



**Objective Matrix**

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

| Training Objectives  | Anticipated Learning Outcomes of the Entire Course  | Corresponding Courses  |
|--|---|--|
| <p>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.</p> | <p><b>Knowledge:</b> 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.</p> <p><b>Skills:</b> 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.</p> <p><b>Abilities:</b> 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.</p> | <p>Courses 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 (1), College English (2), Extended College English Series (1), Extended College English Series (2), Practical Writing, College Student Psychological Health Education, College Student Career Development and Employment Guidance (1), College Student Career Development and Employment Guidance (2), Basics of Innovation and Entrepreneurship, College Military Theory, College Sports and Health (1), College Sports and Health (2), College Sports and Health (3), College Sports and Health (4), Arts and Physical Education, Humanities and Social Sciences, Innovation and Entrepreneurship, Freshman Orientation and Military Training, Public Welfare Labor, Social Practice and Volunteer Services.</p> |
| <p>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.</p>                                       | <p><b>Skills:</b> 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.</p> <p><b>Ability:</b> Capable of observing, analyzing, and solving technical problems</p>  | <p>Courses include Advanced Mathematics A (1), Advanced Mathematics A (2), Linear Algebra, Probability and Mathematical Statistics, College Physics A (1), College Physics A (2), College Physics Laboratory, General Chemistry, Organic Chemistry, Physical Chemistry.</p>  |



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.

**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.

**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

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.

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

Courses include Introduction to Water Supply and Drainage Science and Engineering, Hydraulics, Water Chemistry Analysis, Hydrology and Hydrogeology, Water Treatment Biology, Basics of AutoCAD, Computer Applications in Water Supply and Drainage Engineering (including BIM Technology), and Professional English.

Courses include Basic Computer Science for College Students, Computer Programming (C Language), Engineering Drawing, Electrical Engineering, Engineering Mechanics, Civil Engineering Fundamentals, Water Engineering Economics and Budgeting, Engineering Geomatics, and Engineering Project Management.



reasonably select modern tools for complex engineering problems; understand the basic methods for developing engineering techniques and modern engineering tools.

**Ability:** Consider the impacts of social, health, safety, legal, cultural, and environmental factors on solutions, and possess a certain level of innovative thinking.

**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.

**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

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.

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

Courses include Pumps and Pumping Stations, Water Quality Engineering Experiments, 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 Process Equipment Basics, Water Supply and Drainage Engineering Instrumentation and Control, Interpretation and Application of Water Supply and Drainage Design Standards, Water Engineering Operation and Intelligent Management.

Courses include Electrical and Electronic Engineering Practical Training A, Geomatics Internship, Familiarization Internship, Pump and Pump Station Course Design, Building Water Supply and Drainage Course Design, Water Supply Network Course Design, Drainage Network Course Design, Water Treatment



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.

Course Design (including practical training at a water treatment plant), Wastewater Treatment Course Design (including practical training at a wastewater treatment plant), Water Engineering Economics and Preliminary Budget Course Design, Production Internship, Metalworking Internship, Graduation Internship, Comprehensive Graduation Training, Graduation Education.