering Practice Courses
Knowledge: Master methods for tracking and learning about the latest developments and knowledge in the frontiers and new areas of water supply and drainage science and engineering. **Skills:** Recognize the importance of lifelong learning, able to proactively follow developments in the profession and related fields, possessing the ability to learn independently. **Ability:** Capable of broadly applying acquired professional knowledge, combined with cutting-edge advancements. Equipped with the ability to adapt to new developments in the water supply and drainage science and engineering industry.	Training Objective: Possesses awareness of self-directed and lifelong learning, and the ability to continuously learn and adapt to personal development needs. Modules: Engineering Practice Courses

The training plan is the basic basis for organizing various teaching activities and is a foundational document for HNCU's management, monitoring, and evaluation of teaching quality. To verify the quality of the training plan, standardize HNCU's training plan development process, ensure the achievement of talent cultivation goals, and better optimize and improve the plan, HNCU has formulated the *Implementation method of rationality evaluation of talent training program in Hunan City University* (see **Appendix 1-3**), which specify the development and revision of the training plan. The training plan for this program is jointly drafted by the college, department, and industry and enterprise experts, reviewed by the college's teaching advisory committee, and submitted for approval by the university (The list of teaching steering committees of the School of Civil Engineering is provided in **Appendix 1-4**, The list of teaching steering committees of the School of Municipal and Surveying and Mapping Engineering is provided in **Appendix 1-5**).

1.4 Admission Requirements

1.4.1 Admission Criteria

According to the *Education Law of the People's Republic of China*, the *Higher Education Law of the People's Republic of China*, and other relevant laws and regulations from the Ministry of Education, all individuals entering Hunan City University for undergraduate study and pursuing a bachelor's degree must hold a high school diploma or an equivalent qualification and must participate in the National College Entrance Examination (Gaokao). Those who meet the following conditions are eligible to apply: 1) Comply with the Constitution and laws of the People's Republic of China; 2) Have graduated from high school or possess an equivalent qualification; 3) Be in good physical health.

1.4.2 Admission Process

University admissions in China are determined by each province and municipality based on the number of applicants and exam scores. Admissions are divided into the first, second, and third batches, with candidates ranked by scores from highest to lowest. Admission to the Civil Engineering major at Hunan City University is in the first batch, with Language and Literature, Mathematics, Foreign Language, Physics, and Chemistry as mandatory subjects for the Gaokao.

During the admission phase, the admissions department at Hunan City University evaluates candidates comprehensively based on predetermined admission plans, primarily considering exam scores for selection. A typical admission process includes: file submission, file review, pre-admission, admission checks, and issuance of admission letters.

Upon entering Hunan City University, new students are required to provide their admission letter and identification documents, then follow the instructions in the registration notice to register at the appropriate department. A typical enrollment process includes: confirming registration, paying tuition, registering for academic status, and collecting study materials and supplies.

1.4.3 Admission Transparency

The admission and enrollment process for freshmen at Hunan City University strictly follows the relevant procedural documents and is highly transparent. According to the *Education Law of the People's Republic of China*, the admission process for regular higher education institutions in China follows a "school responsibility, admission office supervision" system. Here, the "admission office" refers to the provincial-level admission office rather than HNCU's own admission office. This means that for candidates who meet the requirements of political and moral assessment, comply with laws and regulations, pass the physical examination, achieve the required score on the national entrance examination, and meet HNCU's file transfer criteria, whether they are admitted and the program to which they are admitted is determined by HNCU itself.

HNCU has issued and implemented documents such as the *2024 Hunan City University Undergraduate Admissions Regulations* (see **Appendix 1-6**), *Hunan City University Online Admission Site Management Regulations* (see **Appendix 1-7**), and *Guidelines for Physical Examination in University Admissions* (see **Appendix 1-8**), to standardize the admission process and improve publicity channels.

The university is responsible for providing explanations to unadmitted candidates and handling other unresolved issues. The provincial-level admission offices organize and implement the submission of qualified candidates' electronic files to the universities and supervise the universities' compliance with national admission policies, adjustments to admission plans, and enforcement of those plans, correcting any violations of national admission policies and regulations.

1.4.4 Student Academic Assessment

Since 2020, the admission score of the Civil Engineering and Water Supply and Drainage Science and Engineering major of Hunan City University has been higher than the undergraduate line standard in the national unified examination (college entrance examination) for the admission of ordinary institutions of higher learning in China. For relevant information and the admission situation in the past five years, please refer to **Appendix 1-9**. Both majors are strictly in accordance with the relevant provisions of the Ministry of Education, the Hunan Provincial Department of Education, and the Hunan Provincial Education Examination Institute. Admissions are carried out in accordance with the relevant regulations of the admissions policy, and a special admissions leadership group has been established to be fully responsible for admissions matters.

1.5 Work load and credits

At Hunan City University, completing 16 contact hours of theoretical courses is equivalent to one Chinese credit. For practical training courses, completing 32 contact hours of study is equivalent to one Chinese credit. Chinese credits are based only on contact hours, whereas the European Credit Transfer and Accumulation System (ECTS) credits calculate not only contact hours but also self-study hours. From the perspective of ECTS credits, the student workload is the sum of his/her contact hours and self-study hours. Generally speaking, 30 hours (including contact hours and self-study hours) equates to one ECTS credit, but there are differences between the two credit systems in terms of self-study hours. When converting Chinese credits to ECTS credits, an average of 58 ECTS credits or 1740 hours (workload) per academic year for Civil Engineering is required, an average of 57.5 ECTS credits or 1725 hours (workload) per academic year for Water Supply and Drainage Science and Engineering is required.

1.5.1 Study Time (Workload) / Contact Hours, Credits, and Self-Study

The course hours and credits for each module of the Civil Engineering major can be found in **Appendix 1-10**. The syllabus for each course is provided in **Appendix 1-11**. For the structural and categorization of workload for different modules, Table 1-3 provides the hourly statistics for the student's four years of study.

Table 1-3 Four-Year Course Hour Statistics of Civil Engineering

Module	Contact Hours	Self-Study Hours	Total Hours	Percentage
Mathematics and Physics	432	348	780	11.21%
Information Technology	80	40	120	1.72%

Engineering Fundamentals	640	515	1155	16.59%
Professional Foundation	240	225	465	6.68%
Professional Application	384	336	720	10.35%
Professional Practice	328	302	630	9.05%
Professional Development	144	81	225	3.23%
Integrated Application	590	670	1260	18.1%
Foreign Language	240	180	420	6.04%
Humanities and Social Sciences	718	467	1185	17.03%
Total Hours	3796	3164	6960	

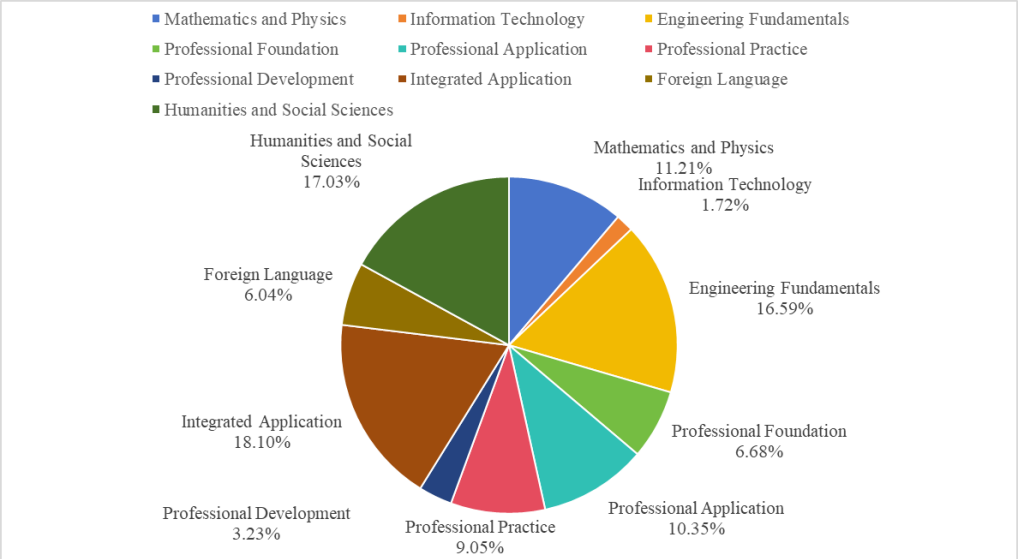

Figure 1.1 Credit Composition of Courses in Different Ability Areas for Civil Engineering

For details on the hours and credits of each course module in Water Supply and Drainage Science and Engineering, see (**Appendix 1-12**). Course syllabi can be found in **Appendix 1-13**. To illustrate the workload structure and classification of different course modules, Table 1-4 provides a four-year statistical breakdown of student hours.

Table 1-4 Four-Year Course Hour Statistics of Water Supply and Drainage Science and Engineering

Course Module	Contact Hours	Self-study Hours	Total Hours	Percentage

Humanities and Social Sciences	978	717	1695	24.6%
Mathematics and Natural Sciences	424	386	810	11.7%
Professional Foundation	280	215	495	7.1%
Engineering Foundation	288	297	585	8.5%
Professional Core	448	407	855	12.4%
Engineering Practice	1312	1148	2460	35.6%
Total Hours	3730	3170	6900	

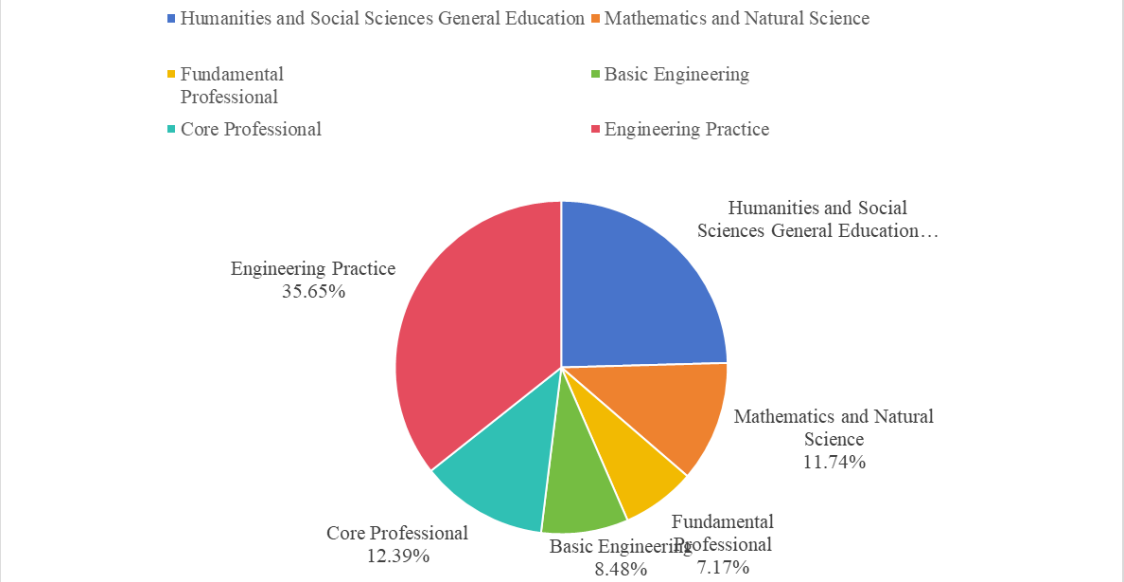

Figure 1.2 Credit Composition of Courses in Different Ability Areas for Water Supply and Drainage Science and Engineering

1.5.2 Credit System

Student learning outcomes are primarily reflected in the form of credits. Each undergraduate must earn the equivalent of 232 ECTS credits in European credits after completing four years of study, meaning an average of 29 ECTS credits per semester. Each undergraduate must earn the equivalent of 230 ECTS credits in European credits after completing four years of study, meaning an average of 28.75 ECTS credits per semester. The credit deviation between different semesters should not exceed 3 ECTS credits. The contact hours for each semester are relatively balanced, ensuring that neither the student's learning effectiveness nor the teacher's teaching quality face structural pressure. Exam results are analyzed by the course instructors, and the student's study time is investigated by tutors

and academic advisors to gather the actual learning workload for each semester, ensuring that the actual student workload aligns with the planned workload. Each student of Civil Engineering must complete approximately 870 hours (workload) per semester. 30 hours (workload) is equivalent to 1 ECTS credit. Each student of Water Supply and Drainage Science and Engineering must complete approximately 860 hours (workload) per semester. 30 hours (workload) is equivalent to 1 ECTS credit.

According to the regulations of Hunan City University, the normal study period for students is 4 years, with a maximum of 6 years. Students who do not graduate within 6 years will receive a certificate of attendance or be withdrawn from the university. Table 1-5 provides detailed information on the graduation rate and employment rate of two majors. As shown in the Table 1-5, the two majors have maintained high graduation rates for three consecutive years, indicating that their curriculum design is appropriately challenging. Additionally, their employment rates are extremely high, demonstrating that the talent training programs effectively meet industry demands.

Table 1-5 Graduation Rate and Employment Rate for 2022-2024

Civil Engineering			
Last 3 years	2022	2023	2024
Number of Students	366	380	307
Graduation Rate	91.53%	95%	94.13%
Employment Rate of Graduates	97.82%	99.47%	91.80%
Water Supply and Drainage Science and Engineering			
Last 3 years	2022	2023	2024
Number of Students	88	75	88
Graduation Rate	97.73%	98.67%	94.32%
Employment Rate of Graduates	94.3%	96%	98.9%

1.6 Didactics and Teaching Methodology

Basic natural science courses and foundational discipline courses are mainly taught in large classes (approximately 80 students), while professional courses are typically taught in smaller classes (around 40 students). Some courses include both theoretical content and in-class experiments, with the in-class experiments usually conducted in batches or groups. Elective courses may be chosen by students based on their personal interests and developmental needs.

In addition to classroom teaching, practice and training are also important components of undergraduate education. The major has more than 20 national and provincial teaching platforms such as the Civil Engineering National Experimental Teaching Demonstration Center and the Civil Engineering Virtual Simulation Experiment Center, which have good practical conditions. At the

same time, more than 100 off-campus practice bases have also been established, which can provide students with sufficient internship and training opportunities. At the same time, students can also choose the on-campus research projects of professional teachers to carry out practical learning. The practice base of the School of Municipal and Surveying and Mapping Engineering is mainly in Hunan City University Design and Research Institute Co., Ltd. According to the project characteristics and course requirements, we also cooperate with Yiyang Water Supply Company, Yiyang Tuanzhou Sewage Treatment Plant, Changde Sewage Treatment Plant and other engineering units to provide students with practical opportunities. Students of both majors must participate in professional basic experiments, professional comprehensive experiments, comprehensive curriculum design, innovation and entrepreneurship training, internships, and labor practices.

The teaching methods in this program also widely incorporate online learning models. Most courses have corresponding course websites on the Hunan City University online teaching platform. The established teaching management information platform and open online course websites provide students with abundant learning resources, stimulating self-directed learning and enhancing their self-study abilities. Online course applications such as Zhihuishu, Yunbanke, Rain Classroom, and Learning Mall have been widely used in online teaching activities, which provide students with more abundant learning resources and interaction opportunities, broaden students' knowledge horizons, and guide them to understand cutting-edge engineering knowledge at home and abroad. Practical teaching, such as course design, closely aligns with engineering practice. Engineering fundamentals theory courses introduce engineering practice applications, while professional core theory courses organize teaching around engineering practice projects, training students' engineering thinking, synchronizing course design calculations, optimizing during design weeks, and expressing engineering concepts; the graduation design requires students to conduct topic research based on engineering practice, adhering to the "time, place, and faculty" fixed model to ensure process control and quality of the design results. The design teaching process is depicted in Figure 1.3.

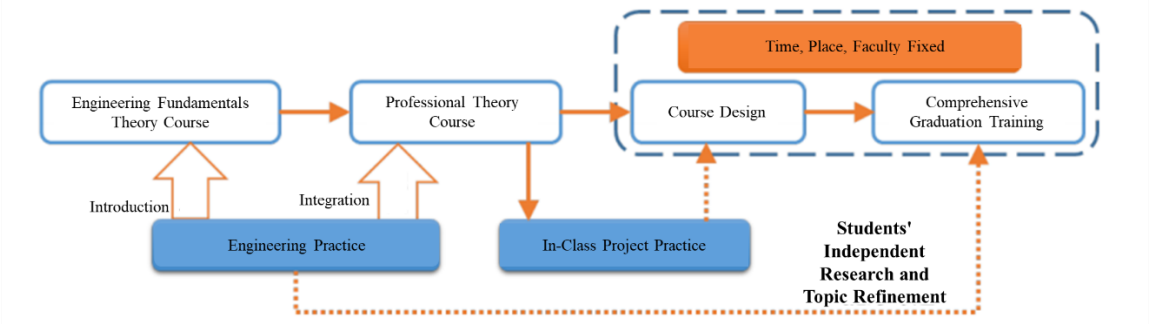

Figure 1.3 Design Teaching Process

2 Exams: System, Concept & Organisation

2.1 System

The eligibility of students for bachelor's degree conferral is evaluated through assessments stipulated by the university. Specifically, students must complete theoretical courses, practical courses (including course design, laboratory experiments, and internship practices), and comprehensive graduation training in accordance with the academic program and course syllabi, all of which undergo rigorous review and evaluation. According to Catalog of Teaching Evaluation System Regulations at Hunan City University **(Appendix 2-1**), students majoring in Civil Engineering and Water Supply and Drainage Science and Engineering may be awarded a bachelor's degree upon fulfilling the following conditions:

- Possess solid mastery of foundational theories, professional knowledge, practical skills, and operational competencies in the discipline, enabling engagement in entry-level roles within related fields post-graduation and demonstrating preliminary problem-solving capabilities.
- Complete all courses stipulated in the academic program within the prescribed duration (four years) and earn the required credits: 232 ECTS credits for Civil Engineering and 230 ECTS credits for Water Supply and Drainage Science and Engineering, with a cumulative Grade Point Average (GPA) meeting the university's specified standards (refer to institutional documentation for criteria).
- Pass the national College English Test Band 4 (CET-4) with a minimum score of 300.

In summary, students must pass all stipulated evaluations to meet the requirements for bachelor's degree conferral. The assessment framework comprises three primary components: course assessments, foreign language proficiency evaluations, and comprehensive graduation assessments. The Full-Time Undergraduate Course Assessment and Grade Management Regulations of Hunan City University (**Appendix 2-2**) specifies detailed provisions on assessment methods, content, and grading criteria, including the organization of examinations and alternative evaluations, the weighting of continuous assessments (e.g., coursework, quizzes) versus final examinations, and corresponding performance standards.

To determine whether students meet the eligibility criteria for a bachelor's degree, they must undergo comprehensive evaluations through various assessments stipulated by the university. Specifically, students are required to complete theoretical courses, practical courses (including curriculum design, experiments, and internship practices), and comprehensive graduation training in accordance with the training program and course syllabi. All these components are subject to rigorous review and assessment.

According to the *Regulations on the Conferral of Bachelor's Degrees at Hunan City University* (**Appendix 2-1**), students majoring in Civil Engineering and Water Supply and Drainage Science and Engineering at our university may be awarded a bachelor's degree upon satisfying the following conditions:

• A solid mastery of basic theories, specialized knowledge, practical skills, and work capabilities in their major, enabling them to engage in foundational work in related fields and solve practical problems preliminarily after graduation.

• Completion of all courses specified in the training plan and attainment of the required credits within the prescribed four-year academic system. Specifically, Civil Engineering majors must earn 232 ECTS credits, and Water Supply and Drainage Science and Engineering majors must earn 230 ECTS credits, with an average Grade Point Average (GPA) meeting the university's specified standards (detailed criteria are outlined in relevant university documents).

• Passing the National College English Test Band 4 (CET-4) with a score of 300 or higher.

In summary, students must pass all assessments to fulfill the requirements for a bachelor's degree. The entire evaluation system primarily consists of course assessments, foreign language assessments, and comprehensive graduation training assessments. The Full-Time Undergraduate Course Assessment and Grade Management Regulations of Hunan City University (**Appendix 2-2**) provides detailed regulations on course assessment methods, content, grade evaluation, etc., covering the organization and implementation of exams and assessments, the proportion of daily performance and final exam scores, and grading criteria.

2.2 Concepts

2.2.1 Course Assessment Methods

Course assessment serves as a pivotal mechanism for evaluating student learning outcomes and teaching quality. In accordance with the Full-Time Undergraduate Course Assessment and Grade Management Regulations of Hunan City University (**Appendix 2-2**), students are required to complete all assessments specified in their academic program. Assessments are categorized into examinations and alternative evaluations, with specific formats determined by the course's academic nature:

1. Assessment Types and Formats

- Examination Courses: Primarily conducted via closed-book written tests, with select courses allowing open-book examinations. Examination content aligns with the expected learning outcomes outlined in the course syllabus. Specific requirements are detailed in the Hunan City University Examination Paper Review Form (**Appendix 2-3**).

- Alternative Evaluation Courses: Utilize formats such as oral examinations, course design projects, practical reports, and presentations/defenses, emphasizing the assessment of students' applied knowledge and practical skills.
- Practical Courses (e.g., Engineering Surveying Internship, Water Quality Engineering Experiments): Performance evaluations + laboratory reports.

2. Grading and Credit Awarding

- Final Composite Score: Comprises continuous assessments (30%–50%) + final examination (50%–70%). Continuous assessments include attendance, assignments, laboratory work, and in-class performance, all documented in the Student Academic Record Form (**Appendix 2-4**).
- Credit Eligibility: A final composite score of ≥60 points (passing grade) qualifies students to earn corresponding credits.

3. Makeup Examinations and Retake Mechanisms

- Makeup Examinations: Students failing a course may take a makeup exam at the start of the subsequent semester (using alternate examination papers for exam-based courses). Makeup scores are recorded as actual marks, but grade points (GPA) are calculated based on a maximum of 60 points.
- Course Retakes: Students failing makeup exams must apply for retakes, either through dedicated retake classes or joining regular classes. Retake fees are charged per credit, and retaken course transcripts are marked with "Retake"

4. Deferred Examination Policy

Deferred Examination Policy: Students unable to attend scheduled exams due to illness, injury, or exceptional circumstances must submit valid documentation (e.g., medical certificates) prior to the examination date and may apply for a deferred examination upon college approval. Deferred exams are scheduled concurrently with makeup examinations, with grades assessed based on actual scores.

2.2.2 Course Assessment Criteria

Course assessment results are recorded on a hundred-point system or five-level grading system, with specific standards as follows:

1. Composition and Evaluation of Grades

- Overall Grade: Composed of daily performance (30%–50%) and final assessment (50%–70%), with the exact proportion specified in the course syllabus.
- Daily Performance: Includes process-oriented evaluations such as attendance, assignments, experiments, class discussions, and unit quizzes, which must be recorded in detail in the Student Academic Performance Record Form (**Appendix 2-4**).

- Final Assessment: Conducted through closed-book examinations or course assessments, focusing on core knowledge points and applied abilities of the course.

2. Grade Level and Grade Point Conversion

Grades are recorded using a dual-track system combining the hundred-point system and five-level grading system (Excellent, Good, Fair, Pass, Fail). The grade point conversion standards are as follows:

Grade Conversion Table

Score Range	Five-Level Grade	GP Range	Midpoint of GP
90~100	Excellent	4.0-5.0	4.5
80~89	Good	3.0-3.9	3.5
70~79	Medium	2.0-2.9	2.5
60~69	Pass	1.0-1.9	1.5
<60	Fail	0	0

Explanation: For the hundred-point system, examination scores are converted as follows: 90 points = 4.0 GP, 91 points = 4.1 GP, and so on; scores below 60 = 0 GP. For the five-level grading system, grades are converted as fixed values: Excellent = 4.5 GP, Good= 3.5 GP, Fair = 2.5 GP,Pass = 1.5 GP, Fail= 0 GP.

3. Dynamic Monitoring of Credits and Academic Progress

Regularly evaluate the matching degree between credit settings of course modules and students' actual study workload (e.g., theoretical class hours, assignment volume, and practical tasks). Analyze the rationality of credit distribution across semesters to ensure students can fulfill graduation requirements within the standard academic system (4-year program). At the end of each academic year, the Academic Affairs Office will conduct a comprehensive review in conjunction with the Teaching Committee and student representatives, using the Hunan City University Course Paper Analysis Form (**Appendix 2-5**) to quantitatively analyze the corresponding relationship between course load and credits.

2.2.3 Foreign Language Assessment Criteria

During college English courses, students' English proficiency and applied abilities are evaluated through course assessments. College English assessments include daily performance (40%) and final assessment (60%), and students must achieve ⩾300 points in the College English Test Band 4 (CET-4). The university provides abundant English learning resources and a supportive environment, such as English-speaking instructors and English practical courses, to promote students' English proficiency.

2.2.4 Graduation Comprehensive Training Evaluation

Graduation Comprehensive Training is a critical teaching practice to achieve talent cultivation goals, aiming to develop students' comprehensive abilities and innovative thinking.

In the graduation training assessment, students must independently complete the project under the guidance of a supervisor. The Hunan City University Undergraduate Graduation Comprehensive Training (Thesis) Management Measures (**Appendix 2-6**) specify detailed rules for topic selection, proposal defense, writing norms, mid-term review, and final defense, and conduct comprehensive evaluations based on quality, innovation, and academic normativity of the graduation training.

- All graduation training scores are composed of supervisor's score (40%), reviewer's score (30%), and defense score (30%), calculated on a hundred-point system. If students dispute their scores, the university's Defense Committee will re-examine the graduation training to determine the final defense score.
- Students are allowed to conduct their graduation comprehensive training in off-campus enterprises. However, students who apply for off-campus graduation design are required to independently formulate a topic related to the internship unit and job position they have applied for. They should prepare a task document as required, submit it to their supervisor for confirmation, and then undergo reviews at both the department and college levels.

The Defense Committee is responsible for reviewing the scores of the graduation comprehensive training. After the review is passed, the scores will be submitted to the university for approval, and the scores will be announced to the students within three days after the defense of the graduation comprehensive training is completed. The university has clear recommendation criteria for the graduation comprehensive training at the "Excellent" level:

- The graduation comprehensive training should have passed the defense and the score should reach the excellent level (90 points or above).
- The recommendation is mainly based on the advancement, creativity, practicality and academic level of the graduation comprehensive training.
- The excellent graduation comprehensive training of the university is recommended by the relevant committee of the university, and a complete evaluation form of the excellent graduation comprehensive training should be attached. After being approved by the relevant working group of the university, it will be submitted to the Academic Affairs Office for filing.

2.2.5 Norms on Students' Academic Integrity

The university has made clear regulations regarding students' academic integrity during the learning process. For students who violate academic integrity, the university will deal with them seriously in accordance with relevant regulations to maintain the solemnity and fairness of academics and create a favorable academic atmosphere.

In terms of assignments and experiments, students should complete them independently in strict accordance with the requirements of their teachers. Dishonest behaviors include tampering with or fabricating task and experiment (report) data; plagiarizing or copying others' assignments and experiment reports; asking others to do tasks, experiments (reports) on their behalf or doing tasks and experiments (reports) for others, as well as other similar dishonest behaviors.

Regarding the graduation comprehensive training, students must use real data and information for academic research, complete it independently, and respect the academic achievements of others through proper citation methods. The dishonest behaviors in the graduation comprehensive training are shown in **Appendix 2-6**.

2.3 Examination Organization and Management

2.3.1 Organization of Course Examinations

Examination Arrangements

- Examination Courses: Organized by the Academic Affairs Office of the university, the examinations for these courses will be carried out within 2 to 3 weeks after the completion of the course instruction. The examination time and venue will be released on the teaching management system.
- Inspection Courses: Organized by the school offering the courses, these are generally completed within two weeks after the course ends and are conducted in the forms of oral examinations, defenses, etc.
- General Courses and Core Courses: For some of these courses, mid-term examinations can be arranged to check the teaching effectiveness (**Appendix 2-2**).

Examination Question Management

The examination questions are set by the school offering the courses. It is necessary to fill in the Hunan City University Proposition Review Form (**Appendix 2-3**) to ensure that the requirements of the course syllabus are covered. The repetition rate of examination questions for the same course within three years should not exceed 30%. Strict confidentiality should be maintained, and the initial drafts and electronic documents should be destroyed (**Appendix 2-2**).

Proctoring and Marking

- Proctors must be qualified and are required to inspect the discipline during the examination (**Appendix 2-2**).
- The marking of examination papers is uniformly organized by the school. It can be carried out through collective marking or an assembly-line operation, and the marking standards should be consistent. For courses with closed-book examinations, it is necessary to fill in the

Hunan City University Course Paper Analysis Form (**Appendix 2-7**), summarize the teaching problems and put forward improvement suggestions.

- Grade Entry, Review and Examination Paper Archiving
- The grades should be entered into the teaching management system, and this should be completed within three days after the marking. Students can query their grades through the system, and those who have objections to the results can apply for a review.
- Any correction of grades requires the approval of the department head and the school leaders, and it is necessary to fill in the Student Application Form for Grade Inquiry and Change Review (**Appendix 2-8**).
- Materials such as examination papers, grade registration forms, and analysis forms should be preserved by the school offering the courses in accordance with the Uniform Requirements for Examination Papers of Hunan City University. The retention period is two years after the students graduating. (**Appendix 2-2**).

2.3.2 Organization of Graduation Comprehensive Training

Management Mechanism

- It is the responsibility of the vice president in charge of teaching and the department head to organize the graduation comprehensive training. They shall formulate the Management Measures for Graduation Comprehensive Training (**Appendix 2-6**), clarifying the processes such as topic selection, proposal defense, and final defense.
- The selected topics should conform to the professional training objectives and be sourced from practical engineering projects or scientific research projects. After being reviewed by the department head, they will be entered into the system (**Appendix 2-9**).

Process Monitoring

- The "double supervisor system" is implemented, with joint guidance from the university and enterprises. Mid-term inspections are carried out regularly to ensure the progress and quality (**Appendix 2-6**).
- The graduation comprehensive training must pass the plagiarism detection, and the repetition rate should not exceed the threshold specified by the university (**Appendix 2-6)**.

Defense and Grade Evaluation

- The defense is uniformly organized by the school. A defense committee will be established, and the grades are comprehensively evaluated by the supervisor (40%), the reviewer (30%), and the defense panel (30%) (**Appendix 2-6**).
- The proportion of excellent graduation comprehensive training should not exceed 15%. The recommended list will be reported to the Academic Affairs Office for filing after being reviewed by the school’s degree committee (**Appendix 2-6**).

3. Resources

3.1 Staff and Staff Development

3.1.1 Faculty Composition

1. Civil Engineering

The Civil Engineering major boasts a teaching team with a balanced age and academic background, high comprehensive quality, and deep academic expertise. The Civil Engineering major has 82 full-time faculty members, including 15 professors, 37 associate professors/senior engineers, and 30 lecturers/experimental teachers, with 51.2% being younger than 45. The faculty includes 49 with doctoral degrees, and 96.3% possess a master's degree or higher. The academic structure covers fields such as road engineering, bridge engineering, construction engineering, urban rail engineering, underground engineering, and geotechnical engineering, meeting the needs of the civil engineering course instruction. Faculty resumes for the Civil Engineering major are provided in **Appendix 3-1**.

2. Water Supply and Drainage Science and Engineering

The Water Supply and Drainage Science and Engineering major has established a team of teachers with high academic levels, diverse academic backgrounds, and a reasonable age structure. The department consists of 21 full-time teachers, including 6 professors, 7 associate professors, and 8 lecturers, with young teachers under the age of 45 making up 61.90% of the faculty. Among them, 10 hold doctoral degrees, and 8 have master's degrees, with 85.71% of the faculty holding a master's degree or higher. Teachers proficient in both professional and technical skills account for 85.71% of the faculty. The academic structure of the faculty covers fields such as water supply and drainage, environmental engineering, municipal engineering, and smart water services, encompassing areas such as water treatment system design, comprehensive water environment treatment, water resource utilization and management, and technical operations, fulfilling the teaching needs of the Water Supply and Drainage Science and Engineering major. See **Appendix 3-2** for the professional teachers' resume.

3.1.2 Faculty Teaching and Research Development

1. Civil Engineering

The Civil Engineering major offers more than 80 specialized courses. In recent years, the Civil Engineering major has actively promoted teaching reform and course development: four provincial and ministerial-level teaching achievement awards were obtained, eight courses were approved as top-tier undergraduate courses in Hunan Province, more than 100 teaching and research reform papers were published, and eight professional textbooks were published (see **Appendix 3-3**).

Over the past five years, Civil Engineering faculty have completed 67 research projects, including 11 provincial and above-level research projects (5 National Natural Science Foundation projects, 32

Hunan Provincial Natural Science Foundation projects), and 30 enterprise cooperation projects, with a total research funding of nearly 13.8 million RMB. More than 120 core journal research papers have been published, including over 100 indexed by SCI and EI, 39 invention patents granted, and 4 science and technology achievement awards. Some of the research papers, national and provincial-level research projects, and science and technology achievements are listed in **Appendix 3-4**.

2. Water Supply and Drainage Science and Engineering

The Water Supply and Drainage Science and Engineering major offers more than 30 specialized courses, not only for undergraduates in this major but also for those studying in related fields such as Civil Engineering, Environmental Engineering, and Building Environment and Energy Application Engineering. In recent years, this program has undertaken 19 educational reform and curriculum development projects, including 12 teaching reform projects funded by the Hunan Provincial Department of Education, resulting in the establishment of five university-level quality courses. It has received five provincial teaching awards, published over 40 educational papers, and authored nine textbooks and monographs. Details on provincial and ministerial-level course development projects, university-level and higher quality courses, excellent teaching awards, and published textbooks and monographs can be found in **Appendix 3-5**.

In the past five years, faculty in the Water Supply and Drainage Science and Engineering program have completed 44 research projects, including 39 funded by national and provincial organizations such as the National Natural Science Foundation of China and the Hunan Provincial Natural Science Foundation, as well as 31 corporate collaborative projects. The total research funding amounts to approximately 2.4 million yuan. They have published over 120 papers in core journals, including more than 60 indexed by SCI & EI, and have been granted 26 patents for inventions, winning 10 scientific and technological achievement awards. For a sample of the research outputs, details on national and provincial research projects, and awards for scientific achievements, please see **Appendix 3-6**.

3.1.3 Faculty Workload

The standard teaching workload for each professional faculty member is as follows: professors are required to teach 300 hours per year, associate professors 320 hours per year, senior lecturers 320 hours per year, and junior lecturers 300 hours per year. The actual workload requirements may vary slightly depending on the position and academic rank. If a full-time teacher completes 60% of the required teaching workload in a given year but fails to meet the required task hours, research credits can be used to offset the teaching task hours. 1 research credit equals 10 teaching hours. If the teaching task hours fall below 60%, research credits cannot be used to offset the teaching workload. The calculation method for workload is outlined in the *Calculation and Management Measures for Undergraduate Teaching Workload of Hunan City University* (**Appendix 3-7**). In the teaching

workload completed by professional teachers, theoretical teaching hours should account for 30% of the required task hours. In addition to necessary theoretical teaching, each teacher must provide adequate guidance for students, including homework grading and practical guidance. These measures ensure that every student in the program receives sufficient guidance on courses and extracurricular assignments, helping students meet the curriculum requirements, acquire the necessary competencies for the program, and achieve the educational goals outlined in the training plan.

3.1.4 Faculty Development

(1) Relevant Training

HNCU has established a Faculty Development Center. The main responsibilities of the center include: strengthening and improving the ideological and political work for faculty, enhancing teacher ethics and teaching styles, organizing faculty training, guiding faculty career development, conducting teaching competitions and seminars, and addressing faculty mental health education issues. The organization is affiliated with the Personnel Office and has an administrative office under its structure. The purpose is to provide services for enhancing teaching competence through teacher training, teaching exchanges, teaching evaluation, teaching research, and teaching consultation, as well as conducting teaching quality assessments and diagnostics, advancing teaching reform and innovation, and continuously improving teaching quality. Currently, various forms of teaching training, teaching forums, and teaching demonstration observation activities have been organized. Additionally, several internal and external education and teaching experts, as well as renowned teachers, have been invited to give lectures.

① Pre-job Training for New Teachers: In compliance with relevant Hunan Province and university regulations, all newly hired individuals engaged in education and teaching work, including full-time faculty, counselors, experimental technical staff, other professional technical positions, administrative staff, and personnel transitioning from non-teaching to teaching roles, are required to participate in the pre-job training organized by HNCU.

② Mentorship System for Young Faculty: To enhance the development of young faculty members, colleges are required, under the *Implementation Measures for the Mentorship System of Young Teachers in Hunan City University (Revised)* **(see Appendix 3-8)**, to assign each newly hired young teacher a mentor with an associate professor or higher title. This leverages the expertise and mentorship of senior teachers to guide, assist, and support the growth of young faculty, aiming to develop their moral and professional integrity, teaching capabilities, and research competencies, ensuring steady improvement in the quality of talent cultivation. Mentors provide guidance and training to mentees in areas such as professional ethics and integrity, teaching research and reform, and scientific research, helping mentees master the principles and methodologies of higher education. The mentorship period generally lasts for two years. After new teachers enter the school, they must

quickly familiarize themselves with teaching processes, and acquire and master basic methods and skills for engaging in teaching and research work under the guidance of a mentor, becoming qualified university-level educators.

The list of mentors for the young teacher mentoring program in the Civil Engineering major and Water Supply and Drainage Science and Engineering major can be found in **Appendix 3-9**.

③ Personal Career Plan for Teachers: To further strengthen faculty team development and enhance HNCU's overall competitiveness, the school has developed and implemented the *Personal Career Plan for Teachers*, clearly defining aspects such as personal research fields and key research directions, research goals (including short-term, medium-term, and long-term targets), further study and social practice plans, teaching plans, and the application for teaching and research projects. Additionally, HNCU has introduced the *Hunan City University Management Measures for Teaching Staff Pursuing Doctoral Degrees while Employed (Trial)*, encouraging young faculty to pursue doctoral degrees while working, further optimizing the faculty structure, reserving a group of young innovative talents with international perspectives and development potential, and encouraging doctoral students to produce high-level research achievements, to promote the high-quality development of HNCU.

④ Work Experience and Overseas Study:

To further strengthen faculty development, the school seeks to cultivate a high-level teaching staff with "dual professional and technical abilities" and an international perspective to meet the educational and teaching needs of applied universities. It aims to improve the professional skills and comprehensive quality of young teachers by encouraging them to engage in external field training at school-industry-research collaboration units or public companies and high-tech enterprises or to visit and study at well-known domestic and international universities or institutions, typically for a period of 1 year. Many faculty members in this program have technical cooperation projects with enterprises, assisting them in solving practical technical challenges, and some teachers have industry work experience. Each professional teacher in this program has the opportunity to visit and study at renowned universities or institutions domestically and abroad. The College has a set number of teachers each year who can receive support from the Hunan Provincial Department of Education for up to 12 months of training and study. HNCU encourages faculty, especially young teachers, to receive training and study at high-level universities or institutions both domestically and internationally.

The Civil Engineering and Water Supply and Drainage Science and Engineering faculty's industry work experience, part-time work, as well as domestic training and international exchange experiences, can be found in **Appendix 3-10**.

(2) Relevant Funding

The Hunan Provincial Department of Science and Technology provides multi-level and various forms of funding support for Hunan City University faculty, including domestic and overseas study visits, industry-academia-research collaborations, and experimental team-building plans, to enhance their professional academic research and teaching capabilities. Specifically, funding support is given for young teachers in Hunan Province to carry out research activities, with funding amounts varying according to the location of the host unit or institution. The school allocates special expenditure from the faculty training budget or from relevant provincial key discipline programs and teaching and research platform funds. For those selected by higher authorities, the school funds tuition and accommodation costs beyond those subsidized by the Ministry of Education and the Department of Education, reimburses monthly round-trip transportation costs within the province, and reimburses transportation costs once per semester for travel outside the province, with total funding not exceeding 10,000 RMB. HNCU dispatches personnel for study visits with a budget of 10,000 RMB per year for in-province expenses (including tuition, accommodation, materials, and transportation) and 15,000 RMB per year for out-of-province expenses (including tuition, accommodation, materials, and transportation).

Hunan City University provides research start-up funding for newly recruited teachers, granting 100,000 to 200,000 RMB per young faculty member with a doctoral degree in this field. Additionally, HNCU has continuously implemented the "351" talent program, with funding support reaching 40,000 to 100,000 RMB per year.

3.2 Student Support and Student Services

3.2.1 Office of Academic Affairs

The daily management and training of undergraduate teaching are primarily handled by the Office of Academic Affairs and the Teaching Quality Management Office. The Office of Academic Affairs is composed of the following departments: Academic Affairs Section, Educational Technology Section, Information Center, Training Section, Practice Section, Admissions Office, and Textbook Section.

External faculty and students must first log in to http://ywpt.hncu.edu.cn:4106/shiro-cas, then click on the school's Teaching Management Information System website: http://58.47.143.9:6038/jwglxt/xtgl/index_initMenu.html?jsdm=&_t=1732871736663#; faculty and staff of Hunan City University can log in to this website with their username and password.

Each college under HNCU has a dedicated teaching office, responsible for managing the college's teaching affairs under the guidance of the Associate Dean of Teaching.

3.2.2 Student Affairs Department

The Student Affairs Department of Hunan City University is a functional unit responsible for student management, education, and services. Its primary duties include:

1.Implementing ideological and political education, national security education, legal education, university regulations and discipline education, health education, mental health education, and moral education for students.

2.Providing daily guidance and services to students, including academic atmosphere development, comprehensive quality evaluation, award selection and recognition, Party and Youth League building, scholarships and grants, student loans, financial aid, dormitory management, career guidance, and employment administration.

3.2.4 Student Counselor System

Hunan City University has established a comprehensive counselor system covering ideological education, Party and Youth League building, academic discipline management, mental health support, career planning, theoretical and practical research, and other areas, aiming to foster students' well-rounded development. Additionally, counselors organize students' participation in social practices and volunteer services to cultivate their sense of social responsibility and dedication. They also address students' specific needs, such as managing support for those with specific medical conditions, providing personalized services and tailored assistance.

3.2.4 Academic Advisors

Every undergraduate freshman at Hunan City University is assigned a dedicated Academic Mentor to guide their academic, professional, and career development and planning. Academic Mentors not only impart specialized knowledge but also serve as mentors and companions in students' growth. Additionally, they prioritize students' mental health and holistic well-being, maintaining regular communication to monitor academic and personal progress, identify potential challenges, and provide timely psychological support and assistance.

3.2.5 Corporate Advisors

Hunan City University has implemented an Industry Mentor Program, dedicated to providing students with industry-aligned practical platforms to stimulate their innovative thinking and entrepreneurial potential. Industry Mentors, rigorously selected and certified by the university, are primarily experienced management elites or highly skilled engineers from various sectors. Furthermore, these mentors maintain close communication with academic mentors within the university, collaborating to implement a "Dual-Mentor" teaching model. This approach optimizes educational resource allocation, fosters deep integration of industry, academia, and research, and establishes a seamless pathway for students to transition from campus to society.

3.2.6 Course Websites

Online teaching has become an indispensable part of educational activities, offering students flexible learning methods, abundant resources, efficient interactive tools, and personalized support, significantly enhancing learning experiences and outcomes. The online course resources for this discipline are primarily hosted on the university's official platforms: Zhihuishu Platform: https://www.zhihuishu.com, Chaoxing Platform: https://hncu.mh.chaoxing.com. These platforms consolidate diverse course materials for the Civil Engineering program, including course introductions, background information, lecture content, syllabi, exercises, and more, providing comprehensive learning guidance. Students can not only access course-related resources but also engage in real-time communication with instructors, enabling learning anytime and anywhere, free from the time and space constraints of traditional classrooms. Additionally, students can adjust their learning pace—revisiting challenging sections or skimming mastered topics—to cater to diverse learning needs. The platforms also support live discussions, Q&A sessions, and interactive livestreams, allowing students to promptly resolve academic queries with teachers or peers.

3.2.7 Internal Major Transfer

At Hunan City University, in order to fully embody the student-centered educational philosophy and further stimulate students' learning enthusiasm and initiative, the university promotes students' comprehensive and individualized development. Based on a thorough consideration of HNCU's and college's existing teaching resources and conditions, maximum convenience is provided for students wishing to transfer majors. The *Management Measures for the Transfer of Majors by Full-time Regular Undergraduate Students at Hunan City University***.** The major transfer process follows the principles of procedural standards, fairness, and merit-based adjustments, mainly targeting first-year undergraduate students. Students are allowed to transfer majors only once during their time at HNCU. Once the major transfer application is approved by HNCU, it cannot be changed again.

For special cases such as students returning after military service or entrepreneurship, or students whose original major has been discontinued during a leave of absence, the application for a major transfer will follow higher-level policies. After approval from both the originating and target colleges, the Academic Affairs Office will review the application, and it will be finalized by the university leadership responsible for undergraduate education.

3.3 Funds and equipment

3.3.1 Laboratories

The institution hosts multiple national and provincial-level platforms, including the National Experimental Teaching Demonstration Center for Civil Engineering. The National Experimental Teaching Demonstration Center for Civil Engineering (Hunan City University) was officially approved in 2015. The center occupies a total floor area of approximately 18,000 square meters and

is equipped with over 9,800 sets of instruments and devices, with a total asset value exceeding 48 million RMB. The demonstration center consists of seven specialized laboratories, including: building engineering laboratory, structural engineering laboratory, geotechnical engineering laboratory, safety and transportation engineering laboratory, water supply and drainage engineering laboratory, building environment and equipment engineering laboratory, surveying and mapping practice teaching center. These laboratories support 18 academic programs, including Civil Engineering and Water Supply and Drainage Science and Engineering, catering to fundamental experimental training for students, faculty research experiments, and open-access experiments for both internal and external users. Annually, the center facilitates over 40 experimental courses, 283,000 student-experiment hours, and more than 150 experimental projects. A detailed introduction to the major laboratories is provided in **Appendix 3-11**.

3.3.2 Discipline Research Platform

1. Civil Engineering

The college possesses over 20 national and provincial teaching and research platforms, such as the National Experimental Teaching Demonstration Center for Civil Engineering, Hunan Provincial Engineering Research Center for Research and Application of Lightweight Aggregate Concrete Technology, Hunan Provincial Research Base for Industry-Education Integrated Applied Talent Training, Hunan Provincial Innovation Training Center for Civil Engineering Students, Hunan Provincial University-Enterprise Cooperative Talent Training Demonstration Base for Civil Engineering. Additionally, the college has been recognized with Hunan Provincial “Double First-Class” Applied Discipline in Civil Engineering and National First-Class Undergraduate Program Construction Site for Civil Engineering. Furthermore, the Master’s Program in Civil Engineering and Hydraulic Engineering began enrolling students in 2023.

2. Water Supply and Drainage Science and Engineering

The college hosts five provincial-level teaching and research platforms, including Hunan Provincial Engineering Research Center for Rural Drinking Water Quality Safety Assurance, Hunan Provincial Virtual Simulation Laboratory for Surveying and Mapping Engineering, Hunan Provincial Practice Teaching Demonstration Center for Surveying and Mapping Engineering, Hunan Provincial University-Industry-Research Cooperation Demonstration Base, Hunan Provincial University Innovation and Entrepreneurship Base. Additionally, the program has been designated as: Hunan Provincial “First-Class Program” Construction Site for Water Supply and Drainage Science and Engineering and Hunan Provincial “13th Five-Year Plan” Comprehensive Reform Pilot Program. Moreover, the approved Professional Master’s Degree Program in Resources and Environment is set to begin student enrollment in 2025.

3.3.3 International Exchange and Collaboration Platform

HNCU adheres to an open schooling strategy and has achieved significant results in international collaboration and exchanges. It has established close partnerships with universities in Singapore, Australia, Ghana, New Zealand, Malaysia, the United States, Macau, and other countries and regions. It collaborates with New Zealand's Whitireia Polytechnic in the field of Visual Communication Design and cooperates with the University of Cape Coast in Ghana to host the Confucius Institute, becoming the first institution of its kind in Hunan Province. HNCU has successfully organized two sessions of the China-Africa International Academic Conference on Urban Construction, inviting representatives from over 20 universities in China and Africa, as well as more than 1,000 scholars, government officials, and international students in China, providing a comprehensive platform for deep cooperation between China and African countries. With the active promotion of HNCU, Chinese has officially been incorporated into Ghana's national education system. HNCU successfully became a member of the Ministry of Education's "China-Africa University Alliance Mechanism." Since 2023, HNCU has vigorously advanced international cooperative education with universities in South America and Central America.

In recent years, the College of Civil Engineering has placed great emphasis on implementing the "Internationalized Education" strategy, focusing on global academic frontiers and strengthening international cooperation. The College has established cooperative educational programs with renowned universities in the United States, Australia, and other countries, sending more than 10 faculty members to visit international universities for academic exchanges, and more than 10 students to participate in international exchange programs. The number of students involved in international cooperation and exchange has been increasing year by year. The cultivation of students' international perspectives and innovation abilities has achieved significant results, laying a solid foundation for further international collaboration.

In order to assist students who are not fluent in Chinese to study in the Civil Engineering major, the College will further improve the English-speaking abilities of its faculty and offer more bilingual courses. The College strengthens Chinese language training for students applying to study in China, helping them adapt quickly to campus life and the academic environment at Hunan City University. International cooperation projects and conferences held by the College and this program in recent years can be found in **Appendix 3-12**.

3.3.4 Corporate Practice Platform

1. Civil Engineering

The program has more than 100 off-campus internship and practical teaching bases. The main internship and practical teaching bases are listed in **Appendix 3-13**, providing excellent opportunities for practical experience. Both the university and the enterprises jointly develop internship teaching

outlines, compile internship guides, and establish corresponding support measures according to the talent training goals and curriculum requirements. Each base is equipped with a stable enterprise internship supervisor who works alongside the university instructors to guide and manage the students' internship activities. University supervisors are responsible for clearly outlining the internship content, tasks, schedules, and management regulations to the students. Enterprise supervisors, based on university requirements and enterprise operational realities, ensure the education on safety production, company rules, confidentiality systems, and other necessary topics. These off-campus practice bases meet the needs of civil engineering students for professional internships and graduation internships. The program annually accommodates approximately 300 students, allowing them to receive ample engineering practice and training, improving their ability to handle real-world problems and achieving the teaching goal of enhancing overall competencies.

In addition, the College advances deep integration of industry-university cooperation and practical-education integration by capitalizing on school-run enterprises such as the Planning and Architectural Design Research Institute, Testing Center, and Supervision Company. It strengthens students' professional internships and practical training programs by cooperating with China State Construction Railway Investment Engineering Group Co., Ltd., and the China Railway Beijing Bureau for order-based talent cultivation. The enterprises deeply participate in the talent training plan, teaching outline, course design, and textbook compilation, and also provide tuition, accommodation, and scholarships for students in their tailored classes.

2. Water Supply and Drainage Science and Engineering

The Water Supply and Drainage Science and Engineering program successfully passed the Ministry of Housing and Urban-Rural Development (MOHURD) professional accreditation review in May 2024. The program places great emphasis on the three-dimensional development model of industry-academia-research collaboration and has established strong cooperative relationships with numerous enterprises, aligning with its professional characteristics. Several undergraduate practical teaching bases have been established through signed agreements, providing students with valuable internship opportunities. During internships, enterprise technical leaders deliver lectures on relevant technological knowledge to meet educational requirements for observational internships, productive internships, graduation internships, and graduation project (comprehensive training), effectively promoting the achievement of the program's educational objectives. Currently, there are 12 off-campus internship and practice teaching bases for this program (**Appendix 3-14**), cooperation agreements or certificates provided in **Appendix 3-15.**

3.3.5 Teaching and Office Facilities

This program's main teaching venues consist of three types: HNCU's teaching buildings, the engineering training center, and the College of Civil Engineering's practice (laboratory) center.

The total area of classroom spaces is 96,700 m²(518 classrooms); laboratory and internship areas cover 85,500 m²; sports facilities span 66,500 m²; including one sports training hall, two standard athletics tracks, two standard soccer fields, 24 basketball courts, six tennis courts, and six gymnastics equipment areas. The arts venue area is 23,200 m². The construction of the Industry-Education Integration Building, Sports Teaching Center, and other facilities has begun, adding a total of 67,400 m²of new construction area. HNCU has also acquired 1,100 acres of land on the west side for future development.

As of October 2024, HNCU has successfully built 96 high-quality recording studios, smart classrooms, observation rooms, and micro-lesson classrooms. Additionally, 281 classrooms are equipped with high-definition cameras with audio pickup. One intelligent teaching monitoring platform, one intelligent classroom patrol platform, and an intelligent teaching monitoring center have been established to enable real-time monitoring and online listening/viewing of classroom sessions.

The College of Civil Engineering has 58 specialized laboratories designed to meet teaching needs, external communication and collaboration, and faculty requirements for public and office spaces. Additionally, the College is equipped with several medium- and small-sized meeting rooms for hosting visiting scholar seminars and academic presentations. The industrial design program's laboratory is available for students to engage in independent academic research and experimental studies.

3.3.6 Accessibility Features

All offices, teaching areas, laboratories, lecture halls, and libraries on campus are fully covered by wireless networks. Computers in the computing center are updated annually according to actual needs to meet development requirements. Network and virtual reality technology facilitate the remote operation of high-end computer-assisted devices.

All newly constructed laboratories, classrooms, office buildings, etc., are equipped with accessibility features, ensuring students with disabilities can easily access these teaching facilities.

In summary, to meet the needs of educational informatization, HNCU has comprehensively built a secure, efficient, scalable, and open information infrastructure on campus. Wireless network coverage is fully extended across public areas, and network-based administrative office operations, teaching informatization management, resource sharing, and accessibility features have been implemented, meeting the learning needs of students, the teaching needs of faculty, and the research needs of academic staff.

3.3.7 Teaching Investment in the Last Five Years

The Civil Engineering major has adequate teaching funds, allocated for basic undergraduate teaching operations, teaching construction, student innovation practice activities, and teaching reform project funding, with an annual increase in the teaching budget to ensure the normal conduct of

teaching activities. Over the past five years, the program has invested over 5 million yuan in teaching funds, with 10.7 million yuan spent on laboratory construction. Detailed information on the program's teaching expenditure in the last five years can be found in **Appendix 3-16.**

The teaching funds for the major of Water Supply and Drainage Science and Engineering are sufficient and guaranteed. The funding for undergraduate teaching basic business expenses, teaching construction, students' innovative practice activities, and teaching reform projects has increased year by year, and there are sufficient teaching funds to ensure normal teaching activities. In the past five years, professional teaching funds have been invested 7.6602 million yuan, laboratory construction has been invested 5.023 million yuan, daily teaching and curriculum construction have been invested 336,500 yuan, and college students' innovation projects and subject competitions have been invested 990,300 yuan. Detailed information on the program's teaching funding investments and expenditures in the past five years is provided in **Appendix 3-17.**

4 Transparency and Documentation

4.1 Description of the civil engineering module

According to the course objectives, the Civil Engineering program divides the entire curriculum into ten modules, while the Water Supply and Drainage Science and Engineering program divides it into six modules. The course modules are listed in Table 4.1. Each module has corresponding courses. The final revision of the training program was made in June 2021; for specific details, see **Appendixs 1-1 and 1-2**. Information on workload credits, teaching methods, admission procedures, examination requirements, and descriptions of all modules is posted on the internal website (https://tmgc.hncu.edu.cn/ASIINrz/Civil_Engineering/pymb_Objectives.htm) for direct access.

Table 4-1 Modules of Civil Engineering Courses

Module number	module	Module head
1	Mathematical physics	Chen Shubo
2	Information technology	Jiang Dongchu
3	Engineering foundation	He Ye
4	Professional foundation	Cao Guohui
5	Professional applications	Tang Huang
6	Professional practice	He Ran
7	Professional development category	Liu Jing

Module number	module	Module head
8	Comprehensive application class	Mao Guangxiang
9	Foreign Languages	Fu Jianan
10	Humanities and social sciences	He Junxin

4.2 Description of water supply and drainage science and engineering module

According to the objectives of the course, the whole course system is divided into six modules, shown in Table 4.2. Each field has a corresponding curriculum. The final revision of the culture protocol is in June 2021, and see **Appendix 1-2** for details. Details of workload credits, teaching methods, admission procedures, examination requirements, and descriptions of all modules are posted on the intranet website (https://szch.hncu.edu.cn/ASIINrz/Water_Supply_and_Drainage_Science_and_Engineering/pymb_Objectives.htm) for direct access.

Table 4-2 Course modules in water supply and drainage science and engineering

Module number	module	Module head
1	General humanities and social sciences	He Junxin and Zang Yonghong
2	Mathematics and natural science	Chen Shubo
3	Professional basic class	Zhou Jun
4	Engineering basic class	Jiang Dongchu
5	Professional core category	Chi Nianping
6	Engineering practice	Xiang Xianan

4.3 Diploma and Diploma Supplement.

Appendix 4-1 provides a sample of diploma and bachelor's degree certificates for students graduating from civil Engineering and Water Supply and Drainage Science and Engineering of Hunan City University. All certificates should be valid with the official seal of Hunan City University and the signature of the principal. **Appendix 4-2** is a supplementary sample of diploma.

4.4 Relevant rules

The rights and obligations of the students will be posted on the website (https://tmgc.hncu.edu.cn/ASIINrz/Civil_Engineering/pymb_Objectives.htm_and_https://szch.hn

cu.edu.cn/ASIINrz/Water_Supply_and_Drainage_Science_and_Engineering/pymb_Objectives.htm). The Dean’s Office of Hunan City University is responsible for deciding on all relevant documents.

5 Quality Management: Quality Assessment and Development

5.1 Teaching quality evaluation

In terms of teaching quality assurance, routine teaching inspections are conducted each semester by every school and program under the unified arrangement of the university’s Academic Affairs Office. The teaching process of inspection includes: classroom theoretical teaching, practical teaching, and graduation project; The specific contents of the inspection include: evaluating textbooks, lesson plans, teaching style, learning style, test papers, teaching process, teaching status, and teaching basic materials; Conduct a course objective questionnaire for students. Putting students at the center, identifying and resolving potential issues that may arise during teaching and student learning processes.

The school adopts a feedback system for student employers and listens to their opinions. Every academic year, the professional teaching and research department will take advantage of students’ production internships and graduation internship inspections to visit enterprises on site and listen to feedback from employers on interns and graduates; Every academic year, the professional teaching and research department conducts a comprehensive questionnaire survey for fresh graduates, providing feedback on their academic performance and learning expectations over the past four years; Every two years or so, the professional teaching and research department will also take advantage of the opportunity of revising the talent training plan to organize teachers to visit production enterprises and other universities, and listen to their opinions and suggestions. Comprehensively summarize and improve the talent training plan and specific courses offered in this major. In addition, the school has introduced external supervision, such as participating in the undergraduate teaching evaluation of higher education institutions initiated by the Chinese Ministry of Education, forming a teaching quality evaluation mechanism that involves the participation of the Ministry of Education’s supervisory departments, employers, teachers, and students, and combines internal and external evaluations. Here, we define the role of the Ministry of Education and employers as external evaluation; And define the power of teachers and students, as well as the school itself, as internal evaluation. Based on the actual results, we believe that this evaluation method is effective.

The School of Civil Engineering at Hunan City University strictly follows the "*Implementation Opinions of Hunan City University on Further Strengthening the Construction of Teaching Management Team*" (see **Appendix 2-1**) to conduct qualification review of teaching staff. Teachers

need to prepare course content based on the basic norms of lesson plans and speeches. The college manages and evaluates the teaching process in accordance with relevant regulations such as the "Guidelines for Classroom Teaching Behavior of Hunan City University", "Implementation Regulations for the Student Teaching Information Officer System of Hunan City University", "Work Regulations of the Teaching Guidance Special Committee of Hunan City University", "Determination and Handling Measures for Teaching Accidents and Errors of Hunan City University", "Management Measures for Attending Classes of Hunan City University", "Calculation and Management Measures for Teaching Workload of Hunan City University", and "Implementation Measures for Undergraduate Education Quality Evaluation and Continuous Improvement of Hunan City University (Trial)". Please refer to **Appendix 2-1** for details.

The Civil Engineering major has established a complete set of process quality management and assurance measures from course objectives to graduation requirements, and then to training objectives. The first is the quality monitoring and continuous improvement of course teaching. In this process, the college teaching guidance committee reviews the teaching outline before class, the teacher’s own formative evaluation is conducted during class, and after class, there are evaluations or questionnaires from supervisors, peers, and students on the course; The second is a questionnaire targeting the graduation requirements of fresh graduates, used for continuous improvement of the curriculum system; The third is to conduct on-site visits to previous graduates and employers to conduct a comprehensive survey questionnaire on training objectives, in order to continuously improve graduation requirements and curriculum systems; The fourth aspect is to provide feedback on the comprehensive graduation requirements and training objectives, and to continuously improve issues such as laboratory and faculty based on the characteristics of the curriculum system and each course. The process is shown in Figure 5.1, and the specific document system can be found in **Appendix 5-1.**

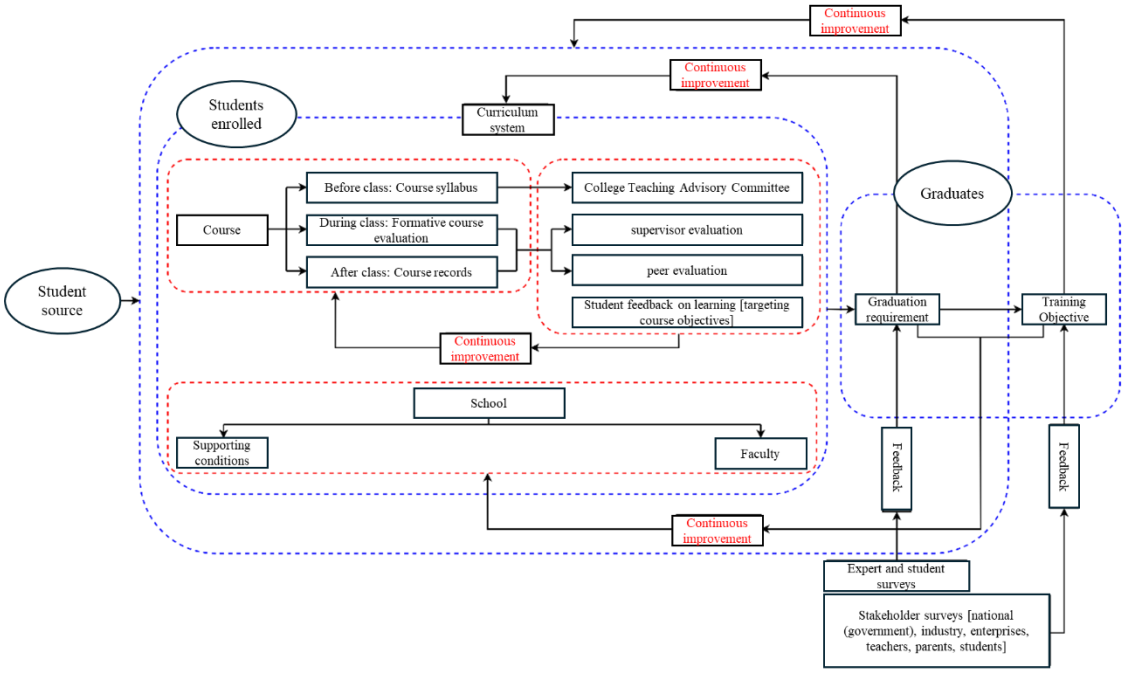

Figure 5.1 Quality Monitoring and Continuous Improvement Process Diagram

The school's academic affairs office regularly conducts teaching evaluations for each course to understand the basic performance of teachers in various aspects of the teaching process, including peer evaluation, student evaluation, and supervisory evaluation (i.e. tripartite evaluation) for each course. Please refer to **Appendix 5-2** for details. The subject of student evaluation is all students, the subject of peer evaluation is teachers, and the subject of supervision and evaluation is a team of experts.

Peer evaluation is an important part of teachers' mutual communication, learning, and evaluation of teaching quality. It requires all teachers to participate, and all undergraduate course teachers must accept peer evaluation.

Supervision and evaluation of teaching are conducted by a teaching supervision team (experts or senior teachers) with the aim of identifying problems and providing improvement suggestions from a professional perspective. The supervision team of the School of Civil Engineering at Hunan City University has improved the quality of teaching through special inspections such as "course inspections, teaching file checks, and classroom evaluations". Supervision and inspection cover the professional theoretical and practical courses of each teacher, and evaluate them from multiple dimensions such as teaching organization, interaction, and effectiveness. Supervisors need to fill out standardized evaluation forms and form written reports for feedback to teachers and colleges. Supervisors not only focus on "supervision" but also on "guidance", providing teaching improvement suggestions for young teachers.

Student teaching quality evaluation is an important component of the teaching evaluation system. Every student must submit the "Teacher Teaching Quality Evaluation Form" and "Course

Questionnaire Form" online after the end of each semester, otherwise their grades cannot be viewed. The teaching suggestions listed in the evaluation form will be analyzed and used to improve teaching methods. Student evaluation is also used to assess the teaching effectiveness of teachers and is linked to their work performance. The course objective questionnaire reflecting the teaching situation is detailed in **Appendix 5-3**.

5.2 Feedback Channels

Through surveys of graduates, industry companies, focus group discussions, site visits, and third-party evaluations, continuous improvements are made in various aspects of the program, including the training objectives, graduation requirements, course structure, and teaching activities. A graduate tracking feedback mechanism and a social evaluation system have been established. Every 2-4 years, the achievement of the training objectives is analyzed through regular assessments.

(1) Graduate Tracking and Feedback Mechanism

1) Responsible Institution: The Admissions and Employment Office of the university formulates the social evaluation mechanism based on the overall development needs of the university. The graduate tracking survey work is organized by the department head, and is implemented through surveys, visits, and other forms of communication. The collected materials are then summarized and analyzed.

2) Work Cycle: Once per year.

3) Target Group:

① Students who graduated 1-5 years ago: The survey coverage should reach at least 50% of the graduating class for that year.

② Students who graduated more than 5 years ago: Representative survey subjects should be selected, taking into account differences in geographic location, types of companies, job roles, etc.

4) Method: The survey is conducted through interviews, focus groups, online platforms, mail, telephone, and other methods, or through alumni meetings, campus visits, and other opportunities to hold alumni discussion sessions.

5) Information Collected: The survey covers analyses of graduates' qualifications during their studies, career choices, evaluations of current jobs and positions, and assessments of how their education has influenced their career development.

(2) Graduate Social Evaluation Mechanism

1) Responsible Department: The university's Admissions and Employment Office develops the social evaluation mechanism according to the university's overall development needs. The graduate tracking survey is organized by the department head and is specifically implemented through surveys, visits, and discussions, with relevant data being compiled and analyzed.

2) Evaluation Cycle: The survey is conducted once every 2-4 years, while visits and discussions are carried out on an irregular basis.

3) Evaluation Methods: Employer surveys, employer focus groups, recruitment company discussions, and industry expert focus groups.

See **Appendix 5-4** for relevant questionnaire samples.

5.3 Further Development and Continuous Improvement

To meet the demands of the job market and technological development, the College of Civil Engineering at Hunan City University places high importance on the continuous development of the program. The college continually explores innovation and has introduced a series of supporting management systems to meet the rapidly changing needs of the industry. To this end, Hunan City University has established a dedicated graduate tracking information system aimed at collecting and analyzing feedback from graduates to understand their performance and development in the workplace. Additionally, the college organizes graduate forums every year during the university's anniversary celebrations, providing a platform for communication with alumni, facilitating the continuous improvement of the curriculum, and enhancing teaching quality.

Considering the potential language barriers faced by some students, the college will further enhance the bilingual teaching abilities of professional faculty, increase the number of bilingual courses, and strengthen Chinese language training for students coming to study in China. This will help them quickly adapt to campus life and the learning environment at Hunan City University, ensuring that every student receives a high-quality educational experience.

5.4 Effects Achieved After Implementing Quality Assurance Measures

(1) Improvement in Graduate Competency Development

Through the continuous improvement of the training objectives, graduation requirements, curriculum structure, and course goals, the graduation competencies of the students in this program have been strengthened, and the quality of talent cultivation has improved. The graduates have enhanced their ability to apply relevant background knowledge of water supply and drainage engineering to propose reasonable solutions, considering their impact on society, health, safety, law, and culture, and taking on corresponding social responsibilities.

(2) Improvement in Graduate Employment Quality

Through continuous improvement, graduates from this program not only possess a solid theoretical foundation and rich practical experience, but also embody a spirit of unity, friendship, collaboration, and innovation. This enables them to have a broad range of career options and a high employment rate. In recent years, the proportion of graduates entering well-known enterprises has gradually increased, including central state-owned and large enterprises such as Shenzhen Planning

and Design Institute, Beijing Municipal Engineering Design and Research Institute Co., Ltd. (Hunan Branch), Changsha Water Industry Group Co., Ltd., China Communications Third Highway Engineering Bureau, China Railway No. 25 Bureau, China State Construction Engineering Corporation (CSCEC) No. 8 Bureau, and China Hydroelectric Engineering Bureau No. 8.

(3) High Overall Quality and Broad Development Prospects of Graduates

Employers generally report that graduates of this program have a solid foundation in both basic and professional knowledge, demonstrate a rigorous and serious work ethic, and possess strong hands-on and practical skills, enabling them to perform well in technical roles related to their field. After five years, many graduates have become technical backbones or engineering managers. Students exhibit strong self-learning abilities and an awareness of lifelong learning, allowing them to follow industry developments, acquire new professional knowledge, and obtain certifications such as Registered Public Equipment Engineer. In addition, graduates have developed certain project management skills and have been exposed to areas such as extra large bridge construction, sponge city construction and the treatment of black and odorous water bodies through elective courses. As a result, their job prospects are broad, and they enjoy strong employment competitiveness.