Nantong Vocational University

Africa Institute of Innovation Technology

(Namibia Zheng He College)

Construction Engineering Technology Curriculum

(2025)

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Table of Contents

1 Major name and major code

Construction Engineering Technology (440301)

2 Admission Requirements

Meet one of the following two conditions:

(a) Applicants should have Grade 12 /NSSCH/NSSCO/NSSCAS or equivalent qualifications, with a minimum of 22 points in the best five subjects (including English with a D symbol), minimum D symbols in Physics Science and Mathematics, and good symbols in any other two subjects.

(b) Applicants should have relevant learning, that is, work experience and certificate in relevant fields.

3 Basic years of study

The basic duration of study is three years of full-time study. The program implements a credit system and a flexible academic system, allowing for reasonable and flexible study time arrangement based on students' flexible learning needs, with a maximum duration of no more than six years.

4 Groups of logic and career orientation

4.1 Group Logic

a. Correspondence with the industry (chain)

Modern building industrialization is moving towards greenness, industrialization and intelligence. Prefabricated construction technology, intelligent integration technology, Internet of Things application technology, etc. are the key technologies of modern building industrialization. This professional group focuses on job clusters such as architectural design, construction, smart home, consulting services, and project information management, providing high-quality technical and skilled talent support for the urgently needed and high-end industries of the industry.

b. Positioning of talent cultivation

Technical and skilled: having ideals and beliefs, professional ethics and the spirit of craftsmanship; Master the process knowledge of modern building construction and the necessary mathematical and theoretical knowledge; Have a sense of safety,

environmental protection and quality; Undergo necessary (must) workplace training.

Compound innovation: Proficient in design, skilled in construction, capable of budgeting, and adept at management; Have the ability to use new technologies such as BIM and Internet of Things to solve practical engineering problems, as well as the ability to think independently, communicate and collaborate, collect information, reflect on oneself and engage in lifelong learning.

International perspective: Familiar with international engineering construction laws and regulations, model contract texts of FIDIC (Federation Internationale Des Ingenieurs -Conseils) and international practices; Have overseas exchange, study and internship experience.

c. Professional logic within the group

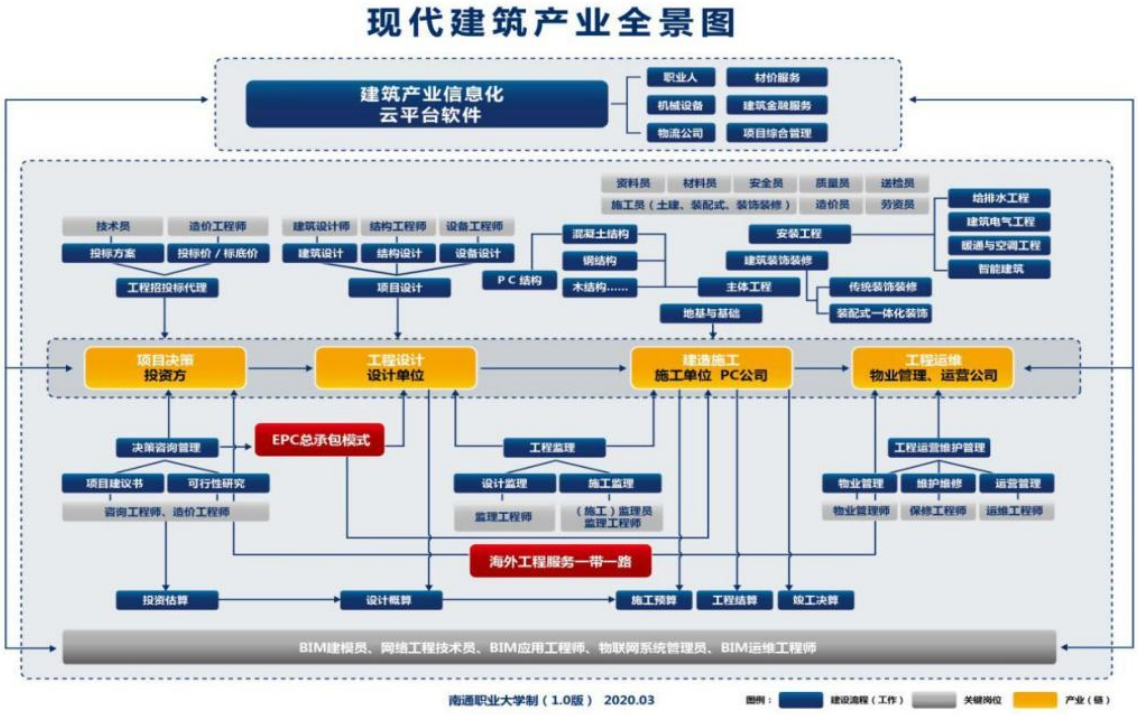

Figure 1 Panorama of the modern construction industry

Based on the panorama of the construction industry chain and the analysis of the alignment degree of professional positions in the group, with the aim of cultivating the "three types" of talents needed for the high-end industry and the high-end of the industry, in accordance with the principle of "relevant positions, similar technologies, and interconnected foundations", the method of integrating professional positions is adopted. The engineering cost, Internet of Things application technology, architectural

engineering technology, interior art design, and architectural engineering management are organically integrated to form three job group specialties: architectural engineering design, intelligent construction, and engineering consulting, and based on the analysis of professional job capabilities, Reconstruct the modular professional curriculum system of "competency-based, practice-oriented, '1+X' integration, and job group curriculum integration" to form the professional group of architectural engineering technology.

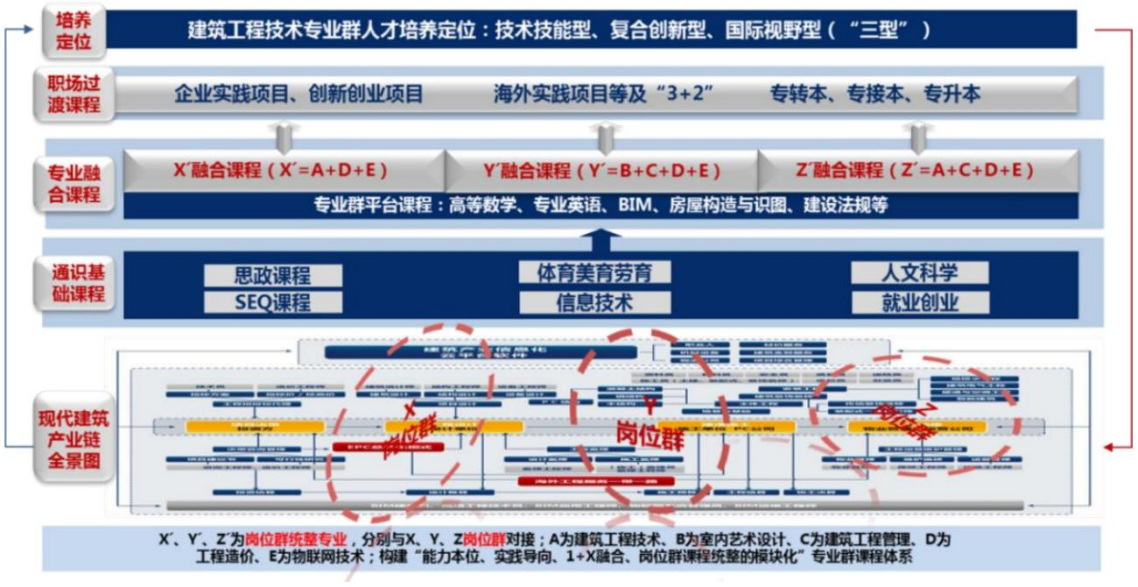

Figure 2 Logical architecture diagram of the Architectural Engineering Technology professional group

The construction of the professional group is based on technologies such as BIM and the Internet of Things, integrating architecture with art and construction technology with Internet of Things application technology. It will add majors such as architectural design intelligent engineering technology, construction project information management, architectural engineering technology (prefabricated building direction), and construction project management (architectural accounting and investment audit direction). To serve the modern construction engineering industry chain, the mapping relationship between professional clusters and job clusters is clarified (Figure 2).

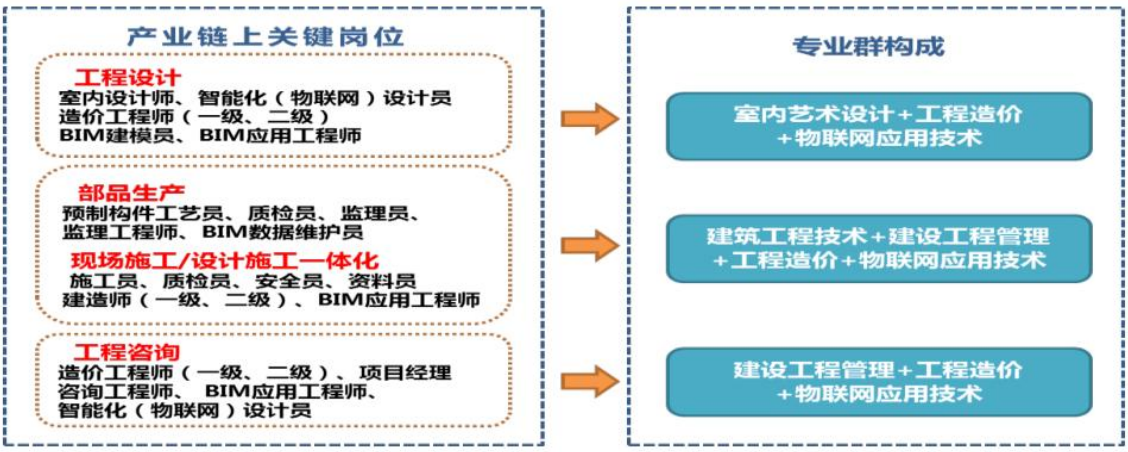

Figure 3 Correspondence between professional clusters and key positions in the industry (chain)

4.2 Career Orientation

Table 1 Overview of career Orientations of this major

Major Category to which it belongs (Code)	Category of Major (Code)	Corresponding industry (Code)	Main occupational categories (Code)	Major Job Categories (Technical field) Examples	Vocational qualification (vocational skill level) Examples of certificates
Civil Engineering and Architecture (44)	Civil construction (4403)	Civil engineering construction (48) House Construction (47)	Engineering technicians (2-02-18-02)	Construction engineering technicians, management engineering technicians	1. Building Information Modeling (BIM) Vocational Skill Level certificate, issued by Langfang Zhongke Building Industrialization Innovation Research Center. 2. Vocational Skill Level Certificate for Fabrication and Installation of Prefabricated Building Components, issued by Langfang Zhongke Building Industrialization Innovation Research Center. 3. Vocational Skill Level certificate for reading construction engineering drawings, issued by Guangzhou ZWsoft Co., LTD.

					4. Certificate of Quality Inspector for Prefabricated Components, issued by Shanghai Association for Engineering Construction Quality Management.

5 Training objectives and training specifications

5.1 Training Objectives

This major aims to cultivate students who can uphold the Constitution and laws of the country, practice the core values of the country, carry forward the skills and civilization, develop their professional qualities and skills comprehensively, have a certain level of scientific and cultural knowledge, good humanistic qualities, scientific literacy, digital literacy, professional ethics, innovative consciousness, professional dedication and the spirit of craftsmanship that strives for excellence. Strong employment and entrepreneurship capabilities and sustainable development capabilities, oriented towards occupations such as construction engineering technicians and management engineering technicians in the housing construction industry, master solid scientific and cultural foundations and knowledge such as architectural drawing, building materials, building mechanics, building construction, building structure, engineering surveying, engineering geotechnical, etc. A highly skilled talent with professional skills in on-site engineering technology and information management in civil engineering, capable of working in construction technology and construction management.

5.2 Training Specifications

a. Quality Requirements

（1）Firmly uphold the Constitution and laws of the country, and have a deep sense of patriotism and national identity;

（2）Master the national laws and industry regulations related to the professional activities of this major, master the knowledge and skills related to green production, environmental protection, safety protection, quality management, etc., understand the relevant industry culture, have a professional spirit of love for the job, abide by the

code of ethics and behavioral norms, have a sense of social responsibility and commitment;

（3）Quality awareness, environmental awareness, safety awareness, information literacy, craftsmanship spirit, and innovative thinking;

（4）Safety first, quality first, energy conservation and emission reduction awareness;

（5）Be courageous and optimistic, have self-management ability, career planning awareness, strong sense of collectivism and teamwork spirit;

（6）Have a healthy body, mind and sound personality, master basic sports knowledge and 1-2 sports skills, develop good fitness and hygiene habits, as well as good behavioral habits;

（7）Master the necessary knowledge of aesthetic education, have a certain level of cultural refinement and aesthetic ability, and develop at least one artistic specialty or hobby;

（8）Establish a correct view of labor, respect labor, love labor, possess labor qualities commensurate with the professional development, promote the spirit of labor, the spirit of craftsmanship, and promote the contemporary trend that labor is glorious, skills are valuable, and creation is great.

b. Knowledge requirements

（1）Master essential ideological and political theories, basic knowledge of science and culture, and knowledge of fine traditional Chinese culture;

（2）Be familiar with laws and regulations related to this major, as well as knowledge of environmental protection, safety and fire protection, etc.

（3）Master the basic cultural knowledge such as English, mathematics, a foreign language (e.g. Chinese) and information technology necessary to support the study of this major and sustainable development, and have good humanistic and scientific literacy;

（4）Master the professional basic knowledge such as architectural drawing, architectural mechanics, building materials, and construction regulations;

（5）Master the professional theoretical knowledge of building construction, building structure, engineering surveying, construction technology, construction

organization, engineering quality and safety management, engineering measurement and valuation, etc.

（6）Master the basic theoretical knowledge of engineering geology;

（7）Master the basic theoretical knowledge of building information modeling technology;

（8）Master professional knowledge such as construction technology and progress management of building engineering;

（9）Master professional knowledge such as quality management and safety management;

（10）Master professional knowledge such as cost control;

（11）Master technical data management, etc.

（12）Master the basic knowledge of information technology;

（13）Be familiar with building equipment such as water, electricity and heating, as well as related knowledge of smart buildings.

c. Competency requirements

（1）Have the ability to engage in inquiry-based learning, lifelong learning and sustainable development, as well as the ability to integrate knowledge and apply it comprehensively to analyze and solve problems;

（2）Have a certain level of innovation ability to adapt to the digital transformation and upgrading of the construction industry;

（3）Have good language and writing skills, as well as communication and cooperation skills;

（4）Have a strong sense of collectivism and teamwork, learn one foreign language and apply it in combination with the major;

（5）Have the ability to read construction drawings of buildings and draw completion drawings of civil engineering;

（6）Have the ability to conduct on-site acceptance, storage, testing and application of common building materials;

（7）Have the ability to measure, set out and check the technical aspects of construction;

（8）Have the ability to analyze and calculate the internal forces of building

structural components;

（9）Have the ability to calculate general construction projects, judge and analyze general structural problems in construction, and handle general technical problems in construction;

（10）Have the ability to read geotechnical investigation reports;

（11）Have the ability to prepare construction plans for sub-projects and sub-items of construction projects, participate in the preparation of construction organization design and construction schedule control for general unit projects;

（12）Have the ability to inspect and monitor the quality and safety of construction projects;

（13）Have the ability to control and manage the construction process on site, and to organize and coordinate;

（14）Have the ability to deal with emergencies on the construction site;

（15）Have the ability to prepare bill of quantities quotations for construction projects, participate in construction cost control, final settlement and project bidding;

（16）Have the ability to prepare, collect, organize, keep and transfer construction project data;

（17）Have BIM modeling skills and BIM application skills, and be able to use BIM and other information technologies, computers and related software to complete job tasks;

（18）Possess digital skills to adapt to the digital and intelligent development needs of this industry。

6 Analysis of job tasks and professional capabilities

Table 2 Analysis of Job Tasks and professional Competencies

Main positions	Work tasks	Professional competence
A Construction worker	A1 Construction organization planning	A1-1 Be able to read construction drawings and other engineering design, construction and other documents A1-2 Is capable of preparing construction organization designs and special construction plans A1-3 Be able to conduct drawing review, technical verification and technical briefing
	A2 Construction technology management	A2-1 Be able to use measuring instruments correctly and have the ability to conduct construction measurements A2-2 Can divide construction sections and determine the sequence

		of construction A2-3 Is capable of dynamic management of the construction plan layout A2-4 Can prepare relevant engineering and technical documents A2-5 Can use professional software to process engineering information data
	A3 Schedule, cost and quality control	A3-1 Be able to calculate quantities and have a preliminary ability to price projects A3-2 Determine the costs of construction projects reasonably A3-3 Is capable of formulating construction schedule plans and resource demand plans A3-4 Is capable of conducting pre-control of quality, environment and occupational health and safety A3-5 Can identify, analyze and handle construction quality defects and hazard sources
B Quality inspector	B1 material quality control	B1-1 The ability to evaluate the quality of B1-1 materials and equipment B1-2 Be able to judge the results of construction tests B1-3 Can verify the quality assurance data of incoming materials and equipment, and supervise the sampling and re-inspection of incoming materials B1-4 Can supervise and track construction tests and review the conformity of measuring instruments
	B2 Process quality control	B2-1 Can determine the construction quality control points B2-2 Can write quality control documents such as quality control measures and implement them B2-3 Be able to develop process quality control measures
	B3 Handling of quality issues	B3-1 Engineering quality inspection, acceptance and evaluation capabilities B3-2 The ability to identify, analyze and handle quality defects The ability to investigate, analyze and propose handling opinions on B3-3 Quality accidents B3-4 The ability to compile, collect and organize quality data
C Safety officer	C1 Safety planning and education	C1-1 Be capable of formulating project safety production management plans C1-2 Be able to prepare emergency response plans for safety incidents C1-3 Can provide safety education to project workers
	C2 Resource and environmental safety checks	C2-1 Can conduct safety checks on construction machinery, temporary electricity, and fire protection facilities C2-2 Can judge the compliance of protective equipment and labor protection supplies C2-3 Can review the qualifications of special operation personnel
	C3 Work safety	C3-1 Is capable of formulating special construction plans for

	management	sub-projects and sub-sections with greater risks C3-2 Can prepare safety and technical briefing documents and carry out briefings C3-3 Project has the ability to manage civilized construction sites and green construction C3-4 Be capable of compiling, collecting and organizing construction safety data
	C4 Accident Handling	C4-1 Can identify hazard sources at the construction site C4-2 Can handle safety hazards and violations of work regulations C4-3 Can handle safety incidents and conduct investigations and analyses

7 Analysis of professional core courses design

Table 3 Analysis of Professional Core Courses design

Names of professional core courses	Corresponding task number	Corresponding occupational ability number
Construction technology	A2, B2, C2, C3, C4	A2-2, A2-3, B2-1, B2-3, C2-1, C2-2, C3-1, C3-2, C3-1, C3-2, C4-1, C4-2, C4-1, C4-2,
Building structures	A1, A3, B2, C1, C3	A1-1, A1-2, A1-3, A3-3, A3-4, B2-2, B2-3, C1-1, C1-2, C3-3
Construction project management	A3, B1, B3, C1, C2, C4	A3-5, B1-1, B1-2, B1-3, B1-4, B3-1, B3-2, B3-3, C1-1, C1-2, C1-3, C4-2
Measurement and valuation of construction works	A3	A3-1, A3-2
Building construction	A1, A2, A3, B2, C3, C4	A1-3, A2-3, A2-4, A2-5, A3-1, A3-3, A3-5, B2-2, C3-2, C3-3, C4-1
Building Mechanics	A1、A2	A1-1、A1-3、A2-4

8 Course Settings and requirements

8.1 Curriculum System

The curriculum system of this major (group) consists of course modules such as public basic (compulsory) courses, public basic (elective) courses, professional group platform courses, professional core courses, professional extension courses, and professional practice courses.

The curriculum system of this major is constructed as shown in the following figure.

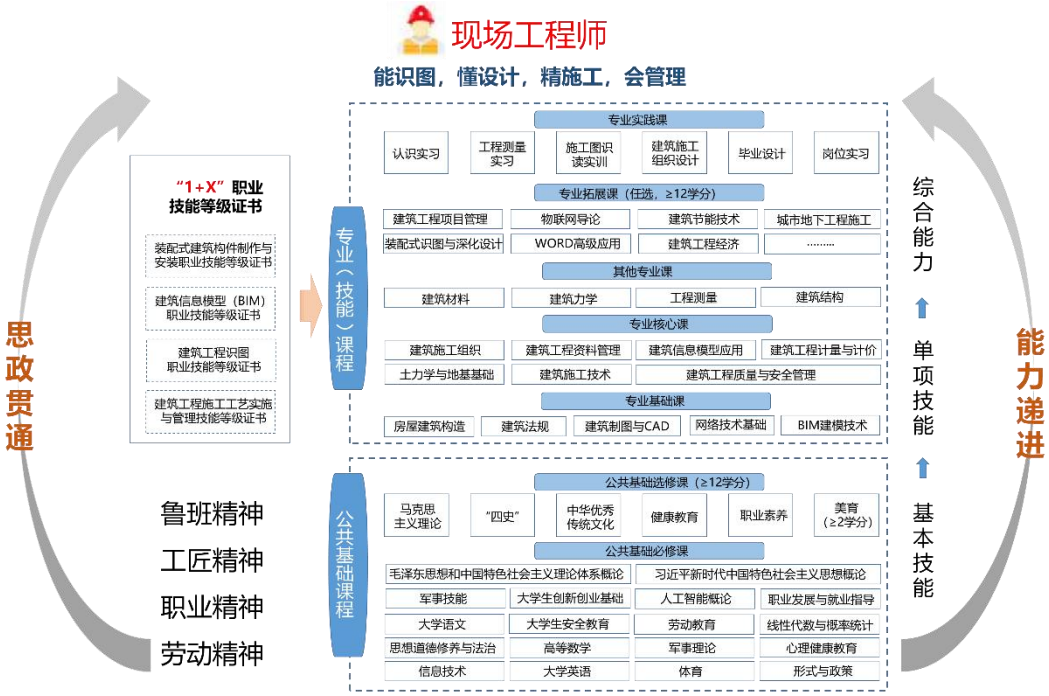

Figure 4 Architectural Engineering Technology curriculum system

8.2 Public Compulsory courses

Table 4 A list of course descriptions for the public compulsory courses of this major

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
1	Career development and employment Guidance I	The fundamental task of the course is to improve students' career selection skills and enhance their overall professional qualities, and the ultimate goal is to improve students' employment competitiveness.	Self-exploration, career exploration, career decision-making, career planning document writing.	Teach the methods and steps of self-awareness and career exploration around the goal of writing a career plan. The teaching focus is on the high alignment of personal traits (abilities, character, interests, and needs) with job requirements, and it is necessary to guide students to make rational decisions based on the results of exploration, being realistic, scientifically analyzing. Attention should be paid to instilling career planning awareness among college students throughout the teaching process.
2	Career development and employment Guidance II	The fundamental task of the course is to improve students' career selection skills and enhance their overall professional qualities, and the ultimate goal is to improve students' employment competitiveness.	Employment situation and information acquisition, resume making and interview skills, identity transformation and psychological adjustment.	Combining teaching with practice, starting from aspects such as employment situation, employment information, job-seeking psychology, resume making, and interview preparation, guide students to establish a correct career outlook and smoothly transition from students to professionals.
3	Professional cognition and career outlook education	The course, through relevant teaching, enables new students to have a deeper understanding of the major, which is conducive to the teaching of subsequent courses and the growth of students.	The development history, current situation and prospects of this major (including regional and domestic and international industrial background); Professional training objectives and core professional courses; The experimental and training rooms set up in this major, the vocational skills certificates that students may obtain through professional practice;	Course instruction is conducted through various forms such as classroom teaching, special lectures, and field visits. Enable students to have a full understanding of the school's background, the overview of the major, the curriculum, the teaching mode, technical certificates, employment and further education, etc. Let the new students understand and like their major. Help students establish correct worldviews, values and outlooks

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
			Talent cultivation model, learning methods of professional courses; Career advancement and employment pathways of this major; Major job positions and extended job positions.	on life.
4	Information technology	The objective of this course is to give students an understanding of the current state and trends of computer development, improve students' computer operation skills, and enable students to master the basic knowledge and skills of computer technology.	Basic knowledge of computers Functions and uses of the operating system; Functions and uses of word processing software; Spreadsheet software features and uses; Features and uses of PowerPoint; An initial knowledge and application of the Internet.	With text editing and typesetting, data analysis and processing, and presentation production commonly used in modern office applications as the main thread, the basic knowledge and basic functions are integrated into practical applications through case explanation teaching methods to improve students' ability to handle office affairs and efficiently process information using office software.
5	Fundamentals of Innovation and Entrepreneurship for college students	Master the basic knowledge of entrepreneurship, enhance the entrepreneurial ability of college students, stimulate their entrepreneurial enthusiasm, and cultivate their innovative spirit.	How to identify and seize entrepreneurial opportunities, form efficient entrepreneurial teams, design business models, write business plans, integrate entrepreneurial resources, and establish and manage new enterprises, etc.	The teaching content and classroom design are close to students, combining theory with practice, with practicality as the main focus, and unfolding step by step in the order of the "Ten Steps of Entrepreneurship" to enable students to complete a simulated entrepreneurship.
6	Labour Education I	1. For all students in the school, cultivate from aspects such as labor awareness, emotional attitude, ability and habit, cultivate students' correct views on labor, establish the awareness of loving labor, form the correct attitude towards labor, make students fully realize that labor is of equal value, love labor, enhance practical operation ability, cultivate students' spirit of hard work and mutual cooperation. 2. Through labor practice, students will master relevant basic skills and learn to work in a self-service manner.	Including but not limited to: a thorough cleaning of the classroom floor, walls, desks, podiums, etc. used by the class; Keep the dormitory tidy and clean, and maintain a comfortable learning and living environment, etc.	1. Basic. Through labor education, equip students with basic labor handling skills to adapt to future professional life, family life and social life. 2. Practicality. In light of the school's actual situation, create sufficient time and space to provide students with conditions for labor operations, allowing them to master knowledge and skills through practice. 3. Adaptability. When implementing labor education, choose the appropriate content and form based on the school and student conditions, pay

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		3. Cultivating students' personal qualities of caring for and cherishing the environment helps students to participate in the protection of the campus environment independently and better cultivate students' sense of ownership.		attention to adapting to the physical and psychological characteristics of students such as age, gender and personality differences, ensure the acceptability of the labor education content, and pay attention to the scientific setting of labor intensity and labor time. 4. Safety. Labor classes must ensure the safety of students. Safety education and management should be interspersed throughout the course to guide students to develop awareness of labor safety and self-protection.
7	Labor Education II	Cultivate students' self-management and labor practice abilities, and promote the formation of a distinct sense of subjectivity and a positive attitude towards life among them. 2. Cultivate students' innovative spirit, promote their ability to actively apply scientific and cultural knowledge to solve practical problems, and at the same time enhance their understanding, exploration, reflection and creation of technology. 3. Cultivate students' sense of social responsibility, promote the formation of good labor habits, and establish a correct view of labor and values.	Including but not limited to club work, community labor, volunteer service, scientific exploration, periodic cleaning of experimental and training sites, public welfare labor service, etc.	1. Establish a long-term working mechanism and standardized management process, carry out labor education and teaching activities with high standards and strict requirements, and comprehensively improve the quality of labor education. 2. Establish working groups for the implementation of labor education, clarify the responsibilities of group members, and formulate detailed plans and implementation plans for each link such as task release, qualification review, student selection, result assessment, and score registration, and implement them step by step. 3. Before the labor begins, ensure that students receive relevant theoretical education and optional tasks; during the labor process, there should be guidance teachers and safeguard measures; after the labor is completed, there should be labor experience and scientific evaluation. In view of the special characteristics of the labor education

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
				curriculum and the requirements for standardization construction, an evaluation system combining qualitative and quantitative evaluation is established to improve the reliability and comparability of the evaluation results.
8	Engineering Mathematics	This course is an essential and compulsory basic course for all engineering majors in higher vocational colleges. Through the teaching of this course, students will acquire the basic knowledge of advanced mathematics, the necessary basic theories and common operation methods, and be trained to have relatively proficient basic operation skills and certain abstract thinking, logical reasoning and spatial imagination abilities, thereby receiving the initial training to solve practical problems using mathematical analysis methods.	Coordinate system, various curve equations, trigonometric functions, conic sections, coordinate transformation calculation based on AutoCAD, precision calculation.	For application purposes, with sufficiency as the scale. On the basis of clarifying the key concepts and methods, moderately downplay the rigorous argumentation and derivation of the basic theory, and simplify complex calculations and transformations, etc. Teacher's teaching method: Linking theory with practice, interspersing mechanical manufacturing examples in the classroom, integrating the ideas and methods of mathematical modeling into classroom activities, enabling students to "use mathematical knowledge to solve practical engineering problems", and cultivating students' mathematical literacy; Combining online and offline teaching, teaching and practice, as well as in-class teaching and after-class tutoring. Student learning methods: Clear learning objectives, use teaching resources, self-study before class; Listen carefully in class, dare to ask questions, be able to summarize what has been learned, combine teaching with practice, and draw inferences by analogy.

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
9	Engineering Physics	Through the teaching of this course, students will be familiar with the basic knowledge of physics such as force, heat, light and electricity, and master the necessary basic theories and the ability to solve practical problems. Through the exploration of some specific problems in various fields, guide the study of related physics knowledge, make the profound theoretical learning easy, and inspire students' enthusiasm for observing and loving life.	Physics of sports, physics of traffic and transportation safety, physics of home life, physics of energy and communication. Many student activity columns are arranged to provide students with a wide range of activity Spaces and opportunities to showcase their talents. The content is flexible and diverse in form, and learning forms can be flexibly arranged according to the actual situation.	Combining the actual situations in life and production, the knowledge points in physics are vividly and graphically presented through projects, which are closely related to life. Teacher's teaching method: Design the classroom with curiosity as the engine, raise questions and inspire students to think. Student learning methods: Set clear learning goals and observe physical phenomena in life carefully; Listen carefully in class, dare to ask questions, be able to summarize what has been learned, combine teaching with practice, and draw inferences by analogy.
10	Physical Education I, III	1. The field of motor cognition and skills 2. The area of motor engagement 3. Physical health area 4. Mental health and social adaptation	1. Level One: Football, basketball, volleyball, Tai Chi, Boxing, badminton, table tennis, tennis, aerobics, yoga, sports dance, Mulan Quan, spinning. 2. Physical health care classes are offered for students with injuries, illnesses, disabilities, etc.	1. The learning objectives are clear. It should be both comprehensive and focused according to the characteristics of the project and the session. 2. The selection of teaching content follows the idea of "goal-driven content". 3. Teachers should choose appropriate teaching methods based on the characteristics of the teaching content, teaching objectives, and the characteristics of the students. 4. Evaluation and assessment. It includes a comprehensive assessment of students' physical education knowledge, motor skills, physical fitness, and emotional attitude.
11	Physical Education II and IV	1. The field of motor cognition and skills 2. Field of sports participation 3. Physical health area 4. Mental health and social adaptation	1. Level 2: Football, basketball, volleyball, Tai Chi, Boxing, badminton, table tennis, tennis, aerobics, yoga, sports dance, Mulan fan, spinning. 2. Physical health care classes are	1. The learning objectives are clear. It should reflect all-round education, and also be focused according to the characteristics of the project and the link. 2. The selection of teaching content follows the

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
			offered for students with injuries, illnesses, disabilities, etc.	idea of "goal-led content". 3. The selection of teaching methods and the application of teaching means. Teachers should choose appropriate teaching methods based on the characteristics of the teaching content and teaching objectives, as well as the characteristics of the students. 4. Evaluation and assessment: This includes a comprehensive evaluation of students' physical education knowledge, motor skills, physical fitness, and emotional attitude.
12	Mental health education	Mental health education courses are offered to freshmen. Through teaching, students will achieve the following goals at the knowledge, skills and self-awareness levels: At the knowledge level, students will understand the basic theories of psychology, clarify the standards and significance of mental health, understand the manifestations of common psychological problems, and master the basic knowledge of self-adjustment; At the skill level, students will acquire self-exploration skills, psychological adjustment skills and psychological development skills. Such as environmental adaptation, self-management, interpersonal communication, emotion regulation, stress management, etc. At the level of self-awareness, enable students to establish an autonomous awareness of mental health development, understand their own psychological characteristics, be able to objectively evaluate their physical condition, mental state, behavioral ability, etc., correctly recognize and accept themselves, be able to	Health and mental health; Planning college life; College student self-awareness; Shaping a sound personality; Emotion management; College interpersonal communication; Frustration and coping; Love and sexual psychology.	The course is based on the physical and psychological development characteristics of college students and is implemented through teaching and practice links such as theoretical lectures, psychological experience and perception, and cognitive behavioral training. It consists of two parts: classroom lectures and after-class practical training. Teacher's teaching methods: Teaching should embody the teaching concept of "teacher-led" and "student-centered", fully mobilize students' enthusiasm for participation, carry out classroom interactive activities, avoid one-way theoretical indoctrination and knowledge imparting, and give full play to the function of teaching in this course in cultivating and improving students' psychological quality. Student learning methods: Clarify the learning goals and requirements, and make use of teaching resources for self-study

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		self-adjust or seek help when encountering psychological problems, and actively explore a life state that suits them and ADAPTS to society.		before class. Listen carefully in class, participate actively, share sincerely; Actively participate in after-class practical activities, gain positive psychological experiences in group interactions, and externalize positive behavioral changes.
13	Comprehensive Chinese I	The core objective of this course is to develop the basic Chinese communication skills of international students, and a three-level ability system is constructed based on the HSK1 syllabus. Knowledge level: Systematic mastery of Hanyu Pinyin (initial consonants, final vowels, tone rules), proficient recognition of 150 high-frequency words (such as numbers, family members, daily items, etc.), understanding of 20 basic grammatical structures (such as "is" sentences, "has" sentences, questions, etc.). Ability level: Be able to complete simple listening and speaking interactions in daily life scenarios (greeting, shopping, asking for directions, ordering food), recognize 50 basic Chinese characters and write short sentences (such as self-introduction, shopping list). Literacy level: Through language learning, understand the basic etiquette of Chinese society (such as the use of titles, taboos at the table), and initially perceive the cultural concept of "harmonious coexistence". The course is designed to	The teaching content is designed with a dual main thread of "language skills + cultural cognition" : Phonetics and Chinese characters module: Correcting tone errors through contrastive training (such as "mā/ ma /mǎ/ ma"), and demonstrating the stroke order rules of Chinese characters (such as "日，月，人") with animation. Vocabulary and Grammar module: The teaching content is linked by themes, including "personal information (name, nationality)" "daily life (time, food)" "place activities (school, supermarket)", incorporating pragmatic rules of measure words (individual, cup, piece) and direction words (up, down, inside). Functional expression module: Design eight real-life dialogue tasks, such as "hospital registration", "traffic asking for directions", and reinforce "Excuse	Implement the "input - Internalization - output" progressive teaching strategy: Input stage: Use TPR (Whole Body Response method) and picture association method, and strengthen vocabulary memory through action instructions such as "raise your hand" and "tap the table". Internalization: Use task-based teaching methods, design activities such as "making Chinese menus" and "simulated birthday parties", and integrate numbers, food vocabulary and blessings. Output stage: Organize "Chinese corner scenario simulations" such as "Restaurant ordering error correction" and "shopping mall bargaining", requiring language accuracy and communication flexibility. Evaluation system: Classroom participation (20%) + module test (40%) + real scene assessment (40%), with emphasis on tone accuracy, grammatical standardization and cultural comprehension. Teachers are required to provide individualized learning feedback on a weekly basis and add

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		help students pass the HSK1 exam and lay a solid language and cultural foundation for HSK2 and above.	me..." "How much?" and other functional sentence patterns. Cultural infiltration module: Each unit combines cultural knowledge points, such as the "red envelope" symbolizing reunion during the Spring Festival, explaining the logic of Chinese greetings with "Hello/Have you eaten", and showcasing the urban and rural landscapes of China through videos.	specialized Chinese character writing training for non-Chinese character circle students.
14	Comprehensive Chinese II	This course takes enhancing the daily Chinese communication skills of international students as its core objective and builds an advanced ability system based on the HSK2 syllabus. Knowledge level: Master 300 high-frequency words (such as occupational, transportation, weather, etc.), systematically study 30 grammatical structures (such as "ba" sentence, result complement, comparative sentence, etc.), and be proficient in using Hanyu Pinyin and 200 commonly used Chinese characters. Ability level: Be able to complete coherent conversations in various scenarios (such as travel consultation, medical treatment description, planning arrangement), understand life conversations at a moderate speed (about 180 words per minute), read short passages of about 150 words and write practical essays of more than 80 words (such as mail, diary). Literacy: Understanding Chinese social customs (such as festival etiquette, taboos in interpersonal	The curriculum adopts a dual-dimensional design of "context-driven + cultural deepening" : Language foundation module: Intensifies tone discrimination and linking training (such as "together yiq ǐ" and "already yǐjīng"), analyzes the formation rules of Chinese characters (phonogram, ideogram), and adds theme words such as "weather, health, occupation". Grammar application module: Focus on functional sentence patterns - through "if..." Then..." Learn hypothetical expressions in combination with "except... Also..." Expand the logic of the topic and design	Implement the teaching strategy of "hierarchical progression + task collaboration" : Input reinforcement: Use film and television clips (such as screenings from life dramas) to train listening to capture details, and summarize grammar rules through mind maps. Internalize and integrate: Design the "Make a travel guide" task to integrate language elements such as location description, transportation mode, and cost calculation; Organize "Chinese debate competitions" (such as "online shopping vs. offline shopping") to enhance logical expression. Output practice: Organize "Chinese situational drama performances" (such as "Airport pick-up", "community volunteer service"), requiring fluency and fit to the scene.

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		communication), and having a preliminary understanding of the principle of "seeking common ground while reserving differences" in cross-cultural communication. The course is designed to help students pass the HSK2 exam and lay the foundation of language logic and cultural cognition for HSK3 study.	situational exercises such as "shopping returns and exchanges" and "travel plan changes". Integrated skills module: Simulate eight types of life scenarios (such as "hospital registration" and "rental consultation") to train students to extract key information from conversations and complete role-playing; Introduce short reading (such as weather forecast, simple news) to develop the ability to summarize information. Cultural extension module: Analyze the spirit of collective collaboration in combination with the Dragon Boat race during the Dragon Boat Festival, explore digital life in China through the case of WeChat Pay, and deepen the understanding of cultural differences by comparing Chinese and Western festivals (such as Spring Festival vs. Christmas).	Evaluation system: Classroom interaction (25%) + module test (35%) + comprehensive project (40%), with emphasis on grammatical accuracy, communicative adaptability and cultural sensitivity. For students with difficulty in writing Chinese characters, a fun practice of "Chinese character story creation" will be added.

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
15	Comprehensive Chinese III	The core objective of this course is to cultivate the comprehensive application ability of intermediate Chinese among international students, and it builds a multi-dimensional ability system based on the HSK3 syllabus. Knowledge level: Master 600 high-frequency words (covering topics such as education, environmental protection, science and technology), systematically study 40 advanced grammatical structures (such as "被" sentences, directional complements, conditional complex sentences, etc.), and be proficient in using 300 commonly used Chinese characters and polyphonic character discrimination. Ability level: Be able to complete complex conversations in work, study, social and other scenarios (such as expressing opinions, solving problems), understand fast-paced life conversations or short news (about 200 words per minute), read 200-300 words of expository text and write more than 150 words of practical writing (such as letters, notifications). Literacy: Understand the integration of traditional Chinese culture with modern society (such as filial piety and contemporary family relationships), and deepen the awareness of cross-cultural communication that is "inclusive". The course is designed to help students pass the HSK3 exam and build a systematic language thinking framework for HSK4 and beyond.	The curriculum adopts a dual-track design of "language integration + cultural speculation" : Language deepening module: strengthening the discrimination of polyphons (such as "xing/hang") and synonyms (such as "participate/take part"), and analyzing complex sentence structures (hypothetical sentence "if...") Then..." Progressive sentence "Not only... And..."). Grammar Extension Module: Focus on compound grammar applications by "being... So..." Learn the passive voice in combination with "the more... The more..." Master the progressive expression and design situational tasks such as "workplace complaint handling" and "environmental initiative discussion". Integrated application module: Simulate 10 types of social scenarios (such as "job interview" and "community council") to train students to present their viewpoints and logical reasoning; Introduce argumentative essay reading (such as editorial excerpts) to develop critical thinking skills. Cultural	Implement the "competency-oriented + project-driven" teaching strategy: Input optimization: Use real corpora such as news broadcasts and interview programs to train listening detail capture ability, and sort out the logical relationship of complex sentences through grammar tree diagrams. Internalize innovation: Design the "Urban Development Proposal" project to integrate language skills such as data description, pros and cons analysis, and suggestion presentation; Organize "Hot topic debate competitions" (such as "Ethical Challenges of AI") to strengthen logical expression and evidence support. Output expansion: Organize "Research reports on social Issues" (such as "Current Status of Garbage Sorting Implementation"), requiring the writing of structured reports based on interview records and data analysis. Evaluation system: Classroom performance (20%) + phased tests (30%) + comprehensive projects (50%), with emphasis on language complexity, depth of cultural understanding and critical thinking ability. For students with weak oral skills, a special training program of "impromptu speech on a topic" will be

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
			Critical thinking module: Explore the path of cultural dissemination by combining the "Confucius Institute" case, analyze the innovation of the digital economy through the "live-streaming e-commerce" phenomenon, and guide dialectical thinking by comparing Chinese and Western educational concepts (such as "exam-oriented education vs. quality-oriented education")	added.
16	Comprehensive Chinese IV	The core objective of this course is to develop advanced comprehensive Chinese application skills for international students, and a complex ability system is constructed based on the HSK4 syllabus. Knowledge level: Master 1,200 advanced vocabulary (covering professional fields such as economics, law, science and technology), systematically study 50 complex grammatical structures (such as "why... Because..." "Not...), proficient in using 500 common Chinese characters and idioms (such as "keep pace with The Times" and "do as the Romans do"). Ability level: Be able to express logically in formal occasions such as academic discussions and business	The curriculum adopts a dual-dimensional design of "professional orientation + cultural integration" : Language improvement module: strengthening the application of idioms and idioms (such as "down-to-earth" and "achieving two goals at once"), analyzing the logic of multiple complex sentences (turning point "although..." But..." Cause and effect "because... Therefore..."), new topics such as "artificial intelligence" and "environmental protection" have been added. Grammar Deepening module:	Implement the "academic traction + practical innovation" teaching strategy: Input upgrade: Use real language materials such as TeT-style Chinese speeches and documentary excerpts to train the ability to integrate listening information, and analyze the structure of argumentative essays through logical framework diagrams. Internalized innovation: Design "research projects on social hotspots" (such as "The Impact of Short Videos on Teenagers"), and integrate research skills such as questionnaire design, data analysis, and conclusion drawing; Organize Model United Nations conferences to enhance multilateral consultation

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		negotiations, understand fast-speaking special reports or news commentaries (about 220 words per minute), read argumentative essays of about 500 words and write argumentative texts of more than 300 words (such as investigation reports, argumentative essays). Literacy: Understand the dialectical relationship between traditional Chinese culture and modern values (such as "the doctrine of the mean" and contemporary social governance), and strengthen the global perspective of "harmony and coexistence". The course is designed to help students pass the HSK4 exam and lay an academic foundation for professional Chinese language learning at HSK5 and above.	Focusing on the academic expression framework, through "from... Learn the analytical perspective, combined with "whatever... All..." Master conditional generalization expressions and design professional scenario tasks such as "policy pros and cons debate" and "business plan proposal". Comprehensive practice module: Simulate 12 types of social scenarios (such as "academic conference presentation" and "contract dispute mediation") to train students to use data argumentation and dialectical thinking; Editorials and excerpts from academic papers are introduced to develop critical reading and literature review skills. Cultural Dialogue module: Explore cultural heritage inheritance in combination with "Digital Protection of Dunhuang", analyze China's green development path through "carbon neutrality policy" cases, and guide in-depth critical thinking by comparing Chinese and Western governance models	capabilities on topics such as global climate governance. Output expansion: Organize "Academic paper writing workshops", requiring students to complete normative writing by combining references and independent viewpoints; Promote "Enterprise Visit reports" to analyze cases of business model innovation in China. Evaluation system: Classroom thinking (20%) + academic projects (40%) + comprehensive examination (40%), with a focus on logical rigor, academic standardization and cross-cultural communication skills. For students with weak writing skills, there will be additional training in "disassembling and reconstructing argumentative essays".

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
			(such as "concentrating resources to get things done vs. Democratic consultation").	
17	Chinese Listening and speaking I	The curriculum focuses on improving students' Chinese listening and speaking skills, and the teaching is centered around language knowledge such as phonetics, vocabulary and grammar. Through common topics in real life, students are helped to master basic language skills and acquire initial social communication skills. Pronunciation: Help students systematically master Chinese pronunciation skills such as initial consonants, final vowels, syllables, tones, light tones, erhua, tone changes, and intonation. Through learning, students can have a solid foundation in pronunciation and the ability to listen and read a certain number of commonly used Chinese characters, laying a good phonetic foundation for the second stage of learning. Vocabulary: Through a variety of listening and speaking exercises, help students master basic vocabulary closely related to daily life. At the same time, students will be able to use the learned vocabulary flexibly in real life, expand their vocabulary, and lay a solid foundation for further	Introduction: 1. Names and Greetings: Master the basic skills of self-introduction, greeting others, and expressing polite expressions. 2. Numbers and Relationships: Learn the expression of numbers and their application in scenarios such as age and phone numbers, and master the basic expressions for introducing family members and relationships. 3. Time and Date: Learn the relevant sentence patterns and vocabulary for expressing time, date and scheduling. 4. Shopping: Master common words and expressions in shopping scenarios such as inquiry, bargaining, etc. 5. Eating: Learn the basic expressions for ordering food, describing food tastes and expressing food preferences. 6. Transportation: Master the basic skills of asking for directions, taking transportation, and describing directions.	1. Teaching content requirements: Teaching should be based on the actual needs of the students and focus on topics related to daily life. 2. Comprehensive ability requirements: Based on pronunciation, vocabulary and grammar, students should be able to combine what they have learned to conduct simple listening and speaking communication in specific scenarios. Students should be able to understand basic language information through conversations or listening exercises and apply what they have learned flexibly in real situations. Encourage students to actively participate in listening and speaking activities in the curriculum to develop language application skills and cross-cultural communication awareness. 3. Teaching evaluation: Evaluate students' learning outcomes through various means such as classroom performance, listening tests, and oral expression. Students are able to complete basic listening and speaking tasks within the prescribed topic range

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		improving their Chinese listening and speaking skills and social communication skills. Grammar: With listening conversation as the core, grammar knowledge is taught around sentence as the basic unit. Through listening comprehension and conversation practice, help students master the basic structure and usage of Chinese, enabling them to gradually acquire the initial ability of Chinese listening comprehension and daily communication on the basis of understanding grammar.	7. Studies and hobbies: Be able to introduce your studies, hobbies and daily activities. 8. Directions: Learn to describe places, directions and locations, and be able to do simple asking and giving directions.	and achieve initial language communication skills.
18	Chinese Listening and Speaking II	Further enhance the proficiency and skills of international students in Chinese listening and speaking, enable them to communicate and express themselves more proficiently in Chinese, and improve their overall language literacy. Vocabulary enhancement stage: Further consolidate the basic grammar knowledge that students have learned through more in-depth and extensive short passage teaching, such as in-depth long conversations, current affairs news, etc. Introduce a large amount of diverse text materials to enrich vocabulary and enhance the richness of students' language expression.	Introduction: Accommodation and Home, Health and medical care, Character description, Weather and clothing, messages and verification, Planning and arrangement; Basics: Shopping, seeing a Doctor, eating, asking for directions, sending things, traveling, repairing, leisure and entertainment, talking about learning, Family.	1. Adhere to moral education and give full play to the educational function of the curriculum Pay attention to the value orientation of the curriculum content, extract the ideological and political elements of the curriculum, and design reasonable teaching activities based on the characteristics of the discipline. 2. Define the teaching objectives and cultivate the core literacy of the subject Improve students' core competencies such as language communication skills, cross-cultural communication skills, language thinking skills and self-study skills.

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		Grammar expansion stage: Expand from sentence as the basic skill training unit to teaching grammar structure and meaning at the text level. Guide students to understand the use of complex grammatical phenomena in discourse by analyzing longer listening texts, such as stories and speeches. Develop students' ability to express themselves coherently using the grammar knowledge they have learned, enabling them to use various grammatical structures more flexibly in conversations and writing, and improve the accuracy and fluency of language expression.		3. Resources should be effectively utilized to create practical pragmatic environments, transforming knowledge into language practice activities, allowing students to experience and apply the language in real environments, thereby effectively promoting language learning and the development of comprehensive abilities. 4. Enhance information literacy and explore the transformation of teaching and learning methods in the context of informatization.
19	Overview of China	Understanding of National Conditions: Help international students gain a comprehensive understanding of China's basic national conditions, including its geographical location, population, ethnic groups, history, political system, economic development, and cultural traditions. This builds a systematic and holistic cognitive framework about China. Cultivation of Critical Thinking and Innovation Skills: Guide international students to apply their acquired	Geography of China (Physical Geography, Human Geography) Chinese History (Ancient History, Modern History, Contemporary History) Chinese politics (political system, government institutions) Chinese Economy (Course of economic development, Economic structure and industries, Economic policies and reforms) Chinese Society (education system, health care, social life)	Knowledge mastery requirements for comprehensiveness and accuracy. Critical thinking skills, information acquisition and integration skills. Teaching methods requirements: Teachers should adopt a variety of teaching methods, such as classroom lectures, group discussions, case studies, field trips, cultural experience activities, etc., to meet the needs of international students with different learning styles and stimulate their interest and enthusiasm in learning.

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		knowledge to analyze and study various social phenomena and issues in China, fostering their ability to think independently and solve problems creatively. For example, students can be organized to conduct research and analysis on hot topics such as China's urbanization process or environmental protection, and are encouraged to present their own viewpoints and insights. Expansion of Global Perspective: Enable international students to recognize China's significant role and influence on the global stage, as well as its close ties with other countries. This helps broaden their global vision and enhance their awareness of global issues. For instance, by introducing China's active contributions to international cooperation and global governance, students are guided to reflect on the interaction between China and the world, and to develop a sense of global responsibility.	Chinese diplomacy (Foreign policy and ideas, diplomatic relations and cooperation)	Assessment method requirements: Establish a diversified assessment system to comprehensively evaluate the learning outcomes of international students. Regular assignments can test students' mastery and application of knowledge points; Classroom performance mainly assesses their participation, language expression and teamwork skills; Tests assess the overall mastery of the course knowledge by international students.
20	Chinese culture	**Cultural understanding**: To enable students to have a deep understanding of the essence, characteristics and diversity of Chinese culture, including language and writing, philosophy and thought, literature and art, customs and habits, religious beliefs, etc. For	A profound and extensive traditional philosophy Splendid traditional literature Exquisite traditional art Traditional architecture of harmony	Cultural values master the requirements of comprehensiveness and accuracy. Critical thinking, cross-cultural comprehension, cultural confidence and innovation development requirements.

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		example, through learning traditional Chinese festivals, folk art, etc., students will experience the unique charm of Chinese culture and enhance their understanding of Chinese cultural values. **Cross-cultural communication skills:** Develop students' ability to engage in effective cross-cultural communication in a Chinese cultural context, enabling them to understand and follow Chinese social etiquette and cultural norms, avoid cultural conflicts, and achieve smooth communication and interaction. Teach students etiquette in different social Settings, such as business banquets, family gatherings, etc., and how to understand and respond to Chinese non-verbal communication signals. **Cultural respect and inclusion:** Cultivate respect and appreciation for Chinese culture among students, promote mutual understanding and inclusion among cultures, and enable them to view differences between cultures with an open and objective attitude.	between man and nature A variety of traditional performances A variety of traditional paintings and calligraphy Traditional food that the people consider heaven A miraculous traditional medicine Traditional customs with a long history The traditional morality of cultivating, regulating, governing and pacifying	Teaching method Requirements: Through the interactive approach of "appreciation discussion + radio dubbing + role-playing", tell the formation, core ideas and shining stories in the flow of Chinese style and trend, and showcase the Chinese wisdom, traditional Chinese virtues and Chinese cultural spirit contained therein. Assessment method requirements: Through a combination of online and offline, process and outcome assessment methods, to comprehensively and objectively evaluate the performance and progress of international students in the course.

8.3 Professional Foundation courses (Professional group platform courses)

Table 5 List of course Descriptions for Professional Group platform Courses

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
1	Architectural CAD	Through the teaching of this course, students will be able to understand the various functions of AutoCAD and have the initial ability to use AutoCAD to draw construction drawings.	Basic knowledge of AutoCAD, basic drawing commands and editing methods, drawing floor plans, elevations, exterior wall body details, staircase details, graphic output.	The teaching process focuses on strengthening students' practical operation ability and technical application ability, and adopts teaching methods such as module teaching, task-driven, and case teaching to give full play to students' leading role. Through the study of this course, cultivate students' sense of norms, and work style of being meticulous, focused, persistent and striving for excellence; In the practical teaching section, infuse the professional spirit of loving one's job and being dedicated to it to inspire students' sense of professional honor and responsibility.
2	Architectural drawing	Through the teaching of this course, students will master the basic principles and laws of projection, cultivate their spatial imagination and spatial analysis abilities, be familiar with the basic standards of architectural drawing, and initially be able to read and understand ordinary architectural construction drawings, structural construction drawings, prefabricated construction drawings, etc.	Introduction, use of drawing tools, instruments and supplies, basic standards of drawing, orthographic projection principle, reading and drawing of axonometric drawings, reading and drawing of section and section drawings, reading of architectural construction drawings, reading of architectural structure construction drawings, reading of prefabricated construction drawings. "1+X" Architectural Engineering Drawing Vocational Skill Level certificate, contents of architectural drawing and reading.	In the teaching process, the teaching content should be closely combined with the occupational position standards, technical specifications and technical standards to improve students' job adaptability; Use teaching resources such as models, multimedia and virtual simulation to help students understand the content expressed in the construction drawings; Guide teaching with work tasks to enhance students' interest in learning, stimulate their motivation to learn, and consolidate what they have learned and exercise relevant skills in the process of work.
3	BIM modeling technology	Through the teaching of the content of this course, students will understand the interface of the modeling software and be familiar with the various functions of the modeling software; Master the key	1. Project preparation (project overview, project sample, project benchmark); 2. Family establishment; 3.Revit building model (walls, columns, beams, doors, Windows, floors, roofs and ceilings, stairs,	Be familiar with BIM modeling software and the modeling environment; Be able to master the methods of creating families and volumes; Be able to complete the creation of Revit building models based on construction drawings, and carry out BIM marking, annotation and annotation, and

Serial numbers	Course Name	Course Objectives	Main Teaching Contents	Main teaching Requirements
		technologies of BIM modeling in various stages, links and systems of engineering projects; Be familiar with the functions and roles of modeling software; Master the key technologies of BIM modeling in various stages, links and systems of engineering projects; Master the creation method of building models and the production method of building component families.	curtain wall systems, canopies, drainage, ramps, etc.); 4. Model-related parameter setting; 5. Basic application analysis of the model (sectioning display, rendering, roaming, detailed list, output).	complete BIM output. The creation of BIM building modeling is combined to cultivate students' sense of norms and the spirit of craftsmanship that strives for excellence; Through group cooperative learning methods, case teaching methods, etc., cultivate students' teamwork spirit.

8.4 Professional Core courses

Table 6 A list of course descriptions for core professional courses

Serial numbers	Course Name	Course Objectives	Main teaching contents	Main teaching Requirements
1	Building structure	Master the concept of building structures (including the concepts of concrete structures, masonry structures, and steel structures, as well as their advantages and disadvantages). Be familiar with the building structure curriculum standards and develop a study plan for this course. Understand the development history of building structures and building structure design standards.	Introduction to building structures, basic principles of building structure calculation, building materials, concrete flexural members, concrete compression members, concrete torsional members, prestressed concrete members, beam-slab structures, frame structures, masonry structures	Master the principle of the interaction between reinforcing bars and concrete; Master the types and construction characteristics of common building structures; Understand the basic force principles of structures; Master the basic load types and their effects; Master the working mechanism of common structural components. Be able to perform basic structural analysis and calculation; Have basic structural layout and selection skills; Preliminary ability to read and draw; Be able to consider the relationship between structural safety, economy and architectural aesthetics.

Serial numbers	Course Name	Course Objectives	Main teaching contents	Main teaching Requirements
2	Building construction	Through the study of this course, students will become familiar with the basic concepts related to civil architectural design; Master the basic principles and influencing factors of building structure design; Master the construction principles, construction methods and construction requirements of the various components of general civil buildings; Be familiar with the basic concepts and knowledge of industrial buildings.	Overview of building structure, building structure system, foundation and basement, wall, roof, floor, staircase, doors and Windows, decoration and finishing, overview of industrial building. In combination with the "1+X" architectural engineering drawing vocational Skill level certificate, architectural drawing content; "1+X" Building Information Modeling (BIM) Primary certificate Building construction content.	This course is an integrated theory and practice course. The main teaching units should adopt methods such as project-based teaching, case teaching, and blended online and offline teaching. The teaching is based on actual projects, supplemented by physical display, model display, and 3D simulation. For key teaching units such as walls, roofs, and stairs, students are required to complete small course designs to develop their hands-on abilities and improve their practical skills. In the teaching process, through the teacher's words and deeds, cultivate students' serious, rigorous and meticulous work style. In the practical teaching process, the spirit of striving for excellence, concentration and dedication should be instilled.
3	Measurement and valuation of construction projects	Through the course, students will master the principles and methods of measurement and valuation in construction projects, be able to complete the preparation of bill of quantities for common civil construction projects, be able to correctly apply quotas to prepare bill of quantities pricing documents, and be able to independently, systematically and completely prepare the budget and final accounts for general industrial and civil construction projects.	Basic theory of project cost, calculation of project cost for each sub-project, calculation of measure project cost, regulatory fee and tax, project settlement.	Be able to prepare bill of quantities for construction projects based on drawings; Be able to accurately calculate the bill of quantities for construction projects; Be able to accurately apply and convert quota items to determine the comprehensive unit price of the bill; Be able to adjust the project price and prepare the project settlement. Develop students' ability to identify problems, solve problems and coordinate communication; Cultivate students' sense of contract and legal awareness; Cultivate students' awareness of cost control and business efficiency.
4	Construction techniques	Through the study of this course, students acquire basic knowledge, basic theories and decision-making methods of construction, and have the initial ability to solve general construction problems; Be familiar with the construction techniques and process principles of the main trades in construction engineering; Be familiar with the development of new technologies and new processes in construction; Cultivate students' ability to independently analyze and solve problems related to construction technology.	Earthwork, foundation and base engineering, masonry engineering, concrete structure engineering, pre-stressed concrete engineering, structural hoisting engineering, energy conservation and environmental protection construction, waterproofing and moisture-proofing engineering, decoration and renovation engineering, seasonal construction, etc.	The teaching content is arranged in accordance with the requirements of vocational skills positions such as "construction worker", "quality inspector", "safety officer", etc. Teaching methods such as project-based teaching, case teaching, on-site teaching, and blended online and offline teaching are preferred; In the teaching process, emphasis should be placed on the combination of theory and practice, and more students should be organized to participate in practical work at construction sites. In teaching, while introducing the development of construction technology, it is necessary to combine the actual situation of our country and focus on teaching some basic processes and construction methods of construction technology. Through course learning, students should be made aware of safety, environmental

Serial numbers	Course Name	Course Objectives	Main teaching contents	Main teaching Requirements
				protection and quality; Improve students' understanding of their major and enhance their sense of professional identity and honor. Cultivate students' work style of being serious and rigorous, realistic and pragmatic, and striving for excellence, as well as the spirit of being hardworking, optimistic and enterprising.
5	Construction project management	Based on the training objectives of the construction engineering technology professional group, combined with the characteristics of talent cultivation in higher vocational colleges, make full use of the advantages of the construction industry and resources, adhere to the principle of integrating job capabilities with curriculum standards, and according to the needs of technological development in the industry and enterprises and the requirements of knowledge, ability and quality required for the corresponding job tasks of the professional positions, Emphasize the support and connection between the courses in both theory and practice. In the process of developing this course, we will follow the guiding ideology of course development based on the work process, adopt the work-study integration approach, and closely integrate the engineering data and experience accumulated from cooperating with several construction enterprises in the province for course development. Under the premise of closely adhering to the main line of the project management process of construction projects, select the most necessary and practical knowledge and skills for the front-line positions of construction management in China's current construction enterprises. By integrating work and study, the teaching links such as case analysis, course design and simulation training on quality management, progress management, safety management and cost management have been strengthened, making the course highly technical and practical.	Organization and management of construction projects; Quality management of construction projects; Progress management of construction projects; Construction project cost management; Construction project safety management and environmental protection; Contract management for construction projects; Construction project information management; BIM application management.	Be able to organize flow construction and draw horizontal bar diagrams; Be able to draw a network diagram based on the logical relationship between workspaces and calculate the time parameters; Be able to optimize a simple network plan and prepare a simple lap network plan; Be able to conduct cost analysis to identify the reasons for cost deviations; Be able to implement full-process cost control before, during and after the event; Be able to use the methods and procedures for dealing with substandard engineering quality to handle simple engineering quality problems and accidents; Be able to identify hazard sources at the construction site and carry out safety pre-control and take safety technical measures. Be able to implement construction project management in accordance with the basic theory of construction project management planning and project management norms; Be able to understand various measures of schedule control, and be able to prepare and adjust and optimize general bar chart plans and network plans; Be able to apply the basic methods of total quality management of engineering projects, have the initial ability to manage quality, safety and civilized construction of engineering projects, be able to organize completion acceptance documents and engineering filing materials, and be able to sign engineering warranty contracts; Be able to initially possess the basic qualities of a data clerk and the ability to manage construction projects using computer software; Be able to master the basic principles of project risk management and be able to use the knowledge learned for construction project risk management.

Serial numbers	Course Name	Course Objectives	Main teaching contents	Main teaching Requirements
6	Building Mechanics	Through this course, students will be able to understand the fundamental concepts of mechanics and master the basic theories of statics, mechanics of materials, and structural mechanics, such as force equilibrium, stress and strain, deformation, and stability. They will become familiar with the load-bearing characteristics of common building structures, including the internal force distribution and deformation patterns of beams, columns, trusses, and frames. Students will also master the load transfer path, gaining an understanding of how vertical loads (such as dead loads and live loads) and horizontal loads (such as wind and seismic forces) are transmitted within structures.	The content of this course includes: tension, compression, and shear; torsion; internal forces in bending; bending stress; bending deformation; stress and strain analysis; strength theories; combined deformation; stability of compression members; dynamic loads; alternating stress; and geometric properties of plane figures.	Master the fundamental knowledge and basic principles related to the course; understand the concepts of vectors and be able to perform vector operations; be capable of applying 2D and 3D vector calculations; understand the dot product; grasp the concept of bending moment; understand force equilibrium and be able to simplify force systems. Be familiar with the types and characteristics of supports; be able to draw free-body diagrams; be capable of analyzing trusses using the joint method and the section method; be able to analyze frames; understand the concept of machines. Master the concept of the centroid of different geometric shapes; understand the concept of moment of inertia; be able to calculate the moment of inertia for composite geometric shapes; apply the parallel axis theorem to solve problems. Grasp the concept of internal forces; be able to calculate internal forces in members; be able to draw shear force and bending moment diagrams; master the calculation of distributed loads, shear forces, and bending moments.

9 Overall arrangement of the teaching process

9.1 Teaching schedule

Table 7 Overall schedule of teaching progress

Courses Categories			Course Number	Course (project) name	Planned academic hours	Theoretical academic hours	Practical hours	Credits	Semester allocation and weekly class hours						Course type
									one	two	three	four	five	six	
Public Courses	Compulsory Public courses		C021004	Information Technology	48	12	36	3.0	3						*
			C061006	Comprehensive Chinese I	64	48	16	4	4						*
			C061010	Chinese Listening and Speaking I	32		32	2	2						*
			C900167	Overview of China	32	32		2	3						
			C131001	Professional knowledge and career outlook education	8	8		0.5	2						
			C111011	Physical Education I	26		26	1	2						
				Engineering Mathematics	48	48		3	3						*
			C061007	Comprehensive Chinese II	64	48	16	4		4					*
			C061011	Chinese Listening and Speaking II	32		32	2		3					*
				Engineering Physics	48	48		3		3					*
			C111012	Physical Education II	32		32	1.0		2					
			C061008	Comprehensive Chinese III	72	40	32	4.5			4				*
			C061016	Chinese culture	32	32		2			2				
			C111013	Sports III	30		30	1.0			2				
			C111014	Sports IV	30		30	1.0				2			
			C061009	Comprehensive Chinese IV	64	32	32	4				4			
			C121005	Career Development and Employment Guidance I	18	10	8	1			3				
			C121006	Career development and career guidance II	20	10	10	1.5				3			
			C141008	Fundamentals of Innovation and Entrepreneurship for College Students	16	14	2	1			3				
			C141004	Labor Education I	16	16	0	1		16					
			C141005	Labor Education II	30	0	30	1			30				
			C141009	Mental health education	32	16	16	2	2						
			Subtotal		794	414	380	45.5	794						
	Professional Compulsory Courses	Professional foundation courses	C042070	Architectural drawing	80	48	32	5	5						*
			C042158	BIM modeling techniques	48	24	24	3		3					
			C042045	Architectural CAD	48	16	32	3		3					
			C042213	Architectural CAD II	64	48	16	4			4				*
			Subtotal		240	136	104	15							
		Professional	C042057	Building structures	80	50	30	5				5			*/★
			C042029	House building structure	80	52	28	5				5			*/★

		Core Courses	C042069	Measurement and Valuation of construction projects	80	48	32	5					5		*/★
			C042065	Construction techniques	120	80	40	7.5					8		*/★
			C042153	Construction project management	80	48	32	5					5		*/★
			C042060	Building Mechanics I	80	64	16	5			5				*
			C042061	Building Mechanics II	80	64	16	5				5			*
			Subtotal		600	406	194	37.5							
		Concentrated Practice Class	C043035	Comprehensive practical training in construction technology	60	0	60	2					▲		■
			C043008	Engineering surveying practice	60	0	60	2			▲				■
			C043107	Course design of Construction Engineering Measurement and Valuation	30	0	30	1					▲		■
			C043006	Course design of Building construction	30	0	30	1				▲			■
			C043028	Architectural Engineering technology Graduation design	240	0	240	8						▲	
			C043029	Internship in construction engineering technology position	180	0	180	6						▲	
			Subtotal		600	0	600	20							
		Other specialized courses	C042046	Building materials	80	48	32	5		5					
			C042033	Engineering Surveying	80	48	32	5			5				*
			Subtotal		160	96	64	10							
	Professional Electives		C042030	Steel structures	48	32	16	3				▲			
			C042063	Building equipment engineering	48	32	16	3				▲			
			C042064	Construction machinery	48	32	16	3				▲			
			C042143	Reading drawings by the flat method	48	24	24	3				▲			
			C042052	Safety management of construction projects	48	32	16	3					▲		
			C042108	Road engineering construction	48	32	16	3					▲		
			C042149	Building energy efficiency technology	48	32	16	3					▲		
			C082087	Interior design	48	32	16	3					▲		
	Subtotal				384			24							

Notes:

1.* indicates examination courses, ※ indicates innovation and entrepreneurship education courses; ★ for core courses; ■ For intensive practice courses; ▲ indicates the semester in which the course is held.

2. At least 14 credits of major elective courses are required, including 8-10 credits of major elective courses and 4-6 credits of cross-major elective courses.

9.2 Schedule of Class Hours and credit allocation

Table 8 Professional Course Hour and Credit Allocation Table

Name of Major	Course categories	Total academic hours	Theoretical academic hours	Practical class hours	The proportion of practice classes	Proportion of total class hours	Credits	Proportion of total credits
Construction	**Public compulsory**	794	414	380	47.86%	31.28%	45.5	33.21%

n Engineering Technology	**courses**							
	Professional compulsory courses	1000	638	362	36.20%	39.40%	62.5	45.62%
	Intensive practice courses	600	0	600	100%	23.64%	20	14.6%
	Professional Electives	144	—	—	—	5.47%	9	6.57%
	Total	2538	—	—	—	100%	137	100%

10 Teaching Assurance

10.1 Teaching Staff

a. Team structure

The ratio of professional students to full-time teachers should not exceed 25:1, the proportion of dual-qualified teachers among professional teachers should not be less than 60%, and the proportion of full-time teachers with senior professional titles should not be less than 20%. The full-time teacher team should take into account professional titles and age to form a reasonable echelon structure. The structure of the teaching staff for this major is shown in Table 9.

Table 9 Structure of the faculty in this major

Team structure	Structure composition	Proportion requirements
Title structure	Professor	7.7%
	Associate Professor	38.5%
	Lecturer	53.8%
Education qualification structure	Doctor	30.8%
	Master	57.7%
	Undergraduate	11.5%
Age structure	Under 35	15.4%
	36-45 years old	42.3%
	Over 45 years old	26.9%
Proportion of part-time teachers		25.0%
Proportion of dual-qualified teachers		92.3%
The ratio of students to full-time teachers		18:1

b. Full-time teachers

(1) Obtain a teacher's professional qualification certificate.

(2) Have a bachelor's degree or above in architectural engineering technology or related fields.

(3) Have good ideological and political qualities and professional ethics, possess the ability and level to fulfill the duties of the teaching position, and abide by the norms of professional ethics for teachers;

(4) Have worked in enterprises or public institutions for more than two years, or have accumulated more than six months of practical experience at the front line of enterprises or production services within five years, and have obtained professional qualification certificates such as constructor, supervision engineer, structural engineer, or professional and technical positions related to the discipline they hold.

c. Professional leader

(1) On-campus professional leader

They should hold the position of associate senior teacher or above, have obtained professional qualification certificates such as constructor, supervisory engineer, structural engineer, or professional technical positions related to the subject they teach, be able to have a good grasp of the development of the industry and the major at home and abroad, be able to have extensive contact with industry enterprises, understand the actual demand of industry enterprises for talents in this major, have strong teaching design and professional research capabilities. Have a strong ability to organize and carry out teaching and research work, and have a certain professional influence in the region or field. The specific requirements are as follows:

1. Possess the ability to understand higher vocational education, the ability to grasp the direction of professional development, the ability to develop courses, the ability to conduct teaching and research reforms, the ability to conduct academic research, especially the ability to develop applied technologies, and the ability to organize and coordinate;

2. Have experience in teaching, research and reform, and have advanced teaching management experience;

3. Have a strong professional level, professional ability, and innovative ideas;

4. Be the leader in professional development, have the latest development ideas, and be in charge of all aspects of professional development work;

5. Be able to guide the backbone teachers to complete the work related to professional construction;

6. Be capable of leading the development and construction of core professional courses;

7. Be capable of leading and mainly participating in applied technology development projects:

8. Have some relevant enterprise experience, possess strong on-site production management organization experience and professional skills, and be able to solve practical problems on the production site.

(2) Off-campus professional leaders

Have a senior professional title or a senior vocational qualification certificate; Front-line professional technicians or senior managers who are enthusiastic about the education cause and have certain influence in the industry or enterprise; Have 10 years or more of relevant professional work experience in enterprises or industries; I have a strong sense of technological innovation, technology service and solid practical skills, and have achieved significant benefits, and I am the main contributor.

Table 10 List of professional leaders

Professional leaders		Basic situation	Main direction
On campus	Xu Guangshu	Professor, Senior engineer, National first-class Registered Structural Engineer, first-class registered cost Engineer, first-class registered construction Engineer, registered supervision engineer, member of the expert database of the Jiangsu Provincial Engineering Cost Management Expert Committee. Head of Jiangsu Province's brand major - Architectural Engineering Technology, Teaching master of Nantong City's colleges and universities, March 8th Red Flag Bearer of Nantong City, "May Day Women's Model" of Nantong Education System, Outstanding Head Teacher. She has edited several textbooks for higher vocational colleges, including "Building Mechanics", "Construction Regulations", "Building Structures", and "Measurement and	Building structures Building construction

		Valuation of Construction Engineering", and has led various teaching and reform research projects at all levels. She has published more than 30 professional academic papers and educational research and reform papers in provincial and above-level professional journals and Chinese core journals.	
Off-campus	Song Xiaozhong	Senior engineer, one first prize of provincial and ministerial technological invention, one first prize of provincial and ministerial scientific and technological progress, one second prize of provincial and ministerial scientific and technological progress, one second prize of national technological invention; Participated in the compilation of four national and local industry standards; 7 invention patents and 20 utility model patents; Gold Medal of the National College Students' Entrepreneurship Competition, First Prize of the National College Students' Challenge Cup Extracurricular Science and Technology Works.	Construction Engineering

d. Part-time faculty/corporate mentor

(1) Mainly appointed from industries and enterprises related to the major, with solid professional knowledge and rich practical working experience, holding intermediate or higher professional and technical positions, capable of undertaking teaching tasks such as professional course teaching, internship and training guidance, and student career development planning guidance, and jointly transforming typical job tasks into major teaching projects with full-time teachers within the school. And divide into several teaching modules, and implement modular teaching with division of labor and collaboration.

(2) Be enthusiastic about the education cause, have a high level of ideological and political awareness and a sense of responsibility, care for students and set a good example.

(3) Have the time necessary to ensure the completion of part-time teaching tasks.

10.2 Teaching Facilities

Teaching facilities should meet the implementation needs of talent cultivation in this major, mainly including professional classrooms, training rooms and training

bases that can meet the requirements of normal course teaching, internships and practical training. Among them, the area and facilities of the training (experimental) rooms should meet the requirements of the national standards for the construction of professional training teaching conditions (norms for the provision of instruments and equipment).

a. Basic conditions of the theoretical classroom

Equipped with electronic whiteboards, multimedia computers, projection equipment, audio equipment, Internet access or Wi-Fi environment, and network security measures. Install emergency lighting and keep it in good condition, comply with emergency evacuation requirements, be clearly marked, and keep escape routes unobstructed.

b. Basic requirements for on-campus training

This major has a comprehensive training base for construction technology supported by the central government's finance. The training area is approximately2 7,000 square meters, including 16 professional training rooms such as "Construction Technology of Building Engineering", "Surveying of Building Engineering", "Building Materials", "Building Structure", etc. There are more than 1,300 sets of experimental and training equipment, with a total value of over 20 million yuan. It is also a base for urgently needed skilled talents in the construction industry by the Ministry of Construction and the Ministry of Education, a key laboratory of building energy conservation and thermal insulation technology in Nantong City, and a public training base for modern construction industry in Nantong City. It has professional classrooms and on-campus training rooms that meet the needs of theoretical and practical teaching and skills assessment for the building engineering technology major and related majors.

Relying on the Nantong Construction Industry-Education Alliance and leading enterprises in the region, multiple off-campus training bases have been established, which can meet the needs of students' work-study alternation, on-the-job internship and teachers' social practice, ensuring the effectiveness of the "teaching, learning and doing" integrated practical teaching.

Table 12 Basic configuration requirements for the main experimental and training rooms of Architectural Engineering Technology major, their functions and main equipment

Serial numbers	Name of the training room	Functions	Main equipment	Supporting the course
1	High-level slipform training room	Hydraulic sliding climbing formwork and sliding formwork system construction	Hydraulic sliding climbing formwork system	Construction technology
2	Building Mechanics Training Room One	Tensile tests, compression tests, torsion tests, impact tests, etc	Tensile testing machine, impact testing machine, hardness testing machine, etc	Mechanics of Architecture
	Building Mechanics Training Room 2	Test of tensile elastic modulus, test of shear elastic modulus, test of bending normal stress of beams, etc	Multifunctional mechanics test bench, flux meter, multifunctional strength tester, etc	
3	Pile foundation simulation training room	Pile foundation mechanical property measurement, pile foundation engineering construction simulation	Anchor bolt tensiometer, high-pressure electric oil pump, argon arc bottle, static strain tester, etc	Construction technology Pile foundation engineering inspection
	Pile foundation inspection laboratory	Low strain, high strain test test, ultrasonic test test, soil bearing capacity test, static penetration test, static load test, foundation pit support displacement test, anchor uplift resistance test, borehole diameter, well slope, slag thickness, hole imaging test	Static load test instrument, ultrasonic flaw detector, foundation bearing capacity test instrument, foundation pile ultrasonic testing instrument, panoramic drilling digital television camera system, bored pile drilling logging system, pile driving analyzer, etc	
4	Building energy conservation and thermal insulation training room	Determination of thermal conductivity of materials, testing of structural maintenance performance, dew point of insulating glass, determination of ultraviolet radiation,	Wall insulation and heat preservation testing system, hollow glass dew point, building exterior window and door insulation performance testing	Building materials Smart building construction technology

Serial numbers	Name of the training room	Functions	Main equipment	Supporting the course
		and testing of thermal performance of walls	device, etc	
5	Prefabricated building training base	Production and hoisting of prefabricated building components, certification, skills competition	Prefabricated component hoisting system, prefabricated component physical object, sleeve grouting system; Prefabricated deepening design software; Prefabricated building construction sand table, prefabricated building construction simulation system, prefabricated building simulation model, prefabricated component simulation production system,	Building structure Production and management of prefabricated components Construction technology for prefabricated buildings Quality and safety management of prefabricated buildings
	Prefabricated building simulation training		Interactive simulation VR training platform for prefabricated buildings	
6	Model-making training room	Architectural model display, architectural model making, interior design model making	Architectural model, laser engraving machine, acrylic vacuum forming machine, CNC engraving machine, villa property model, etc	Building structure of houses
7	Building Materials Training Room 1	Test of particle size distribution and fineness of sand, test of moisture content of sand, test of particle size distribution of gravel, determination of setting time of cement, determination of fineness of cement,	Negative pressure screening instrument, mortar shaking table, cement mortar mixer, cement negative pressure screening instrument, cement mortar mixer, etc	Building materials

Serial numbers	Name of the training room	Functions	Main equipment	Supporting the course
		determination of stability of cement, determination of water content for standard consistency of cement, determination of strength of cement mortar		
	Building Materials Training Room 2	Concrete mixture workability test, concrete cube compressive strength test, mortar consistency test, mortar stratification degree test, brick compressive and flexural strength test	Negative pressure sieve, cement quick curing box, electric concrete penetration resistance tester, carbon-sulfur combined tester, freezer, bonding tester, cement quick curing box, etc	
9	Water and electricity installation training room	Water supply and drainage installation training, fire protection installation training, electrical equipment installation training	Line tracer, electrical control components, digital display insulation resistance, indoor water supply and drainage pipe simulation system, relay controller	Building equipment and drawing
10	Geotechnical Training Room 1	Soil moisture content test, soil shear test, soil liquid plasticity test, soil density test	Bench triaxial instrument, consolidation instrument, triple low pressure consolidation instrument, cross plate scissors instrument, pore pressure measuring instrument, etc	Soil mechanics and foundation
	Geotechnical Training Room Two	Soil moisture content test, soil shear test, soil liquid plasticity test, soil density test	Concrete standard curing box, photoelectric liquid plastic limit tester, two-speed electric equal strain direct	

Serial numbers	Name of the training room	Functions	Main equipment	Supporting the course
			shear tester, strain-controlled direct shear tester, etc	
11	Engineering inspection training room	Engineering quality routine inspection, reinforced concrete structure inspection, steel structure inspection	Non-metallic ultrasonic detector, rebound data logger, concrete crack microscope, multi-functional direct reading calcium meter, floor slab thickness gauge, ultrasonic thickness gauge, advanced digital ultrasonic flaw detector matching, portable X-ray flaw detector matching, etc	Non-destructive testing and electrical testing techniques Entity inspection of engineering structures Steel structure inspection
12	Engineering surveying training room	Leveling, distance measurement, Angle measurement, construction layout, topographic mapping, deformation observation	Total station, electronic theodolite, electronic level, optical theodolite, GPS rangefinder, etc	Engineering Surveying Engineering surveying practice
13	BIM Training Center	BIM construction 3D site layout management, construction technology virtual simulation, architectural drawing virtual simulation, BIM5D modeling	BIM5D software, BIM 3D construction site layout software, virtual simulation software for construction technology, virtual simulation software for engineering drawing recognition	Fundamentals of BIM Modeling Building Information Modeling application BIM technology application for building equipment BIM technology application for building structures

Serial numbers	Name of the training room	Functions	Main equipment	Supporting the course
				Case studies of BIM application
14	Construction technology training room	Steel bar processing, masonry, plastering, scaffolding erection, etc	Rebar workbench, rebar cutting machine, rebar straightening machine, rebar bending machine, arc welding machine, rebar threading machine, mortar mixer, etc	Construction technology
15	VR simulation training room for safety management of construction projects	Construction project safety accident experience	VR panoramic experience equipment for construction safety	Construction quality and safety management
16	Intelligent construction training base	Intelligent monitoring, digital construction monitoring	Deep foundation pit monitoring system, construction hoist safety monitoring system, tower foundation safety monitoring and management system; High formwork monitoring system; Indoor intelligent working robot	Intelligent machinery and robots Intelligent construction technology

c. Basic requirements for off-campus training bases

The off-campus internship base should be able to provide relevant internship positions such as construction workers, data clerks, construction workers, prefabricated deepening designers and BIM draftsmen, cover the mainstream business of current construction and management, and be able to accept a certain scale of student internships. It should be able to provide a certain number of instructors to guide and manage students' internships; There are rules and regulations to ensure the daily work, study and life of interns, as well as safety and insurance guarantees.

10.3 Teaching resources

1. Requirements for textbook selection

(1) Standardize the system for textbook construction and selection, improve the quality evaluation and management mechanism for textbook selection, and establish a system for textbook selection approval.

Strictly implement the national requirements for textbook selection, abide by the relevant regulations of this school on textbook subscription, and in accordance with the training objectives and curriculum standards of the architectural engineering technology major, give priority to the selection of new editions of textbooks, higher vocational textbooks or other high-quality and distinctive textbooks from the national and provincial planning textbook directories published in the last three years. Ensure that excellent teaching materials reflecting the development level of modern science and technology and teaching achievements are included in the classroom.

(2) Make full use of information technology and increase the construction of "new form integrated" teaching materials.

In the selection of teaching materials, emphasis should be placed on cultivating technical and skilled, compound and innovative, and international-vision talents, and attention should be paid to the combination of systematic knowledge and progressive knowledge development to adapt to the current status and development trend of production technology; Teaching materials for basic theory courses should be sufficient and focused on strengthening application, while teaching materials for professional core courses should be more targeted and practical with the aim of improving students' vocational skills.

Make full use of digital resources to facilitate teachers' course teaching and students' blended online and offline learning, achieving an effective combination of readability and interest, as well as teaching and self-study.

(3) Student-centered and competency-based dual development of characteristic teaching materials by schools and enterprises.

The teaching team of the Architectural Engineering Technology major, based on enterprise research, combined with practical training conditions both inside and outside the school, increased cooperation between the school and enterprises, selected

teaching materials according to the curriculum standards, designed the teaching process, selected cases and exercises, and formed school-based teaching materials that adapt to the characteristics of the major and reflect the integration of work and study, so that students can obtain effective material guidance in the integrated learning process of teaching, learning and doing.

We have collaborated with the industry and enterprises to develop school-based teaching materials for core professional courses. We should fully integrate with the actual situation, align with the professional standards, introduce new concepts into the teaching materials, and adhere to the principles of course setting aligning with job requirements, teaching content aligning with job capabilities, teaching scenarios aligning with the working environment, and teaching assessment aligning with enterprise evaluations, so as to achieve a combination of knowledge and practicality.

2. Requirements for the configuration of books and documents

Regularly purchase excellent teaching materials, professional books, periodicals, electronic materials and other learning and auxiliary resources that meet the research and teaching implementation needs of teachers of the architectural engineering technology major, the professional learning and knowledge expansion needs of students, the research of enterprise mentors, and the integration of new technologies, new processes, new materials and new equipment of professional standards.

3. Requirements for digital resource allocation

Relying on the National Teaching resource library project for vocational education, the teaching resources of professional core courses should be systematic, complete and of high quality, including course introduction, course standards, teaching design, teaching courseware, teaching videos, electronic textbooks, exercise banks, case libraries, practical training projects, reference materials, etc.

The Architectural Engineering Technology major uses the digital platform within the school to collect, process, organize and develop course resources and project case libraries, build a shared teaching resource library for the Architectural Engineering Technology major, provide support for both online and offline learning for teachers and students, realize online auxiliary teaching on the school platform, assist students in consolidating the content taught in the course in their spare time, and enhance

interaction between teachers and students as well as among students. To achieve autonomous, inquiry-based and individualized learning for students.

10.4 Teaching Methods

1. Establish a people-oriented and all-round development teaching concept. Follow the basic laws of vocational education, firmly establish the concept that improving the quality of classroom teaching is the fundamental task of professional talent cultivation, actively carry out research on teaching reform, and improve the quality of course teaching.

2. Master and choose teaching methods scientifically and reasonably. Under the guidance of modern vocational education theory, teachers are required to master the characteristics of various teaching methods such as lecture, discussion, inspiration, practice, discussion, demonstration, experiment, visit, practice, inquiry, online and offline hybrid, task-driven, on-site teaching, work-study altercation, integration of courses and certificates, and integration of courses and competitions. Based on the learning needs of students and the employment needs of society, the teaching content should be scientifically selected, and appropriate teaching methods should be reasonably chosen and optimally combined.

3. Effective use of teaching methods. Teachers should optimize the combination and comprehensive application of the chosen teaching methods based on the actual teaching situation, pay full attention to students' feedback, make timely adjustments to adapt to the actual learning situation of students, and improve teaching effectiveness.

4. Firmly carry out educational reform, adhere to the goal of quality-oriented education and the lifelong development of students, reform the professional teaching content, curriculum system and teaching methods and means in accordance with the principles of being practical, useful and practical, break free from the constraints of subject education, pay attention to the close combination of theory and practice, and actively explore the laws of cultivating technical and skilled talents.

5. Build quality courses, teaching materials and shared resources. Give priority to national, provincial and university-level excellent online open courses, and actively carry out the construction of teaching teams, teaching content, teaching methods and means, teaching materials, training bases and mechanisms; Use information

technology and means to open online teaching resources such as course teaching materials, and provide high-quality educational resources for free use by teachers and students.

6. Build excellent teaching innovation teams. Establish a team cooperation mechanism, promote teaching discussions and exchanges of teaching experience through the mentorship system, reform teaching content and methods, develop teaching resources, and improve the overall teaching level of teachers.

10.5 Learning Evaluation

The assessment of students' academic performance should take into account aspects such as cognition, skills, and emotions, and reflect the diversity of assessment criteria, subjects, methods, and processes, such as the combination of process assessment and final assessment, and the assessment methods that connect with on-the-job internships, vocational skills competitions, and vocational skills level certificates. Strengthen the quality monitoring of the teaching process and reform the standards and methods of teaching evaluation.

1. Academic evaluation of students. The major adheres to the process-oriented and practical assessment of courses, constantly reforms and improves the digital evaluation system of students' academic performance, classifies and evaluates students' academic performance according to the nature and orientation of the courses, strengthens the assessment and evaluation of students' autonomous learning ability, and encourages the diversified evaluation of online and offline learning outcomes. Theoretical course grades include final and regular grades, while regular grades include questions and discussions in class, quizzes, after-class assignments, research reports, etc. Innovative evaluation system for integrated theory and practice courses, with emphasis on practical assessment, and regular performance includes homework, classroom questions and discussions; Practical operation links are saved in the form of video, audio, text materials, etc. Each course has detailed operation requirements and standardized scoring criteria for practical operation links, and necessary feedback is provided for each practical operation link.

Table 13 Evaluation Form for Learning of Students majoring in Architectural Engineering Technology

Serial Number	Course type	Procedural Assessment proportion	Course Individual Practice The proportion of training assessment	Finality Weighting of assessment	Assessment methods
1	Theory class	60%	/	40%	Written tests, oral tests, online tests, assignments
2	Theory and practice integrated course	30%	30%	40%	Written test, oral test, online test, practical assessment, project work
3	Practical lessons	60%	/	40%	Evaluation and assessment by school-enterprise teachers (mainly assessing attitudes towards practical training, civilized production, practical training products, practical training reports, etc.) and supervision and evaluation by students

2. Third-party evaluation. The evaluation of graduates by industries and enterprises is an important part of the talent cultivation quality evaluation system. This major regularly and irregularly understands the evaluation of graduates by industries, enterprises, etc., and establishes and improves the third-party evaluation system of talent cultivation quality, mainly including:

(1) Investigation of the on-the-job internship and employment situation of recent graduates. During the annual internship period of fresh graduates, several internship units are surveyed, mainly to understand the situation of graduation design, internship, employment, etc.

(2) The annual follow-up system for graduates. Each year, random key visits will be made to the previous graduates' employers to understand their satisfaction and recognition of the graduates, as well as the applicability of their professional knowledge and skills.

(3) Survey the graduates five years later. The survey mainly examines students'

job positions, job development, income, job satisfaction, the number of job changes after graduation, job adaptation, etc.

10.6 Quality Management

1. Improve the professional teaching quality monitoring and management system, perfect the quality standards in aspects such as classroom teaching, teaching evaluation, experimental (training) teaching, on-the-job internship, course design, graduation design (thesis), professional research, talent training program update, and resource construction, and achieve talent training specifications through teaching implementation, process monitoring, quality evaluation and continuous improvement.

2. Improve the teaching management mechanism, strengthen the daily operation and management of teaching organization, regularly carry out diagnosis and improvement of course construction level and teaching quality, and establish and improve systems such as class inspection, class observation, teaching evaluation and learning evaluation. Relying on the Teaching supervision alliance of Higher Vocational colleges, we will carry out demonstration supervision, diagnostic supervision and evaluation supervision, enforce teaching discipline, strengthen the function of teaching organization, and regularly conduct activities such as open classes and demonstration classes to comprehensively improve the quality of education and teaching.

3. Establish an evaluation index system for the quality of talent cultivation, which mainly consists of three parts: cultivation objectives, cultivation process and cultivation quality.

Table 14 Evaluation Index System for quality of professional talent cultivation

Serial Numbers	Indicators	Content
1	Cultivation goals	The development of the talent cultivation program of this major follows the objective and objective laws of talent cultivation. The talent cultivation orientation and goals are established based on the demand for industry positions in the regional economy. A long-term mechanism has been formed for the research on the market demand for industry positions. It is updated annually and closely follows the new trends in industry development and the new dynamics of the demand for industry positions. To ensure consistency between talent cultivation and industrial development, the curriculum system based on market research and expert argumentation is professional, systematic and in line with the regularity of

			career development. The talent cultivation plan is accurate in positioning the talent cultivation goals, consistent with the development of the industry, and has a certain degree of forward-looking.
2	Training process	Curriculum system	Jointly developed by the school and the enterprise, it fully reflects the alignment of the curriculum content with professional standards. The curriculum system is oriented towards positions such as construction workers, quality inspectors, and data clerks, in line with the regularity of career development. All core professional courses are jointly developed by the school and enterprises, and the course content is in line with the professional standards.
		Teaching methods	The construction of professional core courses includes three-dimensional teaching resources such as the course website, and adopts various teaching methods such as project-based teaching, case teaching, blended teaching, and integrated theory and practice teaching to enhance classroom effectiveness and improve teaching quality.
		Base construction	Relying on the comprehensive training base of construction technology supported by the central government's finance, the practical teaching of the course is effectively connected with the work process; The off-campus training bases established by the ** Construction Industry-Education alliance meet the needs of students for work-study alternation, on-the-job internship and teachers for social practice.
		Faculty development	Build a "dual-qualified" full-time and part-time teaching team. The proportion of full-time teachers with dual-qualified qualities should be no less than 90%, and the ratio of part-time teachers should be no less than 1:3. All full-time teachers should have practical experience in enterprises.
3	Quality of training		This major builds an education system that integrates moral, intellectual, physical, aesthetic and labor education, and integrates the spirit of labor, the spirit of model workers and the spirit of craftsmanship throughout the entire education process to shape new era Lu Ban craftsmen. We attach great importance to the cultivation of students' professional practical abilities, actively carry out innovation and entrepreneurship education, and enhance students' professional qualities. The students of this major have a high employment rate and a high rate of job matching. Relevant enterprises in the construction industry give full recognition to the students' professional ability, professional quality and business knowledge.

4. The school has established a follow-up feedback mechanism for graduates and a social evaluation mechanism, and analyzed the source of students, the academic performance of current students, the employment situation of graduates, etc., and regularly evaluated the quality of talent cultivation and the achievement of training goals.

5. Establish a regular and dynamic diagnosis and improvement mechanism for specialties. Based on the PDCA cycle theory, build and operate a spiral system for improving the quality of professional talent cultivation, conduct real-time monitoring and multi-dimensional evaluation of the implementation of courses within the major, promptly identify problems and issue warnings and make corrections, conduct phased diagnosis of the overall situation of professional construction and the effect of talent

cultivation, and provide timely feedback and improvement, to form a regular and sustainable self-diagnosis and improvement mechanism.

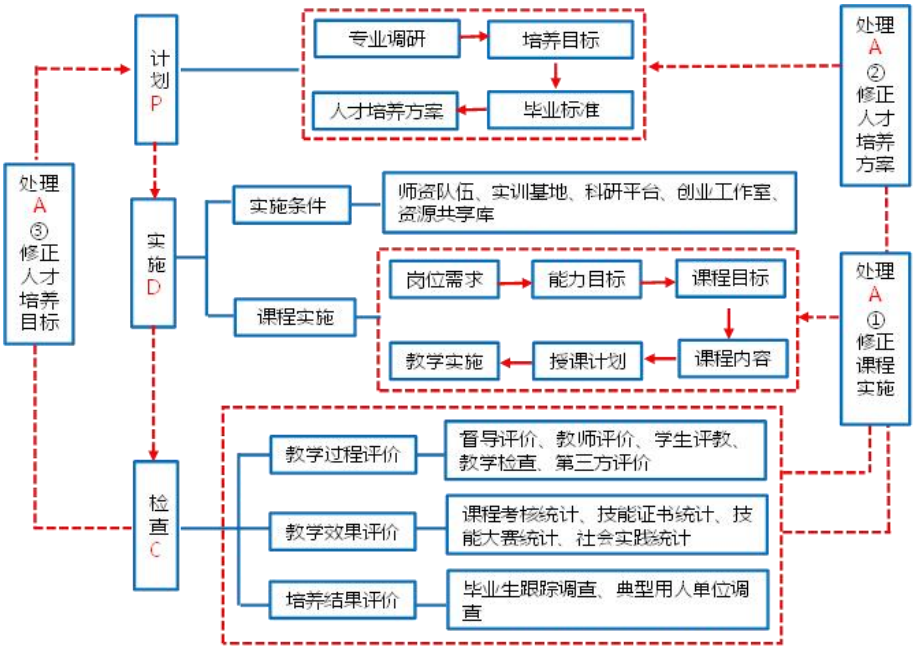

Figure 5 Architecture diagram of the professional information-based quality assurance platform based on PDCA

11 Graduation Requirements

11.1 Credit Requirements

Within the prescribed period of study, complete all teaching tasks as required and obtain a minimum of 137 credits for graduation in the corresponding major, including 9 credits of professional elective courses.

11.2 Certificate Requirements

1.HSK: Obtain a HSK level 4 certificate or equivalent.

2. Computer Proficiency Test Level 1 certificate or equivalent.

3. It is recommended to obtain at least one of the following certificates:

(1) Building Information Modeling (BIM) Vocational Skill Level Certificate, issued by Langfang Zhongke Building Industrialization Innovation Research Center.

(2) Vocational Skill Level Certificate for Fabrication and Installation of Prefabricated Building Components, issued by Langfang Zhongke Building Industrialization Innovation Research Center.

(3) Building Engineering Drawing Reading Vocational Skill Level Certificate, issued by Guangzhou ZWsoft Co., LTD.

(4) Certificate of Quality Inspector for Prefabricated Components, issued by the Shanghai Engineering Construction Quality Management Association.

(5) AUTOCAD (Intermediate) Vocational and Technical Training certificate, issued by the National CAD Application Training Network - Nanjing Center.

(6) 3DSMax (Intermediate) Vocational and Technical Training Certificate, issued by National CAD Application Training Network - Nanjing Center.

(7) Photoshop (Intermediate) Vocational and Technical Training Certificate, issued by National CAD Application Training Network - Nanjing Center.

(8) Sensor Network Application Development Vocational Skill Level Certificate (Intermediate), issued by Beijing Newland Times Education Technology Co., LTD.

(9) Special Technical Certificate of "Internet of Things System Application Technology" issued by the Education and Examination Center of the Ministry of Industry and Information Technology.

11.3 Requirements for quality, knowledge and ability

Table 15 Breakdown of graduation Requirements Indicators

Graduation Requirements	Break down metrics	Interpretation of the connotation of graduation requirement indicators
Graduation Requirement 1 Engineering knowledge: Possess the common basic knowledge of advanced mathematics, English, computer science, etc. necessary for this major; Have professional basic knowledge such as architectural drawing, architectural mechanics, building materials, etc. Have professional knowledge of modern architectural design, construction, operation and maintenance management, etc.	1.1 Master the knowledge of mathematics, natural science and engineering cost, and be able to correctly understand the ideas, methods and expressions for solving construction project cost problems.	Master the mathematics, natural science, engineering fundamentals and professional knowledge needed to solve the problem, be able to understand the scientific thinking and methods of engineering cost, and be able to use them to describe the problem.
	1.2 Be able to apply relevant knowledge to specific objects, deduce and analyze problems.	Be able to apply mathematical, natural science, and engineering knowledge and methods to deduce and analyze specialized problems for specific engineering problem objects.
	1.3 Be capable of proposing solutions to professional engineering problems based on	Be able to integrate mathematical, natural science, engineering knowledge and methods to propose

	relevant knowledge and solving the problems.	solutions and solve professional problems.
Graduation Requirement 2: Problem Analysis: Be capable of effectively expressing general engineering problems in construction projects using drawings, text, software, etc. Be capable of analyzing and abstract-modeling general engineering problems in the field of architectural engineering technology, and applying the professional knowledge learned for analysis.	6.1 Master the basic knowledge of construction engineering and be able to break down and express problems in the field of construction engineering.	Be able to use the basic principles and knowledge of construction engineering to break down and express engineering problems in the field of construction engineering.
	6.2 Master the professional knowledge of construction project cost, and be able to analyze and model problems such as construction project design and construction.	Be able to apply professional knowledge of construction engineering to analyze solutions to key links of specific and complex engineering problems in construction engineering design and construction.
	6.3 Be able to apply knowledge of construction engineering and reference literature to solve problems in the field of construction engineering and draw effective conclusions.	Be able to comprehensively apply knowledge of construction engineering, learn literature research methods, and use references to analyze the influencing factors in the process of solving complex engineering problems, and seek alternative solutions to obtain effective conclusions.
Graduation requirement 3 Data organization and Information Collection: Master the basic methods of literature retrieval, and have the ability to collect, analyze, judge and select relevant technical information using modern information technology tools; Familiar with archival management methods and proficient in computerized archival management information systems; Have the ability to collect, organize and manage archives such as materials and drawings in the process of engineering project construction.	3.1 Master the ideas and contents of data organization	Be able to use modern information technology means to collect, analyze, judge and select relevant technical information
	3.2 Master the methods of archive management	Be able to manage archives using a computerized archive management system
	3.3 Master the collection and management of data during the construction process of engineering projects	Be able to use information technology to collect and organize engineering data, drawings and other materials during the construction process
Graduation requirement 4 Design Solutions: For general engineering problems, be able to propose specific construction plans based on factors such as laws and regulations, environment, society, safety, and culture, combined with technical	4.1 Master the knowledge of laws and regulations, society, safety, etc	Be capable of applying comprehensive professional knowledge to solve various influencing factors encountered in general engineering problems.
	4.2 Be able to propose technical construction plans	Be able to propose specific construction plans by taking into

conditions.		account social, safety, and cultural factors, and in combination with technical conditions.
Graduation requirement 5 Use of modern tools: Proficient in common office software; Familiar with professional software related to construction, management, maintenance, design, Internet of Things technology application, BIM application, familiar with relevant network technology, and able to use common professional software for drawing, modeling, measurement and valuation, project management, project maintenance, etc.	5.1 Master the basic knowledge and application methods of modern tools and information technology needed to solve complex engineering problems in the field of construction engineering.	Master the principles and methods of using modern tools, information technology tools, engineering tools and simulation software commonly used in the field of construction engineering, and understand their limitations.
	5.2 Be able to select, develop and use appropriate technologies, resources, modern engineering tools and information technology tools to simulate, analyze, predict or control problems in the field of construction engineering.	Be able to reasonably select, develop and use corresponding modern tools, information technology tools, engineering tools and simulation software for the analysis, prediction or control of complex engineering problems in specific construction engineering fields.
	5.3 Understand the limitations of modern engineering tools and information technology tools in addressing complex engineering problems in mechanical engineering.	Be able to understand the limitations of modern engineering tools and information technology tools in solving complex engineering problems in the field of mechanical engineering based on the analysis and calculation results of specific objects.
Graduation requirements 6 Job skills: Meet the job skills requirements related to construction worker, quality inspector, safety officer, data clerk, BIM modeler, interior designer, Internet of Things, including measurement and layout, drawing reading, material inspection, construction organization, on-site coordination, quality management and control, data organization and collection, contract management, etc.	6.1 Understand the job content of the construction engineering technology position	Be competent in the work of a building engineering technology position, such as surveying and setting out, reading drawings, etc.
	6.2 Master the job content of construction engineering management positions	Be competent in construction project management positions such as construction organization, quality management and control, data organization and collection, contract management, etc.
Graduation requirements 7 Lifelong learning: Correctly understand the importance of lifelong learning and have a certain ability of self-study; Be able to make a learning plan based on one's own situation and	7.1 Have the awareness of autonomous learning and lifelong learning.	Be able to recognize the necessity of self-directed and lifelong learning in the context of social development.
	7.2 Be able to actively follow the development of the industry, and have the ability to continuously	Have the ability to learn independently, including the ability to understand technical issues, the

keep up with the development direction of the enterprise industry.	learn and adapt to the development of the profession and society.	ability to summarize and raise questions, etc.
Graduation requirement 8 Project Organization and Management: Possess the ability to organize and manage projects in accordance with the requirements of multiple disciplines related to the architectural engineering major; Be able to make reasonable economic, management and leadership decisions based on engineering economic theory.	8.1 Master the discipline knowledge related to construction engineering and carry out engineering organization and management work	Have professional knowledge and the ability to organize and manage construction projects
	8.2 Master the theory of engineering economics and make management and leadership decisions accordingly	Be able to make project decisions based on engineering economics theory
Graduation Requirement 9 Engineering and Society: Understand the responsibilities that engineering technicians should undertake in terms of public health, public safety, social and cultural, and legal aspects throughout the entire engineering project; Based on background knowledge and standards related to construction engineering, be able to evaluate the impact of the design, construction and operation plans of engineering projects on society, health, safety, law and culture.	9.1 Understand the responsibilities that engineering technicians should undertake in terms of public health, public safety, society and culture, etc	Be capable of undertaking the responsibilities of engineering and technical personnel in terms of public health, public safety, society and culture, as well as the law throughout the entire project process
	9.2 Master the methods for evaluating the social, health, safety, legal and cultural impacts of the design, construction and operation plans of engineering projects.	Be able to evaluate the social, health, safety, legal and cultural impacts of the design, construction and operation plans of the project.
Graduation Requirement 10 Environment and Sustainability: Understand the role of policies and regulations of the building engineering major and related industries in safeguarding the environment and sustainability; Be familiar with the interconnections between construction engineering-related technologies and environmental protection and sustainable development; Be familiar with the laws and regulations related to environmental protection, hygiene, safety and health in construction projects. Have the awareness to promote the use of new	10.1 Master the role of policies and regulations in the construction engineering specialty and related industries in safeguarding the environment and sustainable development.	Have the ability to formulate green construction plans for building projects.
	10.2 Be familiar with the interrelationship between construction engineering-related technologies and environmental protection and sustainable development.	Be able to have a green construction awareness of energy, water and land conservation in engineering practice
	10.3 Be familiar with the laws and regulations concerning environmental protection, hygiene, safety and health in construction projects.	Be able to implement green construction measures for energy and water conservation in engineering practice

energy-saving and environmentally friendly materials in engineering practice, attach importance to energy, water and land conservation, and carry out green construction.		
Graduation requirement 11 Professional norms: Be able to abide by professional ethics and behavioral norms in engineering practice; Quality awareness, environmental awareness, safety awareness, craftsmanship spirit and innovative thinking, as well as the spirit of hard work and teamwork.	11.1 Have humanistic and social science literacy and a sense of social responsibility.	Have correct values, understand the relationship between the individual and society, and be familiar with China's national conditions.
	11.2 Be able to understand and abide by engineering ethics and norms in construction engineering practice and fulfill responsibilities.	Understand the engineering ethics and norms of honesty, impartiality, integrity and code of conduct, and be able to consciously abide by them in engineering practice; Understand the engineer's social responsibility for the safety, health and well-being of the public, as well as environmental protection, and be able to fulfill that responsibility consciously in engineering practice.
Graduation Requirements 12 Communication and Coordination: Possess strong communication and coordination skills, be able to communicate and interact effectively with industry peers and the public through oral or written means, and be able to coordinate the relationships among construction units, construction units, design units, supervision units, government supervision departments and social supervision institutions in accordance with laws and regulations, fairly and objectively.	12.1 Have the awareness of self-directed learning and lifelong learning.	Be able to recognize the necessity of self-directed and lifelong learning in the context of social development.
	12.2 Be able to actively follow the development of the industry, and have the ability to continuously learn and adapt to the development of the profession and society.	Have the ability to learn independently, including the ability to understand technical issues, the ability to summarize and the ability to raise questions, etc.

Table 16 Support matrix analysis of course requirements for graduation

Teaching link	Objective 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8	Goal 9	Goal 10	Goal 11	Goal 12
College English	L						L					
Information technology	L					M	M	L			M	H
Applied Mathematics	L					L						L
Professional awareness and career outlook education	L		H	L		L			L			
Sports	L											
Military education	H											
Moral and ideological cultivation and legal basis	H	H	L	L						J		M
Military training	H								M			
Labour Education	L	M	M	M		L			H	J		H
Introduction to Artificial Intelligence	L				L			L				H
College Chinese	L						L					
Situation and Policy	H		M									H
Career development and career guidance	M	L	M	L	L		M		L			H
An Outline of MAO Zedong Thought and the theoretical System of Socialism with	H			M								
Building materials	H	H	L	M	L	M	H	L	L	L	L	L
Mechanics of Architecture	L	L	L	L	L	L	M	L	M	M	M	H
Architectural drawing and	M	H	L	L	H	H	M	M	L	L	M	L

Teaching link	Objective 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8	Goal 9	Goal 10	Goal 11	Goal 12
Fundamentals of BIM	M	H	M	M	H	H	L	M	L	L	L	H
House building structure	H	L	L	L	L	H	L	M	L	L	M	L
Building structure	H	H	L	H	H	M	M	L	M	M	H	M
Building equipment and	M	L	L	L	L	H	L	M	L	L	H	M
Engineering Surveying	L	H	L	M	H	M	L	M	L	L	L	L
Construction organization	H	M	L	M	M	H	M	M	M	H	M	L
Quality and safety	L	L	H	L	H	L	L	L	L	L	L	L
Measurement and valuation	M	M	L	M	M	H	M	M	M	H	M	L
Construction techniques	H	M	M	H	H	H	M	H	M	M	M	L
Construction project data	H	L	M	H	H	H	M	H	M	M	M	L
Building Information	H	M	M	H	M	H	H	H	H	H	M	L
Architectural engineering	M	L	L	H	H	H	M	H	M	M	M	L
Engineering Surveying	H	H	L	H	M	M	H	M	M	M	M	L
Construction drawing	M	L	L	M	L	H	L	M	L	L	M	L
Construction organization	H	L	M	L	L	M	L	M	H	H	M	M
Internship in Construction	M	M	M	M	M	H	M	H	M	M	H	H
Internship in Construction	M	M	M	M	M	H	M	H	M	M	H	H
Architectural Engineering	H	H	M	H	M	M	M	H	M	M	M	L

Note: In the table, for each course and practical link, the support strength for each graduation requirement is indicated by "H" (high), "M" (medium), and "L" (low) respectively.