Yunnan College of Business Management
of civil engineering
Civil Engineering 081001

Course Module Manual

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Ideological, Moral and Legal Education

Module Name	Ideological, Moral and Legal Education		
Semester of module instruction	Semester 1		
Module Owner	Li Yifan		
language	the Chinese language		
Relationship to the course	General education required courses		
teaching method	Teacher-centered methods: lecture, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Personalized approach: Cloud Class completes homework and video learning resources Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.2 hours per week for 18 weeks, totaling 21 hours, including homework and exam preparation time.		
credit	3 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the main content of the outlook on life and establish a correct outlook on life; understand the connotation and importance of ideals and beliefs; correctly recognize the relationship between ideals and reality, as well as the relationship between personal ideals and social ideals, grasp the principle of the unity of personal ideals and social ideals, and understand the basic requirements for setting lofty ideals and realizing them; deeply comprehend the basic connotation of the spirit of China, national spirit, and patriotism, and recognize patriotism in the new era; understand the scientific connotation and significance of socialist core values.	**R6**
	CLO2	Master and articulate the essence and functions of morality, the core and principles of socialist morality, and understand the basic connotations of traditional Chinese virtues and China's	**R7**

		revolutionary morality; establish a correct moral outlook, consciously inherit traditional Chinese virtues and China's revolutionary morality, and continuously improve moral character through virtuous practices; comprehend the significance of morality, uphold great virtues, observe public morals, and strictly adhere to private morals, thereby refining moral character.	
	CLO3	Recognize and articulate the basic content and connotation of the socialist legal system, the rule of law system, the path of rule of law, the rule of law thinking, and the legal rights and obligations; internalize the reverence for the rule of law in the heart and externalize the exemplary observance of the law in actions, enhance the rule of law literacy, and become the backbone of the construction of a rule-of-law China; improve the rule of law literacy, cultivate the rule of law thinking, respect and safeguard the authority of the law, and exercise power and fulfill obligations in accordance with the law.	**R8**
content	Through this course, students will master the basic knowledge and theory of outlook on life, values, ethics and law; have the basic ability to analyze and solve problems; constantly improve their ideological and moral quality and legal literacy, and grow into a new generation of the times who consciously shoulder the great task of national rejuvenation. Course Introduction: (Weight 2/54, Level: Memory + Understanding + Analysis) Chapter 1: Grasping Life's Essence and Charting Your Path (Weight: 6/54, Level: Memory + Understanding + Analysis) Chapter 2: Pursuing Great Ideals and Upholding Noble Beliefs (Weight: 6/54, Level: Memory + Understanding + Analysis) Chapter 3: Inheriting Fine Traditions and Promoting the Spirit of China (Weight: 12/54, Level: Memory + Understanding + Analysis) Chapter 4: Clarifying Value Pursuits and Practicing Value Principles (Weight: 8/54, Level: Memorization + Understanding + Analysis) Chapter 5: Adhering to Ethical Standards and Cultivating Moral Character (Weight: 12/54, Level: Memory + Understanding + Analysis) Chapter 6: Mastering Legal Philosophy and Enhancing Legal Literacy (Weight: 8/54; Level: Memorization + Understanding + Analysis)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.		

Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	(1) Recommended teaching material "Ideological Morality and Rule of Law", edited by the compilation group, Higher Education Press, February 2023. References [1] Political Science and Life, by Ross King, translated by Lin Zhen, People's University Press, 2014. [2] The Spirit of the Laws, by Montesquieu, translated by Zhang Yanshen, Commercial Press, 2012. [3] Walden, by Thoreau, translated by Li Jihong, Tianjin People's Publishing House, 2018. [4] 1984, by George Orwell, translated by Fu Xia, Times Literature Press, 2018. [5] "Xi Jinping's Seven Years as a Rural Youth", published by the CPC Central Party School Press in 2017. [6] Xi Jinping on the Overall National Security Concept, Central Literature Press, 2018. [7] On Upholding the Rule of Law in All respects, Central Literature Press, 2020. [8] Xi Jinping: The Governance of China, Vol. 3, China Foreign Languages Publishing House, 2020 edition. [9] Compilation of Documents of the 20th National Congress of the Communist Party of China, Party Building Reading Press, 2022. [10] "100 Questions on the Study of the 20th CPC National Congress", Party Building Literature Publishing House, 2022 edition. [11] "A Special Compilation of Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era", Party Building Literature Publishing House, 2024 edition.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

An Overview of Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era

Module Name	An Overview of Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era		
Semester of module instruction	Semester 1		
Module Owner	Li Yiyuan		
language	the Chinese language		
Relationship to the course	General education compulsory course		
teaching method	Teacher-centered methods: lecture, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Individualized approach: Complete homework and video learning on the cloud class platform; The method of practice: practical teaching.		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.2 hours per week for 18 weeks, totaling 21 hours, including homework and exam preparation time.		
credit	3 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Be able to articulate the latest theoretical achievements of the Sinicization and modernization of Marxism, fully comprehend the historical context, formation and development process, scientific system, historical status, and guiding significance of the new leap in the Sinicization and modernization of Marxism. Be able to elaborate on the overarching task of upholding and developing socialism with Chinese characteristics, and understand the strategic arrangements for comprehensively building a modern socialist country, as well as the guidelines, policies, and strategies for the modernization of socialism with Chinese characteristics in the new era. Study the content related to the comprehensive promotion of	**R6**

		Chinese-style modernization to advance the great rejuvenation of the Chinese nation, and understand that Chinese-style modernization is the only correct path for building a strong country and achieving national rejuvenation. Recognize that the leadership of the Communist Party of China is the most essential feature of socialism with Chinese characteristics, and acknowledge that upholding the Party's overall leadership is the only way to uphold and develop socialism with Chinese characteristics. Grasp the fundamental principle of putting people at the center, and establish the lofty ideal of serving the people and striving for the socialist cause.	
	CLO2	Be able to elaborate on the main content of Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era, articulate the "Five-in-One" overall layout and the "Four Comprehensives" strategic layout, grasp the strategic pillars for achieving socialist modernization, comprehend the country's major policies, and understand both the what and the why of national development strategies. Fully comprehend the theoretical characteristics and ideological styles contained in Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era, such as putting people first, lofty faith, historical consciousness, problem orientation, fighting spirit, and global vision, thereby enhancing political, theoretical, ideological, and emotional recognition of this thought.	**R7**
	CLO3	Be able to list the important guarantees for realizing the great rejuvenation of the Chinese nation, deeply understand the significance of adhering to "one country, two systems" and advancing the complete reunification of the motherland, be aware of China's current diplomatic characteristics and international role, and have a profound understanding of the key to comprehensively building a modern socialist country in the new era and advancing the great rejuvenation of the Chinese nation lies in comprehensively governing the Party with strict discipline. Be able to initially understand the basic principles behind the international situation and national policies, discern the policy orientation and development goals, focus on the unity of knowledge and action and applying what is learned, vigorously promote the fine academic style of linking theory with practice, and consciously use this ideology to guide the solution of practical problems.	**R8**
content	"An Overview of Xi Jinping Thought on Socialism with Chinese		

	Characteristics for a New Era" is a core course in the political theory curriculum of regular higher education institutions nationwide. The course systematically expounds the scientific theoretical system of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era. Through the study of topics such as the new leap in the Sinicization of Marxism, the overarching task of upholding and developing socialism with Chinese characteristics, upholding the Party's overall leadership, putting people at the center, guiding high-quality development with new development concepts, comprehensively deepening reform, developing whole-process people's democracy, advancing the rule of law, building a strong socialist cultural country, strengthening social construction with a focus on people's livelihood, building a socialist ecological civilization, fully building the people's army into a world-class force, comprehensively implementing the overall national security outlook, upholding "one country, two systems" and advancing national reunification, promoting the building of a community with a shared future for mankind, comprehensively governing the Party with strict discipline, and being pioneers and trailblazers in the new journey, students can fully grasp and effectively apply this latest theoretical achievement of the Sinicization of Marxism, establish correct worldviews, outlooks on life, and values; students can consciously apply the Marxist standpoint, viewpoint, and methodology to enhance their ability to analyze and solve practical problems arising in the construction of socialism with Chinese characteristics in the new era; students can establish the common ideals and beliefs of socialism with Chinese characteristics in the new era. content of courses： Introduction (3/54 credits, Level: Memory + Understanding + Analysis) Chapter 1 Upholding and Developing Socialism with Chinese Characteristics in the New Era (Weight: 3/54, Level: Memory + Understanding + Analysis) Chapter 2: Advancing the Great Rejuvenation of the Chinese Nation Through Chinese-Style Modernization (Weight: 3/54; Level: Memory + Understanding + Analysis) Chapter 3: Upholding the Party's Overall Leadership (3/54 Weight, Level: Memorization + Understanding + Analysis) Chapter 4: Upholding People-Centric Governance (3/54 Weight, Level: Memory + Understanding + Analysis) Chapter 5: Comprehensive Reform and Deepening (3/54 Weight, Level: Memorization + Understanding + Analysis) Chapter 6 Promoting High-Quality Development (Weight: 3/54, Level: Memory + Understanding + Analysis) Chapter 7: Education, Science, and Talent Strategies for Socialist Modernization (3/54 Weight, Level: Memorization + Understanding + Analysis) Chapter 8: Developing People's Democracy Throughout the Entire Process (Weight: 3/54; Level: Memorization + Understanding + Analysis) Chapter 9 Comprehensive Rule of Law (Weight: 3/54, Level: Memorization + Understanding + Analysis) Chapter 10: Building a Socialist Cultural Powerhouse (Weight: 3/54;

	Level: Memory + Understanding + Analysis) Chapter 11: Strengthening Social Development with a Focus on Ensuring and Improving People's Livelihood (Weight: 3/54, Level: Memory + Understanding + Analysis) Chapter 12: Building a Socialist Ecological Civilization (Weight: 3/54; Level: Memory + Understanding + Analysis) Chapter 13 Safeguarding and Building National Security (3/54 Weight, Level: Memory + Understanding + Analysis) Chapter 14: Building a Strong National Defense and People's Army (Weight: 3/54; Level: Memory + Understanding + Analysis) Chapter 15: Upholding 'One Country, Two Systems' and Advancing the Complete Reunification of the Motherland (Weight: 3/54; Level: Memorization + Understanding + Analysis) Chapter 16 China's distinctive major-country diplomacy and promoting the building of a community with a shared future for mankind (weight 3/54, level: memory + understanding + analysis) Chapter 17: Comprehensive Strict Governance of the Party (Weight: 3/54; Level: Memorization + Understanding + Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score, including classroom performance, independent learning, periodic test, practical teaching, etc. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "An Overview of Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era" Higher Education Press, People's Publishing House, August 2023 edition 2. A Guide to the Report of the 20th CPC National Congress, People's Publishing House, October 2022 3. A Guide to 100 Questions on the Study of the Report of the 20th CPC National Congress, published by Learning Publishing House and Party Building Literature Publishing House in October 2022
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Basic principles of Marxism

Module Name	Basic principles of Marxism		
Semester of module instruction	Second semester		
Module Owner	Shen Shiqiang		
language	the Chinese language		
Relationship to the course	General Education Courses		
teaching method	Teacher-centered methods: lecture, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Practical hours: 1.2 hours per week for 18 weeks, totaling 21 hours, including after-class assignments, exam preparation time, etc.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Ideological and Moral Education and Rule of Law, Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	8.1 Have good moral character, correct world outlook, outlook on life and values, and understand the relationship between the individual and society;	**R8、R12**
Content	This course is a systematic lecture on the basic theories of Marxism, integrating the three main components of Marxism—Marxist philosophy, political economy, and scientific socialism—into an organic whole. It aims to help students correctly understand the fundamental laws of human social development, accurately grasp the historical process of capitalist development, establish correct worldviews, outlooks on life, and values, cultivate and enhance students' ability to analyze and solve practical problems using Marxist theory, and strengthen their ideals and convictions in striving for the great cause of socialism with Chinese characteristics. The specific objectives are as follows: Course Objective 1: To explain the developmental patterns of nature, thought, and human society, and to apply Marxist fundamental		

	perspectives, positions, and methodologies in analyzing civil engineering challenges. By guiding students with positive, scientific, and correct values, this program aims to cultivate proper worldviews, life philosophies, and value systems among civil engineering students. Course Objective 2: Be able to explain the basic methods of Marxism to understand and transform the world, and use the basic views and methods of Marxism to analyze various problems and situations faced by civil engineering. Be able to formulate practical work plans according to different engineering situations, and improve the pertinence and effectiveness. Course Objective 3: To articulate the scientific worldview and methodology of Marxism, master critical thinking, and discern the developmental trajectory of the world through analyzing the relationship between existence and thought. This will continuously enhance one's ability to comprehend the world, develop reflective capabilities in civil engineering contexts, and strengthen logical reasoning skills to adapt to diverse complex scenarios. content of courses： Introduction (2/54 weight, Level: Memory) Chapter 1: The Materiality of Matter and Its Developmental Laws (Weight: 10/54, Levels: Memorization, Comprehension, Evaluation) Chapter 2: Practice, Cognition, and Their Developmental Patterns (Weight: 8/54; Levels: Memorization, Comprehension, Evaluation) Chapter 3: Human Society and Its Developmental Patterns (Weight: 14/54; Level: Memorization, Comprehension, Evaluation; Includes Social Practice) Chapter 4: The Essence and Laws of Capitalism (Weight: 8/54, Level: Memorization and Understanding) Chapter 5: The Development and Trends of Capitalism (Weight: 4/54, Level: Memorization and Understanding) Chapter 6: The Development of Socialism and Its Laws (Weight: 6/54, Level: Memorization and Understanding) Chapter 7: The Noble Ideal of Communism and Its Ultimate Realization (Weight: 2/54, Level: Memory & Comprehension)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Marx: "Economic and Philosophic Manuscripts of 1844", "Theses on Feuerbach", "Introduction to the Critique of Hegel's Philosophy of

	Right", "Das Kapital", "Critique of the Gotha Program", "The German Ideology". 2. Engels: "Speech at Marx's Grave", "Ludwig Feuerbach and the End of German Classical Philosophy", "The Origin of the Family, Private Property and the State", "Anti-Dühring", "Dialectics of Nature" (relevant chapters). 3. Marx and Engels: The Communist Manifesto, Nine Letters on Historical Materialism 4. Lenin: "Karl Marx", "Friedrich Engels", "On Several Features of the Historical Development of Marxism", "The Three Sources and Three Components of Marxism", "On Dialectics", "Elements of Dialectics". 5. Mao Zedong: "Concern for the People's Livelihood and Attention to Working Methods", "On Practice", "On Contradiction", "Where Do Correct Human Thoughts Come From?", "Reforming Our Study", "Serving the People". 6 Stalin: On the Foundations of Leninism, On Dialectical Materialism and Historical Materialism. 7 Deng Xiaoping: "Emancipate the mind, seek truth from facts, and unite as one to look forward", "Building socialism with Chinese characteristics", "Unity can only be achieved by ideals and discipline", "Key points of talks in Wuchang, Shenzhen, Zhuhai, Shanghai, etc." 8. Jiang Zemin: "On the Three Represents", "Speech at the Celebration of the 80th Anniversary of the Founding of the Communist Party of China", and "Speech by Chairman Jiang Zemin at the Panel Discussion of the Millennium Summit of the United Nations". 9 Hu Jintao: "Speech at the Symposium on the Important Theory of the Three Represents", "Unswervingly Advancing Along the Path of Socialism with Chinese Characteristics for the Building of a Moderately Prosperous Society in All Respects ——— Report at the 18th National Congress of the Communist Party of China", "Speech at the Symposium on Enhancing the Ability of Leading Officials at the Provincial and Ministerial Levels to Build a Socialist Harmonious Society". 10 Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, Publicity Department of the CPC Central Committee, People's Publishing House, June 2019 edition. 11 Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, 30 Lectures, Publicity Department of the CPC Central Committee, Study Press, May 2018 edition. 12 Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, 2023 Edition, Learning Publishing House and People's Publishing House, 2023 Edition. 13 Selected Works of Xi Jinping, Vol. 1 and Vol. 2, People's Publishing House, 2023.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Essentials of Chinese Modern History

Module Name	Essentials of Chinese Modern History		
Semester of module instruction	Second semester		
Module Owner	Xie Lilei		
language	the Chinese language		
Relationship to the course	General Education Required Courses		
teaching method	Teacher-centered methods: lecture method, case analysis method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical method: practical teaching		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.2 hours per week for 18 weeks, totaling 21 hours, including homework and exam preparation time.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Ideological and Moral Education and Rule of Law, Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Explain why the Opium War marked the beginning of modern China's history, and describe the foreign military aggression, economic plunder, political control, and cultural subjugation against China after the Opium War. Understand the exploration of national salvation by the peasant class, the landlord class ruling group, and the bourgeois reformists and revolutionaries, and identify the reasons and lessons for their failure. Recognize the two historical tasks facing modern China: striving for national independence, people's liberation, and achieving national prosperity and modernization. Apply Marxist materialist historiography to solve practical problems in China.	R8
	CLO2	Explain the historical inevitability and significance of the founding of the Communist Party of China, and recognize the theme and main thread of China's history since the founding of the Communist Party of China. Understand the great	R8

		historical significance of the founding of the People's Republic of China. Master the efforts and achievements of the Communist Party of China in exploring the path of socialist construction in China. Explain the inevitability and necessity of the Communist Party of China's reform and opening up and socialist modernization. Deeply comprehend how history and the people chose Marxism, the Communist Party of China, the socialist path, and reform and opening up. Ultimately, promote college students to clarify their ideological misunderstandings and consciously resist the erroneous trend of historical nihilism.	
	CLO3	Deeply grasp the overall impact and significance of the changes in the principal social contradiction in the new era. State the theme and historical significance of the 20th National Congress of the Communist Party of China, and outline the work of the past five years and the great changes of the new era over the past decade. Adhere to Marxism-Leninism, Mao Zedong Thought, Deng Xiaoping Theory, the important thought of the "Three Represents," and the Scientific Outlook on Development. Fully implement Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, and use the Marxist standpoint, viewpoint, and methodology to observe, grasp, and lead the times, continuously deepening our understanding of the laws of governance by the Communist Party, the laws of socialist construction, and the laws of human social development.	R8
content	Through this course, students will understand the profound suffering inflicted on the Chinese nation and the Chinese people by foreign capital-imperialist aggression and its collusion with Chinese feudal forces; comprehend the two historical tasks facing China since modern times: striving for national independence and people's liberation, and achieving national prosperity and people's well-being; learn about the arduous explorations and tenacious struggles of China's advanced individuals and the masses for national salvation and survival, along with their lessons and experiences; connect with the domestic and international environment after the founding of New China to understand the historical inevitability of the Chinese people embarking on the socialist path led by the Communist Party; deeply grasp how history and the people chose Marxism, the Communist Party of China, the socialist path, and reform and opening-up. By closely integrating China's modern and contemporary historical realities and analyzing relevant historical processes, events, and figures, students will enhance their ability to apply scientific historical perspectives and methodologies to analyze historical issues and discern historical truths. Through drawing lessons from history, students will reflect on and explore the cultural essence that enabled the Chinese nation to achieve modernization, cultivating a new national cultural psychology that is neither arrogant nor self-		

	deprecating, yet confident and humble. content of courses： Introduction (Weight: 2/54, Level: Memory-Evaluation) Chapter 1: The Chinese Nation's Struggles and Resistance in the Modern Era (Weight: 4/54, Category: Memory-Evaluation) Chapter 2: Early Explorations of National Development by Various Social Forces (Weight: 5/54, Category: Memory-Evaluation) Chapter 3: The Xinhai Revolution and the End of Monarchical Autocracy (Weight: 4/54, Category: Memory-Evaluation) Chapter 4: The Founding of the Communist Party of China and the New Situation of the China Revolution (Weight 6/54, Level: Memory-Evaluation) Chapter 5: New Path of China Revolution (Weight 5/54, Level: Memory-Evaluation) Chapter 6: China's War of Resistance Against Japan (Weight: 7/54, Category: Memory-Evaluation) Chapter 7: Striving to Establish a New China (Weight 6/54, Level: Memory-Evaluation) Chapter 8 The Founding of the People's Republic of China and the Exploration of the Socialist Construction Path of China (Weight 5/54, Level: Memory-Evaluation) Chapter 9 Reform and Opening-up and the Founding and Development of Socialism with Chinese Characteristics (Weight 5/54, Level: Memory-Evaluation) Chapter 10: China's Socialism with Chinese Characteristics Enters a New Era (Weight 5/54, Level: Memory-Evaluation)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates students' self-directed learning, classroom participation, assignments, periodic tests, practical teaching, and component scores. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a final exam, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Basic Principles of Steel Structures" edited by Shen Zuyan, China Architecture & Building Press, June 2018. 2. "Basic Principles of Steel Structures" edited by Cui Jia, China Architecture & Building Press, published in September 2019. 3. "Steel Structure Design Standard" (GB50017-2017), China Architecture & Building Press, 2017. 1. From the Opium War to the May 4th Movement (Part II), People's

	Publishing House, 2010. 2. Selected Works of MAO Zedong (vols. 1-4), People's Publishing House, 1991. 3. Selected Works of Deng Xiaoping (Volume III), People's Publishing House, 1993. 4. Selected Documents of the CPC Central Committee, CPC Central Party School Press, 1994. 5. Selected Works of Jiang Zemin (Volume 1), People's Publishing House, 2006. 6. "Learning Reader of Scientific Outlook on Development", Learning Press, 2006 edition. 7. Selected Important Documents Since the Founding of the People's Republic of China, Central Documents Press, 2011. 8. Xi Jinping: The Governance of China, Foreign Languages Press, 2014. 9. "Ninety Years of the Communist Party of China", published by CPC History Press and Party Building Literature Press in 2016. 10. A Brief History of the Communist Party of China, CPC History Press, 2021. 11. "100 Questions on the Study of the Resolution of the Sixth Plenary Session of the 19th CPC Central Committee", Party Building Literature Publishing House, Study Daily Publishing House, 2021 edition. 12. "100 Questions on the Study of the Report of the 20th CPC National Congress", Party Building Literature Publishing House, Study Daily Publishing House, 2022 edition.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

An Overview of Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics

Module Name	An Overview of Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics		
Semester of module instruction	3rd semester		
Module Owner	Li Di		
language	the Chinese language		
Relationship to the course	General Education Required Courses		
teaching method	Teacher-centered methods: lecture method, case analysis method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical method: practical teaching		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.2 hours per week for 18 weeks, totaling 21 hours, including homework and exam preparation time.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Ideological and Moral Education and Rule of Law, Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, Basic Principles of Marxism, Outline of Modern and Contemporary History of China		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Explain the connotation, theoretical achievements, and internal logical relationships of the Sinicization and modernization of Marxism; understand how the Communist Party of China adheres to combining the basic principles of Marxism with China's specific realities and with the fine traditional Chinese culture, continuously advancing the Sinicization and modernization of Marxism.	**R6、7、8、12**
	CLO2	Explain the formation, development, core content, and guiding principles of Mao Zedong Thought. Systematically understand the Marxist positions, viewpoints, and methodologies embedded in Mao Zedong Thought. Learn to accurately assess the historical significance of Comrade Mao Zedong	**R6、7、8、12**

		and Mao Zedong Thought.	
	CLO3	Explain the background and formation process of the theoretical system of socialism with Chinese characteristics, elaborate on the scientific connotation, main content, and theoretical essence of Deng Xiaoping Theory, the important thought of the "Three Represents," and the Scientific Outlook on Development, and systematically grasp the Marxist stance, viewpoints, and methods contained in the theoretical system of socialism with Chinese characteristics. Strengthen confidence in the path, theory, system, and culture of socialism with Chinese characteristics, and enhance political, ideological, and emotional identification.	**R6、7、8、12**
	CLO4	In social practice, we should better integrate theoretical knowledge with practical application by closely connecting it with the history of the Communist Party, the history of New China, the history of reform and opening-up, the development of socialism, and the evolution of the Chinese nation. This requires aligning with the great practices of waging great struggles, building great projects, advancing great causes, and realizing great dreams, while closely integrating with the actual needs of comprehensively building a modern socialist country. Furthermore, we must connect with our own ideological realities, achieving an organic unity between theory and practice, ideals and reality, subjectivity and objectivity, as well as knowledge and action.	**R6、7、8、12**
content	Through studying this course, students first strive to master basic theories. They gain an understanding of the historical process, transformations, and achievements of the Communist Party of China leading the people in revolution, construction, and reform. They develop a deeper comprehension of how the Communist Party of China adheres to combining the basic principles of Marxism with China's specific realities and with the excellent traditional Chinese culture, continuously advancing the Sinicization and modernization of Marxism. They also achieve a more accurate grasp of the theoretical achievements formed in the process of the Sinicization and modernization of Marxism, strengthening their confidence in the path, theory, system, and culture of socialism with Chinese characteristics, and enhancing political, ideological, and emotional identification. Second, the course cultivates students' theoretical thinking. By learning to grasp the ideas behind theories, the strategies within them, and the wisdom contained within strategies, students are inspired by ideas, enlightened by strategies, and enlightened by wisdom. This continuously improves their theoretical and ideological level and enhances their ability to analyze and solve problems. Third, the course helps students connect theory with practice. It closely links the history of the Party, the history of New China, the history of reform and opening up, the history of socialist development, and the history of the development of the Chinese nation. It integrates the great practice of the great struggle, the great project of construction,		

	the great cause of advancement, and the great dream of realization, aligns with the actual construction of a modern socialist country, and connects with students' own ideological realities. This organically unifies theory with practice, ideals with reality, subjectivity with objectivity, and knowledge with action, encouraging students to consciously engage in the great practice of socialism with Chinese characteristics and make due contributions to the great rejuvenation of the Chinese nation. content of courses： Introduction: The Historical Process and Theoretical Achievements of Sinicizing and Modernizing Marxism (Weight: 3/54, Category: Memory-Evaluation) Chapter 1 Mao Zedong Thought and Its Historical Significance (Weight: 6/54, Category: Memorization-Evaluation) Chapter 2: New Democratic Revolution Theory (Weight: 6/54, Category: Memory-Evaluation) Chapter 3: Socialist Transformation Theory (Weight: 6/54, Category: Memorization-Evaluation) Chapter 4: Theoretical Achievements of Initial Exploration in Socialist Construction (Weight: 6/54, Category: Memory-Evaluation) Chapter 5 The Formation and Development of the Theoretical System of Socialism with Chinese Characteristics (Weight: 6/54, Level: Memory-Evaluation) Chapter 6 Deng Xiaoping Theory (9/54 weight, Level: Memory-Evaluation) Chapter 7: The Important Thought of the Three Represents (Weight: 6/54, Category: Memorization-Evaluation) Chapter 8 Scientific Outlook on Development (Weight: 6/54, Category: Memorization-Evaluation)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates students' self-directed learning, classroom participation, after-class assignments, and periodic assessments, with corresponding point allocations. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content through the form of final examination, and evaluates the achievement of the course's knowledge objectives, ability objectives and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "An Overview of the Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics (2021 Edition)" edited by the Editorial Group. "An Overview of the Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics".

	Beijing: Higher Education Press: 2021 2. Sun Jutao. An Introduction to Deng Xiaoping Theory and the Important Thought of the Three Represents. Wuhan: Wuhan University Press, 2003. 3. Zhuang Fuling (Ed.). Mao Zedong Thought: An Introduction. Beijing: Renmin University of China Press, 1991. 4. Selected Works of Mao Zedong, Volumes 1, 2, 3, and 4, People's Publishing House, 1991 5. Mao Zedong's Collected Works, Volumes 1-8, People's Publishing House, 1999 edition. Renmin University of China Press. 6. Selected Works of Deng Xiaoping, Volumes 1, 2, and 3, People's Publishing House, 1994 edition 7. The report of the 17th National Congress of the Communist Party of China "Hold high the great banner of socialism with Chinese characteristics and strive for new victories in building a moderately prosperous society in all respects" 8. The report of the 18th National Congress of the Communist Party of China "Unswervingly advance along the path of socialism with Chinese characteristics and strive for the building of a moderately prosperous society in all respects" 9. Report of the 19th National Congress of the Communist Party of China "Decisive Victory in Building a Moderately Prosperous Society in All Respects and Securing a Great Victory for Socialism with Chinese Characteristics in the New Era", People's Publishing House, 2017 edition. 10. "Thirty Lectures on Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era", Publicity Department of the CPC Central Committee, Learning Publishing House, May 2018 edition. 11. "Study Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era", Publicity Department of the CPC Central Committee, Study Press, June 2019 edition. 12. "Xi Jinping on 'Staying True to Our Original Aspiration and Keeping Our Mission Firmly in Mind'," edited by Xi Jinping, Central Party History and Literature Research Institute, Party Building Literature Publishing House, August 2019 edition. 13. The report of the 20th National Congress of the Communist Party of China "Hold high the great banner of socialism with Chinese characteristics and unite to strive for the comprehensive building of a modern socialist country" 14. "Study Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era (2023 Edition)", Publicity Department of the CPC Central Committee, Study Press, People's Publishing House 1. "Basic Principles of Steel Structures" edited by Shen Zuyan, China Architecture & Building Press, June 2018. 2. "Basic Principles of Steel Structures" edited by Cui Jia, China Architecture & Building Press, published in September 2019. 3. "Steel Structure Design Standard" (GB50017-2017), China Architecture & Building Press, 2017.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

situation and policy

Module Name	situation and policy		
Semester of module instruction	Second semester		
Module Owner	Roddan		
language	the Chinese language		
Relationship to the course	General education compulsory course		
teaching method	Teacher-centered methods: lecture, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Individualized approach: Complete homework and video learning on the cloud class platform;		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 48 hours in total Self-study hours: 2 hours, including: after-class assignments, preparation time, etc		
credit	2 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	We must recognize that culture forms the bedrock of national identity and destiny. As the world's only enduring civilization that has evolved through statehood, Chinese civilization now stands at a pivotal historical juncture of building a strong nation and achieving national rejuvenation. The Chinese nation's historic leap from standing up to becoming prosperous and strong will inevitably be accompanied by the flourishing of Chinese culture, and will ultimately call for the establishment of a socialist cultural powerhouse.	**R7、R8、R12**
	CLO2	It is important to understand that since the 18th National Congress of the Communist Party of China, China has achieved historic accomplishments in green and low-carbon development, with accelerated progress in the green energy transition, continuous optimization and upgrading of industrial structures, sustained improvement in resource utilization efficiency,	**R7、R8、R12**

	and ongoing enhancement of environmental quality, laying a solid foundation for further promoting green transformation. In 2024, the Central Committee of the Communist Party of China and the State Council issued the "Opinions on Accelerating the Comprehensive Green Transformation of Economic and Social Development," proposing to integrate the requirements of green transformation into the overall economic and social development, advancing green transformation in all aspects, fields, and regions. In teaching, students should fully recognize the significance of comprehensively advancing green transformation, deeply understand the difficulties and challenges currently faced in accelerating the comprehensive green transformation of economic and social development, and inspire young students to leverage their talents and actively participate in the construction of a green China.	
CLO3	The ability to educate is the foundation for building a strong nation and achieving national rejuvenation. Building a strong education nation has been a cherished aspiration of the Chinese nation since modern times, serving as a pioneering task, solid foundation, and strategic support for advancing the great cause of national rejuvenation through Chinese-style modernization. The Outline states that the education nation we aim to build is a socialist education nation with Chinese characteristics, characterized by strong ideological and political guidance, talent competitiveness, technological support, livelihood security, social coordination, and international influence. Currently, the central task of our Party is to unite and lead people of all ethnic groups across the country to advance the great rejuvenation of the Chinese nation through Chinese-style modernization. The strategic interests and goals of the nation determine the priority orientation of national development, and the construction of a strong education nation must be given top priority. In the new position and journey of national development, we must clearly recognize the new positioning and tasks of building a strong education nation.	**R7、R8、R12**
CLO4	History and reality have shown that China and the United States, as two major powers, cannot afford to avoid engagement. Expecting to change each other is unrealistic, and the consequences of conflict and confrontation are unbearable for all. The Sino-US relationship is not a multiple-choice question of whether to improve, but a mandatory task of how to improve. The key to solving this task lies in anchoring the grand direction of	**R7、R8、R12**

		mutual respect, peaceful coexistence, and win-win cooperation. These three principles not only summarize past experiences in Sino-US relations but also draw lessons from historical conflicts between major powers. They serve as crucial navigation beacons to ensure that the two giant ships of China and the United States do not deviate course, lose momentum, or collide.	
content	The course "Situation and Policy" takes the Sinicization of Marxism as its main thread, focusing on expounding the main content, essence, historical status, and guiding significance of the theoretical achievements of the Sinicization of Marxism. It fully reflects the historical process and basic experience of the Communist Party of China in continuously advancing the combination of the basic principles of Marxism with the specific realities of China. With the latest achievements of the Sinicization of Marxism as the focus, it comprehensively grasps the new era of socialism with Chinese characteristics, systematically expounds the main content and historical status of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, and fully reflects the strategic deployment of building a modern socialist country. content of courses： Topic 1: Accelerating the Development of a Socialist Cultural Powerhouse (Weight: 12/48; Level: Memory + Understanding + Analysis) Special Topic 2: Cultivating a Green Foundation to Build a Beautiful China (Weight: 12/48, Level: Memory + Understanding + Analysis) Topic 3: Advancing from an Educational Powerhouse to a Global Education Leader (Weight: 12/48; Level: Memory + Comprehension + Analysis) Topic 4: Charting the Path for China-US Relations in the New Era (Weight: 12/48; Level: Memory + Comprehension + Analysis)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score, including classroom performance, independent learning, etc. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through online open-book exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Current Affairs Report for College Students, published by the Publicity Department of the CPC Central Committee and Current Affairs Report Magazine, March 2025 edition 2. A Guide to the Report of the 20th CPC National Congress, People's Publishing House, October 2022 3. A Guide to 100 Questions on the Study of the Report of the 20th CPC		

	National Congress, published by Learning Publishing House and Party Building Literature Publishing House in October 2022
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

College Foreign Language (1)

Module Name	College Foreign Language (1)		
Semester of module instruction	Semester 1		
Module Owner	Qi Wen		
language	Chinese, English		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture method, heuristic teaching method; Methods of interaction: comparative teaching method, cooperative learning teaching method, discussion teaching method; Practical methods: task-driven teaching method, topic-based teaching method		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 126 class hours Teaching hours: 4 hours per week for 18 weeks, 72 hours in total Self-study hours: 3 hours per week for 18 weeks, totaling 54 hours, including homework and exam preparation time		
credit	4 credits		
Prerequisites and recommendations for joining this module	High School English		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Systematically study English pronunciation, core vocabulary, and grammatical structures to master daily conversation and basic written expression skills. Develop the ability to comprehend slow-paced English dialogues and brief announcements, and engage in basic Q&A interactions. Read and understand short, general English materials (such as notices and emails). Complete simple sentence translation between Chinese and English, and cultivate foundational language application awareness. Acquire international perspective to communicate effectively in cross-cultural contexts.	**R10**
	CLO2	To cultivate students' awareness of lifelong learning, deeply understand the importance of English as a key tool for continuous learning and personal development, and master effective English self-learning strategies through this course, so as to have the ability to continuously	**R12**

		acquire new knowledge and adapt to future development and challenges in English.	
content	This course focuses on English language knowledge and application skills, learning strategies, and intercultural communication, guided by foreign language teaching theories. Its goal is to develop students' comprehensive English proficiency. Through this course, students will enhance their listening, speaking, reading, and writing skills, as well as self-directed learning abilities. The program equips them to effectively communicate information orally and in writing in English for future studies, careers, and social interactions, while strengthening their independent learning capabilities and improving overall cultural literacy. content of courses： Unit 1: College Life (Weight: 15/72, Level: Memory + Comprehension + Application) Unit 2: Reading (Weight: 14/72, Level: Memory + Comprehension + Application) Unit 3: Color (Weight 14/72, Level: Memory + Comprehension + Application) Unit 4: Interview (15/72 total score, covering memory, comprehension, and application) Unit 5: Festival (Weight: 14/72, Level: Memory + Comprehension + Application)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 30% process assessment + 70% final assessment (1) Process assessment, with a percentage score, accounts for 30% of the total score. (2) The final assessment, worth 70% of the total score, is out of 100 points and is converted from the National College English Test Band 4 (CET-4) score. The final course assessment score = National College English Test Band 4 score * 0.2		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Zhang Zhihua (Ed.). General University English: Reading and Writing Course, Revised Edition, Vol. 1. Beijing: Science Press, 2022.06 2. Zhang Zhihua (Ed.). General University English: Listening and Speaking Course, Revised Edition, Vol. 1. Beijing: Science Press, 2022.06 3. Ministry of Education, Higher Education Foreign Language Teaching Steering Committee, "College English Teaching Guide (2020 Edition)". Beijing: Higher Education Press, 2020.12 4. Ministry of Education, National Language Commission, "China English Proficiency Rating Scale".2018.06 5. Compiled by the National College English Test (CET-4 and CET-6) Committee. National College English Test Syllabus (2016 Revised Edition). Shanghai: Shanghai Foreign Language Education Press,		

	2016.09 6. Yan Wenqing (Ed.). Teaching Guide for Ideological and Political Education in College English Courses. Shanghai: East China Normal University Press, 2021.05
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

College Foreign Language (2)

Module Name	College Foreign Language (2)		
Semester of module instruction	Second semester		
Module Owner	Qi Wen		
language	Chinese, English		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture method, heuristic teaching method; Methods of interaction: comparative teaching method, cooperative learning teaching method, discussion teaching method; Practical methods: task-driven teaching method, topic-based teaching method		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 126 class hours Teaching hours: 4 hours per week for 18 weeks, 72 hours in total Self-study hours: 3 hours per week for 18 weeks, totaling 54 hours, including homework and exam preparation time		
credit	4 credits		
Prerequisites and recommendations for joining this module	College Foreign Language (1)		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Enhance comprehensive language proficiency by mastering complex sentence structures and text organization. Listen to academic lectures or professional audio materials at moderate speaking rates, actively participate in group discussions, and articulate viewpoints effectively. Read and extract key information from medium-length professional articles. Translate basic technical passages with professional relevance, ensuring logical coherence. Draft well-structured outlines for lab reports or technical documentation drafts.	**R10**
	CLO2	To cultivate students' awareness of lifelong learning, deeply understand the importance of English as a key tool for continuous learning and personal development, and master effective English self-learning strategies through this course, so as to have the ability to continuously acquire new knowledge and adapt to future development and challenges in English.	**R12**

content	This course focuses on English language knowledge and application skills, learning strategies, and intercultural communication, guided by foreign language teaching theories. Its goal is to develop students' comprehensive English proficiency. Through this program, students will enhance their listening, speaking, reading, and writing skills while cultivating self-directed learning abilities. The course equips learners to effectively communicate information orally and in writing in English for future studies, careers, and social interactions, while strengthening their independent learning capabilities and improving overall cultural literacy. content of courses： Unit 1: Affection (Weight: 15/72, Level: Memory + Comprehension + Application) Unit 2: Education (Weight: 15/72, Level: Memory + Comprehension + Application) Unit 3: Personality (Weight: 14/72, Level: Memory + Comprehension + Application) Unit 4: Name and Appearance (Weight: 14/72, Memory + Comprehension + Application) Unit 5: Traditional Chinese Medicine (Weight: 14/72, Level: Memory + Comprehension + Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 30% process assessment + 70% final assessment (1) Process assessment, with a percentage score, accounts for 30% of the total score. (2) The final assessment, worth 70% of the total score, is out of 100 points and is converted from the National College English Test Band 4 (CET-4) score. The final course assessment score = National College English Test Band 4 score * 0.2
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Zhang Zhihua (Ed.). General University English: Reading and Writing Course, Revised Edition, Vol. 2. Beijing: Science Press, 2022.06 2. Zhang Zhihua (Ed.). General University English: Listening and Speaking Course, Revised Edition, Vol. 2. Beijing: Science Press, 2022.06 3. Ministry of Education, Higher Education Foreign Language Teaching Steering Committee, University English Teaching Guide (2020 Edition). Beijing: Higher Education Press, 2020.12 4. Ministry of Education, National Language Commission, "China English Proficiency Rating Scale".2018.06 5. Compiled by the National College English Test (CET-4 and CET-6) Committee. National College English Test Syllabus (2016 Revised Edition). Shanghai: Shanghai Foreign Language Education Press, 2016.09 6. Yan Wenqing (Ed.). Teaching Guide for Ideological and Political

	Education in College English Courses. Shanghai: East China Normal University Press, 2021.05
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

College Foreign Language (3)

Module Name	College Foreign Language (3)		
Semester of module instruction	3rd semester		
Module Owner	Qi Wen		
language	Chinese, English		
Relationship to the course	General education required courses		
teaching method	Teacher-centered methods: lecture method, heuristic teaching method; Methods of interaction: comparative teaching method, cooperative learning teaching method, discussion teaching method; Practical methods: task-driven teaching method, topic-based teaching method		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 54 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1 hour per week for 18 weeks, totaling 18 hours, including after-class assignments, exam preparation time, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	College Foreign Language (1), College Foreign Language (2)		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Enhance professional English proficiency to write standardized English experimental reports, technical documents, and thesis abstracts; comprehend key points from technical lectures and fluently present technical solutions and achievements; analyze English literature in electrical automation to summarize technical logic; translate formal professional materials using specialized tools; participate in international conference discussions to demonstrate cross-cultural communication awareness.	**R10**
	CLO2	To cultivate students' awareness of lifelong learning, deeply understand the importance of English as a key tool for continuous learning and personal development, and master effective English self-learning strategies through this course, so as to have the ability to continuously acquire new knowledge and adapt to future development and challenges in English.	**R12**

content	This course focuses on English language knowledge and application skills, learning strategies, and intercultural communication, guided by foreign language teaching theories. Its goal is to develop students' comprehensive English proficiency. Through this program, students will enhance their listening, speaking, reading, and writing skills while cultivating self-directed learning abilities. The course equips learners to effectively communicate information orally and in writing in English for future studies, careers, and social interactions, while strengthening their independent learning capabilities and improving overall cultural literacy. content of courses： Unit 1: Life Insights (Weight: 8/36, Level: Memory + Comprehension + Application) Unit 2: Stories (Weight: 6/36, Level: Memory + Comprehension + Application) Unit 3: Animals (1) (Weight: 6/36, Level: Memory + Comprehension + Application) Unit 4: Food (Weight: 8/36, Memory + Comprehension + Application) Unit 5: Current Affairs (Weight: 8/36, Level: Memorization + Understanding + Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 30% process assessment + 70% final assessment (1) Process assessment, with a percentage score, accounts for 30% of the total score. (2) The final assessment, worth 70% of the total score, is out of 100 points and is converted from the National College English Test Band 4 (CET-4) score. The final course assessment score = National College English Test Band 4 score * 0.2
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Zhang Zhihua (Ed.). General University English: Reading and Writing Course, Volume 3 (Revised Edition). Beijing: Science Press, June 2021. 2. Zhang Zhihua (Ed.). General University English: Listening and Speaking Course, Revised Edition, Vol. 3. Beijing: Science Press, 2021.06 3. Ministry of Education, Higher Education Foreign Language Teaching Steering Committee, University English Teaching Guide (2020 Edition). Beijing: Higher Education Press, 2020.12 4. Ministry of Education, National Language Commission, "China English Proficiency Rating Scale".2018.06 5. Compiled by the National College English Test (CET-4 and CET-6) Committee. National College English Test Syllabus (2016 Revised Edition). Shanghai: Shanghai Foreign Language Education Press, 2016.09 6. Yan Wenqing (Ed.). Teaching Guide for Ideological and Political Education in College English Courses. Shanghai: East China Normal

	University Press, 2021.05
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

College Foreign Language (4)

Module Name	College Foreign Language (4)		
Semester of module instruction	4th semester		
Module Owner	Qi Wen		
language	Chinese, English		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture method, heuristic teaching method; Methods of interaction: comparative teaching method, cooperative learning teaching method, discussion teaching method; Practical methods: task-driven teaching method, topic-based teaching method		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 54 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1 hour per week for 18 weeks, totaling 18 hours, including after-class assignments, exam preparation time, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	College Foreign Language (1), College Foreign Language (2), College Foreign Language (3)		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Enhance English proficiency to write standardized experimental reports, technical documents, and academic abstracts; comprehend and summarize key points from professional lectures, and fluently present technical solutions and achievements; analyze English literature in electrical automation to identify technical logic; utilize translation tools for official documents; actively participate in international conference discussions to demonstrate cross-cultural communication competence.	**R10**
	CLO2	To cultivate students' awareness of lifelong learning, deeply understand the importance of English as a key tool for continuous learning and personal development, and master effective English self-learning strategies through this course, so as to have the ability to continuously acquire new knowledge and adapt to future development and challenges in English.	**R12**

content	This course focuses on English language knowledge and application skills, learning strategies, and intercultural communication, guided by foreign language teaching theories. Its goal is to develop students' comprehensive English proficiency. Through this program, students will enhance their listening, speaking, reading, and writing skills while cultivating self-directed learning abilities. The course equips learners to effectively communicate information orally and in writing in English for future studies, careers, and social interactions, while strengthening their independent learning capabilities and improving overall cultural literacy. content of courses： Unit 1: Art (Weight: 8/36, Level: Memory + Comprehension + Application) Unit 2: Digital Technology (Weight: 8/36, Level: Memory + Understanding + Application) Unit 3: Environmental Protection (Weight: 6/36, Level: Memory + Understanding + Application) Unit 4: Health (Weight 6/36, Memory + Comprehension + Application) Unit 5: On Friendship (Weight: 8/36, Level: Memory + Comprehension + Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 30% process assessment + 70% final assessment (1) Process assessment, with a percentage score, accounts for 30% of the total score. (2) The final assessment, worth 70% of the total score, is out of 100 points and is converted from the National College English Test Band 4 (CET-4) score. The final course assessment score = National College English Test Band 4 score * 0.2
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Zhang Zhihua (Ed.). General University English: Reading and Writing Course, 4th Revised Edition. Beijing: Science Press, 2024.03 2. Zhang Zhihua (Ed.). General University English: Listening and Speaking Course, 4th Revised Edition. Beijing: Science Press, 2024.03 3. Ministry of Education, Higher Education Foreign Language Teaching Steering Committee, "College English Teaching Guide (2020 Edition)". Beijing: Higher Education Press, 2020.12 4. Ministry of Education, National Language Commission, "China English Proficiency Rating Scale".2018.06 5. Compiled by the National College English Test (CET-4 and CET-6) Committee. National College English Test Syllabus (2016 Revised Edition). Shanghai: Shanghai Foreign Language Education Press, 2016.09 6. Yan Wenqing (Ed.). Teaching Guide for Ideological and Political Education in College English Courses. Shanghai: East China Normal University Press, 2021.05

version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Beauty and Life----Lady's School

Module Name	Beauty and Life----Lady's School		
Semester of module instruction	Second semester		
Module Owner	Chen Su		
language	the Chinese language		
Relationship to the course	General education required courses		
teaching method	Teacher-centered methods: lecture demonstration method, case analysis method, situational simulation guidance method; Interactive methods: group discussion method, role-playing method; Practice methods: skill practice training method, social practice experience method, project planning practice method;		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 25 class hours Teaching hours: 1 hour per week for 18 weeks, totaling 18 hours Self-study hours: 0.4 hours per week for 18 weeks, totaling 7 hours, including after-class assignments, exam preparation time, etc.		
credit	1 credit		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	The program systematically enhances humanistic and social science literacy, enabling participants to deeply understand traditional Chinese etiquette culture and modern civilizational norms while cultivating refined speech, appropriate conduct, and strong moral integrity. Students will apply the developed sense of responsibility, empathy, and communication skills from the curriculum to civil engineering practices. Through project design, team collaboration, and client communication, they will adhere to professional ethics while fulfilling social responsibilities with both technical expertise and humanistic care, achieving harmonious integration of	**R10**

		engineering technology and humanistic spirit.	
content	The course is primarily designed for contemporary female college students, aiming to cultivate their appearance, speech, manners, thinking, and behavioral habits, enabling them to possess feminine charm rich in the essence of China's beauty. Based on the excellent concepts of traditional culture, it guides contemporary female college students to be virtuous, elegant, and self-reliant, teaching them basic daily life skills and guiding them to explore their interests and hobbies. It promotes the healthy development of women's potential, helping them achieve both moral integrity and artistic accomplishment, with a fulfilling spirit and refined taste, better adapting to societal demands and striving to become modern professional women who are "self-respecting, self-confident, self-reliant, and self-improving." content of courses： Chapter 1: Inner Cultivation in the 'Heart' (Weight 12/18, Level: Memory + Understanding + Application + Evaluation) Chapter 2: Externalizing into 'Form' (Weight 6/18, Level: Memory + Understanding + Application)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 60% of process assessment + 40% of final assessment (1) Process assessment, with a percentage score, accounts for 60% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 40% of the total grade. It is mainly assessed through course papers to evaluate the achievement of the course's competency and literacy objectives.		
Learning and Exam Requirements	The course is evaluated on a 100-point scale, and 60 points are required to pass the course.		
Reading List	1. "Good Love", edited by Chen Guo, People's Daily Press, April 2018; 2. "Psychology of Women", edited by Song Xintian, Shanxi Normal University Press, September 2012; 3. Women and Power, by Mary Beard, Tianjin People's Publishing House, February 2019; 4. "The Feelings and Sexuality of Chinese Women", Li Yinhe, Inner Mongolia University Press, August 2009; 5. "Manual for the Use of the Female Human Body", Wang Shu, China Zhi Gong Press, published in January 2007; 6. "Eight Tips for Working Women", Harvard Business Review, Zhejiang Publishing Group, October 2018.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Beauty and Life----The School of Gentlemen

Module Name	Beauty and Life----The School of Gentlemen		
Semester of module instruction	Second semester		
Module Owner	Li Shiba		
language	the Chinese language		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture demonstration method, case analysis method, situational simulation guidance method; Interactive methods: group discussion method, role-playing method; Practice methods: skill practice training method, social practice experience method, project planning practice method;		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 25 class hours Teaching hours: 1 hour per week for 18 weeks, totaling 18 hours Self-study hours: 0.4 hours per week for 18 weeks, totaling 7 hours, including after-class assignments, exam preparation time, etc.		
credit	1 credit		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	This program cultivates the core ethos of "self-cultivation, family harmony, state governance, and world peace" from China's profound traditional culture. It systematically develops traditional virtues including benevolence, righteousness, propriety, wisdom, and integrity, fostering personal character marked by uprightness, honesty, humility, and responsibility. By integrating humanistic values, social responsibility, and engineering ethics into civil engineering practices—from project design and technology development to field implementation—it ensures strict adherence to professional ethics.	**R10**

		Engineers are guided by the principles of a gentleman, fulfilling their mission while safeguarding project quality and safety. The curriculum comprehensively evaluates the societal, environmental, and public impact of technological applications, achieving harmonious development between professional competence and humanistic literacy.	
content	This course will help students understand the essence of a gentleman's character, enhance their moral cultivation, and nurture well-rounded individuals with both virtue and talent. Through exploring Chinese traditional culture, students will experience the profound heritage of China's five-thousand-year civilization. The program aims to deepen students 'understanding of the' gentleman' concept, guiding them to self-improvement and pursue a more meaningful life. content of courses： Chapter 1: The Nobleman's Intent (Weight 2/18, Level: Memory + Understanding + Application + Evaluation) Chapter 2: The Virtue of the Nobleman (Weight 2/18, Level: Memory + Understanding + Application + Evaluation) Chapter 3: The Etiquette of the Nobleman (Weight 2/18, Level: Memory + Understanding + Application) Chapter 4: The Beauty of the Nobleman (Weight 4/18, Level: Memory + Understanding + Application) Chapter 5: The Virtue of the Nobleman (Weight: 4/18; Level: Memory + Understanding + Application) Chapter 6: The Art of the Nobleman (Weight: 4/18; Level: Memory + Understanding + Application)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 60% of process assessment + 40% of final assessment (1) Process assessment, with a percentage score, accounts for 60% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 40% of the total grade. It is mainly assessed through course papers to evaluate the achievement of the course's competency and literacy objectives.		
Learning and Exam Requirements	The course is evaluated on a 100-point scale, and 60 points are required to pass the course.		
Reading List	1. Analects with Translations and Annotations, translated and annotated by Yang Bojun, Zhonghua Book Company, 1980 edition; 2. "A Brief History of Chinese Philosophy", by Feng Youlan, New World Press, 2004 edition; 3. The Journey of Beauty, by Li Zehou, Cultural Relics Publishing House, 1981 and 1989 editions; 4. "The Learning of the Nobleman", Xu Xiaoyue, Jiangsu People's Publishing House, 2025 edition; 5. "Having Seen the Noble Gentleman", by Hao Yongwei, Guangxi Normal University Press, 2024 edition;		

	6. "The Great Transformation of History", by Gong Pengcheng, Zhejiang Literature and Art Publishing House, 2023 edition.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Health education for college students

Module Name	Health education for college students		
Semester of module instruction	Semester 1.2		
Module Owner	Zhuang Yanling, Liu Shuting, Luo Jing		
language	the Chinese language		
Relationship to the course	General Education Required Courses		
teaching method	Teacher-centered methods: lecture method, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); A practical approach: group counseling		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1 hour per week for 14 weeks, totaling 14 hours, including: homework after class and preview before class		
credit	2 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the theories and basic concepts related to health education, clarify the standards and significance of physical health and mental health, be familiar with the basic knowledge related to physical and mental health, common physical and mental diseases and symptoms, and the basic methods of maintaining physical and mental health.	**R12**
	CLO2	Enhance self-care awareness and psychological crisis prevention consciousness, cultivate self-directed awareness for healthy development. Actively explore your psychological traits and personality characteristics, objectively evaluate your physical condition, mental state, and behavioral capabilities. Correctly recognize and accept yourself, while proactively developing good living habits and hygiene practices. Cherish life and nurture a sense of life appreciation.	**R10、12**
	CLO3	Master essential knowledge in injury prevention, infection control, and first aid, along with self-	**R10、**

		exploration, psychological adjustment, and mental development skills. These include techniques like artificial respiration, chest compressions, environmental adaptation, stress management, communication, problem-solving, self-management, interpersonal skills, and career planning. When facing psychological challenges, individuals should be able to self-regulate or seek help, actively exploring lifestyles that suit their needs and align with societal expectations.	**12**
content	The "College Student Health Education" course aims to help students understand health standards and their significance. It equips students with knowledge about physical and mental health conditions, infectious disease prevention, emergency response, medication use, and psychological development characteristics. The program fosters a scientific understanding of mental health, encourages self-awareness and self-acceptance, and promotes continuous improvement in psychological resilience. Students will master skills for self-exploration, stress management, interpersonal challenges, and psychological crisis resolution. By enhancing students' self-motivation to maintain mental health and improving their ability to self-care and disease prevention, the course ultimately guides them to consciously adopt healthy behaviors and lifestyles, thereby promoting comprehensive physical and mental well-being. content of courses： Chapter 1: Introduction to Health Education Curriculum (Weight: 2/36, Level: Understanding) Chapter 2: Adaptation for Newcomers (Weight: 2/36, Levels: Understanding, Application, Analysis) Chapter 3: Sexual Health Education for College Students (Weight: 4/36, Levels: Understanding, Application, Analysis) Chapter 4: Healthy Lifestyle (Weight 2/36, Level: Understanding, Application, Analysis) Chapter 5: Interpersonal Communication (Weight: 4/36, Level: Understanding, Application, Analysis) Chapter 6: AIDS Prevention Education (Weight: 2/36, Level: Understanding and Application) Chapter 7 Disease Prevention (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 8: Common Psychological Issues and Interventions Among College Students (Weight: 4/36, Level: Understanding, Application, Analysis) Chapter 9: Romantic Psychology (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 10: Developing a Healthy Personality (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 11 Drug Prevention (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 12 Emotional Regulation and Stress Management (Weight 4/36, Level: Understanding, Application, Analysis)		

	Chapter 13 Life Education (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 14 Safety and Emergency Risk Management (Weight: 2/36, Level: Understanding, Application, Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It primarily evaluates students' performance in class participation, assignments, periodic tests, and self-directed learning, with corresponding point allocations. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a final written exam and assesses the achievement of the course objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Health Education for College Students", edited by He Yushan and Liang Jinyun, published by Huazhong University of Science and Technology Press in July 2024.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Military theory and training

Module Name	military theory		
Semester of module instruction	Semester 1		
Module Owner	Zhao Liping		
language	the Chinese language		
Relationship to the course	Public required courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); A practical approach: military training		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 100 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 3.6 hours per week for 18 weeks, totaling 64 hours, including after-class assignments, exam preparation time, etc.		
credit	4 credits		
Prerequisites and recommendations for joining this module	The basic knowledge of history, geography and politics in high school enables students to understand the basic concepts of international relations and national security.		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Guide students to establish a correct world outlook, outlook on life and values.	**R9、R12**
	CLO2	Master the basic knowledge and skills of military affairs.	**R9、R12**
	CLO3	Strengthen the concept of national defense, national security awareness and awareness of crisis, carry forward the spirit of patriotism, inherit the red gene, and improve the comprehensive national defense quality of students	**R9、R12**
content	Through the study of this course, students will understand and master the basic knowledge of military affairs, enhance the concept of national defense, national security awareness and crisis awareness, carry forward the patriotic spirit, inherit the red gene, and improve the comprehensive national defense quality of students.		

	content of courses： Chapter 1 China's National Defense (Weight 10/36, Level: Understanding, Application) Chapter 2 National Security (Weight: 8/36, Level: Understanding, Application) Chapter 3 Military Thought (Weight: 6/36, Level: Understanding, Analysis, Application) Chapter 4 Modern Warfare (Weight: 6/36, Level: Understanding, Analysis, Application) Chapter 5: Information Technology Equipment (Weight: 6/36, Level: Understanding and Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. National Defense Education Office. A Brief History of National Defense [M]. Beijing: National Defense University Press, 2012. 2. Xun Ji. New Military Course Tutorial for College Students [M]. Beijing: National Defense University Press, 2015. 3. Xu Yan. Du Wenlong, Military Theory. National Defense University of the People's Liberation Army, 2025.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Military theory and training

Module Name	military training		
Semester of module instruction	Semester 1		
Module Owner	Li Ruqiang		
language	the Chinese language		
Relationship to the course	Public required courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); A practical approach: military training		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 100 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 3.6 hours per week for 18 weeks, totaling 64 hours, including after-class assignments, exam preparation time, etc.		
Credits	4 credits		
Prerequisites and recommendations for joining this module	The basic knowledge of history, geography and politics in high school enables students to understand the basic concepts of international relations and national security.		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Guide students to establish a correct world outlook, outlook on life and values.	**R9、R12**
	CLO2	Master the basic knowledge and skills of military affairs.	**R9、R12**
	CLO3	We will strengthen the concept of national defense, awareness of national security and awareness of potential dangers and crises, carry forward the spirit of patriotism, inherit the red gene, and improve students' comprehensive national defense quality.	**R9、R12**
content	Through the study of this course, students will understand and master the basic knowledge of military affairs, enhance the concept of national defense, national security awareness and crisis awareness, carry forward the patriotic spirit, inherit the red gene, and improve the comprehensive national defense quality of students.		

	content of courses： Chapter 1: Common Regulations-Education and Training (Weight: 50/148, Level: Understanding) Chapter 2: Shooting and Tactical Training (Weight: 24/168, Level: Understanding and Application) Chapter 3: Defensive Skills and War-time Protection Training (Weight: 44/168, Level: Understanding and Application) Chapter 4: Combat Readiness Fundamentals and Practical Training (30/168, Level: Understanding and Application)
Assessment format	1. Course assessment: Process assessment. 2. Assessment: The evaluation is based on the students' training time, actual performance and mastery level. The scores are divided into four grades: excellent, good, pass and fail.
Learning and Exam Requirements	Grading is divided into four levels: excellent, good, pass, and fail.
Reading List	1. National Defense Education Office. A Brief History of National Defense [M]. Beijing: National Defense University Press, 2012. 2. Xun Ji. New Military Course Tutorial for College Students [M]. Beijing: National Defense University Press, 2015. 3. Xu Yan. Du Wenlong, Military Theory. National Defense University of the People's Liberation Army, 2025.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

University Sports (Club)

Module Name	University Sports (Club)		
Semester of module instruction	Semester 1, 2, 3, 4		
Module Owner	Wang You		
language	the Chinese language		
Relationship to the course	General education compulsory courses		
Teaching Methods	Teacher-centered methods: lecture method, demonstration method, questioning; Interactive methods: inquiry-based problem learning, group discussion, cooperative learning method; Individualized learning methods: Feynman learning method, physical education teaching Practical methods: task-driven method, practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 0.8 hours per week for 18 weeks, totaling 14 hours, including after-class assignments, exam preparation time, etc.		
credit	4 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Carry out the construction of ideological and political education in courses, systematically conduct education on socialism with Chinese characteristics and the Chinese Dream, socialist core values, rule of law, labor, mental health, and excellent traditional Chinese culture, to cultivate students' firm ideals and convictions, and equip them with political identity, patriotic sentiment, cultural literacy, constitutional and legal awareness, and moral cultivation.	R9
	CLO2	Possessing high cultural literacy, strong aesthetic sensibility, and noble moral integrity; demonstrating rigorous scientific thinking and a pursuit of truth; maintaining sound mental health, physical well-being, and civilized behavioral habits; demonstrating critical thinking to identify, analyze, question, and evaluate phenomena and	R9

		issues in professional fields, while articulating personal perspectives;	
	CLO3	Have a critical spirit, able to find, analyze, question and evaluate the phenomena and problems in the professional field, and express personal opinions;	R12
content	The "University Sports (Club)" course is a compulsory general education program for all undergraduate majors across the university. Designed to enhance students 'physical fitness, health, and sports literacy through physical exercises, scientific training, and well-structured sports education, this course serves as both a cornerstone of the academic curriculum and a central component of the university's sports initiatives. It plays a vital role in implementing quality education and cultivating well-rounded talents. Guided by the philosophy of "Health First, Holistic Development, Focused Excellence, and Community Service," the course enables students to learn sports joyfully while mastering at least two athletic skills, laying the foundation for lifelong physical activity. The curriculum encompasses psychological development elements such as competition, teamwork, challenges, victories, and setbacks, alongside sports values including fairness, perseverance, self-sacrifice, and team spirit. It supports the three graduation requirements outlined in the "Undergraduate Talent Development Plan": value standards, competency benchmarks, and general abilities. As a core foundational discipline, it is essential for nurturing well-rounded socialist modernization talents with moral integrity, intellectual depth, physical fitness, and aesthetic appreciation. The course also helps students develop stable career awareness and professional ethics, serving as a primary pathway to achieve educational objectives and contributing significantly to realizing the university's overarching educational goals. The first semester focuses on basketball, volleyball, and track and field. In the second semester, students choose a subject based on their interests, hobbies, and strengths (such as basketball, football, volleyball, badminton, table tennis, or martial arts). The third and fourth semesters cover the same subjects as the second semester, reinforcing and advancing the knowledge gained. Course Objective 1: To cultivate students' proper understanding of this course and enhance their awareness of physical activity participation, enabling them to engage in regular, proactive, and conscious exercise routines. Students will master the fundamental principles and methods of scientific physical training, including effective fitness techniques, prevention and management of sports injuries, and self-assessment of exercise outcomes. This knowledge will empower them to apply scientific theories to guide their practical activities. Course Objective 2: Through physical education courses, students will master two favorite sports and exercise methods, developing specific hobbies and interests. They will learn to exercise scientifically, improve athletic abilities, and cultivate sports talents. Additionally, they will participate in challenging activities and sports competitions, laying a solid foundation for lifelong physical activity. Course Objective 3: Design physical education curriculum goals; consciously improve psychological well-being and overcome mental barriers through sports activities, cultivating a positive and optimistic outlook on life; apply appropriate methods to regulate emotions; experience the joy and sense of achievement in sports. Demonstrate strong sportsmanship and cooperative spirit, properly handling		

	competition and collaboration. Teaching content: Part 1: Sports Theory Knowledge (4/36 score, Level: Memorization + Understanding + Application) Part II: Fundamental Sports Techniques (32/36 score, Level: Memorization + Understanding + Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates students' classroom participation, health runs, assignments, self-directed learning, and completion of periodic tests. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content through skill tests and evaluates the achievement of the course objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "University Physical Education and Health Tutorial", edited by Zhang Juan et al., Beijing Sport University Press, 1st edition, September 2019. 2. "University Physical Education and Health (Illustrated Demonstration + Video Guidance)", edited by Yuan Shoulong, People's Posts and Telecommunications Press, 1st edition, 2022. 3. University Physical Education and Health Education, edited by Li Nianmao et al., Beijing Institute of Technology Press, 1st edition, April 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Career Planning and Employment Guidance (1)

Module Name	Career Planning and Employment Guidance (1)		
Semester of module instruction	Semester 1		
Module Owner	Liu Yanyu		
language	the Chinese language		
Relationship to the course	General education required courses		
teaching method	Teacher-centered methods: lecture method, case teaching, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); A practical approach: working in groups		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 9 class hours Teaching hours: 2 hours per week for 4 weeks, 8 hours in total Self-study hours: 0.25 hours per week for 4 weeks, including 1 hour for after-class assignments and exam preparation.		
credit	0.5 credit		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Understand the rich connotation of career planning, master the positive significance of career planning, establish the awareness of independent career planning; master the relevant theories and methods of environmental analysis and self-exploration, and be able to use career planning tools for planning.	**R8、R9、R12**
	CLO2	Be able to accurately assess social, occupational, and family information related to target careers; master methods for exploring and describing personal interests, personality traits, skills, and values; acquire job-person fit analysis techniques and use these insights to formulate career goals and develop plans. Develop environmental exploration skills to independently analyze employment trends, policy frameworks, industry developments, and societal demands; cultivate self-exploration abilities to accurately identify and strategically position personal career objectives.	**R8、R9、R12**

	CLO3	By guiding and training students to explore their own personality characteristics, students' self-awareness is awakened; through the study and writing of career planning, students clarify the planning path and actively implement it.	**R8、R9、R12**
content	This course helps students understand the social role of universities, grasp the institution's educational philosophy and talent development objectives, strengthen their sense of responsibility, improve adaptability, establish a scientific view of personal growth, and cultivate career aspirations early on. It also introduces students to the concepts of career, professional development, and career planning, clarifies the significance of career planning, and provides insights into the development trends of their major, curriculum structure, educational goals, and essential skills. The course equips students with practical knowledge of career planning components and steps, clarifies developmental tasks during university years, and guides them in formulating effective career plans. content of courses： Chapter 1: Cognitive Career (Weight: 1/8, Level: Memory + Understanding) Chapter 2 Self-Cognition (Weight 1/8, Level: Memory + Understanding + Application) Chapter 3: Career Exploration (3/8 Weight, Level: Understanding + Application) Chapter 4 Career Decision Making (Weight 3/8, Level: Understanding + Application)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the total grade. It mainly evaluates students' classroom performance, self-directed learning, homework, and completion of periodic tests. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. The final assessment requires the submission of a career plan tailored to individual characteristics.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	Li Xinwei, Wang Junchuan, and Li Xiugang. Career Planning and Employment Guidance for College Students. Shanghai: Shanghai Jiao Tong University Press, 2023.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Career Planning and Employment Guidance (2)

Module Name	Career Planning and Employment Guidance (2)		
Semester of module instruction	4th semester		
Module Owner	Qiao Lin, Yu Yanyan		
language	the Chinese language		
Relationship to the course	General education required courses		
teaching method	Teacher-centered methods: lecture method, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); A practical approach: working in groups		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 8 class hours Teaching hours: 2 hours per week for 2 weeks, 4 hours in total Self-study hours: 1 hour per week for 4 weeks, totaling 4 hours, including after-class assignments and exam preparation time.		
credit	0.2 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Understand labor market information, occupational classification knowledge, and basic knowledge of employment and entrepreneurship; master the principles of personal job objective positioning; understand the structure, principles, and requirements of job application materials; master the content and importance of workplace etiquette;	**R8、R9、R12**
	CLO2	Master information retrieval and management skills, including methods for categorizing, organizing, and screening job information. Develop career decision-making abilities and learn to craft personalized resumes tailored to specific job requirements. Acquire workplace competencies with a solid grasp of professional etiquette. Gain industry insights through interviews, online research, and professional exploration. Practice resume writing and interview skills using simulated interviews and peer	**R8、R9、R12**

		reviews.	
	CLO3	By guiding and training students to independently analyze employment trends and job market information, we cultivate their awareness of resource sharing and teamwork. Through simulated interview training in group formats, students develop strong team spirit and communication skills, enhancing their collaborative abilities. Establishing professional ethics standards and improving vocational competence, we align personal development goals with organizational growth and national development. This approach fosters a strong sense of collective honor and social responsibility, encouraging students to contribute to the nation's future.	**R8、R9、R12**
content	This course helps students systematically understand their interests, abilities, and values, enabling them to scientifically plan career goals and avoid blind career choices. By aligning with professional characteristics and industry demands, students develop personalized growth paths to enhance self-management and decision-making skills. The program cultivates awareness of dynamic career adjustments, teaches methods for goal decomposition and implementation planning, and strengthens control over career development. Practical job-seeking skills are systematically trained, including resume writing, interview techniques, and professional networking, to improve job matching efficiency. Students are guided to understand industry trends and regulatory policies, fostering adaptability to evolving employment environments. The curriculum emphasizes integrating personal value with societal needs, advocates proactive employment attitudes and professional ethics, cultivates lifelong development awareness, and builds sustainable career growth mindset and learning capabilities. content of courses： Chapter 1 Professional Competence (Weight: 2/4, Level: Memorization + Understanding) Chapter 2: Professional Skills (2/4 Weight, Level: Memory + Understanding + Application)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the total grade. It mainly evaluates students' classroom performance, self-directed learning, homework, and completion of periodic tests. (2) The final assessment is worth 60% of the total score, with a full score of 100. The thesis will be submitted for the final assessment.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		

Reading List	Career Planning and Employment Guidance for College Students (2nd Edition), edited by Huang Shumin and Lyu Min. Beijing: Aviation Industry Press.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Career Planning and Employment Guidance (3)

Module Name	Career Planning and Employment Guidance (3)		
Semester of module instruction	6th semester		
Module Owner	Joan		
language	the Chinese language		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture method, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); A practical approach: working in groups		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 8 class hours Teaching hours: 2 hours per week for 3 weeks, 6 hours in total Self-study hours: 0.67 hours per week for 3 weeks, 2 hours in total, including: after-class assignments, exam preparation time, etc.		
credit	0.3 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master theories and methodologies for understanding personal traits and occupational characteristics, combined with social environment analysis to comprehend employment trends and regulatory policies. Be familiar with employment and entrepreneurship policies as well as job rights protection. Master the structure, principles, and requirements for writing job application materials. Develop interview application techniques and methods. Learn to collect employment information through various channels and process it effectively.	**R8、R9、R12**
	CLO2	Master information retrieval and management skills, with proficiency in categorizing, organizing, and screening job information. Develop career decision-making abilities to craft tailored resumes that align with job requirements and characteristics. Acquire workplace etiquette knowledge and essential professional	**R8、R9、R12**

		communication techniques, including understanding interview formats and key evaluation criteria. Be familiar with the principles and requirements for signing and terminating employment agreements and labor contracts. Effectively gather job market insights, policies, and information through online platforms, professional research, and career interviews. Set realistic job-seeking goals using self-assessment, career assessments, and peer feedback. Enhance resume quality through online submissions, mock interviews, and peer reviews while improving interview skills.	
	CLO3	By guiding and training students to independently analyze employment trends and job market information, we cultivate their awareness of resource sharing and teamwork. Through simulated interview training in group formats, students develop strong team spirit and communication skills, enhancing their collaborative abilities. Establishing professional ethics standards and improving vocational competence, we align personal development goals with organizational growth and national development. This approach fosters a strong sense of collective honor and social responsibility in serving the country, nurturing students 'commitment to contributing to the nation's future.	**R8、R9、R12**
Content	Through this course, students will gain comprehensive understanding of the latest employment environment, industry policies, and relevant regulations. By familiarizing themselves with current employment policies and legal frameworks, they will build a solid information foundation for job hunting, thereby enhancing their success rate. Secondly, regarding employment perspectives and expectations, the course guides students to ground their decisions in reality, fostering correct career concepts and helping them establish realistic career expectations. This enables students to approach job selection with greater rationality and pragmatism. Thirdly, in terms of employment skills, the course assists students in analyzing their strengths and weaknesses in job-related competencies, while providing effective strategies to address shortcomings and improve their employability. Finally, regarding psychological adjustment, the course helps students recognize common psychological challenges in the job market, master scientific coping methods, and guide them to face employment challenges with a positive mindset, ensuring a smooth transition through the job-seeking process. content of courses： Chapter 1 Employment Environment and Policies (Weight: 1/6, Level: Memorization + Understanding) Chapter 2 Employment Preparation (Weight: 1/6, Level: Memory +		

	Understanding + Application) Chapter 3: Employment Skills Enhancement (3/6 Weight, Level: Memory + Understanding + Application) Chapter 4 Employment Rights Protection (Weight 1/6, Level: Memory + Understanding)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the total grade. It mainly evaluates students' classroom performance, self-directed learning, homework, and completion of periodic tests. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. A resume must be submitted for the final assessment.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	Career Planning and Employment Guidance for College Students (2nd Edition), edited by Huang Shumin and Lyu Min. Beijing: Aviation Industry Press.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Entrepreneurship Education (1)

Module Name	Entrepreneurship Education (1)		
Semester of module instruction	Second semester		
Module Owner	Dong Li		
language	the Chinese language		
Relationship to the course	General Education Courses		
teaching method	Teacher-centered methods: lecture, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 6 class hours Teaching hours: 4 hours Self-study hours: 2 hours		
credit	0.2 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Innovation awareness and ability: able to cope with the changing social environment, put forward innovative ideas and carry out innovative practices.	R12
	CLO2	The ability to continue to learn: with a sense of lifelong learning, the ability to learn independently and the potential for self-development, able to achieve the depth and horizontal transfer of knowledge and ability through continuous learning, and adapt to the sustainable development of society and individuals.	**R12**
content	Entrepreneurship Education (1) serves as the foundational course in the entrepreneurship curriculum system. This course equips students with the ability to articulate core concepts and functions of innovation and entrepreneurship, outline the entrepreneurial process and its essential elements, and explain the essence of entrepreneurial spirit along with its benefits for personal development. It aims to ignite students 'entrepreneurial awareness, reshape their perspectives on		

	entrepreneurship, and clarify that entrepreneurship is not merely about starting a business, but rather a mindset and a philosophy. The program helps students grasp the essence of entrepreneurship, articulate its fundamental components and processes, and understand its connection to personal growth. Furthermore, it encourages students to recognize current trends and opportunities in career development and entrepreneurship within their academic disciplines. By fostering attention to professional advancement, employment prospects, and entrepreneurial initiatives, the course ultimately develops students' adaptability and innovative capabilities to navigate an uncertain future. This course primarily serves the "developable" component of professional talent cultivation objectives, aligning with the graduation requirement indicators of "innovative awareness and capability" and "continuous learning ability". Through the course, students will recognize that the world is constantly changing, while also developing the awareness and ability to adapt to a rapidly evolving society. The course content includes: Chapter 1: The Essence of Innovation and Entrepreneurship (Weight: 1/4; Level: Memorization and Understanding) Chapter 2: Key Elements and Basic Types of Entrepreneurship (Weight: 1/4, Level: Memorization and Understanding) Chapter 3: Entrepreneurial Spirit (Weight: 1/4, Level: Understanding and Application) Chapter 4: Entrepreneurship and Life Development (Weight: 1/4, Level: Understanding and Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 60% of process assessment + 40% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 60% of the final grade. It primarily evaluates students' self-directed learning, classroom participation, and assignment performance. (2) The final assessment, with a full score of 100 points, accounts for 40% of the total grade. It is mainly assessed through the presentation of the entrepreneurial project, and evaluates the achievement of the course's knowledge objectives, ability objectives and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Entrepreneurship Basics, edited by Jiao Yanjun,Liu Wenfeng, Jin ling, Beijing: University of Electronic Science and Technology Press, January 2023. 2. Entrepreneurship Management, edited by Zhang Yuli, Machinery Industry Press, February 2015, 3rd edition. 3. How to Teach Entrepreneurship: The Practice-Based Babson Teaching Method, edited by Heidi M. Neck, Patricia G. Green, Candida G. Brush, Machinery Industry Press, April 2015, 1st edition. 4. Entrepreneurship Basics and Innovative Practice, edited by Cai Jian, Wu Ge, Wang Chenhuizi, Peking University Press, March 2015, 1st edition.

version number	V2025, effective from March 2025

Entrepreneurship Education (2)

Module Name	Entrepreneurship Education (2)		
Semester of module instruction	4th semester		
Module Owner	Jinling		
language	the Chinese language		
Relationship to the course	General Education Courses		
teaching method	Teacher-centered methods: lecture, case teaching, questioning; Interactive methods: project-based, inquiry-based problem learning, teaching seminars (including group discussions), role-playing;		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 44 class hours Teaching hours: 32 hours Self-study hours: 12 hours		
credit	1.8 credits		
Prerequisites and recommendations for joining this module	Entrepreneurship Education (1) and related courses		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Through the setting of teaching situations, students can experience, understand and master the knowledge of entrepreneurial team formation, entrepreneurial thinking, design thinking, patent filling and application process, business model design, business plan writing methods and theories.	R9、 10、11
	CLO2	Cultivate students 'thinking and understanding of innovation and entrepreneurship; improve students' ability to combine theory with practice; learn to use relevant entrepreneurial theoretical knowledge and skills to solve practical problems encountered in future entrepreneurship and enterprise management.	**R12**
	CLO3	Cultivate students' autonomy, initiative, creativity, independent thinking and the good quality of daring to challenge authority, and gradually establish market development awareness and guide students to find the market and grasp the market opportunities with career sensitivity based	**R12**

		on this quality.	
content	This course employs a practice-oriented teaching methodology, utilizing the Entrepreneurship Wisdom Classroom to integrate five core modules of entrepreneurial education theory — "task, empathy, creation, experimentation, and reflection" — into foundational entrepreneurship education. The instruction adopts a flipped classroom format, transforming the traditional "teacher-centered, student-passive" approach into a "teacher-guided, interactive, and student-driven" model. Each session focuses on entrepreneurship education (2) tailored to specific majors, guided by the talent development plan. Through interactive elements like games, Q&A sessions, teacher-student collaboration, and simulated scenario teaching, instructors help students experience entrepreneurship while mastering essential knowledge and skills. The course content includes: Module 1: Entrepreneurs and Startup Teams (Weight: 4/32, Level: Memorization, Understanding, Application) Module 2: Design Thinking (Weight: 8/32, Levels: Memorization, Understanding, Application) Module 3: Marketing (4/32 weight, Level: Memorization, Understanding, Application) Module 4: Enterprise Simulation Operations (Weight: 4/32, Level: Memorization, Understanding, Application) Module 5: Business Model Design (Weight: 4/32, Level: Memorization, Understanding, Application) Module 6: Business Presentation (Weight: 8/32; Levels: Memorization, Comprehension, Application, Evaluation)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 60% of process assessment + 40% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 60% of the final grade. It evaluates students' self-directed learning, classroom participation, periodic assessments, and homework performance. (2) The final assessment, with a full score of 100 points, accounts for 40% of the total score. It mainly evaluates and scores the business plans of each group.		
Learning and exam requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Design Thinking, edited by Jiao Yanjun, Zhao Rui, Duo Wenjuan, University of Electronic Science and Technology Press, June 2020. 2. Entrepreneurship Basics, edited by Yang Hongwei, Yang Jun, Jiao Yanjun, Jilin University Press, August 2017, 2nd edition. 3. Entrepreneurship Management, edited by Zhang Yuli, Machinery Industry Press, February 2015, 3rd edition. 4. How to Teach Entrepreneurship: The Practice-Based Babson Teaching Method, edited by Heidi M. Neck, Patricia G. Green, Candida G. Brush, Machinery Industry Press, April 2015, 1st edition.		

	5. Entrepreneurship Basics and Innovative Practice, edited by Cai Jian, Wu Ge, Wang Chenhuizi, Peking University Press, March 2015, 1st edition.
version number	V2025, effective from March 2025

University Computer Foundation (1)

Module Name	University Computer Foundation (1)		
Semester of module instruction	Semester 1		
Module Owner	Zuo Jihui		
language	the Chinese language		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture method, demonstration method, questioning; Interactive methods: inquiry-based problem learning, group discussion, cooperative learning method; Individualized learning methods: Feynman learning method, computer teaching Practical methods: task-driven method, practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 0.78 hours per week for 18 weeks, totaling 14 hours, including after-class assignments, exam preparation time, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	To understand the basic and universal core concepts, methods and technologies in computer science, master the basic knowledge and skills of computer, cultivate students 'computational thinking ability, improve students' information literacy, understand the role and value of information technology in the new era, and convey the scientific spirit.	**R5**
	CLO2	Familiar with the basic operation of office software, able to skillfully use office software to complete daily document processing, data processing and information management tasks, with good ability to use office software.	**R5**
	CLO3	Be able to use computers to obtain information, comprehensively use information technology to analyze specific problems, explore ways to solve	**R12**

		problems; establish correct information values and ethics, establish the concept of lifelong learning.	
content	Through this course, students will gain proficiency in commonly used information retrieval tools and methodologies. They will master fundamental computer knowledge and operational skills, become adept at using office software, and learn to analyze, process, and present data in their professional fields using modern technological tools. The program aims to enhance students' computer application capabilities, cultivate computational thinking and self-directed learning abilities, while fostering a lifelong learning mindset. content of courses： Chapter 1: Basic Computer Knowledge (Weight: 2/36, Level: Memory + Understanding) Chapter 2 Computer System Knowledge (Weight 2/36, Level: Memory + Understanding + Application) Chapter 3: Word Processing Software (Weight 10/36, Level: Understanding + Application) Chapter 4: Spreadsheet Software (Weight: 12/36, Level: Understanding + Application) Chapter 5 Presentation Software (Weight: 4/36, Level: Understanding + Application) Chapter 6 Computer Networks (Weight 2/36, Level: Memory + Understanding + Application) Chapter 7: Python Primer (4/36 credits, Level: Memorization + Understanding)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the total grade. It mainly evaluates students' classroom performance, self-directed learning, homework, and completion of periodic tests. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content and the achievement of the course objectives through computer-based testing.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Zhang Shujuan, Zhou Yanping (eds.). University Computer. Xi 'an: Xi' an Jiaotong University Press, 2020.7. 2. Pu Yunwei (Ed.). Computational Thinking and Network Literacy in University Computer Science. Beijing: People's Posts and Telecommunications Press, March 2019. 3. Zhang Yongxin, Wang Tingzhong (eds.). Basic Computer Science for College Students (Ideological and Political Education Edition) (Micro-Lecture Edition). Beijing: Tsinghua University Press, 2022.9.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

University Computer Foundation (2)

Module Name	University Computer Foundation (2)		
Semester of module instruction	Semester 1		
Module Owner	Zuo Jihui		
language	the Chinese language		
Relationship to the course	General education compulsory courses		
teaching method	Teacher-centered methods: lecture method, demonstration method, questioning; Interactive methods: inquiry-based problem learning, group discussion, cooperative learning method; Individualized learning methods: Feynman learning method, computer teaching Practical methods: task-driven method, practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 0.78 hours per week for 18 weeks, totaling 14 hours, including after-class assignments, exam preparation time, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	University Computer Foundation (1)		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Understands the fundamental concepts and methodologies of programming, is proficient in Python syntax and core concepts, and has a solid grasp of basic data structures. Mastering the use of Python's standard and third-party libraries is essential. Knowledge of AI-related concepts, operational principles, and ethical considerations forms the knowledge foundation for interdisciplinary practice.	**R5**
	CLO2	Proficient in Python Integrated Development Environment (IDE), capable of writing Python programs to solve problems and process data. Skilled in using tools to read and analyze Python code, and able to apply computational thinking to solve complex problems with AI-assisted programming.	**R5**

	CLO3	Students can develop a rigorous and responsible work attitude and scientific spirit, shape the correct technical values and professional ethics, and strengthen ethical awareness and legal awareness.	**R12**
content	Through this course, students will master Python programming, understand core programming concepts and techniques, and learn to apply computational problem-solving methods. The program cultivates students' ability to write programs using Python fundamentals, enabling them to effectively solve real-world problems through coding. Ultimately, it enhances computational thinking, information technology application skills, and AI literacy. content of courses： Chapter 1 Python Fundamentals (Weight: 6/36, Level: Memorization + Understanding + Application) Chapter 2 Basic Data Types (Weight: 4/36, Level: Memory + Understanding + Application) Chapter 3: Program Control Structure (Weight 4/36, Level: Memory + Understanding + Application) Chapter 4 Functions and Code Reuse (Weight: 4/36, Level: Memorization + Understanding + Application) Chapter 5 Composite Data Types (Weight 4/36, Level: Memory + Understanding + Application) Chapter 6 Document and Data Formatting (Weight 4/36, Level: Memory + Understanding + Application) Chapter 7 Programming Methods (Weight 4/36, Level: Memory + Understanding + Application) Chapter 8: Python for AI Fundamentals (6/36 credits, Level: Memorization + Understanding + Application)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a 100-point scale, accounts for 40% of the final grade. It evaluates students' classroom participation, assignments, periodic tests, and self-directed learning progress. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly evaluates the teaching content and the achievement of the course objectives through online assessment.		
Learning and exam requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Song Tian, Huang Tianyu, and Yang Yating. Fundamentals of Python Programming (3rd Edition). Beijing: Higher Education Press, 2024.09. 2. Gordon, ed.Python Fundamentals and Office Automation. Beijing: People's Posts and Telecommunications Press, 2022.09. 3. Shen Yanguang, Xue Hongmei (eds.). University Computer: Python Programming. Beijing: Tsinghua University Press, 2021.09.		

version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Advanced Mathematics (1)

<table>
<tr><td>Module Name</td><td colspan="3">Advanced Mathematics (1)</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">Semester 1</td></tr>
<tr><td>Module Owner</td><td colspan="3">Zhu Meiling</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Discipline and subject basic required courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: heuristic teaching, case teaching, lecture method;
Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), task-driven teaching method;</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 140 class hours
Teaching hours: 5 hours per week for 18 weeks, 90 hours in total
Self-study hours: 2.8 hours per week for 18 weeks, totaling 50 hours, including after-class assignments, exam preparation time, etc.</td></tr>
<tr><td>credit</td><td colspan="3">5 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">elementary mathematics</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master the theoretical knowledge of advanced mathematics required by civil engineering;</td><td>R1</td></tr>
<tr><td>CLO2</td><td>Use the knowledge and methods of higher mathematics to solve the complex engineering problems in the field of civil engineering through mathematical model;</td><td>R2</td></tr>
<tr><td>content</td><td colspan="3">Through this course, students will systematically acquire foundational knowledge in calculus and ordinary differential equations, master essential theoretical concepts and common computational methods, and apply mathematical approaches to solve practical problems in civil engineering. The curriculum's structured components cultivate students' computational proficiency, abstract thinking, logical reasoning, spatial visualization, self-directed learning capabilities, and problem-solving skills for real-world challenges.
content of courses：
Chapter 1: Functions and Limits (Weight: 22/90; Level: Memorization, Understanding, Application)
Chapter 2: Derivatives and Differentiation (Weight: 16/90; Level:</td></tr>
</table>

	Memorization, Understanding, Application) Chapter 3: Mean Value Theorem and Applications of Derivatives (Weight: 12/90, Level: Memorization, Understanding, Application) Chapter 4: Indefinite Integrals (Weight: 14/90, Level: Memorization, Understanding, Application) Chapter 5: Definite Integrals (Weight: 10/90, Level: Memorization, Understanding, Application) Chapter 6: Applications of Definite Integrals (Weight: 6/90, Levels: Memorization, Understanding, Application) Chapter 7 Differential Equations (Weight: 10/90, Level: Memorization, Understanding, Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 0% of the total evaluation score. It primarily evaluates teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] Advanced Mathematics (Volume I), edited by School of Mathematical Sciences, Tongji University, published by Higher Education Press in July 2023. [2] Advanced Mathematics (Volume I), compiled by the Advanced Mathematics Textbook Editorial Group of Northwestern Polytechnical University, published by Science Press in August 2024. [3] Advanced Mathematics, edited by Tao Jinrui, published by Machinery Industry Press in January 2021. [4] Advanced Mathematics (Part I), edited by Zhu Shixin and Tang Shuo, Higher Education Press, July 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Advanced Mathematics (2)

<table>
<tr><td>Module Name</td><td colspan="3">Advanced Mathematics (2)</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">Second semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Zhu Meiling</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Discipline and subject basic required courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: heuristic teaching, case teaching, lecture method;
Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), task-driven teaching method;</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 140 class hours
Teaching hours: 5 hours per week for 18 weeks, 90 hours in total
Self-study hours: 2.8 hours per week for 18 weeks, totaling 50 hours, including after-class assignments, exam preparation time, etc.</td></tr>
<tr><td>credit</td><td colspan="3">5 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Advanced Mathematics (1)</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master the theoretical knowledge of advanced mathematics (multivariable calculus, infinite series) required by civil engineering;</td><td>R1</td></tr>
<tr><td>CLO2</td><td>Use the knowledge and methods of binary calculus and infinite series to solve problems in the field of civil engineering through mathematical model;</td><td>R2</td></tr>
<tr><td>content</td><td colspan="3">Through this course, students will systematically acquire foundational theories in multivariable calculus and infinite series, master essential theoretical frameworks and practical computational methods, and apply mathematical approaches to solve real-world problems in civil engineering. The curriculum's structured components cultivate students' computational proficiency, abstract thinking, logical reasoning, spatial visualization, self-directed learning capabilities, and problem-solving skills through hands-on practice.
content of courses：
Chapter 8: Vectors and Spatial Analytic Geometry (Weight: 16/90; Levels: Memorization, Understanding, Application)
Chapter 9: Calculus of Multivariable Functions and Its Applications</td></tr>
</table>

	(Weight: 20/90, Level: Memorization, Understanding, Application) Chapter 10: Integral Calculus (Weight: 14/90, Levels: Memorization, Understanding, Application) Chapter 11: Curved Integrals and Surface Integrals (Weight: 14/90, Levels: Memorization, Understanding, Application) Chapter 12 Infinite Series (Weight: 26/90, Levels: Memory, Understanding, Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 0% of the total evaluation score. It primarily evaluates teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] Advanced Mathematics (Part II), edited by School of Mathematical Sciences, Tongji University, Higher Education Press, 8th edition, June 2023. [2] Advanced Mathematics (Part II). Compiled by the Advanced Mathematics Textbook Editorial Group of Northwest University. Science Press, August 2021,3rd Edition. [3] Advanced Mathematics (Part II), edited by Bao Yong and Zhang Yanjun, published by China Machine Press, 1st edition, January 2020. [4] Advanced Mathematics (Part II), edited by Fei Weiyin and Liang Yong, China University of Science and Technology Press, 3rd edition, January 2021.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

linear algebra

<table>
<tr><td>Module Name</td><td colspan="3">linear algebra</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">Second semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Zhang Dan</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Discipline and subject basic required courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: heuristic teaching, case teaching, lecture method;
Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), task-driven teaching method;</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 84 class hours
Teaching hours: 3 hours per week for 18 weeks, 54 hours in total
Self-study hours: 1.7 hours per week for 18 weeks, totaling 30 hours, including homework and exam preparation time.</td></tr>
<tr><td>credit</td><td colspan="3">3 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Advanced Mathematics (1)</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master the theoretical knowledge of linear algebra required for civil engineering;</td><td>R1</td></tr>
<tr><td>CLO2</td><td>Use the knowledge and methods of linear algebra to solve related problems in the field of civil engineering through mathematical model;</td><td>R2</td></tr>
<tr><td>content</td><td colspan="3">Through this course, students will systematically acquire fundamental concepts, theories, and methods in linear algebra, including determinants, matrices, and systems of linear equations. They will master determinant calculations using properties of determinants or the expansion theorem along a specific row (column), perform matrix operations such as addition, subtraction, scalar multiplication, and matrix multiplication, and apply elementary row transformations to find matrix inverses. Students will learn to determine solution conditions for systems of linear equations and solve related problems using determinants, matrices, and vectors. This course aims to develop computational skills, data processing abilities, abstract reasoning, and logical thinking, while laying essential mathematical foundations for advanced courses and professional applications.
content of courses：</td></tr>
</table>

	Chapter 1: Determinants (Weight: 12/54, Levels: Memory, Understanding, Application) Chapter 2: Matrix (Weight 10/54, Levels: Memory, Understanding, Application) Chapter 3: Systems of Linear Equations (Weight: 12/54, Levels: Memory, Understanding, Application) Chapter 4: n-dimensional Vector Spaces (Weight: 6/54, Levels: Memorization, Understanding, Application) Matrix eigenvalues and eigenvectors (weight 8/54, levels: memory, understanding, application) Chapter 6 Quadratic Forms (Weight: 6/54; Levels: Memorization, Understanding, Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 0% of the total evaluation score. It primarily evaluates teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] Linear Algebra, edited by Xiao Macheng, Higher Education Press, 3rd edition, September 2021. [2] Linear Algebra, Wu Ganchang, China Renmin University Press, 5th edition, June 2021. [3] Linear Algebra, edited by Zhong Yuquan and Zhou Jian, published by Science Press, 2nd edition, January 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Probability theory and mathematical statistics

Module Name	Probability theory and mathematical statistics		
Semester of module instruction	3rd semester		
Module Owner	Zhang Dan		
language	the Chinese language		
Relationship to the course	Discipline and subject basic required courses		
teaching method	Teacher-centered methods: heuristic teaching, case teaching, lecture method; Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), task-driven teaching method;		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 84 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.7 hours per week for 18 weeks, totaling 30 hours, including after-class assignments, exam preparation time, etc.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics (1), Advanced Mathematics (2), Linear Algebra		
Module Goals/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the theoretical knowledge of probability theory and mathematical statistics required by civil engineering;	**R1**
	CLO2	Use the knowledge and methods of probability theory and mathematical statistics to solve complex problems in the field of electrical engineering through mathematical models;	**R2**
content	Through this course, students will master the fundamental theories of probability theory and mathematical statistics, along with computational methods for various problems. They will develop the ability to understand, analyze, and logically reason about mathematical concepts, theorems, and key conclusions, enabling them to apply statistical knowledge to solve practical problems in civil engineering. content of courses： Chapter 1: Random Events and Probability (Weight: 8/54, Levels: Memorization, Understanding, Application) Chapter 2: Random Variables and Their Distributions (Weight: 10/54; Level: Memorization, Understanding, Application) Chapter 3: Multivariate Random Variables and Their Distributions		

	(Weight: 10/54; Level: Memorization, Understanding, Application) Chapter 4: Numerical Characteristics of Random Variables (Weight: 8/54; Level: Memorization, Understanding, Application) Chapter 6: Samples and Sampling Distributions (Weight: 8/54; Levels: Memorization, Comprehension, Application) Chapter 9: Analysis of Variance and Regression Analysis (Weight: 10/54; Level: Memorization, Understanding, Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 0% of the total evaluation score. It primarily evaluates teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] Probability Theory and Mathematical Statistics, edited by Sheng Zhuo, Xie Shiqian, and Pan Chengyi, Higher Education Press, 5th edition, December 2019. [2] Probability Theory and Mathematical Statistics Tutorial, edited by Shen Hengfan, Higher Education Press, 5th edition, June 2019. [3] Probability Theory and Mathematical Statistics Tutorial, edited by Long Yonghong, Higher Education Press, December 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

complex function

Module Name	complex function		
Semester of module instruction	3rd semester		
Module Owner	Meng Yuanyuan		
language	the Chinese language		
Relationship to the course	Discipline and subject basic required courses		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), questioning; Practical methods: experimental method		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 56 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1.1 hours per week for 18 weeks, totaling 20 hours, including after-class experiments and preparation time.		
credit	2 credits		
Prerequisites and recommendations for joining this module	higher mathematics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the concepts of complex numbers, complex plane, complex functions, complex spheres, and infinity points. Proficiently grasp operations, properties, and applications of complex numbers and complex functions. Understand the equivalent characterization theorem of analytic functions, particularly the Cauchy-Riemann conditions. Comprehend the analyticity of elementary functions, the infinite differentiability of analytic functions, the isolation of zeros of analytic functions, the uniqueness theorem of analytic functions, and the maximum modulus principle.	R1
	CLO2	Understand the definition of complex function integration, master the Cauchy Integral Theorem and its generalizations, the Cauchy Integral Formula, the Mean Value Theorem for analytic	R2

		functions, and their various applications; be proficient in Taylor and Laurent expansions of analytic functions and apply them to solve practical problems; correctly comprehend the definition of residues and the Residue Theorem.	
content	"Complex Functions and Integral Transforms" is a core foundational course for the Civil Engineering undergraduate program. With the continuous advancement of science and technology, complex functions have been increasingly applied across diverse fields including civil engineering, computer science, astronomy, physics, biology, and engineering technology. As such, this subject has become an essential component of civil engineering education. Students will master the fundamental theories and methods of complex functions and integral transforms, gaining in-depth understanding of analytical functions, the Cauchy Integral Theorem, Cauchy Integral Formula, Taylor and Laurent expansions of analytical functions, and residue theory. They will also develop practical skills to apply these concepts in solving real-world problems. content of courses： Chapter 1: Complex Numbers and Functions (Weight: 8/54, Level: Understanding + Application). Chapter 2: Analytical Functions (Weight: 6/54, Level: Understanding + Application). Chapter 3: Integrals of Complex Functions (Weight: 8/54, Level: Understanding + Application). Chapter 4: Series Representation of Complex Functions (Weight: 6/54, Level: Understanding + Application). Chapter 5: Lagging Variables and Their Applications (Weight: 6/54, Level: Understanding + Application). Chapter 6 Conformal Mapping (Weight 4/54, Level: Understanding + Application). Chapter 7 Fourier Transform (Weight 8/54, Level: Understanding+ Application). Chapter 8: Laplace Transform (Weight 8/54, Level: Understanding+Application).		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a percentage basis, accounts for 40% of the final grade. It mainly evaluates students' assignment completion, self-directed learning, periodic assessments, classroom performance, and		

	midterm exam results. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates teaching content through a closed-book written test to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] Li Hong and Xie Songfa. Complex Functions and Integral Transforms. Beijing: Higher Education Press, 2021. [2] Yu Jiarong. Advanced Mathematics in Complex Analysis. 5th Edition. Beijing: Higher Education Press, 2014.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

college physics

Module Name	college physics		
Semester of module instruction	3rd semester		
Module Owner	Ji Zhiyong		
language	Chinese		
Relationship to the course	Discipline and subject basic required courses		
teaching method	Teacher-centered methods: heuristic teaching, case teaching, lecture method; Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), task-driven teaching method;		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 84 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.7 hours per week for 18 weeks, totaling 30 hours, including homework and exam preparation time.		
credit	3 credits		
Prerequisites and recommendations for joining this module	higher mathematics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the theoretical knowledge of university physics required by civil engineering; master and apply the ideas and methods of physics.	**R1**
	CLO2	Use the knowledge and methods of university physics to analyze and solve problems in the field of civil engineering through physical models;	**R2**

content	Through the study of this course, students will understand the structure, properties, interactions and the basic laws of motion of matter in nature, master the basic knowledge of electromagnetism, and initially have the ability to establish physical models, qualitative analysis and quantitative calculation, independent acquisition of knowledge and the ability to connect theory with practice. content of courses： Introduction (2/54 weight, Level: Memory, Understanding, Application) Chapter 1: Electrostatic Fields (Weight: 6/54; Levels: Memorization, Understanding, Application, Analysis) Chapter 2 Conductors and Electrolytes in Electrostatic Fields (Weight: 8/54; Focus: Memorization, Understanding, Application, and Analysis) Chapter 3: Direct Current (Weight: 4/54; Levels: Memorization, Understanding, Application, Analysis) Chapter 4: Steady Magnetic Fields (Weight: 8/54; Levels: Memorization, Understanding, Application, Analysis) Chapter 5 Magnetic Media (Weight: 6/54, Levels: Memory, Understanding, Application, Analysis) Chapter 6 Electromagnetic Induction (Weight: 6/54; Levels: Memorization, Understanding, Application, Analysis) Chapter 7 Alternating Current (Weight: 10/54; Levels: Memorization, Understanding, Application, Analysis) Chapter 8: Maxwell's Electromagnetic Field Theory (Weight: 4/54; Levels: Memorization, Understanding, Application, Analysis)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] Chen Bingqian. General Tutorial of University Physics: Electromagnetism (2nd Edition). Beijing: Peking University Press, 2012.1-371. [2] Zhang Ruiming. General Tutorial of University Physics. Exercise Solutions (2nd Edition). Beijing: Peking University Press, 2016.10. [3] Zhang Sanhui. University Physics: Electromagnetism (3rd Edition, A Version). Beijing: Tsinghua University Press, 2008.09-249. [4] Hu Haiyun. University Physics (Volume 3): Electromagnetism. Beijing: Higher Education Press, 2017.08-308.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

University Physics Lab

<table>
<tr><td>Module Name</td><td colspan="3">University Physics Lab</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">3rd semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Ji Zhiyong</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Discipline and subject basic required courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, heuristic/guided teaching, open/inquiry-based, project-based learning;
Interactive methods: inquiry-based problem learning, teaching discussion (including group discussion), task-driven teaching method;</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 28 class hours
Teaching hours: 2 hours per week for 10 weeks, 20 hours in total
Self-study hours: 1 hour per week for 8 weeks, 8 hours in total, including: pre-class preparation, after-class writing of experiment report homework.</td></tr>
<tr><td>credit</td><td colspan="3">1 credit</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Advanced Mathematics, University Physics</td></tr>
<tr><td rowspan="2">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master the theoretical knowledge and operational skills related to university physics experiments required by civil engineering;</td><td>R4</td></tr>
<tr><td>content</td><td colspan="3">Through the teaching of university physics experiment course, students can master the basic knowledge and methods of physics experiment, master the use of basic instruments, deepen the understanding of physical phenomena and basic theoretical knowledge, and cultivate students' practical ability and innovation ability.
content of courses：
Project 1: RLC Circuit Characteristics (Weight: 4/18, Levels: Memorization, Understanding, Application, Analysis)
Item 2: Photoelectric Effect and Planck's Constant Measurement (Weight: 4/18; Level: Memorization, Understanding, Application, Analysis)
Project 3: Franck-Hertz Experiment (Weight: 1/18; Levels: Memory, Comprehension, Application, Analysis)
Project 4: Wind Power Generation (Weight: 1/18; Level: Memorization,</td></tr>
</table>

	Understanding, Application, Analysis) Item 5: Independent Bridge Experiment (Weight: 4/18; Levels: Memory, Comprehension, Application, Analysis) Item 6: Hall Effect (Weight 4/18, Levels: Memory, Understanding, Application, Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It is mainly evaluated through the experiment report to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	[1] University Physics Teaching and Research Group, Yunnan University of Economics and Management. University Physics Laboratory Manual. 2022. [2] Xie Bing (Ed.). University Physics Experiment. Xi'an: Xidian University Press, July 2021,1st Edition. [3] Du Hongyan (Ed.). University Physics Experiment. Beijing: Science Press, 1st ed., August 2022. [4] Fang Lili and Guo Peng (eds.). University Physics Experiments. Beijing: Higher Education Press, 2nd ed., September 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

autecology

Module Name	Environmental Ecology		
Semester of module instruction	4th semester		
Module Owner	Zhang Yuexia, Huang Donghong, Wang Baihui		
language	the Chinese language		
Relationship to the course	Discipline-based Foundation Courses		
Teaching Methods	Teacher-centered methods: case teaching, questioning, practice; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approaches include group learning activities such as campus biodiversity surveys and creating themed posters for the International Day for Biological Diversity on May 22.		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 56 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1.1 hours per week for 18 weeks, totaling 20 hours, including: after-class assignments, self-study of cloud class video materials, case studies, and preparation time.		
credit	2 credits		
Prerequisites and recommendations for joining this module	general chemistry		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Be able to correctly articulate civil engineering problems using knowledge from mathematics, natural sciences, and foundational professional courses; understand the concepts and implications of environmental protection and sustainable development; comprehend the impacts of hydropower engineering practices on human society and the environment; and evaluate the interrelationships between hydropower engineering products and environmental protection as well as sustainable development.	**R1、R7**
content	Through the study of "Environmental Ecology", students should be able to understand the impact of human activities on the natural environment, master the strategies and methods of environmental protection and sustainable development, and provide a strong theoretical support and practical guidance for the future environmental protection and ecological civilization construction.		

	content of courses： Chapter 1 Introduction (Weight: 2/36, Level: Understanding, Scope: Knowledge-Analytical) Chapter 2: Biology and Environment (Weight: 4/36, Level: Understanding, Range: Knowledge-Analysis) Chapter 3: Life Systems in the Biosphere (Weight: 6/36, Level: Understanding, Range: Knowledge-Analysis) Chapter 4: Ecosystem Ecology (Weight: 4/36, Level: Multiple Levels: Understanding + Evaluation, Range: Knowledge-Analysis) Chapter 5 Landscape Ecology (Weight: 2/36, Level: Multiple Levels: Understanding + Application + Evaluation, Range: Knowledge-Analysis) Chapter 6: Interference Ecology (Weight: 2/36, Level: Multiple Levels: Understanding + Application + Analysis + Evaluation, Range: Knowledge-Analysis) Chapter 7 Environmental Pollution and Its Ecological Effects (Weight: 4/36, Level: Multiple Levels: Understanding + Application + Analysis, Range: Knowledge-Analysis) Chapter 8 Ecological Monitoring and Evaluation (Weight: 4/36, Level: Multiple Levels: Understanding + Application + Analysis + Evaluation, Range: Knowledge-Analysis) Chapter 9 Environmental Ecological Engineering and Ecological Restoration (Weight: 4/36, Level: Multiple Levels: Understanding + Application + Analysis + Creation, Range: Knowledge-Analysis) Chapter 10: Ecosystem Management and Ecological Planning (Weight: 4/36; Level: Multiple Levels: Understanding + Application + Analysis + Evaluation; Scope: Knowledge to Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 50% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Introduction to Environmental Ecology, edited by Sheng Lianxi, Higher Education Press, 3rd edition, June 2020. 2. Ecological Environment Protection and Sustainable Development, edited by Hu Zhiquan, Huazhong University of Science and Technology Press, 2nd edition, August 2021.
version number	Version 2022 took effect in September 2022

	V2022.1, update: ECTS-based credit and workload calculation

Introduction to Civil Engineering

<table>
<tr><td>Module Name</td><td colspan="3">Introduction to Civil Engineering</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">Semester 1</td></tr>
<tr><td>Module Owner</td><td colspan="3">**</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Professional Foundation Courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, lecture;
Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 28 class hours
Teaching hours: 2 hours per week for 9 weeks, 18 hours in total
Self-study hours: 1.1 hours per week for 9 weeks, totaling 10 hours, including course paper presentations and other activities.</td></tr>
<tr><td>credit</td><td colspan="3">1 credit</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">not have</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>Description (This is the CLO description)</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>To understand the content, methods, achievements and development of civil engineering, and to understand the comprehensiveness, sociality and unity of technology, economy and management of civil engineering from the perspective of discipline overview, so as to build a preliminary professional foundation.</td><td>R10</td></tr>
<tr><td>CLO2</td><td>By studying the development of civil engineering in China in recent years and its basic construction plans, students gain insight into the nation's ongoing modernization efforts. This approach subtly aligns their academic pursuits with national development goals, thereby igniting a lifelong passion for engineering design.</td><td>R12</td></tr>
<tr><td>content</td><td colspan="3">This course is typically offered in the first semester, focusing on explaining the significance of civil engineering and its core content. It introduces the latest technological advancements and information from both domestic and international sources while offering future perspectives. The course aims to help junior civil engineering students understand the fundamental aspects, historical context, and current development of civil engineering. By providing essential theoretical</td></tr>
</table>

<table>
<tr><td></td><td>knowledge, it seeks to enhance students' interest in the field, foster a passion for civil engineering, cultivate a sense of responsibility towards the profession, and develop proactive learning capabilities.
<table>
<tr><th>content of courses</th><th>weight</th><th>rank</th></tr>
<tr><td>Chapter 1 Introduction</td><td>2/18</td><td>understand</td></tr>
<tr><td>Chapter 2 Civil Engineering Materials</td><td>2/18</td><td>understand</td></tr>
<tr><td>Chapter 3 Basic Engineering</td><td>2/18</td><td>Understand-Apply-Analyze</td></tr>
<tr><td>Chapter 4 Construction Engineering</td><td>2/18</td><td>Understand-Apply-Analyze</td></tr>
<tr><td>Chapter 5 Traffic Engineering</td><td>2/18</td><td>Understand-Apply-Analyze</td></tr>
<tr><td>Chapter 6 Ports and Water Conservancy</td><td>2/18</td><td>Understand-Apply-Analyze</td></tr>
<tr><td>Chapter 7 Engineering disasters and Accidents</td><td>2/18</td><td>Understand-Apply-Analyze</td></tr>
<tr><td>Chapter 8 Information, Digitalization and Intelligence in Civil Engineering</td><td>2/18</td><td>Understand-Apply-Analyze</td></tr>
<tr><td>Chapter 9 Civil Engineer</td><td>2/18</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
</table></td></tr>
<tr><td>Assessment format</td><td>1. The course assessment consists of process assessment and summative assessment.
2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment
(1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates students' self-directed learning, classroom participation, assignments, and periodic assessments.
(2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through course papers submitted by students, assessing the achievement of the course's knowledge, ability, and literacy objectives.</td></tr>
<tr><td>Learning and Exam Requirements</td><td>The course is scored out of 100, with 60 being the passing mark.</td></tr>
<tr><td>Reading List</td><td>1. Shen Zuyan. Introduction to Civil Engineering, Beijing: China Architecture & Building Press, 2nd edition, September 2017.</td></tr>
<tr><td>version number</td><td>Version 2022 took effect in September 2022</td></tr>
</table>

	V2022.1, update: ECTS-based credit and workload calculation

Construction engineering drawing and interpretation

Module Name	Construction engineering drawing and interpretation		
Semester of module instruction	Semester 1		
Module Owner	Du Jiao		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 84 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 2 hours per week for 15 weeks, totaling 30 hours, including homework and exam preparation time		
credit	3 credits		
Prerequisites and recommendations for joining this module	not have		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	To cultivate students' professional ability in architectural drawing and reading, conceptual ability and spatial imagination, enhance their practical ability, so that students can independently complete the drawing and reading of various architectural drawings, have a certain ability in drawing, and master the norms and standards of architectural engineering drawing and reading.	**R1**
	CLO2	Students should be able to draw architectural drawings, including floor plans, elevations, sections, etc., according to given design requirements and specifications. They should be able to accurately draw architectural elements in proportion and use symbols and marks to clearly convey design intentions.	**R1**
	CLO3	Students will apply their architectural drafting and reading skills to real-world projects, including participating in simulation exercises, solving design and construction challenges, and	**R2/R5**

		collaborating effectively with teams to deliver professional drawings and technical support.	
	CLO4	Students should be able to analyze and solve problems related to architectural drawing, and be able to communicate effectively with other project members (such as architects, engineers, etc.). They should be able to understand and interpret the information in the drawings, and be able to make suggestions or suggestions to improve the design or solve the problems in the construction.	**R10**
content	This course equips students with fundamental principles and standards of architectural drafting, enabling them to master the creation and interpretation of architectural drawings, apply design codes, and develop spatial reasoning and teamwork skills. Through a combination of theoretical instruction and hands-on practice, students will be prepared to effectively apply their acquired knowledge and skills in real-world engineering projects. Chapter 1: Mastery of Cartographic Tools and Architectural Drawing Standards (Weight: 4/54, Level: Understanding) Chapter 2 Projection Principles and Characteristics of Points, Lines, and Planes (Weight: 6/54; Level: Memorization + Understanding) Chapter 3: Classification of Basic Shapes and Guidelines for Projection Drawing (Weight: 6/54, Level: Memory + Understanding + Application) Chapter 4: Analysis of Composite Shapes and Three-Dimensional View Drawing (Weight: 8/54, Level: Understanding + Application + Creativity) Chapter 5: Principles, Methods, and Interpretation of Section and Cross-Section Drawings (Weight: 6/54, Level: Understanding + Application + Creativity) Chapter 6: Classification and Drawing Methods of Axonometric Drawings (Weight: 4/54, Level: Memory + Understanding) Chapter 7: Reading and Drawing Architectural Drawings (Weight: 10/54, Level: Understanding + Application + Creativity) Chapter 8: Structural Drawing Interpretation and Production (Weight: 10/54, Level: Understanding + Application + Creativity)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Construction Engineering Drawing and Reading, edited by Wang Qiang and Zhang Xiaoping, China Machine Press, September 2017.		

	2. Construction Engineering Drawing and Reading, edited by Wang Yi, Tsinghua University Press, January 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Civil Engineering Materials

Module Name	Civil Engineering Materials		
Semester of module instruction	3rd semester		
Module Owner	Li Tao		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical method: civil engineering material experiment		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 84 class hours Teaching hours: 3 hours per week for 16 weeks, 48 hours in total Self-study hours: 2.4 hours per week for 15 weeks, totaling 36 hours, including homework and exam preparation time.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, College Physics, Linear Algebra		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Equip students with fundamental knowledge of the properties, applications, and preparation methods of major engineering materials. Familiarize them with the types and characteristics of commonly used engineering materials, master the patterns of material property changes, explore ways to improve material performance, and understand production principles and methods. This provides essential theoretical foundations for subsequent specialized courses such as architectural engineering and civil engineering construction.	**R1**
	CLO2	Master the fundamental principles and methods of quality inspection for common civil engineering materials, with practical skills in using standard instruments and equipment, along with basic abilities to accurately observe, calculate, analyze experimental data, and prepare lab reports. Understand the principles and methods of material quality management, and develop the ability to conduct material-related work in accordance with national standards and specifications. Cultivate	**R7**

		students' teamwork spirit through teaching and laboratory activities.	
	CLO3	Reasonable selection of civil engineering materials suitable for the environment, and reasonable selection and use of civil engineering materials in different engineering environments;	**R4**
	CLO4	Understand the standardization of engineering materials and the development trend of building materials, realize the importance of building materials in the future professional courses and practical work, and further establish the confidence and determination to learn this course well; in the teaching and experiment process, cultivate students' sense of safety responsibility and professional ethics.	**R8**
content	Through this course, students will master fundamental knowledge of civil engineering materials, including their basic properties, primary functions, application scenarios, experimental methods, and quality evaluation. They will understand the principle that material properties determine their applications and learn material testing methodologies. Students will develop essential skills for selecting and using engineering materials appropriately, master conventional quality inspection principles and methods for common materials, and acquire practical abilities in operating standard instruments. Additionally, they will gain foundational competencies in observing, calculating, and analyzing experimental data, as well as writing experimental reports. content of courses： Chapter 1: Fundamental Properties of Civil Engineering Materials (Weight: 2/48, Level: Memorization + Understanding) Chapter 2: Inorganic Cementitious Materials with High Strength (Weight 2/48, Level: Memory + Understanding) Chapter 3 Cement (Weight: 10/48; Level: Memory + Understanding + Analysis + Evaluation) Chapter 4 Concrete (Weight 18/48, Levels: Memory + Understanding + Application + Analysis + Evaluation) Chapter 5: Building Mortar (Weight: 6/48; Level: Memory + Comprehension + Analysis + Evaluation) Chapter 6: Wall Materials (Weight: 2/48, Level: Memory + Understanding) Chapter 7: Steel (Weight 4/48, Level: Memory + Understanding) Chapter 8: Asphalt and Polymer Materials (Weight: 2/48, Level: Memory + Comprehension) Chapter 9 Wood (Weight 2/48, Level: Memory + Understanding)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score.		

	(2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and exam requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Civil Engineering Materials, edited by Bai Xianchen, China Architecture & Building Press, 1st edition, August 2019.
version number	1.V2022, the major version took effect in September 2022 2.V2022.1, Update: ECTS-based credit and workload calculation

engineering geology

Module Name	engineering geology		
Semester of module instruction	Second semester		
Module Owner	Wang Hao		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 56 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 2 hours per week for 10 weeks, totaling 20 hours, including homework and exam preparation time		
credit	2		
Prerequisites and recommendations for joining this module	higher mathematics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Through internship activities, students can gain in-depth understanding of the technical standards system, intellectual property, industrial policies, and laws and regulations in civil engineering. They will learn to comprehend and adhere to professional specifications and operational standards related to engineering geology. Additionally, they will explore the impact of different social cultures on engineering activities, developing the awareness and capability to conduct engineering practices in cross-cultural contexts.	**R2**
	CLO2	In the planning, design, construction, use and operation stages of civil engineering practice, we can actively make suggestions for the engineering geological problems that may occur in the construction of the project, put forward economic and scientific and effective prevention and control measures, reduce the project risk, reduce the economic loss of the country, cultivate professional responsibility, and promote the	**R6**

		craftsman spirit.	
	CLO3	Capable of working independently or collaboratively within a team, leveraging personal expertise while respecting and incorporating team members' input. Possesses strong teamwork skills to address practical challenges collectively, thereby enhancing individual influence and contribution within the team.	**R7**
content	Engineering geology serves as a cornerstone course in civil engineering education. This curriculum systematically explores fundamental geological principles, examines adverse geological phenomena with their engineering implications, and develops methodologies for analyzing geotechnical challenges through field investigations. Designed to equip students with comprehensive knowledge of rock formations, geological structures, hydrogeological processes, groundwater dynamics, and common civil engineering geotechnical issues, the course delivers classroom instruction that cultivates essential competencies. Learners acquire systematic understanding of geological hazards in construction projects, learn to identify their formation mechanisms, and master practical solutions. The program emphasizes developing critical skills in interpreting geological survey reports and implementing geotechnical interventions, ultimately preparing students for professional careers in the field. content of courses： Chapter 1 Introduction (Weight: 2/36; Levels: Memorization, Comprehension, Application, Analysis, Evaluation, and Creation) Chapter 2: Types of Rock Formation and Engineering Geology Characteristics (Weight: 8/36, Levels: Memorization, Understanding, Application) Chapter 3: Geological Structures (Weight: 6/36, Level: Memory-Evaluation) Chapter 4 Natural Geological Processes (Weight: 6/36; Levels: Memorization, Understanding, Application) Chapter 5 Groundwater (Weight 8/36, Level: Memory, Understanding, Application) Chapter 6 Engineering Geology Issues (Weight: 4/36, Levels: Memorization, Understanding, Analysis, Evaluation) Chapter 7 Engineering Geological Survey (Weight: 2/36; Levels: Memorization, Understanding, Application, Evaluation)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total score. It mainly assesses the teaching content through a		

	closed-book written test.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Engineering Geology, edited by Shi Zhenming, China Architecture & Building Press, March 2020. 2. "Geology of Civil Engineering", edited by Hu Houtian, China Architecture & Building Press, February 2017.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Steel structure design principles

Module Name	Civil Engineering Materials		
Semester of module instruction	3rd semester		
Module Owner	Li Tao		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical method: civil engineering material experiment		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 15 weeks, 45 hours in total Self-study hours: 2 hours per week for 15 weeks, totaling 30 hours, including homework and exam preparation time		
credit	3 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, College Physics, Linear Algebra		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Equip students with fundamental knowledge of the properties, applications, and preparation methods of major engineering materials. Familiarize them with the types and characteristics of commonly used engineering materials, master the patterns of material property changes, explore ways to improve material performance, and understand production principles and methods. This provides essential theoretical foundations for subsequent specialized courses such as architectural engineering and civil engineering construction.	**R1**
	CLO2	Master the fundamental principles and methods of quality inspection for commonly used civil engineering materials, with practical skills in operating standard instruments and equipment, along with basic abilities to accurately observe, calculate, analyze experimental data, and prepare lab reports. Understand the principles and methods of material quality management, and develop foundational capabilities to conduct material-related	**R3**

		work in accordance with national standards and specifications. Through teaching and laboratory activities, cultivate students' teamwork spirit.	
	CLO3	Reasonable selection of civil engineering materials suitable for the environment, and reasonable selection and use of civil engineering materials in different engineering environments;	**R4**
content	Through this course, students will master fundamental knowledge of civil engineering materials, including their basic properties, primary functions, application scenarios, experimental methods, and quality evaluation. They will understand the principle that material properties determine their applications and learn material testing methodologies. Students will develop essential skills for selecting and using engineering materials appropriately, master conventional quality inspection principles and methods for common materials, and acquire practical abilities in operating standard instruments. Additionally, they will gain foundational competencies in observing, calculating, and analyzing experimental data, as well as writing experimental reports. content of courses： Chapter 1: Fundamental Properties of Civil Engineering Materials (Weight: 2/48, Level: Memorization + Understanding) Chapter 2: Inorganic Cementitious Materials with High Strength (Weight 2/48, Level: Memory + Understanding) Chapter 3 Cement (Weight: 10/48; Level: Memory + Understanding + Analysis + Evaluation) Chapter 4 Concrete (Weight 18/48, Levels: Memorization + Understanding + Application + Analysis + Evaluation) Chapter 5: Building Mortar (Weight: 6/48; Level: Memory + Comprehension + Analysis + Evaluation) Chapter 6: Wall Materials (Weight: 2/48, Level: Memory + Understanding) Chapter 7: Steel (Weight 4/48, Level: Memory + Understanding) Chapter 8: Asphalt and Polymer Materials (Weight: 2/48, Level: Memory + Comprehension) Chapter 9 Wood (Weight 2/48, Level: Memory + Understanding)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	2. Civil Engineering Materials, edited by Bai Xianchen, China		

	Architecture & Building Press, 1st edition, August 2019.
version number	1.V2022, the major version took effect in September 2022 2.V2022.1, Update: ECTS-based credit and workload calculation

rational mechanics

Module Name	rational mechanics		
Semester of module instruction	Semester 1		
Module Owner	**		
language	the Chinese language		
Relationship to the course	Professional Foundation Courses		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 84 class hours Teaching hours: 3 hours per week for 18 weeks, 54 hours in total Self-study hours: 1.7 hours per week for 18 weeks, 30 hours in total, including: after-class assignments, exam preparation time, etc.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Linear Algebra, University Physics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	Description (This is the CLO description)	Support graduation requirements
	CLO1	Proficient in isolating components from simple object systems and constructing force diagrams. Master the analytical methods for equilibrium problems in plane systems of forces. Comprehend point motion descriptions using Cartesian and natural coordinate systems, with a thorough understanding of rigid body translational motion and fixed-axis rotation characteristics. Acquire fundamental analytical techniques for plane motion (including motion synthesis/decomposition, reference point method, instantaneous center method, and velocity projection). Understand and compute essential dynamic physical quantities (momentum, angular momentum, kinetic energy, impulse, work, potential energy, inertial forces, and rotational inertia). Grasp universal dynamic theorems (momentum theorem, angular momentum theorem, kinetic energy theorem, and corresponding conservation laws). Perform calculations for simplified inertial force systems in rigid body translational motion, symmetric rigid body rotation, and plane	**R1**

		motion scenarios.	
	CLO2	Proficient in isolating components and applying various equilibrium equations to solve general statics problems. Skilled in using the fixed-point method, instantaneous center method, and velocity projection method to resolve planar motion problems of rigid bodies. Capable of selecting and applying relevant dynamic theorems to solve kinetic problems involving particles, systems of particles, and rigid bodies.	**R2**
	CLO3	By integrating diverse teaching methods with real-world engineering applications, we ignite students' thirst for knowledge while cultivating scientific rigor and creative problem-solving skills. Our program fosters a passion for their field and profession, nurturing meticulous learning attitudes and self-motivated study habits.	**R3**

content

Through this course, students can master the basic laws and research methods of mechanical motion (including equilibrium) of point masses, point mass systems and rigid bodies and their engineering applications, learn to apply the theories and methods of theoretical mechanics to analyze and solve some simple engineering problems, and cultivate their abstract thinking, logical thinking and innovation ability.

course content	**weight**	**rank**
Chapter 1 Basic concepts of force and force analysis of objects	2/54	Memorize-Understand-Apply
Chapter 2. Vector force system and couple system	10/54	Memorize-Understand-Apply
Chapter 3 General planar force system	14/54	Memorize-Understand-Apply
Chapter 4 Space Force System	2/54	Memorize-Understand-Apply
Chapter 5. Motion of a Point	2/54	Memorize-Understand-Apply
Chapter 6 Basic Motion of a Rigid Body	4/54	Memorize-Understand-Apply
Chapter 7. Combinational Motion of Points	4/54	Memorize-Understand-Apply
Chapter 8 Planar motion of rigid bodies	4/54	Memorize-Understand-Apply
Chapter 9 Basic equations of particle dynamics	2/54	Memorize-Understand-Apply
Chapter 10 Momentum	2/54	Memorize-Understand-Apply

	Chapter XI Momentum Theorem	4/54	Memorize-Understand-Apply
	Chapter 12 The Work-Force Theorem	4/54	Memorize-Understand-Apply
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates post-class assignments, periodic tests, midterm exams, and classroom performance, with corresponding point allocations. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a closed-book written test, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Theoretical Mechanics (2nd Edition), by Wen Jianming, Beijing: China Architecture & Building Press, June 2020. 2. Theoretical Mechanics (I) (5th Edition), Harbin Institute of Technology, Beijing: Higher Education Press, July 2019. 3. Theoretical Mechanics (5th Edition), by Fei Xuebo, Wang Yong, and Zhuang Biaozhong, Beijing: Higher Education Press, March 2019.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

building construction

<table>
<tr><td>Module Name</td><td colspan="3">building construction</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">3rd semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Zhao Yingli</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Professional Foundation Courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lectures, case teaching, questioning;
Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion);
Practical approach: Project practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 56 class hours
Teaching hours: 2 hours per week for 18 weeks, 36 hours in total
Self-study hours: 2 hours per week for 10 weeks, totaling 20 hours, including homework and exam preparation time</td></tr>
<tr><td>credit</td><td colspan="3">2 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Civil engineering materials, architectural drawing and interpretation</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master the whole process of civil engineering structure design, consider the factors that affect the safety performance of the structure in the whole life cycle, and comprehensively consider the social, health, safety, legal, cultural and environmental factors that affect the engineering structure design or construction organization.</td><td>R1</td></tr>
<tr><td>CLO2</td><td>Understand the principles and methods of using modern instruments and information technology tools commonly used in the profession, and understand their limitations, and be able to select appropriate instruments and information resources for analysis, calculation and design for complex civil engineering problems.</td><td>R3</td></tr>
<tr><td>content</td><td colspan="3">This course equips students with fundamental knowledge of architectural composition principles, construction methodologies, and spatial design theories, serving as a core practical course for civil engineering majors. It develops essential skills in civil architectural design and construction, enabling students to understand critical design factors, structural</td></tr>
</table>

	principles, construction techniques, and application scopes across building components. Through hands-on design exercises, students reinforce their learning while acquiring essential technical expertise in industrial architecture. The program cultivates logical reasoning, spatial visualization, technical drawing proficiency, graphic communication, and self-directed learning capabilities. content of courses： Chapter 1 Overview (Weight: 2/36, Level: Understanding) Chapter 2: Building Floor Plan Design (Weight: 4/36, Level: Knowledge-Analysis) Chapter 3: Building Section Design (Weight: 4/36, Level: Knowledge-Analysis) Chapter 4: Building Form and Facade Design (Weight: 2/36, Level: Knowledge-Analysis) Chapter 5: Civil Building Structure Concepts (Weight: 2/36, Level: Understanding) Chapter 6: Wall and Foundation Structures (Weight: 4/36, Levels: Understanding, Application, Analysis) Chapter 7: Floor and Ground Floor Structure (Weight: 4/36, Level: Understanding, Application, Analysis) Chapter 8: Stairway Construction (Weight: 4/36, Levels: Understanding, Application, Analysis) Chapter 9 Roof Structure (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 10: Window and Door Systems with Sunshade Structures (Weight: 2/36; Level: Understanding, Application, Analysis) Chapter 11 Expansion Joints (Weight: 2/36, Level: Understanding, Application, Analysis) Chapter 12 Industrialization of Civil Buildings (Weight: 2/36, Level: Understanding) Chapter 13 Industrial Building Design (Weight: 2/36, Level: Understanding, Application, Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	"Architectural Design of Buildings (6th Edition)", co-authored by Tongji University, Southeast University, Xi'an University of Architecture and Technology, and Chongqing University, China Architecture & Building Press, December 2024.

version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

engineering survey

Module Name	engineering survey		
Semester of module instruction	4th semester		
Module Owner	Wang Jianying		
language	the Chinese language		
Relationship to the course	Required Course		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions)		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 56 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1.1 hours per week for 18 weeks, totaling 20 hours, including: after-class assignments, preview, review, and exam preparation time.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Construction Engineering Drawing and Reading		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Have the basic knowledge and principles of engineering surveying, and be able to correctly read and apply large scale topographic maps;	**R1**
	CLO2	Familiar with the basic structure and operation of conventional measuring instruments (level, theodolite, total station, etc.), and able to complete the processing of measurement data, indoor calculation and drawing;	**R5**
	CLO3	Understand the principles of new surveying instruments and technologies and their applications in related fields. Be able to analyze and solve complex surveying problems in civil engineering with the help of modern surveying tools based on basic surveying knowledge.	**R5**
content	Through this course, students will master fundamental engineering surveying knowledge, understand measurement data processing methods, and learn about the structure and operation of modern surveying instruments. They will also develop essential field measurement skills, including topographic map drawing and data analysis capabilities. In terms of communication, students will be able to		

	clearly and accurately describe surveying processes and results, providing solid technical support for future engineering practices. content of courses： Chapter 1: Fundamentals of Surveying (Weight: 2/36; Level: Memorization + Understanding + Application) Chapter 2: Leveling (Weight: 6/36, Level: Memory + Understanding) Chapter 3: Angle Measurement (Weight 4/36, Level: Memory + Understanding + Application) Chapter 4 Distance Measurement and Line Orientation (Weight: 4/36, Level: Memory + Understanding + Application) Chapter 5 Plane Control Surveying (Weight: 8/36, Level: Memorization + Understanding + Application) Chapter 6 Elevation Control Surveying (Weight: 4/36, Level: Memorization + Understanding + Application) Chapter 7 Topographic Map Surveying and Application (Weight: 4/36, Level: Memorization + Understanding + Application) Chapter 8: Fundamental Construction Surveying Tasks (Weight: 4/36, Level: Memorization + Understanding + Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Civil Engineering Surveying", edited by Sun Xiaorong, China Architecture & Building Press, December 2021 (textbook for the 14th Five-Year Plan of the Ministry of Housing and Urban-Rural Development). 2. Civil Engineering Surveying, edited by Yin Yaoguo, Guo Baoyu et al., Wuhan University Press, 3rd edition, August 2021. 3. Civil Engineering Surveying (6th Edition), edited by Hu Wusheng and Pan Qinglin, Southeast University Press, August 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

mechanics of materials

Module Name	mechanics of materials		
Semester of module instruction	4th semester		
Module Owner	Xia Qiaoli		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning. Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); The practice method: project practice.		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 84 credit hours. Teaching hours: 3 hours per week for 18 weeks, 54 hours in total. Self-study hours: 2 hours per week for 15 weeks, 30 hours in total, including: after-class assignments, preparation time, etc.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Advanced mathematics, university physics, theoretical mechanics.		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	1.2 Be able to use mathematical knowledge to establish and solve mechanical models in basic professional courses, and use professional basic courses and mathematical knowledge to analyze complex problems in civil engineering and establish and solve mathematical models in professional courses.	**R1**
	CLO2	2.2 Be able to use mechanical models to express complex engineering problems based on professional knowledge of mathematics, natural science and civil engineering.	**R2**
	CLO3	4.3 Be able to correctly select and operate the experimental device and test equipment, carry out the experiment (test) safely, obtain effective experimental data, analyze and interpret, and get reasonable and effective conclusions.	**R4**
content	Through this course, students will master the methodology of abstracting mechanical models from real-world engineering components, acquire fundamental principles and methods for studying internal forces, stress,		

	and deformation distribution in structural members, and develop theoretical and computational skills for analyzing member strength, stiffness, and stability. The program equips students with essential computational and experimental competencies, laying a solid mechanical foundation for subsequent specialized courses and practical applications in structural design and scientific research. It cultivates comprehensive mechanical literacy and qualitative/quantitative analytical capabilities, providing students with essential skills for advanced professional studies, structural analysis, and initial engineering practice. content of courses： Chapter 1 Introduction (2/54 weight, Level: Memorization, Understanding, Application); Chapter 2 Axial Tension and Compression and Mechanical Properties of Materials (weight 10/54, level: memory, understanding, application); Chapter 3: Cutting and Pressing (Weight 4/54, Levels: Memory, Understanding, Application); Chapter 4: Reversal (Weight 10/54, Levels: Memory, Understanding, Application); Chapter 5 Bending Internal Forces (Weight 8/54, Level: Memory, Understanding, Application); Chapter 6 Bending Stress (Weight 4/54, Level: Memory, Understanding, Application); Chapter 7 Bending Deformation (Weight 8/54, Levels: Memory, Understanding, Application); Chapter 8 Composite Deformation (Weight 4/54, Level: Memory, Understanding, Application); Chapter 9: Column Stability Problem (Weight: 4/54, Level: Memory, Understanding, Application).
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Mechanics of Materials, Sun Xunfang, Beijing: Higher Education Press, March 2019. 2. Mechanics of Materials, Liu Hongwen, Beijing: Higher Education Press, July 2017,6th edition.
version number	Version 2022 took effect in September 2022

	V2022.1, update: ECTS-based credit and workload calculation

hydraulics

Module Name	hydraulics		
Semester of module instruction	4th semester		
Module Owner	Huang Donghong		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical methods: engineering case practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 56 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1.1 hours per week for 18 weeks, totaling 20 hours, including after-class assignments, exam preparation time, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Theoretical Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master fundamental concepts including viscosity, pressure, streamlines, pathlines, cross-sectional flow patterns, head, and head loss. Distinguish between steady and unsteady flows, uniform and non-uniform flows, pressurized and unpressurized flows, laminar and turbulent flows, as well as fast and slow flows. Develop proficiency in calculating total hydrostatic pressure, velocity, flow rate, pressure, and head loss. Apply the continuity equation, energy equation, and momentum equation to analyze and solve general engineering problems, thereby laying a solid foundation for advanced professional courses.	**R1**
	CLO2	Demonstrate proficiency in applying fundamental principles and methodologies of hydraulics to analyze and resolve practical challenges in civil engineering. Possess expertise in hydraulic experimental research and design, capable of participating in experimental planning and	**R4**

		execution, analyzing results, and making fundamental inferences and predictions based on experimental data. Understand commonly used software and application methods in hydraulic numerical simulation, laying the foundation for advanced research and practical implementation.	
content	Through this course, students will master the basic concepts, basic theories and analysis methods of water flow motion, understand the characteristics of different water flows, learn the hydraulic calculation in common civil engineering, and have the preliminary experimental measurement skills, which lays a foundation for learning subsequent courses and professional technical work. content of courses： Chapter 1 Introduction (Weight: 2/36, Level: refers to one level, multiple levels, or ranges) Chapter 2 Hydrostatics (Weight 6/36, Level: ***) Chapter 3: The Theory of Flow Lines in Fluid Motion (Weight 8/36, Level: ***) Chapter 4 Flow Resistance and Head Loss (Weight 6/36, Level: ***) Chapter 5 Flow in Pressurized Pipelines (Weight 4/36, Level: ***) Chapter 5 Steady Uniform Flow in Open Channels (Weight 2/36, Level: ***)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 50% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Hydraulic Engineering, Sichuan University State Key Laboratory of Hydraulic Engineering and Mountain River Development and Protection, Higher Education Press, 5th edition, April 2016; 2. "Hydraulics", edited by Zhao Zhenxing, He Jianjing, and Wang Cun, Tsinghua University Press, 3rd edition, April 2021; 3. "Hydraulics", edited by Zhang Zhichang, Li Guodong, and Li Zhiqin, China Water Resources and Hydropower Press, 3rd edition, February 2021. This refers to the "9. Recommended Textbooks and Reference Materials" section in the course syllabus.		

version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

structural mechanics

Module Name	structural mechanics		
Semester of module instruction	5th semester		
Module Owner	Liu Lingmei		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lecture, case teaching, group discussion, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 112 class hours Teaching hours: 4 hours per week for 18 weeks, 72 hours in total Self-study hours: 2.2 hours per week for 18 weeks, totaling 40 hours, including cloud class resources, after-class assignments, and exam preparation time.		
credit	4 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Theoretical Mechanics, Material Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Be able to use mathematical knowledge to establish and solve mechanical models in basic professional courses, and use professional basic courses and mathematical knowledge to analyze complex problems in civil engineering and establish and solve mathematical models in professional courses.	**R1**
	CLO2	Be able to complete the mechanical performance design and construction scheme design of system, structure and component (node) for specific requirements in civil engineering.	**R3**
	CLO3	Understand the principles and methods of using professional engineering tools and simulation software commonly used in the profession, and understand their limitations. For complex civil engineering problems, be able to select appropriate engineering tools and professional simulation software for analysis, calculation of	**R5**

		internal forces of structures, and design.	
	CLO4	Be able to express complex engineering problems based on the basic principles of mathematics, natural science and civil engineering expertise, and adopt mechanical model methods.	**R2**
content	Through this course, students will master the fundamental concepts, theories, and methods of structural mechanics. They will learn to perform internal force analysis and deformation analysis on various rod systems, and apply structural mechanics principles to solve common structural force problems in engineering practice. The program aims to cultivate students' problem-solving abilities, engineering practice skills, and innovative thinking capabilities. Chapter 1 Introduction (2/72 weight, Level: Memory, Understanding) Chapter 2: Structural Analysis of Geometric Construction (Weight: 4/72; Levels: Memory, Understanding, Application, Analysis, Evaluation) Chapter 3: Statically Determinate Beams and Frames (Weight: 10/72; Level: Memorization + Understanding + Application + Analysis + Evaluation + Creativity) Chapter 4: Three-Hinged Arch (Weight: 2/72, Level: Memory + Understanding + Application) Chapter 5: Statically Determinate Trusses and Composite Structures (Weight: 6/72, Level: Memory + Understanding + Application + Analysis) Chapter 6: Structural Displacement Calculation (Weight 12/72, Levels: Memory + Understanding + Application + Analysis + Evaluation + Creativity) Chapter 7: Force Method (Weight 14/72, Level: Memory + Understanding + Application + Analysis + Evaluation) Chapter 8 Displacement Method (Weight 10/72, Level: Memory + Understanding + Application + Analysis + Evaluation) Chapter 9: Limiting Approach (Weight 6/72, Level: Memory + Understanding + Application + Analysis) Chapter 10 Influence Line (Weight 6/72, Level: Memory + Understanding + Application + Analysis)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	Recommended textbook: Structural Mechanics, edited by Li Liankun, Higher Education Press, 7th edition, November 2022.		

	Reference: Structural Mechanics, edited by Shan Jian and Lü Lingyi, Southeast University Press, June 2022, third edition.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Civil engineering structure test

<table>
<tr><td>Module Name</td><td colspan="3">Civil engineering structure test</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">6th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Chen Weilong</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Professional Foundation Courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, demonstration method;
Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion);
Practical approach: Project practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 28 class hours
Teaching hours: 6.9 hours per week for 4 weeks, 27 hours in total
Self-study hours: 1 hour</td></tr>
<tr><td>credit</td><td colspan="3">1.0 credit</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Materials Mechanics, Structural Mechanics, Principles of Concrete Structure Design, Principles of Steel Structure Design</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Students develop structural testing and analysis awareness, enhancing their practical skills in evaluating and advancing new materials, technologies, and theories through experimental methods. They can articulate the content, methodologies, principles, and instrumentation of structural testing in civil engineering.</td><td>R4</td></tr>
<tr><td>CLO2</td><td>Students have the ability to complete the design, operation and analysis of structural experiments.</td><td>R5</td></tr>
<tr><td>content</td><td colspan="3">"Structural Testing in Civil Engineering" is a course designed to help students gain a deep understanding of structural engineering principles and practical applications through theoretical instruction and hands-on experiments. Students will learn to design and conduct various structural tests, ranging from static load tests to dynamic tests and even non-destructive testing, to reveal the behavior and performance of structures under different loads. Through these experiments, students will master advanced testing equipment and techniques, learn data collection, analysis, and interpretation, enabling them to accurately assess the safety, stability, and performance of structures. Additionally, the course emphasizes developing students' teamwork and communication skills, as well as awareness of experimental safety and</td></tr>
</table>

	standardized operations. This course provides students with both theoretical knowledge and practical skills, laying a solid foundation for their future career development in civil engineering. content of courses： Chapter 1 Introduction (Weight 1/12, Level: Memory) Chapter 2: Loading Methods and Equipment for Building Structure Testing (Weight: 1/12, Level: Memory + Understanding + Application) Chapter 3 Experimental Design of Building Structures (Weight: 2/12, Level: Memory + Understanding + Application) Chapter 4: Structural Testing Techniques and Measurement Instruments (Weight: 2/12, Level: Memorization + Understanding + Application) Chapter 5: Static Testing and Dynamic Measurement Techniques for Building Structures (Weight: 2/12, Level: Memorization + Understanding + Application) Chapter 6: On-site Testing Techniques for Building Structures (2/12 Weight, Level: Memorization + Understanding + Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. (1) Process-based assessment, scored on a 100-point scale, accounts for 40% of the final grade. It evaluates students' classroom participation, assignments, and self-directed learning. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It is mainly scored based on the completion of the experiment report to evaluate the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Structural Testing and Inspection of Building Engineering", edited by Xu Fenqiang, China Architecture & Building Press, May 2023 2. "Civil Engineering Structure Test" (2nd Edition), edited by Zhang Shuguang, China Architecture & Building Press, January 2022 Experimental device user manual and experimental guide
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Civil engineering construction regulations

Module Name	Civil engineering construction regulations		
Semester of module instruction	4th semester		
Module Owner	Wu Yan		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 28 class hours Teaching hours: 2 hours per week for 9 weeks, 18 hours in total Self-study hours: 1.1 hours per week for 9 weeks, totaling 10 hours, including after-class assignments, exam preparation time, etc.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Architectural Engineering, Civil Engineering Materials, Theoretical Mechanics, Material Mechanics, Structural Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Have the basic ability to use the basic knowledge of construction laws and regulations to solve the relevant legal problems in engineering practice, cultivate and develop good professional standards and ethical quality, and achieve the goal of legal knowledge and ability requirements of second-level construction engineers.	**R6**
	CLO2	It can comply with the construction laws and regulations in the process of practical engineering construction, make use of the learned construction laws and regulations to carry out legal construction, ensure the quality of project construction, and have laws to rely on.	**R8**
content	This course aims to cultivate students' legal awareness, help them understand the components of the civil engineering legal system, and master the basic principles and research methods of construction regulations. It also helps students comprehend legal knowledge in		

	construction processes and grasp the legal basis for handling construction regulations, providing a solid theoretical foundation for the lawful development of engineering projects. content of courses： Chapter 1: Legal Foundations of Construction Engineering (2/18 Weight, Level: Understanding) Chapter 2: Construction Engineering Qualification System (2/18 Weight, Level: Memorization-Evaluation) Chapter 3: Legal Framework for Engineering Bidding and Tendering (2/18 Weight, Level: Memorization-Evaluation) Chapter 4: Construction Engineering Contract Legal System (3/18 Weight, Level: Memorization + Understanding + Evaluation)) Chapter 5: Construction Legal System (2/18 Weight, Level: Memorization-Understanding) Chapter 6: Legal Framework for Engineering Quality (Weight: 2/18; Level: Memorization + Application + Assessment) Chapter 7 Engineering Safety Legal System (Weight: 2/18, Level: Memorization + Application + Evaluation) Chapter 8 Legal Framework for Construction Project Standardization (Weight: 1/18, Level: Understanding) Chapter 9 Construction Project Risk Prevention System (Weight: 1/18; Level: Memorization + Analysis + Evaluation) Chapter 10 Environmental Protection Law for Construction Projects (Weight: 1/18, Level: Memorization-Understanding)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Engineering Construction Regulations Tutorial (2nd Edition)", edited by He Baizhou, China Architecture & Building Press, 1st edition, July 2019. 2. Civil Engineering Construction Regulations (4th Edition), edited by Wu Shengxing, Higher Education Press, 1st edition, May 2020.

version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Soil mechanics and foundation engineering

<table>
<tr><td>Module Name</td><td colspan="3">Soil mechanics and foundation engineering</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">5th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Guo Shengjuan</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Required Course</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, demonstration method;
Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion);
Practical approach: Project practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 75 class hours
Teaching hours: 4 hours per week for 13.5 weeks, 54 hours in total
Self-study hours: 3 hours per week for 7 weeks, totaling 21 hours, including homework and exam preparation time</td></tr>
<tr><td>credit</td><td colspan="3">3 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Architectural Engineering, Advanced Mathematics, Theoretical Mechanics, Materials Mechanics, Engineering Geology</td></tr>
<tr><td rowspan="4">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Students master the basic concepts, basic theories and calculation methods of soil physical properties, foundation stress, deformation, shear strength, bearing capacity and soil pressure in soil mechanics.</td><td>R2</td></tr>
<tr><td>CLO2</td><td>Students master the basic concepts, basic theories and calculation methods of soil physical properties, foundation stress, deformation, shear strength, bearing capacity and soil pressure in soil mechanics.</td><td>R3</td></tr>
<tr><td>CLO3</td><td>Develop strong learning ability, practical ability and cooperative ability.</td><td>R4</td></tr>
<tr><td>content</td><td colspan="3">This course includes two parts: soil mechanics and basic engineering:
The soil mechanics curriculum equips students with fundamental engineering geology concepts, including soil formation mechanisms and classification systems. It covers essential physical-mechanical properties of soil, along with calculation methods for foundation settlement, bearing capacity, and earth pressure. The program also teaches slope stability analysis techniques, ultimately enabling students to apply these</td></tr>
</table>

	principles to solve real-world engineering challenges involving structural stability and deformation. The foundation engineering curriculum requires students to master the fundamental principles of foundation types and design, including the design methods for shallow foundations and extended foundations on natural soil. Students must acquire expertise in pile foundation design principles and construction techniques, while gaining familiarity with primary soil improvement methods and reinforcement mechanisms. The program also emphasizes understanding the engineering characteristics, evaluation methods, and practical solutions for special soils. Graduates will develop comprehensive capabilities in both foundation design and project management within civil engineering. Introduction (Weight: 1/42, Level: Understanding) Chapter 1: Physical Properties and Engineering Classification of Soil (Weight: 3/42, Level: Understanding + Memorization + Analysis + Application) Chapter 2 Soil Permeability (Weight 2/42, Level: Understanding + Memory + Analysis + Application) Chapter 3 Soil Stress (Weight 2/42, Level: Understanding + Memorization + Analysis + Application) Chapter 4 Soil Compression and Foundation Settlement Calculation (Weight: 3/42, Level: Understanding + Memorization + Analysis + Application) Chapter 5 Soil Shear Strength (Weight 3/42, Level: Understanding + Memorization + Analysis + Application) Chapter 6 Soil Pressure (Weight 2/42, Level: Understand+Memorize+Analyze+Apply) Chapter 7 Foundation Bearing Capacity (Weight 4/42, Level: Understanding + Memorization + Analysis + Application) Chapter 8: Design of Retaining Walls (Weight: 3/42, Level: Understanding + Memorization + Analysis + Application) Chapter 9 Slope Stability Analysis (Weight: 2/42, Level: Understanding + Memorization + Analysis + Application) Chapter 10: Shallow Foundations on Natural Subgrades (Weight: 3/42, Level: Understanding + Memorization + Analysis + Application) Chapter 11: Continuous Foundation (Weight 2/42, Level: Understanding + Memory + Analysis + Application) Chapter 12 Pile Foundations (Weight 4/42, Level: Understanding + Memorization + Analysis + Application) Chapter 13 Foundation Treatment (Weight 4/42, Level: Understanding + Memory + Analysis + Application) Chapter 14: Foundation Pit Engineering (Weight: 2/42, Level: Understanding + Memorization + Analysis + Application) Chapter 15: Special Land Foundation (Weight 2/42, Level: Understanding + Memorization + Analysis + Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. It mainly assesses students' daily performance and experimental operation. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a closed-

	book format, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Soil Mechanics and Foundation Engineering, edited by Xiong Tiantian and Zhou Ling, China Architecture & Building Press, May 2020 2. "General Specifications for Building and Municipal Foundation", National Standard of the People's Republic of China, China Architecture & Building Press, April 2021 3 "Code for Design of Building Foundation and Substructure", National Standard of the People's Republic of China, China Architecture & Building Press, July 2011 4. Technical Code for Foundation Treatment of Buildings, National Standard of the People's Republic of China, China Architecture & Building Press, August 2012
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Principles of concrete structure design

Module Name	Principles of concrete structure design		
Semester of module instruction	5th semester		
Module Owner	**		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 100 class hours Teaching hours: 4 hours per week for 16 weeks, 64 hours in total Self-study hours: 2 hours per week for 18 weeks, totaling 36 hours, including homework and exam preparation time		
Credits	4 credits		
Prerequisites and recommendations for joining this module	Architectural Engineering, Civil Engineering Materials, Theoretical Mechanics, Material Mechanics, Structural Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	Description (This is the CLO description)	Support graduation requirements
	CLO1	Students should be able to recite the physical and mechanical properties of concrete and steel reinforcement along with their testing standards, while memorizing core terms in current design codes regarding material performance, component classification, and design states. They must explain the force mechanisms and failure modes of reinforced concrete components under bending, shear, compression, tension, and torsion, and clarify the stress transfer principles and structural requirements for prestressed concrete components.	**R1、R2**
	CLO2	Demonstrate proficiency in applying mathematical and mechanical principles to conduct force analysis and formula derivation for structural components. Integrate concrete structural design theories to complete cross-section selection, reinforcement design, and structural detail optimization, ensuring compliance with relevant specifications. Master the operational procedures for concrete	**R3**

<table>
<tr><td></td><td></td><td>component performance testing. Through comparative analysis of measured data and theoretical calculations, identify error sources and propose corrective strategies to strengthen the integration of theoretical knowledge and practical application.</td><td></td></tr>
<tr><td></td><td>CLO3</td><td>Be able to systematically evaluate the design of concrete structure according to the actual engineering requirements and the requirements of current specifications, including safety, economy and construction feasibility analysis; be able to comprehensively use test data, theoretical calculation and specifications to optimize the design parameters of components and put forward reasonable improvement suggestions.</td><td>R4</td></tr>
<tr><td>content</td><td colspan="3">This course provides fundamental theories and knowledge of concrete structures, covering load-bearing characteristics of common concrete and prestressed concrete components, design principles, and corresponding construction measures. Through this course, students will develop comprehensive analytical skills to evaluate structural behavior and design capabilities. The program establishes essential theoretical foundations for advanced courses like "Concrete Structure Design" and prepares students for graduation projects.
<table>
<tr><th>content of courses</th><th>weight</th><th>rank</th></tr>
<tr><td>Chapter I Introduction</td><td>2/64</td><td>understand</td></tr>
<tr><td>Chapter 2 Physical and mechanical properties of concrete structural materials</td><td>8/64</td><td>Memorize-Understand</td></tr>
<tr><td>Chapter 3 Bearing capacity of bending members in cross section</td><td>12/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Chapter 4 Bearing capacity of inclined section of flexural member</td><td>8/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Chapter 5 Bearing capacity of cross section of compressed members</td><td>12/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Chapter 6 Bearing capacity of tension member section</td><td>4/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Chapter 7 Bending capacity of twisted members</td><td>4/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
</table></td></tr>
</table>

	Chapter 8. Deformation, cracking, ductility and durability	6/64	Understanding-Applying-Analyzing-Evaluating-Innovating
	Chapter IX Prestressed concrete elements	8/64	Understanding, Applying, Analyzing, Evaluating, and Innovating
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It primarily evaluates homework (20%), periodic tests (20%), self-directed learning (10%), classroom participation (20%), and experiments (30%). (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a closed-book written test, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Li Aiqun (Ed.). Concrete Structures (Volume I) ── Principles of Concrete Structure Design. China Architecture & Building Press. 7th Edition, January 2020. 2. Shen Puseng (Ed.). Principles of Concrete Structure Design. Higher Education Press. 5th Edition, May 2020. 3. China Academy of Building Research. Code for Design of Concrete Structures (GB50010-2010). Beijing: China Architecture & Building Press. May 2011. 4. China Ministry of Housing and Urban-Rural Development. General Code for Concrete Structures (GB55008-2021). Beijing: China Architecture & Building Press. April 2022.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Steel structure design principles

Module Name	Steel structure design principles		
Semester of module instruction	5th semester		
Module Owner	Sun Jun		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 75 class hours Teaching hours: 3 hours per week for 15 weeks, 45 hours in total Self-study hours: 2 hours per week for 15 weeks, totaling 30 hours, including homework and exam preparation time		
credit	3 credits		
Prerequisites and recommendations for joining this module	Architectural Engineering, Civil Engineering Materials, Theoretical Mechanics, Material Mechanics, Structural Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Comprehensively understand the basic knowledge of steel structure, such as material characteristics, structural forms and connection methods, and master the calculation principles and calculation formulas of steel structure under tension, compression, bending and connection;	**R1**
	CLO2	Can actually use the knowledge of steel structure design in engineering projects, to carry out the design and verification of beams, columns and connection nodes, the verification results can be compared with the design specifications for analysis, and finally come up with the optimal structural design scheme;	**R3**
	CLO3	Contact the civil engineering materials and material mechanics course experiment, can accurately understand the difference between elastic and plastic design, and correctly apply it in the design.	**R4**

content	Through this course, students can master the knowledge of calculation of steel structure tension, compression and bending components and joint connections, and apply the knowledge to the design of simple engineering cases, so as to have the ability to solve engineering problems. Chapter 1 Introduction (Weight: 2/45, Level: Memory) Chapter 2: Materials for Steel Structures (Weight: 4/45, Level: Memorization + Understanding) Chapter 3: Connections of Steel Structures (Weight: 16/45, Level: Understanding + Application + Analysis) Chapter 4 Axial Force Members (Weight 12/45, Level: Understanding + Application + Analysis) Chapter 5 Bending Members (Weight 11/45, Level: Understanding + Application + Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Basic Principles of Steel Structures" edited by Shen Zuyan, China Architecture & Building Press, June 2018. 2. "Basic Principles of Steel Structures" edited by Cui Jia, China Architecture & Building Press, published in September 2019. 3. "Steel Structure Design Standard" (GB50017-2017), China Architecture & Building Press, 2017.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Earthquake resistance

Module Name	Earthquake resistance		
Semester of module instruction	6th semester		
Module Owner	Guo Shengjuan		
language	the Chinese language		
Relationship to the course	Required Course		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions)		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1 hour per week for 14 weeks, totaling 14 hours, including homework and exam preparation time		
credit	2.5 credits		
Prerequisites and recommendations for joining this module	Structural mechanics, reinforced concrete structures, steel structures, masonry structures		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Proficient in using the bottom shear method and the mode decomposition reaction spectrum method to carry out seismic design verification of common industrial and civil building structures and bridge structures, and able to apply seismic structural measures to the seismic design of structures.	**R3**
	CLO2	Can calculate the seismic force according to the known site conditions, seismic intensity and structural dynamic characteristics, select reasonable structural type according to the design code, and know the new technology in the field of engineering seismic research.	**R6**
	CLO3	Know the cause and distribution of earthquake, list the basic elements of earthquake motion and the disasters caused by earthquake.	**R8**
content	Through this course, students will acquire essential knowledge in seismic-resistant engineering design, develop professional awareness in structural seismic design, enhance computational skills for seismic analysis, and master the application of relevant seismic codes, regulations, and reference materials. The program emphasizes		

	understanding the critical importance of seismic concept design, seismic calculation methodologies, and seismic mitigation measures, while clarifying their interrelationships. Students will also gain comprehensive familiarity with the procedural steps and technical components of seismic-resistant design. Chapter 1 Earthquake Overview (Weight: 2/36, Level: Understanding) Chapter 2 Earthquake Effects (Weight 8/36, Level: Understanding + Memory + Analysis) Chapter 3 Seismic Design of Structures (Weight 12/36, Level: Understanding + Memorization + Analysis + Application) Chapter 4: Seismic Design of Structural Concepts (Weight: 6/36; Level: Understanding, Memorization, Analysis, Application) Chapter 5 Seismic Design of Concrete Structures (Weight: 4/36; Level: Comprehension, Memorization, Analysis, Application) Chapter 9 Seismic Isolation Design for Building Structures (Weight: 2/36; Level: Understanding, Memorization, Analysis, Application) Chapter 10: Structural Energy Dissipation and Vibration Reduction Design (Weight: 2/36; Level: Comprehension + Memorization + Analysis + Application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates students' classroom participation, self-directed learning, regular assignments, and periodic assessments, with each component contributing to the final score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content through written tests and evaluates the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Seismic Design of Engineering Structures, edited by Li Aiqun, China Architecture & Building Press, 3rd edition, January 2018 "General Code for Seismic Design of Buildings and Municipal Engineering", National Standard of the People's Republic of China, China Architecture & Building Press, 2021 3. "Code for Seismic Design of Buildings", National Standard of the People's Republic of China, China Architecture & Building Press, November 2016 4. "Code for Design of Concrete Structures", National Standard of the People's Republic of China, China Architecture & Building Press, July 2016
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Civil Engineering Cognitive Practice

Module Name	Civil Engineering Cognitive Practice		
Semester of module instruction	Semester 1		
Module Owner	Xia Qiaoli		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 60 class hours Teaching hours: 20 hours per week for a total of 1 week. Self-study hours: 20 hours per week for 2 weeks, 40 hours in total, including: after-class homework, preparation time, etc.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Introduction to Civil Engineering		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	8.1 Establish and practice core socialist values, correctly understand the basic national conditions that China is in and will remain in the primary stage of socialism for a long time to come, and have a strong sense of mission and responsibility as builders and successors of the socialist cause.	**R8**
	CLO2	6.1 Understand the technical standard system, intellectual property, industrial policies, laws and regulations in the field of civil engineering, and understand the influence of different social cultures on engineering activities.	**R6**
	CLO3	9.2 Have the ability to work independently or cooperatively in a team, and play the role of individuals in a team.	**R9**
content	Through this course, students will gain foundational knowledge of various buildings, structures, and construction practices in civil engineering. The program aims to cultivate early engineering awareness, spark curiosity for advanced courses, broaden perspectives, and establish practical foundations for core and specialized studies. Hands-on field		

	experiences will enhance professional competence and practical skills, while fostering responsibility, social interaction abilities, and teamwork spirit. As an essential component of civil engineering education, on-site construction training will emphasize safety awareness, laying crucial groundwork for subsequent specialized courses. content of courses： Experiment (Training) Project 1: Construction Engineering Internship (Weight: 10/20, Level: Understanding, Application, Analysis). Experiment (Training) Project 2: Road and Bridge Engineering Internship (Weight: 10/20, Level: Understanding, Application, Analysis).
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 50% of the final grade. It evaluates students' classroom participation, homework performance, self-directed learning, and regular assessments, with corresponding point allocations. (2) The final assessment, with a full score of 100 points, accounts for 50% of the total grade. It evaluates the teaching content through the completion of a cognitive internship summary, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Introduction to Civil Engineering, Wang Lin, Wuhan: Huazhong University of Science and Technology Press, 3rd edition, January 2018. 2. Introduction to Civil Engineering, Yu Jiahuan, Yu Qun, Beijing: Tsinghua University Press, 1st edition, March 2019. 3. Introduction to Civil Engineering, Shen Zuyan, Beijing: China Architecture & Building Press, 2nd edition, August 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Engineering geology practice

Module Name	Engineering geology practice		
Semester of module instruction	3rd semester		
Module Owner	Wang Hao		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 60 credit hours Teaching hours: 2 hours per week for 10 weeks, 20 hours in total Self-study hours: 4 hours per week for 10 weeks, totaling 40 hours, including homework and exam preparation time		
credit	1		
Prerequisites and recommendations for joining this module	Engineering geology		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Through internship activities, students can gain in-depth understanding of the technical standards system, intellectual property, industrial policies, and laws and regulations in civil engineering. They will learn to comprehend and adhere to professional specifications and operational standards related to engineering geology. Additionally, they will explore the impact of different social cultures on engineering activities, developing the awareness and capability to conduct engineering practices in cross-cultural contexts.	**R6**
	CLO2	In the planning, design, construction, use and operation stages of civil engineering practice, we can actively make suggestions for the engineering geological problems that may occur in the construction of the project, put forward economic and scientific and effective prevention and control measures, reduce the project risk, reduce the economic loss of the country, cultivate professional responsibility, and promote the	**R8**

		craftsman spirit.	
	CLO3	Capable of working independently or collaboratively within a team, leveraging personal expertise while respecting and incorporating team members' input. Possesses strong teamwork skills to address practical challenges collectively, thereby enhancing individual influence and contribution within the team.	**R9**
content	This course is designed for students who have mastered the fundamental theories of engineering geology. It equips learners with essential field survey techniques, including the use of geological compasses, determination of rock layer orientations, observation of geological routes, and mapping of geological profiles. Participants will develop the ability to observe geological phenomena in the field, analyze and evaluate engineering geology challenges, examine the interaction between civil engineering construction activities and geological conditions, and propose targeted solutions tailored to specific site requirements. content of courses： Internship Project 1: Interpretation of Geological and Topographic Maps and Observation of Mineral and Rock Samples (Weight: 10/20, Level: Understanding, Application, Analysis, Evaluation) Internship Project 2: Observing Rocks, Identifying Structures, Understanding Slope Stability and Management, and Measuring Dip Using a Geological Compass (Weight: 10/20, Levels: Understanding, Application, Analysis, Evaluation)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. The teaching content is assessed through the submission of internship reports.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Engineering Geology, edited by Shi Zhenming, China Architecture & Building Press, March 2020. 2. "Geology of Civil Engineering", edited by Hu Houtian, China Architecture & Building Press, February 2017.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Building design course

Module Name	Building design course		
Semester of module instruction	3rd semester		
Module Owner	Zhao Yingli		
language	the Chinese language		
Relationship to the course	Specialized Professional Practice Course		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 60 class hours Teaching hours: 2 hours per week for 10 weeks, 20 hours in total Self-study hours: 4 hours per week for 10 weeks, totaling 40 hours, including homework and preparation time		
credit	2 credits		
Prerequisites and recommendations for joining this module	Building architecture, architectural engineering drawing and interpretation		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO2	Master the whole process of civil engineering structure design, and consider the factors that affect the safety performance of the structure in the whole life cycle, and be able to comprehensively consider the social, health, safety, legal, cultural and environmental factors that affect the engineering structure design or construction organization;	**R3**
	CLO3	Understand the principles and methods of using modern instruments and information technology tools commonly used in the profession, and understand their limitations, and be able to select appropriate instruments and information resources for analysis, calculation and design for complex civil engineering problems.	**R5**
content	Through the architectural design practice course in building architecture, students can independently complete a civil engineering project under faculty guidance. This program familiarizes them with fundamental architectural processes, construction principles, and structural methods, enabling them to research and finalize architectural solutions while		

	producing detailed drawings including floor plans, elevations, sections, and structural details. The course deepens students' understanding of core theories, knowledge, and technical skills in their major, while developing their abilities in design, drafting, documentation, and comprehensive layout presentation. This comprehensive training lays a solid foundation for advanced studies and prepares graduates to effectively adapt to societal demands. content of courses： Chapter 1: Building Floor Plan Design (Weight: 6/20, Level: Understanding, Application, Analysis) Chapter 2: Building Facade Design (Weight: 4/20, Level: Understanding, Application, Analysis) Chapter 3: Building Section Design (Weight: 4/20, Level: Understanding, Application, Analysis) Chapter 4: Construction Node Detail Drawings (Weight: 6/20, Level: Understanding, Application, Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. Course assessment consists of process assessment and final assessment. (1) Process-based assessment, scored on a 100-point scale, accounts for 40% of the final grade. It evaluates students' classroom participation, self-directed learning, assignments, and periodic assessments. Students absent for one-third or more of the semester will be disqualified from the exam. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through the submission of works, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	"Architectural Design of Buildings (6th Edition)", co-authored by Tongji University, Southeast University, Xi'an University of Architecture and Technology, and Chongqing University, China Architecture & Building Press, December 2024.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Engineering Surveying Practice

Module Name	Engineering Surveying Practice		
Semester of module instruction	4th semester		
Module Owner	Wang Jianying		
language	the Chinese language		
Relationship to the course	Required Course		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions)		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 120 class hours Teaching hours: 5 hours per week for 8 weeks, 40 hours in total Self-study hours: 10 hours per week for 8 weeks, totaling 80 hours, including data collection, data processing, manual filling, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Engineering Surveying, Architectural Drawing and Reading		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO2	Familiar with the basic structure and operation of conventional measuring instruments (level, theodolite, total station, etc.), and able to complete the processing of measurement data, indoor calculation and drawing;	R5
	CLO3	Understand the principles of new surveying instruments and technologies and their applications in related fields. Be able to analyze and solve surveying problems in complex engineering projects by using basic knowledge of surveying and modern surveying tools.	R9
content	Through this course, students will acquire fundamental knowledge of engineering surveying, understand its core theories and methodologies, develop essential competencies in surveying techniques, and gain the ability to resolve complex engineering surveying challenges. content of courses： Experiment (Training) Project 1: Elevation Control (Weight: 8/40, Level: Memory + Understanding + Application) Experiment (Training) Project 2: Plane Control (Weight: 8/40, Level: Memory + Understanding)		

	Experiment (Training) Project 3: Topographic Map Surveying (Weight: 24/40, Level: Memory + Understanding)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Civil Engineering Surveying", edited by Sun Xiaorong, China Architecture & Building Press, December 2021 (textbook for the 14th Five-Year Plan of the Ministry of Housing and Urban-Rural Development). 2. Civil Engineering Surveying, edited by Yin Yaoguo, Guo Baoyu et al., Wuhan University Press, 3rd edition, August 2021. 3. Civil Engineering Surveying (6th Edition), edited by Hu Wusheng and Pan Qinglin, Southeast University Press, August 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Basic engineering course design

<table>
<tr><td>Module Name</td><td colspan="3">Basic engineering course design</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">5th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Guo Shengjuan</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Specialized Professional Practice Course</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, demonstration method;
Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);
Practical approach: Project practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 90 hours
Teaching hours: 4 hours per week for 5 weeks, 20 hours in total
Self-study hours: 10 hours per week for 7 weeks, totaling 70 hours, including time for homework after class</td></tr>
<tr><td>credit</td><td colspan="3">1 credit</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Soil mechanics and foundation engineering</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO2</td><td>Be able to comprehensively use the knowledge learned to independently analyze and solve practical basic engineering problems, be familiar with the general laws of basic engineering design, and have the ability to design common basic types of engineering.</td><td>R3</td></tr>
<tr><td>CLO3</td><td>Understand the basic engineering related specifications, and have the ability to comprehensively apply various means to query information.</td><td>R6</td></tr>
<tr><td>content</td><td colspan="3">Through this practical course, students can master the basic steps of basic engineering design, understand the requirements of specifications, have the basic ability of basic design, and master the ability to solve complex foundation engineering problems with the minimum cost.
Single Foundation under Reinforced Concrete Column (Weight 10/20, Level: Understanding + Memory + Analysis + Application)
Gravity retaining wall (weight 10/20, level: understanding + memory + analysis + application)</td></tr>
</table>

Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. It mainly assesses students' daily study situation and the composition of the score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It evaluates the teaching content through the design outcomes, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and exam requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	Soil Mechanics and Foundation Engineering, edited by Xiong Tiantian and Zhou Ling, China Architecture & Building Press, May 2020 2. "General Specifications for Building and Municipal Foundation", National Standard of the People's Republic of China, China Architecture & Building Press, November 2021 3. "Code for Design of Building Foundation and Substructure", National Standard of the People's Republic of China, China Architecture & Building Press, March 2012
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Concrete structure course design

Module Name	Concrete structure course design		
Semester of module instruction	6th semester		
Module Owner	Tan Xiaojun		
language	the Chinese language		
Relationship to the course	Professional Concentrated Practice Course		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 120 class hours Teaching hours: 4 hours per week for 10 weeks, 40 hours in total Self-study hours: 8 hours per week for 10 weeks, totaling 80 hours, including course design assignments, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Concrete and masonry structure design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	Description (This is the CLO description)	Support graduation requirements
	CLO1	Further understand the layout of the frame structure, the types of loads, the transmission path, and the calculation of the cylinder diagram; master the methods and types of load combination; be able to select components according to the requirements of the task book; write the design calculation book, and calculate the section size and reinforcement of components.	**R3**
	CLO2	To improve students 'ability to independently analyze and solve practical problems with comprehensive application of professional knowledge: to cultivate students' basic skills such as design calculation, engineering drawing, literature review, application of standards and specifications, use of modern tools, report writing, communication, etc.	**R5、R6**
content	Through design practice, students will understand the main process of structural design in construction engineering; exercise and improve the ability of arrangement, calculation, construction treatment and drawing of structural construction drawings of reinforced concrete structures; cultivate the ability of independent analysis and solution of practical		

	engineering problems, and promote students to establish the engineering thinking and sense of responsibility of engineers. 1. Estimate the size of the frame structure; 2. Determine the load and calculate the stiffness of the component; 3. Internal force calculation and internal force combination; 4. Reinforcement calculation; 5. Drawings.
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the total grade. It mainly assesses the progress and quality of students' course design completion, as well as their classroom performance. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through course design scores and assesses the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Li Aiqun (Ed.). Concrete Structures Volume II: Design of Concrete Structures and Masonry Structures. Beijing: China Architecture & Building Press. 7th edition, January 2020. 2. Liang Xingwen, Shi Qingxuan (eds.). Concrete Structure Design. Higher Education Press. 5th edition, November 2021. 3. China Academy of Building Research. Code for Design of Concrete Structures (GB50010-2010). Beijing: China Architecture & Building Press. May 2011. 4. China Ministry of Housing and Urban-Rural Development. General Code for Concrete Structures (GB55008-2021). Beijing: China Architecture & Building Press. April 2022.
Version	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Steel structure design

Module Name	Steel structure design		
Semester of module instruction	6th semester		
Module Owner	Sun Jun		
language	the Chinese language		
Relationship to the course	Specialized Professional Practice Course		
teaching method	Teacher-centered methods: case teaching; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 5 hours per week for 6 weeks, 30 hours in total Self-study hours: 6 hours per week for 10 weeks, totaling 60 hours, including design software learning and design material collection		
credit	3 credits		
Prerequisites and recommendations for joining this module	Steel structure design principles, steel structure design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Understand the layout principle of light portal frame, support system layout, force characteristics and main component design, and reasonably select steel and connection materials for steel structure according to theoretical calculation results.	**R2**
	CLO2	Master load calculation methods and structural calculation diagrams, perform basic internal force calculations; use professional design software such as PKPM to input loads and site conditions, and output design drawings and calculation results.	**R5**
	CLO3	From the perspective of construction such as component production, transportation and on-site installation, the size of components should be rationally allocated in structural design and the form of connection of components should be rationally selected; from the perspective of development, the improvement of building function should be considered, and the	**R3**

		maintenance and renovation of steel structure should be considered.	
content	Through this course, students can master the basic theory and method of steel structure design, as well as the design process and method of steel structure engineering, and have the ability to design light steel structure plant and steel frame structure, providing a solid foundation for future engineering design and construction in the field of steel structure or further study. Course design project: single-storey portal steel frame structure design		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Assessment: The final course grade is calculated as 30% process evaluation + 70% final evaluation, with scores on a percentage scale. The assessment primarily evaluates students 'mastery of engineering design knowledge. The course design should focus on developing students' abstract and logical thinking abilities, as well as their capacity to apply theoretical analysis to solve practical problems.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. "Steel Structure Design for Buildings (2nd Edition)" edited by Shen Zuyan, China Architecture & Building Press, September 2020 2. "Steel Structure" (Edited by Guoxin Dai), Wuhan University of Technology Press, August 2019 3. "Steel Structure Design Standard" GB50017-2017 4. Technical Code for Cold-Bent Thin-Walled Steel Structures GB50018-2002 5. PKPM tutorial videos		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Civil Engineering Construction Course Design (BIM)

Module Name	Civil Engineering Construction Course Design (BIM)		
Semester of module instruction	7th semester		
Module Owner	Wang Hao		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 10 hours per week for 3 weeks, 10 hours in total Self-study hours: 20 hours per week for 3 weeks, totaling 60 hours, including homework and preparation time		
credit	3		
Prerequisites and recommendations for joining this module	Civil engineering construction, civil engineering construction organization		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Through theoretical lectures, case teaching, independent learning, practical research, communication and discussion and other teaching activities, students are initially equipped with the basic ability to use the basic knowledge of civil engineering construction organization to solve the relevant construction organization and management problems in engineering practice.	**R5**
	CLO2	Familiar with engineering construction organization design and preparation specifications, with the ability to prepare construction plans.	**R6**
	CLO3	Master the construction process of each part of the construction project, be familiar with the key points and difficulties of each part of the construction project, and be able to successfully complete the whole process management of construction organization.	**R7**
content	Through the course design, students will initially acquire the basic		

	ability to apply the basic knowledge of civil engineering construction organization and solve the relevant construction organization and management problems in engineering practice. They will understand and abide by the professional standards and ethical norms of civil engineers, and basically meet the legal knowledge and ability requirements of the second-level construction engineer. content of courses： Experiment (Training) Project 1: Construction Schedule (Weight: 5/30, Level: Memorization, Understanding, Application) Experiment (Training) Project 2: Construction Network Planning (Weight: 5/30, Level: Memorization, Understanding, Application) Experiment (Training) Project 3: Unit Engineering Construction Organization Design (Weight: 20/30, Level: Application, Analysis, Evaluation, and Innovation)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total evaluation. It primarily evaluates the teaching content through the submission of the unit construction organization design report, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Civil Engineering Construction Organization", edited by Zhao Ping, China Architecture & Building Press, August 2022. 2. "Construction Organization of Civil Engineering", edited by Liang Peixin and Wang Liwen, Wuhan University of Technology Press, November 2021.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

fieldwork

Module Name	fieldwork		
Semester of module instruction	7th semester		
Module Owner	Wang Jianying		
language	the Chinese language		
Relationship to the course	Required Course		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions)		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 360 class hours Teaching hours: 10 hours per week for 8 weeks, 80 hours in total Self-study hours: 35 hours per week for 8 weeks, totaling 280 hours, including project production, logs, production summaries, etc.		
credit	4 credits		
Prerequisites and recommendations for joining this module	All Professional Courses		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Enable students to combine theory with practice, verify, consolidate and deepen the professional theoretical knowledge such as road geometry line shape, subgrade and pavement structure, and establish perceptual understanding;	**R2、R5**
	CLO2	To learn practical knowledge of production such as construction knowledge, construction management, construction technology and technical economy, and cultivate the ability to analyze and solve practical problems independently;	**R6、R8**
	CLO3	Combine with workers and engineering and technical personnel, extensively contact with the society, expand the scope of knowledge, enhance practical skills.	**R10、R11、R12**
content	The Civil Engineering Production Internship aims to bridge classroom theory with real-world practice, enabling students to master essential skills like surveying, drafting, construction, design, and project management through hands-on engagement in engineering projects. This program also deepens students' understanding of industry operations and working environments, while cultivating problem-solving abilities,		

	teamwork, and innovative thinking. By participating in internships, students enhance their professional competence and adaptability, laying a solid foundation for future careers. Additionally, the internship helps build professional networks and valuable resources, equipping students with crucial experience for advancing in the civil engineering field. content of courses： Experimental (Training) Project: Construction Site Internship (80/80 Weight, Level: Memorization + Understanding + Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Civil Engineering Construction (2nd Edition), edited by Guo Jianying and Chen Anying, Wuhan University Press, 2021.01. 2. Construction Technology (7th Edition), edited by Yao Jinying and Yao Xiaoxia, China Architecture & Building Press, 2022.07. 3. Road Survey and Design (4th Edition), edited by Zhang Zhiqing, Science Press, July 2022. 5. Roadbed and Pavement Engineering (4th Edition), edited by Huang Xiaoming, Southeast University Press, July 2020. 6. Tunnel Engineering (3rd Edition), edited by Li Mingtian, People's Communications Press, February 2022. 7. "Bridge Engineering" (5th Edition), edited by Shao Xudong, People's Communications Press, May 2019.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

graduation field work

Module Name	graduation field work		
Semester of module instruction	8th semester		
Module Owner	Graduation internship instructor		
language	the Chinese language		
Relationship to the course	Specialized Professional Practice Course		
teaching method	Project Practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 180 class hours Teaching hours: 10 hours per week for 4 weeks, 40 hours in total Self-study hours: 35 hours per week for 4 weeks, a total of 140 hours, including: completing tasks assigned by the internship unit		
credit	6 credits		
Prerequisites and recommendations for joining this module	Specialized Courses		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Learn to collect and sort out relevant graduation design materials through multiple channels, have the basic ability of research, and have the basic idea of solving complex engineering problems.	**R1/R3**
	CLO2	Comprehensively understand the work of civil engineering design, construction and management, and learn to use structural design and construction management software for scheme design.	**R5**
	CLO3	Have the idea of loving the profession, having a clear sense of responsibility and serving the construction of the motherland, and have the basic quality of social communication and teamwork.	**R8/R9/ R10**
content	Through graduation internships and completing internship reports, graduates develop preliminary plans for their thesis projects, establish a comprehensive design framework, and formulate initial design proposals. This process lays a solid foundation for advancing their thesis work, ensuring a strong start to their graduation project. During internships, students conduct targeted research, take detailed notes, create sketches, perform field measurements, and gather essential literature and materials required for their thesis development.		
Assessment format	When the graduation internship is completed, students are required to		

	complete a graduation internship report. The internship score is given by the enterprise instructor (40%) and the graduation project instructor (60%).
Learning and Exam Requirements	Each student shall submit a graduation internship report, which mainly includes the following contents: (1) Understand the formation process and content of architectural design scheme and structural design scheme; (2) Determine the graduation project topic, preliminarily determine the corresponding architectural and structural design scheme; (3) Complete the collection, reading, and translation of materials and literature related to the graduation project; conduct on-site surveys and investigations for the actual project; (4) Complete the installation and training of various professional design software related to the project, and achieve the level of proficient use; (5) Master the professional knowledge and technology related to the graduation project.
Reading List	1. Code for structural loads of buildings GB 50009 1. Code for structural loads of buildings GB 50009 2. Code for Design of Building Foundation GB 50007 3. Concrete Structure Design Code GB 50010 3. Concrete Structure Design Code GB 50010 4. Seismic Design Code for Buildings GB 50011 4. Seismic Design Code for Buildings GB 50011 5. Technical Code for Concrete Structures in High-Rise Buildings JGJ 3 6. Fire Protection Code for Building Design GB 50016 6. Fire Protection Code for Building Design GB 50016 7. User Manual for PK-PM Series Software (Includes: APM, PM, PK, LTCAD, JCCAD, etc.) 8. Construction specifications and technical requirements 9. Textbooks on Building, Concrete Structures, Masonry Structures, Foundation Engineering, and Seismic Structures
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Graduation Project (Thesis)

Module Name	Graduation project (thesis)		
Semester of module instruction	8th semester		
Module Owner	Graduation Project Advisor		
language	Chinese 0		
Relationship to the course	Specialized Professional Practice Course		
teaching method	Custom Design		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 420 class hours Teaching hours: 10 hours per week for 14 weeks, 140 hours in total Self-study hours: 20 hours per week for 14 weeks, totaling 280 hours, including: graduation project data collection, relevant software learning, design completion, result file organization, and graduation project defense		
credit	14 credits		
Prerequisites and recommendations for joining this module	All pre-courses for civil engineering		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	The ability to apply basic theories, professional knowledge and industry norms to solve practical engineering and technical problems.	**R2/R3/ R4/R7/ R6/R11**
	CLO2	Proficient in commonly used structural design software, with the ability to optimize structural design.	**R5**
	CLO3	Have the basic ability to consult Chinese and English professional literature, master the basic skills of writing papers.	**R4**
	CLO4	Have the sense of teamwork, have the basic quality of a rigorous and serious engineer, have the basic spirit of humanistic care.	**R10/R12**
Content	Through immersive practices, social engagement, engineering design projects, and thesis writing, students develop comprehensive analytical and problem-solving skills, significantly enhancing their independent working capabilities. This process also profoundly shapes their moral character, professional attitudes, and work ethic. Cultivating a strong sense of professional commitment and responsibility plays a vital role in elevating graduates' overall competencies.		

Assessment format	The final score is calculated as 40% of the supervisor's evaluation, 20% of the reviewer's assessment, and 40% of the defense committee's rating.
Learning and Exam Requirements	1. Work plan 2. Go deep into the field to conduct investigation and research and collect data 3. Read Chinese and foreign literature 4. Plan comparison and selection 5. Engineering software design 6. Design calculation and theoretical analysis 7. Complete construction drawings, prepare design specifications, or write reports (papers) 8. Submit for blind review 9. Defense after passing the blind review
Reading List	1. Civil Engineering Design Guide, edited by Gao Xiangyang, Peking University Press, 2016 2. Principles of Concrete Structure Design, edited by Shen Pusheng, Higher Education Press, 2012 3. Concrete Structure Design. Edited by Fan Jiang and Yuan Jixing. Chongqing University Press, 2014. 4. Basic Principles of Steel Structure Design, edited by Huang Chengwei, Science Press, 2013 5. Structural Mechanics (Edited by Sun Jun), Chongqing University Press, 2016 6. Seismic Structural Design (Edited by Wang Sheliang), Wuhan University of Technology Press, 2011 7. Latest standards and specifications for architectural structure design and construction, as well as road and bridge design and construction
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Construction of Civil Engineering

Module Name	Construction of Civil Engineering		
Semester of module instruction	6th semester		
Module Owner	Wang Hao		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 3 hours per week for 15 weeks, 45 hours in total Self-study hours: 3 hours per week for 15 weeks, totaling 45 hours, including homework and exam preparation time		
credit	3		
Prerequisites and recommendations for joining this module	Construction Engineering Drawing and Reading, Civil Engineering Materials, Engineering Surveying, and Architectural Design		
Module Goals/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Possessing fundamental theoretical knowledge in earthworks, foundation engineering, main structure engineering, structural installation, waterproofing, and decoration engineering, with mastery of construction techniques and technical requirements for each discipline. Capable of comprehensively considering project requirements, material characteristics, and construction conditions to develop practical construction plans tailored to specific engineering needs.	**R3**
	CLO2	Proficient in construction management software and capable of interpreting technical specifications. Able to apply standards for project inspections, acceptance procedures, and quality evaluation. Skilled in using construction management software to simulate civil engineering processes, with the ability to analyze limitations of these tools to ensure their effectiveness and accuracy in practical engineering applications.	**R5**

	CLO3	Be able to comprehensively analyze and evaluate the impact of civil engineering construction activities on society, health, safety, law and culture. Be able to deeply understand the constraints in engineering practice, and clearly understand the social and legal responsibilities to be undertaken in the process of engineering implementation.	**R6**
	CLO4	Understand policies, laws, regulations, and standards related to civil engineering construction, environmental protection, and sustainable development. Possess environmental awareness and sustainable development consciousness, capable of evaluating the sustainability of civil engineering projects from a sustainable perspective. Analyze and assess the impacts of civil engineering construction on humans and the environment.	**R7**
content	This course focuses on construction techniques, methodologies, and the selection and application of construction machinery across various trades in civil engineering projects. Through this program, students will acquire fundamental knowledge, theoretical frameworks, and decision-making approaches in civil engineering construction, while developing essential skills to analyze and resolve technical challenges in construction practices. content of courses： Chapter 1 Earthwork (Weight: 8/45, Level: Memory-Evaluation) Chapter 2 Foundation Treatment and Pile Foundation Engineering (Weight: 6/45, Levels: Memorization, Understanding, Analysis) Chapter 3 Masonry Structure Engineering (3/45 Weight, Level: Memorization, Understanding, Analysis) Chapter 4: Concrete Structures Engineering (Weight: 14/45, Category: Memorization-Evaluation) Chapter 5: Structural Installation Engineering (Weight: 6/45, Levels: Memorization, Understanding, Analysis) Chapter 6 Waterproofing Engineering (Weight: 2/45, Level: Memorization, Understanding, Analysis) Chapter 7 Decoration Engineering (Weight 2/45, Level: Memory, Understanding, Analysis) Chapter 8 Bridge Engineering (Weight: 2/45, Level: Memory, Understanding) Chapter 9: Road Surface Engineering (Weight: 2/45, Level: Memorization and Understanding)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. (1) Process assessment, with a percentage score, accounts for 40% of the total score.		

	(2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content through a closed-book written test.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Civil Engineering Construction, edited by Mao Heqin, Wuhan University of Technology Press, August 2018. 2. Civil Engineering Construction, edited by Hu Changming, Science Press, October 2017.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Concrete and masonry structure design

Module Name	Concrete and masonry structure design		
Semester of module instruction	6th semester		
Module Owner	Tan Xiaojun		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 120 class hours Teaching hours: 4 hours per week for 16 weeks, 64 hours in total Self-study hours: 3.1 hours per week for 18 weeks, totaling 56 hours, including after-class assignments, exam preparation time, etc.		
credit	4 credits		
Prerequisites and recommendations for joining this module	Architectural Engineering, Civil Engineering Materials, Theoretical Mechanics, Material Mechanics, Structural Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	Description (This is the CLO description)	Support graduation requirements
	CLO1	Through this course, students can use the basic theory to analyze the structural system, structural layout and structural form of general industrial and civil buildings with reinforced concrete and masonry structures, and master the basic design methods of beam and slab structures, single-storey factories, frame structures and masonry structures.	**R1/R3**
	CLO2	Cultivate students' awareness of consulting the Code and reference materials, guiding them to observe and think critically. Develop their ability to apply theoretical knowledge to solve practical problems and design engineering structures. Students should be able to utilize modern design tools to interpret and design floor slabs, staircases, single-story industrial buildings, frame structures, and masonry structures.	**R6/R2**
	CLO3	Follow the development trend and practical engineering structure of this discipline, expand students 'vision, establish a strong sense of lifelong learning, and cultivate	**R8**

<table>
<tr><td></td><td></td><td>students to have a high sense of responsibility and rigorous work style, and always put the safety of people's lives and property in the first place in their work.</td><td></td></tr>
<tr><td>content</td><td colspan="3">This course is a required professional course for civil engineering majors specializing in architectural engineering. It focuses on the design calculations and structural construction of reinforced concrete beams and slabs, masonry structures, single-story industrial plant structures, and frame structures. Through this course, students will develop structural force analysis capabilities and learn to apply structural design codes, manuals, and standard drawing sets for industrial and civil building design. The course also lays a solid foundation for advanced studies in structural engineering.
<table>
<tr><th>Teaching content</th><th>weight</th><th>rank</th></tr>
<tr><td>Chapter 1 Introduction</td><td>2/64</td><td>Memorize-Understand</td></tr>
<tr><td>Chapter 2 Beam plate structure</td><td>14/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Homework Guidance</td><td>6/64</td><td>Understand-Apply-Analyze-Evaluate-Analyze</td></tr>
<tr><td>Chapter 3 Single-storey industrial plant</td><td>14/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Chapter 4 Multi-storey frame structure</td><td>14/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
<tr><td>Chapter 5 Masonry structures</td><td>14/64</td><td>Understand-Apply-Analyze-Evaluate</td></tr>
</table></td></tr>
<tr><td>Assessment format</td><td colspan="3">1. The course assessment consists of process assessment and final assessment.
2. Grade Evaluation: The final course grade is calculated as 30% of the process assessment, 20% of the major assignment, and 50% of the final assessment.
(1) Process-based assessment, scored on a percentage scale, accounts for 30% of the final grade. It evaluates students 'assignment completion, classroom participation, self-directed learning, and periodic assessments.
(2) Major assignment, also scored on a percentage scale, accounts for 20% of the final grade. It assesses students' completion of the beam-slab course design.
(3) The final assessment, with a full score of 100 points, accounts for 50% of the total grade. It primarily evaluates the teaching content through a closed-book exam at the end of the semester, assessing the achievement of the course's knowledge, ability, and literacy objectives.</td></tr>
<tr><td>Learning and Exam Requirements</td><td colspan="3">The course is scored out of 100, with 60 being the passing mark.</td></tr>
<tr><td>Reading List</td><td colspan="3">1. Li Aiqun (Ed.). Concrete Structures Volume II: Design of Concrete</td></tr>
</table>

	Structures and Masonry Structures. Beijing: China Architecture & Building Press. 7th edition, January 2020. 2. Shen Puseng (Ed.). Concrete Structure Design. Higher Education Press. 5th Edition, September 2020. 3. China Academy of Building Research. Code for Design of Concrete Structures (GB50010-2010). Beijing: China Architecture & Building Press. May 2011. 4. China Ministry of Housing and Urban-Rural Development. General Code for Concrete Structures (GB55008-2021). Beijing: China Architecture & Building Press. April 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

design of steel structure

Module Name	design of steel structure		
Semester of module instruction	6th semester		
Module Owner	Sun Jun		
language	the Chinese language		
Relationship to the course	Elective for major		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 3 hours per week for 15 weeks, 45 hours in total Self-study hours: 3 hours per week for 15 weeks, totaling 45 hours, including homework and exam preparation time		
credit	3 credits		
Prerequisites and recommendations for joining this module	Theoretical Mechanics, Materials Mechanics, Structural Mechanics, Principles of Engineering Loads and Reliability Design, Principles of Steel Structure Design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Remember the design knowledge of single-storey factory structure, ordinary steel roof, portal frame structure and multi-storey steel structure, and apply it to the calculation of nodes and systems in different types of steel structure, and finally output the theoretical calculation results and get the preliminary design scheme.	**R6、R3**
	CLO2	List common steel structure design software, and be able to use at least one building structure design software.	**R1**
	CLO3	The standardization concept is applied to the design of steel structure to improve the efficiency of later component manufacturing and installation, and finally save production resources and improve engineering benefits.	**R2**
content	Through this course, students will master the characteristics, basic design methods, calculation diagrams, and internal force analysis of steel structure houses commonly used in industrial and civil buildings.		

	They will also be able to design steel structure sections, overall design, and structural treatment according to design specifications with the help of design software, and finally have the ability to design building structures. Chapter 1 Introduction (Weight: 2/45, Level: Memory) Chapter 2: Single-story Factory Structures and Standard Steel Roofs (Weight: 12/45, Level: Understanding + Application + Analysis) Chapter 3 Portal Frame Structure Design (Weight 14/45, Level: Understanding + Application + Analysis) Chapter 4: Design of Multi-Story and High-Rise Steel Structures (Weight: 13/45, Level: Application + Analysis) Chapter 5: Introduction to Steel Structure Design Software (Weight: 4/45, Level: Evaluation)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Steel Structure Design for Buildings (2nd Edition)", edited by Shen Zuyan, Architectural Industry Press, September 2020 2. Steel Structure, edited by Zhang Yanxia, Tsinghua University Press, 2014 3. Steel Structure, edited by Guoxin Dai, Wuhan University of Technology Press, 2019
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

High-rise building structure design

Module Name	High-rise building structure design		
Semester of module instruction	7th semester		
Module Owner	Liu Lingmei		
language	the Chinese language		
Relationship to the course	Core Professional Courses		
teaching method	Teacher-centered methods: lecture, case teaching, group discussion, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 60 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 2 hours per week for 12 weeks, totaling 24 hours, including cloud class resources, after-class assignments, and exam preparation time.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Load and Structural Design, Principles of Concrete Structure Design, Concrete Structure Design, Structural Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	After analyzing civil engineering problems with professional knowledge of civil engineering, I can compare and synthesize various solutions to civil engineering problems to obtain the optimal solution and effective conclusions	**R3**
	CLO2	Master the whole process of civil engineering structure design, and consider the factors that affect the safety performance of the structure in the whole life cycle, and be able to comprehensively consider the social, health, safety, legal, cultural and environmental factors that affect the engineering structure design or construction design; Be able to correctly select and operate the experimental device and test equipment, carry out the experiment (test) safely, obtain effective experimental data and analyze and interpret, and get reasonable and effective conclusions; Be able to select modern tools that meet specific needs for specific objects, simulate civil	**R3** **R6** **R8**

		engineering problems, and be able to analyze their limitations.	
	CLO3	Master the whole process of civil engineering structure design, and consider the factors that affect the safety performance of the structure in the whole life cycle, and be able to comprehensively consider the social, health, safety, legal, cultural and environmental factors that affect the engineering structure design or construction design.	**R3**
content	Through this course, students will gain a proper understanding of the significance of constructing high-rise buildings; learn to correctly apply various codes and regulations, and develop the ability to consult manuals and reference materials; become more familiar with design procedures and related design content; enhance their design calculation skills, and establish a structural concept. Chapter 1 Introduction (Weight: 4/36, Level: Memory, Understanding) Chapter 2 Structural Loads of High-Rise Buildings (Weight 6/36, Level: Memorization + Understanding + Application + Analysis + Evaluation) Chapter 3 Design Requirements (Weight: 4/36, Level: Memory + Understanding + Application + Analysis + Evaluation) Chapter 4 Frame Structure Calculation (Weight 6/36, Level: Memory + Understanding + Application + Analysis + Evaluation + Creativity) Chapter 5: Shear Wall Structures (Weight: 6/36; Level: Memory + Understanding + Application + Analysis) Chapter 6: Shear Wall Design (Weight: 6/36; Levels: Memory, Understanding, Application, Analysis, Evaluation, and Creativity) Chapter 7: Tubular Structures (Weight 4/36, Level: Memory + Understanding + Application + Analysis)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	Recommended textbook: "High-rise Building Structure Design", edited by Qian Jiaru, China Architecture & Building Press, 3rd edition, February 2021. References: [1] [S] China Academy of Building Research. Technical		

	Code for Concrete Structures of High-rise Buildings (JGJ3-2010). Beijing: China Architecture & Building Press, 2011.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Civil engineering construction organization

<table>
<tr><td>Module Name</td><td colspan="3">Civil engineering construction organization</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">7th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Du Jiao</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Elective for major</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lectures, case teaching, questioning;
Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);
Practical approach: Project practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 60 class hours
Teaching hours: 3 hours per week for 9 weeks, 27 hours in total
Self-study hours: 3.3 hours per week for 10 weeks, totaling 33 hours, including homework and exam preparation time.</td></tr>
<tr><td>credit</td><td colspan="3">2 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Theoretical Mechanics, Materials Mechanics, Structural Mechanics, Principles of Engineering Loads and Reliability Design, Principles of Steel Structure Design</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Through theoretical teaching, case teaching, independent learning, practical research, communication and discussion and other teaching activities, students have the basic ability to use the basic knowledge of civil engineering construction organization to solve the relevant construction organization and management problems in engineering practice.</td><td>R7</td></tr>
<tr><td>CLO2</td><td>Master the construction process of each part of the construction project, be familiar with the key points and difficulties of each part of the construction project, and be able to successfully complete the whole process management of construction organization.</td><td>R11</td></tr>
<tr><td>content</td><td colspan="3">Through theoretical lectures, case studies, self-directed learning, field research, and collaborative discussions, students will develop foundational skills in civil engineering project organization to address practical management challenges. They will understand and adhere to professional ethics standards for civil engineers, thereby meeting the</td></tr>
</table>

	legal competency requirements for Level 2 Construction Engineers. Chapter 1: Construction Organization Overview (3/27 Weight, Level: Memorization) Chapter 2 Flow Construction Principles (Weight: 4/27, Level: Understanding + Application + Analysis) Chapter 3 Network Planning Techniques (Weight 6/27, Level: Understanding + Application + Analysis) Chapter 4 Construction Organization Design for Unit Projects (Weight: 8/27, Level: Applied + Analytical) Chapter 5: General Design of Construction Organization (Weight: 6/27, Level: Evaluation)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Civil Engineering Construction Organization", edited by Zhao Ping, China Architecture & Building Press, August 2022. 2. "Construction Organization of Civil Engineering", edited by Liang Peixin and Wang Liwen, Wuhan University of Technology Press, November 2021.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Scientific Literature Retrieval and Writing (Engineering)

Module Name	Scientific Literature Retrieval and Writing (Engineering)		
Semester of module instruction	3rd semester		
Module Owner	Niu Laichun		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 25 class hours Teaching hours: 2 hours per week for 9 weeks, 18 hours in total Self-study hours: 1 hour per week for 7 weeks, totaling 7 hours, including homework and exam preparation time.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Building science, civil engineering materials		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Students will be able to apply their expertise in natural sciences and civil engineering to analyze complex engineering problems through literature review, identify influencing factors, and draw valid conclusions. The program equips students with essential skills in literature collection, organization, processing, and application, ensuring the successful completion of course papers or graduation theses.	**R2**
	CLO2	This program equips students with systematic mastery of professional cost estimation knowledge, identifies breakthroughs for academic research, and develops expertise in professional paper writing. It cultivates research literacy, enhances innovation capabilities and writing proficiency, while comprehensively addressing social, health, safety, legal, cultural, and environmental factors influencing engineering structural design or construction organization. The	**R2**

		curriculum also prepares students with comprehensive knowledge for their upcoming graduation thesis writing.	
content	Through this course, students will develop essential skills in literature collection, organization, processing, and application to facilitate the successful completion of their course papers or graduation theses. The program simultaneously fosters the formation and development of information literacy concepts, including information awareness, value recognition, ethical standards, and security awareness. By enhancing students' learning capabilities, research proficiency, and innovative thinking, it prepares them to thrive in the knowledge economy era and meet the demands of the information age. The curriculum systematically equips students with civil engineering expertise, identifies breakthroughs for academic research, master professional thesis writing techniques, cultivate research literacy, improve innovation capabilities and writing proficiency, and provide comprehensive knowledge preparation for their upcoming graduation thesis writing. content of courses： Chapter 1: Information Retrieval Fundamentals (Weight: 1/18, Level: Memorization + Understanding) Chapter 2: Retrieval of Digital Information Resources and Database Applications (Weight: 1/18, Level: Understanding + Application + Analysis) Chapter 3: Thesis Writing (Weight: 1/18, Level: Understanding + Application + Analysis)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through the submission of papers, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Literature Retrieval and Thesis Writing (2nd Edition), edited by Zhang Yancui, Xi'an University of Electronic Science and Technology Press, July 2021. 2. "Introduction to Literature Retrieval and Scientific Paper Writing", edited by Wang Hongjun, China Machine Press, November 2018. 3. Modern Literature Retrieval and Utilization, Rao Zongzheng, China Machine Press, March 2020. 4. Literature Retrieval and Thesis Writing, by Li Zhenhua, Tsinghua University Press, July 2022.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Computer-Aided Design (CAD)

Module Name	Computer-Aided Design (CAD)		
Semester of module instruction	3rd semester		
Module Owner	**		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 3 hours per week for 9 weeks, 27 hours in total Self-study hours: 2.3 hours per week for 10 weeks, totaling 23 hours, including after-class assignments, exam preparation time, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Construction engineering drawing and interpretation		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the fundamentals of CAD software, including its operation methods and techniques. Be able to create architectural plans, elevations, sections, and construction drawings using CAD, and understand the relevant methods for producing structural construction drawings with CAD software.	**R5**
	CLO2	This course develops students 'fundamental CAD skills and critical thinking methods, equipping them with the ability to acquire and process general information using computers. Through systematic learning, students will master CAD software for creating and modifying construction drawings, ensuring practical application in real-world projects. The program also cultivates students' capabilities in data collection, analysis, and utilization, while fostering self-directed learning abilities. These competencies lay a solid foundation for advanced studies in related disciplines.	**R5**

content	Through this course, students will master image processing techniques and develop the ability to apply design principles flexibly, thereby fulfilling professional learning requirements and meeting evolving market demands. After acquiring foundational CAD skills, students will be capable of creating civil engineering drawings and construction plans tailored to technical specifications, enhancing their computer application proficiency. The program emphasizes essential theoretical knowledge and equips students with job-ready competencies in related fields, preparing them to become technical professionals adaptable to frontline roles in architectural engineering production, including technical and structural design positions. content of courses： Chapter 1: Basic Knowledge of CAD (Weight: 4/50, Level: Understanding) Chapter 2: CAD Fundamentals (4/50 Weight, Level: Understanding and Memorization) Chapter 3: Basic Settings for CAD Drawing (Weight: 4/50, Level: Understanding + Memorization) Chapter 4: Drawing Architectural Floor Plans (Weight: 8/50, Level: Understanding + Memory + Application + Evaluation) Chapter 5: Drawing Building Facade Drawings (Weight: 4/50, Level: Memory + Understanding + Application + Evaluation) Chapter 6: Drawing Architectural Cross-Sections (Weight: 6/50, Level: Memory + Understanding + Application + Evaluation) Chapter 7: House Layout Drawing (Weight: 6/50, Level: Memory + Understanding + Application + Evaluation) Chapter 8: Detailed House Drawing (Weight: 6/50, Level: Memory + Understanding + Application + Evaluation) Chapter 9: Structural Construction Drawing (Weight: 8/50; Level: Memorization + Understanding + Application + Evaluation)
Assessment format	1. Assessment Method The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 60% of process assessment + 40% of final assessment. (1) Process-based assessment, scored on a 100-point scale, accounts for 60% of the final grade. It evaluates students' classroom participation, self-directed learning, after-class assignments, practical achievements, and their respective component scores. (2) The final assessment, with a full score of 100 points, accounts for 40% of the total grade. It evaluates the teaching content through the form of the work, and assesses the achievement of the course's knowledge objectives, ability objectives and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "AutoCAD Architectural Engineering Drawing Tutorial", edited by Ma Xiaoli and Yu Hui, China Electric Power Press, August 2021. 2. "Architectural Engineering Drawing and CAD", edited by Deng Fukang and Yao Jiquan, China Architecture & Building Press, June 2021.

	3. "CAD Drawing for Construction Engineering (3rd Edition)", edited by Zhou Jiaxin, Chemical Industry Press, March 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

BIM supporting technology

<table>
<tr><td>Module Name</td><td colspan="3">BIM supporting technology</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">5th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Wang Nian</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Elective courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, demonstration teaching, case teaching, questioning;
Interactive methods: question and answer method, individual guidance method, inquiry-based problem learning, teaching discussion (including group discussion), reverse classroom;
Implementation approaches: real-world project practice, tiered skill development programs, and BIM skills competitions</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 50 class hours
Teaching hours: 3 hours per week for 9 weeks, 27 hours in total
Self-study hours: 2 hours per week for 9 weeks, totaling 23 hours, including: after-class assignments, competition participation, and exam preparation time</td></tr>
<tr><td>credit</td><td colspan="3">2 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Architectural Design, Computer-Aided Design (CAD), Architectural Engineering Drawing and Interpretation</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO2</td><td>Proficient in using Revit software for BIM modeling and familiar with pipeline collision detection operations.</td><td>R5</td></tr>
<tr><td>CLO3</td><td>Master BIM-based model rendering and output, including BIM model rendering and BIM competition case studies.</td><td>R5</td></tr>
<tr><td>content</td><td colspan="3">This course equips students with a comprehensive understanding of BIM concepts, historical context, and fundamental principles. Learners will master essential drawing techniques and operational methods in Revit software, enabling them to create 3D architectural models. The program ensures students acquire core competencies in their field, preparing them for professional roles in related industries.
This course equips students with fundamental BIM knowledge, master essential Revit drafting techniques and operational methods, and enables them to create 3D architectural models using</td></tr>
</table>

	Revit software. content of courses： Chapter 1: BIM Overview (2/50 Weight, Level: Memorization and Understanding) Chapter 2: Application of BIM in All Phases of Construction Project Life Cycle (Weight: 2/50, Level: Understanding) Chapter 3: BIM Solutions (2/50 Weight, Level: Memorization) Chapter 4: Revit Fundamentals (Weight 2/50, Level: Understanding) Chapter 5: Creating Revit Building Models (30/50 Weight, Level: Application) Chapter 6 Revit Structural Modeling (Weight 4/50, Level: Analysis, Application) Chapter 7: Advanced Applications of BIM Models in Revit (Weight: 8/50, Level: Application & Creation)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the total score. It mainly assesses students' mastery of software. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content through course assignments and evaluates the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is evaluated on a 100-point scale, and 60 points are required to pass the course.
Reading List	[1] Principles and Applications of BIM Technology, Peking University Press, Zhang Yong, 1st edition, January 2020. [2] "Fundamentals of BIM Technology", edited by Sun Zhongjian, Tsinghua University Press, First Edition, August 2018.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Flat drawing reading and steel quantity calculation

Module Name	Flat drawing reading and steel quantity calculation		
Semester of module instruction	3rd semester		
Module Owner	Jin Zhihui		
language	Chinese		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: learning MOOCs, case teaching, and questioning; Methods of interaction: inquiry-based problem learning; Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1 hour per week for 14 weeks, totaling 14 hours, including pre-class MOOC learning and time for filling out practical training reports.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Construction Engineering Drawing and Reading, Building Architecture, Theoretical Mechanics		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	5.1 Understand the principles and methods of using modern instruments and information technology tools commonly used in the profession, and understand their limitations, and be able to select appropriate instruments and information resources for analysis, calculation and design for complex civil engineering problems.	**R5**
	CLO2	In the process of learning theoretical knowledge and professional knowledge of steel bars, we should enhance our sense of responsibility and innovation ability, take innovation as the driving force, and achieve "using the old for the present and the foreign for the middle". We should use the new prefabricated technology of manufacturing industry to solve the problem of transformation and upgrading of the current construction industry, and realize the modernization of the construction industry as soon as possible.	**R11**
content	Through this course, students will master the drawing rules		

	for cast-in-place concrete structures and detailed construction specifications, while gaining comprehensive understanding of steel reinforcement design, drawing interpretation, quantity surveying, material ordering, and binding operations. The program further expands knowledge of prefabricated steel reinforcement systems utilizing advanced manufacturing technologies, integrates QR code-based project management solutions, and equips learners with essential skills for driving the transformation and upgrading of the construction industry. Chapter 1 Introduction (Weight: 4/36, Level: Memorization, Understanding, Application) Chapter 2: Basic Components (Weight: 12/36; Level: Memorization, Understanding, Application) Chapter 3: Column Components (Weight: 4/36; Levels: Memorization, Comprehension, Application, Analysis) Chapter 4: Beam Components (Weight 4/36, Levels: Memorization, Comprehension, Application, Analysis) Chapter 5: Panel Components (Weight: 4/36; Levels: Memorization, Comprehension, Application, Analysis) Chapter 6: Stair Components (Weight: 2/36; Levels: Memorization, Comprehension, Application, Evaluation) Chapter 7: Shear Wall Components (Weight: 4/36; Levels: Memorization, Comprehension, Application, Evaluation) Review (Weight 2/36, Level: Memory, Understanding)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 50% of process assessment + 50% of final assessment (1) Process assessment, with a percentage score, accounts for 50% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 50% of the total grade. It mainly evaluates the teaching content through online forms and assesses the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Wu Di, Yang Bo, Xu Lin. Reinforced Concrete Flat Method Drawing and Quantity Surveying [M]. Wuhan: Wuhan University of Technology Press, 2022.

	2. China Institute of Architectural Standard Design. Drawing Rules and Construction Details for Overall Representation of Concrete Structure Construction Drawings 22G101-1, -2, -3 [M]. Beijing: China Planning Press, 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

engineering economy

<table>
<tr><td>Module Name</td><td colspan="3">engineering economy</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">4th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Zhang Mi</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Elective courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture, case teaching, questioning;
Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);
Practical approach: case analysis</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 38 class hours
Teaching hours: 3 hours per week for 9 weeks, 27 hours in total
Self-study hours: 1.2 hours per week for 9 weeks, totaling 11 hours, including homework and exam preparation time.</td></tr>
<tr><td>credit</td><td colspan="3">1.5 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">higher mathematics</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Cultivate students 'independent, rigorous, realistic work style and team spirit, cultivate students' innovative spirit and good professional ethics.</td><td>R8</td></tr>
<tr><td>CLO2</td><td>Have a comprehensive and correct understanding of the principles and applications of engineering economics. Master the basic principles of engineering economics, understand and master the practical applications of engineering economics.</td><td>R11</td></tr>
<tr><td>content</td><td colspan="3">"Engineering Economics" is a core elective course for civil engineering undergraduates, serving as a bridging discipline between natural and social sciences that fulfills the program's graduation requirements. As a branch of applied economics, this course equips students with fundamental knowledge of engineering economics' nature, research focus, and distinctive features. It covers the general process of engineering economic analysis, essential requirements for engineers, and the interplay between engineering technology and economic principles. Through systematic instruction, students will master the core objectives and essential content of this critical subject.
content of courses：</td></tr>
</table>

	Chapter 1 Introduction (Weight 2/27, Level: Memory) Chapter 2: Fundamental Elements of Engineering Economic Analysis (Weight: 4/27, Level: Memorization + Understanding) Chapter 3: The Time Value of Money (Weight 4/27, Level: Understanding + Application + Analysis) Chapter 4: Economic Evaluation Indicators for Engineering Projects (Weight: 3/27, Level: Memorization + Understanding) Chapter 5: Uncertainty and Risk Analysis in Engineering Projects (Weight 4/27, Level: Understanding + Application + Creativity) Chapter 6: Equipment Upgrade Analysis (Weight: 4/27, Level: Application + Analysis + Evaluation) Chapter 7 Financial Evaluation of Engineering Projects (Weight: 4/27, Level: Understanding + Application + Analysis + Evaluation) Chapter 8 Value Engineering (Weight 2/27, Level: Understanding + Application + Analysis)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a closed-book written test, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Engineering Economics, edited by Tan Dalu, China Architecture & Building Press, 3rd edition, 2021. 2. Engineering Economics, edited by Fan Qinman and Jiang Qing, Tsinghua University Press, 1st edition, March 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Engineering load and reliability design principles

Module Name	Engineering load and reliability design principles		
Semester of module instruction	4th semester		
Module Owner	Sun Jun		
language	Chinese		
Relationship to the course	Professional Elective		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 38 class hours Teaching hours: 3 hours per week for 9 weeks, 27 hours in total Self-study hours: 1.4 hours per week for 8 weeks, totaling 11 hours, including after-class assignments, exam preparation time, etc.		
credit	1.5 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Probability Theory and Mathematical Statistics, Civil Engineering Materials, Mechanics of Materials		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Remember the load classification and calculation rules of engineering structure. When designing engineering structure, this rule can be used to identify different loads and calculate the values.	**R3**
	CLO2	Review the current load code and carry out load combination in the engineering structure design, and be familiar with the calculation of load representative values.	**R6**
	CLO3	The load combination value can be correctly applied to the design of a single component to carry out simple structural internal force calculation.	**R3**
content	Through this course, students will master the calculation methods of engineering structural loads, establish stochastic probability models for structural loads and resistances, and design load-resistance coefficients based on structural reliability theory. They will be able to comprehensively apply fundamental theoretical knowledge in civil engineering, creatively solve practical engineering problems, and		

	develop preliminary design capabilities. Chapter 1 Introduction (Weight 2/27, Level: Memory) Chapter 2: Gravity (Weight 4/27, Level: Understanding + Application) Chapter 3 Wind Load (Weight 4/27, Level: Understanding + Application) Chapter 4 Other loads and actions (weight 3/27, level: understanding) Chapter 5 Statistical Analysis of Engineering Structure Loads (Weight 3/27, Level: Evaluation) Chapter 6 Statistical Analysis of Structural Component Resistance (Weight 3/27, Level: Evaluation) Chapter 7 Structural Probability Reliability Design Method (Weight 8/27, Level: Application + Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams to assess the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1 Unified Standard for Reliability Design of Building Structures GB 50068—2018 2. Code for Structural Load of Buildings GB 50009—2012 3. Code for Seismic Design of Buildings GB 50011—2010
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

English for Civil Engineering

Module Name	English for Civil Engineering		
Semester of module instruction	5th semester		
Module Owner	Liu Lingmei		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: lecture, case teaching, group discussion, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion);		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 50 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1 hour per week for 14 weeks, totaling 14 hours, including cloud class resources, homework, and exam preparation time.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Architectural Engineering, Theoretical Mechanics, Materials Mechanics, Structural Mechanics, Civil Engineering Materials		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	The basic principles of natural science and civil engineering science are used to analyze the influencing factors of complex engineering problems and obtain effective conclusions by means of literature research. Be able to recognize that there are multiple options for solving complex civil engineering problems, and will seek alternative solutions through literature research.	**R9**
	CLO2	Understand the engineering professional ethics and norms of abiding by the law and dedication, respecting nature, being dedicated and keeping promises, innovating and seeking perfection, honesty, fairness, integrity and compliance, and be able to consciously abide by them in engineering practice.	**R12**
content	Through this course, students will comprehensively enhance their professional English proficiency via diverse teaching methods and learning activities. The program focuses on mastering specialized terminology, improving reading comprehension, strengthening writing		

	and communication skills, developing oral interaction abilities, enhancing listening skills, cultivating cross-cultural communication and collaboration capabilities, advancing academic research competencies, and preparing for career development. Unit 1 Introduction (Weight: 2/36, Level: Memory, Comprehension) Unit 2: Being Your Own Engineer (Weight: 4/36, Level: Memory + Comprehension + Application + Analysis) Unit 3 Tensile Test (Weight 4/36, Levels: Memory + Comprehension + Application + Analysis + Evaluation + Creativity) Unit 4: Sydney Opera House (Weight: 4/36; Level: Memory + Comprehension + Application + Analysis + Evaluation) Unit 5: Why the Towers Fell (Weight: 2/36; Level: Memory + Comprehension + Application + Analysis + Evaluation) Unit6 Hotel Skywalk Collapse (Weight 2/36, Level: Memory + Comprehension + Application + Analysis + Evaluation) Unit 7: Hotel Collapse in Singapore (Weight: 4/36, Level: Memory + Comprehension + Application + Analysis + Evaluation) Unit 8: King's Cross Fire (Weight: 4/36; Level: Memory + Comprehension + Application + Analysis + Evaluation) Unit 9 Leap Through Time-Earthquake (Weight: 2/36, Level: Memory + Understanding + Application + Analysis) Unit 10: Green Buildings (Weight: 2/36; Levels: Memory, Comprehension, Application, Analysis, Evaluation, and Creativity) Unit 11: International Cooperation and Exchange (Weight: 2/36; Level: Memory + Comprehension + Application + Analysis) Unit 12: Civil Engineering Preparation (Weight: 4/36; Level: Memorization + Understanding + Application + Analysis)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, scored on a 100-point scale, accounts for 40% of the final grade. It mainly evaluates students' midterm exams, classroom performance, and after-class assignments. The performance assessment accounts for 40%, including self-study (20%), classroom performance (20%), after-class assignments (30%), and periodic tests (30%). Those who miss more than one-third of the course hours will be disqualified from the exam. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly evaluates the teaching content through examinations and assesses the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	Recommended textbook: Civil Engineering English (3rd Edition), edited by Duan Bingting, Wuhan University of Technology Press, 2018. Reference: Civil Engineering English (2nd Edition), edited by Jia Yanmin, Science Press, 2011.

	English for Civil Engineering (3rd Edition), edited by Tian Wenyu, Chongqing University Press, 2020.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

geo-information system

Module Name	geo-information system		
Semester of module instruction	5th semester		
Module Owner	Li Cheng		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: lecture, case teaching, group discussion, questioning; Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion);		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 25 class hours Teaching hours: 2 hours per week for 9 weeks, 18 hours in total Self-study hours: 1 hour per week for 7 weeks, totaling 7 hours, including cloud class resources, homework, and exam preparation time.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Construction engineering drawing and interpretation, engineering survey		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Master the fundamental concepts, theories, and methodologies of Geographic Information Systems (GIS) and their practical applications in engineering. Develop skills in data editing, database creation, digital data acquisition, spatial correction, text-based feature creation, database conversion, network analysis, buffer and overlay analysis, raster data analysis, geostatistical analysis, 3D analysis, digital terrain analysis, and spatial modeling.	**R5**
	CLO2	The program focuses on mastering fundamental	**R5**

		concepts of Geographic Information Systems (GIS), including its core functionalities and interdisciplinary connections. Key topics encompass: geospatial concepts and spatial abstraction, spatial data structures (vector and raster), spatial data organization and management, spatial data acquisition, basic measurement methods for spatial objects, spatial analysis techniques, Digital Elevation Models (DEMs)and digital terrain modeling, spatial statistical analysis, and visualization of geographic information.	
content	Geographic Information Systems (GIS) integrate computer science, information science, geography, surveying and mapping, remote sensing, environmental science, urban science, and spatial information science. Widely applied in civil engineering, GIS enables the collection and organization of extensive land data. Through analysis and simulation of this data, optimal land use plans can be determined, effectively preventing land waste and environmental damage while enhancing land utilization efficiency. Chapter 1: Fundamental Concepts of GIS (Weight: 2/18, Level: Memorization and Understanding) Chapter 2: Mathematical Foundations of Geospatial Data (Weight: 4/18; Level: Memorization + Understanding + Application + Analysis + Evaluation) Chapter 3 Spatial Data Models and Structures (Weight: 6/18; Level: Memorization + Understanding + Application + Analysis + Evaluation) Chapter 4: Fundamental Spatial Analysis in GIS (Weight: 6/18; Level: Memorization + Understanding + Application + Analysis + Evaluation + Creativity)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	[1] Tang Guo'an, Zǔ Zhū. A Tutorial on Geographic Information Systems (2nd Edition). Beijing: Higher Education Press, September 2020,2nd Edition. [1] Tang Guo'an, Zǔ Zhu. A Tutorial on Geographic Information Systems (2nd Edition). Beijing: Higher Education Press, September 2020,2nd Edition. [2] Li Fayuan, Tang Guoan, Yang Xin. GIS Experiment. Beijing: Science Press, 1st edition, March 2024. [3] Kang-tsung Chang. Introduction to Geographic Information Systems.		

	Beijing: Science Press, 1st edition, November 2023.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Application of architectural structure design software

<table>
<tr><td>Module Name</td><td colspan="3">Application of architectural structure design software</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">5th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Guo Shengjuan</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Elective courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture method, demonstration method;
Methods of interaction: inquiry-based problem learning, teaching discussion (including group discussion);
Practical approach: Project practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 25 class hours
Teaching hours: 2 hours per week for 9 weeks, 18 hours in total
Self-study hours: 1 hour per week for 7 weeks, totaling 7 hours, including time for after-class assignments</td></tr>
<tr><td>credit</td><td colspan="3">1 credit</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Load and Structural Design, Principles of Concrete Structure Design,
Concrete Structure Design</td></tr>
<tr><td rowspan="4">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master PKPM modeling, calculation, construction drawing, and civil engineering structural design methods.</td><td>R5</td></tr>
<tr><td>CLO2</td><td>Master the calculation principles of civil engineering structure selection and construction design; cultivate students' ability of preliminary design and calculation of structure; have the ability to operate structural design software, and be able to use the knowledge to solve practical engineering problems.</td><td>R5</td></tr>
<tr><td>CLO3</td><td>Develop a positive and rigorous learning attitude and good study habits. Have environmental protection and sustainable development awareness; be able to effectively communicate and play a role as a member or leader in a team; have a sense of social responsibility and good engineering professional ethics.</td><td>R5</td></tr>
<tr><td>content</td><td colspan="3">Through this course, students will master PKPM modeling, computational methods, and construction drawing techniques, while</td></tr>
</table>

	acquiring civil engineering structural design methodologies and computational principles for structural selection and design. The program cultivates foundational structural design and computational capabilities, along with proficiency in structural design software operations. 1. Introduction to PKPM Structural Design (2/18 credits, Level: Understanding + Application) 2.PMCAD (Weight: 6/18, Level: Understanding + Application) 3. Model Analysis and Adjustment (Weight 4/18, Level: Understanding + Application) 4.JCCAD Basic Design (2/18 credit, Level: Understanding + Application) 5. Construction drawing design (weight: 4/18, level: understanding and application)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment. (1) Process-based assessment, scored on a 100-point scale, accounts for 40% of the final grade. It evaluates students' classroom participation, assignments, regular quizzes, and self-directed learning. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It evaluates the teaching content mainly through the submission of works, and assesses the achievement of the course's knowledge objectives, ability objectives and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	"Application of Building Structure Design Software (PKPM)", edited by Li Jianfen, China Architecture & Building Press, 2nd edition, December 2021.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Road survey course design

<table>
<tr><td>Module Name</td><td colspan="3">Road survey course design</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">5th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Yang Xu</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Required Professional Courses</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: lecture, question;
Methods of interaction: group discussion;
Practical methods: engineering case practice</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 60 class hours
Teaching hours: 4 hours per week for 5 weeks, 20 hours in total
Self-study hours: 8 hours per week for 5 weeks, totaling 40 hours, including: road standard cross section design, road plan design, road longitudinal section design, general roadbed design, earthwork cross section design and earthwork quantity statistics, etc.</td></tr>
<tr><td>credit</td><td colspan="3">2 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Advanced Mathematics, Architectural Engineering Drawing and Reading, Engineering Geology, Engineering Surveying, Road Survey and Design</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Be able to analyze the technical and economic aspects (such as engineering quantity and environmental impact) of different route schemes by integrating topographic maps and survey data, compare the differences between traditional design and BIM collaborative design, and design optimized route schemes that meet the requirements of specifications and visualize them.</td><td>R3</td></tr>
<tr><td>CLO2</td><td>Proficient in road design software (e.g., highway BIM systems, Weidi) to complete integrated horizontal, vertical, and cross-sectional route design, verify compliance with design parameters and specifications, generate construction drawings using Digital Terrain Model (DTM), and produce technical analysis reports.</td><td>R5</td></tr>
<tr><td>content</td><td colspan="3">This comprehensive engineering course focuses on practical road survey and design, providing systematic training throughout the entire process. It covers core design elements including standard cross-sections, planar alignment, longitudinal profiles, subgrade structures, and earthwork</td></tr>
</table>

	allocation. Using tools like AutoCAD and BIM systems for highway engineering design, students perform curve calculations, quantity surveys, and construction drawing production. The curriculum emphasizes integrating theory with industry standards, starting with task book analysis and progressively advancing design tasks. It enhances students' practical skills from concept selection and parameter optimization to final integration (including design documentation and drawings), while incorporating digital technologies like BIM and GIS. This approach cultivates comprehensive road survey and design competencies aligned with industry standards, laying a solid foundation for careers in road engineering design and management. content of courses： Project 1: Course Design Assignment, Case Studies, and Software Introduction (3/20 Weight, Level: Memorization + Understanding + Application) Project 2: Road Standard Cross-Section Design (3/20 Weight, Level: Understanding + Application) Project 3: Road Layout Design (3/20 Weight, Level: Application+Analysis+Creation) Project 4: Road Cross-Section Design (3/20 Weight, Level: Application+Analysis+Creation) Practice Project 5: General Subgrade Design (Weight: 2/20, Level: Understanding + Application) Project 6: Cross-sectional Design of Earthwork and Quantitative Analysis of Earthwork (Weight: 2/20, Level: Understanding + Application) Project 7: Design Description Compilation and Content Refinement (2/20 Weight, Level: Understanding + Application) Practice Project 8: Calculation of Horizontal and Vertical Curves (Weight 2/20, Level: Understanding + Application)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total evaluation score. It primarily evaluates the teaching content through the design drawings, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.

Reading List	1. Highway Engineering Technical Standard (JTG B01-2014), edited by China Communications First Highway Survey and Design Research Institute Co., Ltd., published by People's Communications Press Co., Ltd., January 2015. 2. Highway Route Design Code (JTG D20—2017), China Communications First Highway Survey and Design Research Institute Co., Ltd., People's Communications Press Co., Ltd., February 2017. 3. "Code for Design of Urban Road Engineering" (CJJ37-2012), edited by Beijing Municipal Engineering Design and Research Institute, China Architecture & Building Press, December 2016.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Roadbed and pavement engineering course design

Module Name	Roadbed and pavement engineering course design		
Semester of module instruction	6th semester		
Module Owner	Xia Qiaoli		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); The practice method: project practice.		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 60 class hours Teaching hours: 20 hours per week for a total of 1 week. Self-study hours: 20 hours per week for 2 weeks, 40 hours in total, including: after-class homework, preparation time, etc.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Civil engineering materials, material mechanics, soil mechanics and foundation engineering, road survey and design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	6.1 Understand the technical standard system, intellectual property, industrial policies, laws and regulations in the field of civil engineering, and understand the influence of different social cultures on engineering activities.	**R6**
	CLO2	3.2 Able to complete the mechanical performance design and construction scheme design of system, structure and components (nodes) with specific requirements in civil engineering.	**R3**
	CLO3	7.1 Be aware of and understand the concept and connotation of environmental protection and sustainable development, and be able to apply environmental protection measures and energy saving technologies to civil engineering practice.	**R7**
content	The "Subgrade and Pavement Engineering Course Design" is conducted after students have completed the core coursework in "Subgrade and Pavement Engineering". Through this practical training program, students will apply their acquired knowledge to independently conduct subgrade and pavement design projects under faculty supervision. This		

	process cultivates and enhances students' structural design and calculation capabilities in subgrade and pavement engineering, equips them with fundamental design methodologies and procedures, and lays a solid foundation for advanced professional courses. content of courses： The experimental (training) project includes the design section of the first section (weight: 10/20, level: understanding, application, analysis). Experiment (Training) Project 2: Pavement Design Section (Weight: 10/20, Level: Understanding, Application, Analysis).
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Roadbed and pavement engineering. Huang Xiaoming. Beijing: People's Communications Press, June 2019. 2. Roadbed and Pavement Engineering (4th Edition), Huang Xiaoming, Nanjing: Southeast University Press, July 2020. 3. Roadbed and Pavement Engineering (2nd Edition), Sha Aimin, Beijing: Higher Education Press, August 2022.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Bridge engineering course design

Module Name	Bridge engineering course design		
Semester of module instruction	6th semester		
Module Owner	Yang Xu		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lecture, question; Methods of interaction: group discussion; Practical methods: engineering case practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 3.75 hours per week for 8 weeks, 30 hours in total Self-study hours: 7.5 hours per week for 8 weeks, totaling 60 hours, including bridge design, structural drawings, and structural calculations.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Materials Mechanics, Structural Mechanics, Principles of Concrete Structure Design, Road Survey and Design, Bridge Engineering		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Students can combine the environmental characteristics of bridge site with current specifications to carry out multi-solution comparison and selection of common bridge types (such as continuous beam bridge and arch bridge), dynamically adjust the structural design parameters, and verify the safety through structural review and calculation.	**R3**
	CLO2	Students can independently complete the digital design task of the whole bridge, skillfully use professional software (such as scheme designer, bridge master) to realize the whole process from scheme design to construction drawing output, and have the innovation ability to solve complex engineering problems.	**R5**
	CLO3	Students can explain the ethical significance of parameters such as safety factor and load combination in bridge design specifications, actively adopt structural measures to reduce ecological impact in scheme design, and identify potential risk points in design drawings that may	**R8**

		violate professional norms.	
content	This course centers on bridge engineering practice, providing students with comprehensive design capabilities through a full-process training program covering "conceptual design-structural calculation-code verification". The curriculum includes bridge type selection and construction drawing preparation, analysis of main beam cross-sectional characteristics and load distribution, internal force and displacement evaluation, as well as code-compliant load-bearing capacity, serviceability limit state, and construction stress verification. For complex structures like cantilever bridge decks, the program emphasizes reinforcement calculation under localized wheel loads. By integrating CAD tools, Bridge Doctor software, and engineering codes, the course systematically enhances students' bridge design skills from theory to practice, laying a solid foundation for engineering applications. content of courses： Project 1: Bridge Design (4/30, Level: Application+Analysis+Creation) Project 2: Bridge Structure Design (6/30, Level: Application + Creativity) Project 3: Main beam cross-section characteristics calculation and load transverse distribution coefficient calculation (weight 2/30, level: application + analysis) Project 4: Calculation of Main Beam Support Reactions, Internal Forces, Stresses, and Displacements (Weight: 8/30, Level: Application + Analysis) Project 5: Verification of Ultimate Limit States for Permanent Load Capacity of Main Beams, Verification of Ultimate Limit States for Permanent Normal Service, and Verification of Stress in Permanent and Temporary Components (Weight 6/30, Level: Application + Analysis + Evaluation) Project 6: Partial Wheel Load Calculation for Cantilever Bridge Deck (Weight 4/30, Level: Application + Analysis)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It evaluates the teaching content mainly through the course design calculation book, and assesses the achievement of the course knowledge objectives, ability objectives and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Bridge Engineering (5th Edition), edited by Shao Xudong, People's Communications Press Co., Ltd., May 2019. 2. Bridge Engineering (Volume I), edited by Fan Lichu, People's Communications Press Co., Ltd., May 2017. 3. "Code for Design of Highway Bridges and Culverts" (JTG D60-2015), edited by China Communications Highway Planning and Design		

	Institute Co., Ltd., published by People's Communications Press Co., Ltd., November 2015. 4. Highway Reinforced Concrete and Prestressed Concrete Bridge and Culvert Design Code (JTG 3362—2018), edited by China Communications Construction Company Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., November 2018.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Bridge and Road Construction Engineering Course Design (BIM)

Module Name	Bridge and Road Construction Engineering Course Design (BIM)		
Semester of module instruction	7th semester		
Module Owner	Yang Xu		
language	the Chinese language		
Relationship to the course	Required Professional Courses		
teaching method	Teacher-centered methods: lecture, question; Methods of interaction: group discussion; Practical methods: engineering case practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 3.75 hours per week for 8 weeks, 30 hours in total Self-study hours: 7.5 hours per week for 8 weeks, totaling 60 hours, including subgrade construction design, base construction design, asphalt pavement construction design, and bridge construction technical design.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Materials mechanics, structural mechanics, bridge engineering, subgrade and pavement engineering		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Proficient in utilizing virtual simulation platforms (e.g., Yunnan University of Economics and Management's Smart Education Cloud Simulation Platform) to study construction organization models for road and bridge projects (including layered embankment simulation and asphalt pavement paving scheduling), analyze the rationality of construction resource allocation, and verify the technical feasibility of critical node solutions (such as foundation pit support stability and concrete pouring process coordination).	**R5**
	CLO2	Be able to describe the construction technology, principle and technical measures of the main types of engineering in road and bridge engineering (such as roadbed filling, asphalt paving, bridge pile foundation construction), and explain the logic of construction plan and quality and safety control points.	**R6**
	CLO3	Be able to evaluate the economy and safety of	**R7**

		construction plans (such as carbon emission simulation and risk warning parameter setting), and put forward improvement suggestions; show a rigorous and responsible professional attitude in collaboration, and take the initiative to reflect on technical ethics and social responsibility (such as minimizing the impact of construction on the surrounding environment).	
content	This course focuses on digital engineering practices, utilizing mainstream industry software (BIM and virtual simulation platforms) to systematically cultivate students' technical capabilities in road and bridge design and construction. The curriculum covers five core modules: Road Engineering (subgrade, base course, asphalt/cement pavement modeling and construction simulation), Bridge Construction Scheme Design and Process Simulation, Parametric Design and Stability Verification of Retaining Walls, and the Full Process of Standardized Calculation Report Compilation. Through the deep integration of "project-driven learning + software operation," it connects the engineering chain of "design-analysis-verification-output," enhancing multidimensional digital problem-solving skills in geotechnical, structural, and material engineering. Incorporating smart construction site technologies and industry standards, this program equips students with modern engineering software expertise to meet the demands of digital design and construction management in transportation infrastructure. content of courses： Project 1: Course design content, subgrade construction design, and base construction design (6/30 credits, Level: Memorization + Understanding) Practical Project 2: Asphalt Pavement Construction Design and Cement Concrete Pavement Construction Design (Weight: 8/30, Level: Application + Analysis + Evaluation) Project 3: Bridge Construction Technical Design (8/30, Level: Application+Analysis+Evaluation) Project 4: Retaining Wall Construction Design (6/30 credits, Category: Application + Analysis + Evaluation) Project 5: Writing a Calculation Report (2/30, Level: Analysis + Evaluation)		
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It evaluates the teaching content through the course design report and assesses the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam	The course is scored out of 100, with 60 being the passing mark.		

Requirements	
Reading List	1. Bridge Engineering (5th Edition), edited by Shao Xudong, People's Communications Press Co., Ltd., May 2019. 2. Technical Specifications for Highway Bridge and Culvert Construction (JTG/T 3650—2020), edited by China Communications Construction Company Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., October 2020. 3. Technical Specifications for Asphalt Pavement Construction on Highways (JTGF40-2004), edited by China Communications Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., January 2005.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

road survey and design

Module Name	road survey and design		
Semester of module instruction	5th semester		
Module Owner	Yang Xu		
language	the Chinese language		
Relationship to the course	Elective courses for the major		
teaching method	Teacher-centered methods: lecture, question; Methods of interaction: group discussion; Practical methods: engineering case practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 60 class hours Teaching hours: 2 hours per week for 18 weeks, 36 hours in total Self-study hours: 1.3 hours per week for 18 weeks, totaling 24 hours, including: homework, preview, review, etc.		
credit	2 credits		
Prerequisites and recommendations for joining this module	Advanced Mathematics, Engineering Drawing and Reading, Engineering Geology, Engineering Surveying		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Be able to summarize the basic theories, technical standards and specifications of road alignment design (such as Highway Route Design Code), explain the principles and calculation logic of horizontal, vertical and cross section design, and correctly read construction drawings with CAD software to complete simple line parameter calculation (such as circular curve radius and longitudinal slope).	**R1**
	CLO2	Proficient in applying route design standards to analyze real terrain data (e.g., contour maps, geological reports), capable of conducting integrated horizontal, vertical, and longitudinal design for complex road sections using tools like AutoCAD/Civil 3D. Conducts cost-benefit analysis of different alignment options and evaluates design documents' technical soundness based on established standards.	**R3**
	CLO3	Capable of integrating environmental and safety requirements (such as line-of-sight protection and ecological red lines), the team innovatively	**R6**

		proposes alignment optimization solutions for challenging terrains like mountain gullies and soft foundation sections. Through BIM technology simulations, they assess construction feasibility while evaluating the technical-economic metrics and ethical considerations of the proposed solutions, including land acquisition costs and ecological impacts.	
content	This course mainly introduces the relevant content of linear design, including road design stage and tasks, road horizontal, longitudinal and transverse linear design and earthwork calculation, as well as road alignment and overall design. content of courses： Road design phase and tasks, road functions and classification (weight 4/32, level: memory + understanding) Road layout design (weight 8/32, level: memory + understanding + application) Road cross-section design (weight 8/32, level: memory + understanding + application) Road cross-section design (weight 10/32, level: memory + understanding + application) Road alignment and overall design (6/32 weight, Level: Application+Analysis+Evaluation)		
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.		
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.		
Reading List	1. Highway Engineering Technical Standard (JTG B01-2014), edited by China Communications First Highway Survey and Design Research Institute Co., Ltd., published by People's Communications Press Co., Ltd., January 2015. 2. Highway Route Design Code (JTG D20—2017), China Communications First Highway Survey and Design Research Institute Co., Ltd., People's Communications Press Co., Ltd., February 2017. 3. "Code for Design of Urban Road Engineering" (CJJ37-2012), edited by Beijing Municipal Engineering Design and Research Institute, China Architecture & Building Press, December 2016.		
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation		

Road and bridge construction

Module Name	Road and bridge construction		
Semester of module instruction	6th semester		
Module Owner	Chen Weilong		
language	the Chinese language		
Relationship to the course	Elective courses for the major		
teaching method	Teacher-centered methods: lecture method, demonstration method; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 hours Teaching hours: 3 hours per week for 15 weeks, 45 hours in total Self-study hours: 3 hours per week for 15 weeks, totaling 45 hours, including: homework and self-study		
credit	2.5 credits		
Prerequisites and recommendations for joining this module	Civil engineering materials, road survey and design, concrete structure design principles, etc		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Familiar with and understand the basic theories, knowledge and methods of modern highway and bridge engineering construction, and the basic principles and methods of construction organization management and design.	**R3**
	CLO2	Understand and master the basic knowledge of highway and bridge engineering theory and design, highway and bridge engineering construction technology, construction organization management and construction control skills; be able to use the above theories, knowledge, technology and skills, correctly analyze and solve common construction technical problems.	**R5、R6**
	CLO3	To cultivate students' proactive engagement in concrete engineering practices, fostering a positive, enterprising, and science-oriented mindset; to develop their ability to integrate theory with engineering practice, and to instill professional ethics that prioritize scientific rigor,	**R7**

		meticulous attention to detail, and a commitment to truthfulness in quality assurance.	
content	"Road and Bridge Construction Engineering" is an elective course recommended by the National Quality Standards for Undergraduate Programs in Higher Education Institutions. As a cornerstone course supporting civil engineering graduation requirements, it fulfills four key objectives outlined in the "Graduation Requirements" section of the "Undergraduate Talent Development Plan for Civil Engineering": 3.2, 5.2, 7.2, and 8.2. Serving as a crucial foundation, this course directly prepares students for subsequent courses including "Construction Organization of Road and Bridge Engineering" and "Course Design for Road and Bridge Construction Engineering". content of courses： Introduction (Weight 2/45, Level: Memory) Common equipment in road and bridge construction (4/45 weight, Level: Understanding + Application) Roadbed construction (weight 4/45, level: Memory + Understanding + Application) Road subgrade construction (2/45 weight, Level: Memorization + Understanding + Application) Asphalt pavement construction (weight 2/45, levels: memory + understanding + application + evaluation) Cement concrete pavement construction (weight 2/45, levels: Memory + Understanding + Application + Evaluation) Bridge Foundation Construction (Weight: 4/45, Levels: Memory, Understanding, Application, Evaluation) Bridge pier construction (weight 2/45, level: Memory + Understanding + Application + Evaluation) Manufacturing and Installation of Simply Supported Concrete Beam Bridges (Weight: 4/45, Level: Memory + Understanding + Application) Concrete continuous beam bridge (weight 6/45, level: memory + understanding + application) Arch bridge construction (weight 4/45, level: memory + understanding + application + evaluation) Bridge deck and ancillary works construction (weight 4/45: Memory + Understanding + Application + Evaluation + Application) Construction Organization and Management of Road and Bridge Engineering (Weight: 2/45, Levels: Memorization, Understanding, Application, Evaluation, and Creativity) Environmental Protection and Safety in Road and Bridge Construction (Weight: 2/45; Levels: Memorization, Understanding, Application, Evaluation, and Creativity) Review (Weight 1/45, Level: Memory + Understanding + Application)		
Assessment format	1. Assessment method: Course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for		

	40% of the final grade. It evaluates assignment completion, classroom participation, self-directed learning, periodic assessments, and component scores. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It mainly assesses the teaching content through the form of examination and evaluates the achievement of the course's knowledge objectives, ability objectives and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Road and Bridge Engineering Construction, edited by Bu Jianqing, Chongqing University Press, July 2022 2. Highway Construction Technology and Management, edited by Bu Jianqing, People's Communications Press, October 2020
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Roadbed and pavement works

Module Name	Roadbed and pavement works		
Semester of module instruction	6th semester		
Module Owner	Xia Qiaoli		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); The practice method: project practice.		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 90 credit hours. Teaching hours: 3 hours per week for 15 weeks, 45 hours in total. Self-study hours: 3 hours per week for 15 weeks, 45 hours in total, including: after-class assignments, preparation time, etc.		
credit	3 credits		
Prerequisites and recommendations for joining this module	Civil engineering materials, material mechanics, soil mechanics and foundation engineering, road survey and design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	2.4 Can recognize that there are multiple options to solve complex civil engineering problems, and will seek alternative solutions through literature research.	**R2**
	CLO2	1.3 Be able to use the professional knowledge of civil engineering to analyze civil engineering problems, and then compare and synthesize various solutions to civil engineering problems to obtain the optimal solution and effective conclusions.	**R1**
	CLO3	3.3 Be able to introduce new materials, new processes and new methods in engineering scheme design.	**R3**
content	"Subgrade and Pavement Engineering" is a discipline course recommended by the "National Quality Standards for Undergraduate Programs in Regular Higher Education Institutions", supporting the three graduation requirements (Indicators 1, 2, and 3) outlined in the "Undergraduate Talent Training Program for Civil Engineering". Prerequisites include "Civil Engineering Materials", "Mechanics of		

	Materials", "Soil Mechanics and Foundation Engineering", and "Road Survey and Design". Core components encompass subgrade systems, drainage networks, retaining structures, pavement design principles, construction methodologies, and road maintenance management. Serving as a crucial foundation, this course provides essential knowledge for students' subsequent studies in related disciplines. content of courses： Chapter 1: Overview (2/45 weight, Level: Memorization, Understanding, Application). Chapter 2: Characteristics and Design Parameters of Roadbed Soil (Weight 4/45, Level: Memorization, Understanding, Application). Chapter 3: Subgrade Design (Weight 4/45, Level: Memorization, Understanding, Application). Chapter 4: Design of Roadbed Protection and Retaining Structures (Weight: 6/45, Level: Memorization, Understanding, Application). Chapter 5: Subgrade Construction (Weight: 4/45, Levels: Memorization, Understanding, Application). Chapter 6 Traffic loads and pavement design parameters (weight 3/45, level: memory, understanding, application). Chapter 7: Roadbed Layer (Weight: 2/45, Level: Memorization, Understanding, Application). Chapter 8 Asphalt Pavement Design (Weight: 8/45, Level: Memorization, Understanding, Application). Chapter 9: Design of Cement Concrete Pavement (Weight: 6/45, Level: Memorization, Understanding, Application). Chapter 10 Road Construction (Weight: 4/45, Level: Memorization, Understanding, Application). Chapter 11: Roadbed and Pavement Maintenance and Management (Weight: 2/45, Levels: Memorization, Understanding, Application).
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Roadbed and pavement engineering. Huang Xiaoming. Beijing: People's Communications Press, June 2019. 2. Roadbed and Pavement Engineering (4th Edition), Huang Xiaoming, Nanjing: Southeast University Press, July 2020. 3. Roadbed and Pavement Engineering (2nd Edition), Sha Aimin, Beijing: Higher Education Press, August 2022.

version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

bridge construction

Module Name	bridge construction		
Semester of module instruction	6th semester		
Module Owner	Yang Xu		
language	the Chinese language		
Relationship to the course	Elective courses for the major		
teaching method	Teacher-centered methods: lecture, question; Methods of interaction: group discussion; Practical methods: engineering case practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 120 class hours Teaching hours: 4 hours per week for 16 weeks, 64 hours in total Self-study hours: 3.5 hours per week for 16 weeks, totaling 56 hours, including bridge design, structural drawing, internal force calculation, virtual simulation experiment, and basic knowledge test.		
credit	4 credits		
Prerequisites and recommendations for joining this module	Materials Mechanics, Structural Mechanics, Principles of Concrete Structure Design, Road Survey and Design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Be able to explain the construction principle, mechanical characteristics and design specifications of bridge structure types (simply supported beam bridge/continuous beam bridge/arc bridge), and apply mechanical knowledge, structural design principles and engineering drawing skills to complete the calculation of internal forces and drawing of typical bridge components.	**R1**
	CLO2	Be able to independently complete the construction drawing design of conventional cross-span simply supported beam and continuous beam bridge.	**R3**
	CLO3	Master the mandatory provisions in bridge design codes (e.g., JTG D60 "Code for Design of Highway Bridges and Culverts"), and analyze the ethical failures in typical bridge accidents (e.g., substituting inferior materials for quality ones, violating integrity principles).	**R8**

content	This course introduces the basic knowledge of bridge planning and design, the categories and calculation methods of bridge design functions (loads), as well as the construction, calculation and construction methods of bridge structures such as bridge deck and ancillary facilities, concrete simply supported beam bridge, continuous beam bridge, rigid frame bridge, concrete arch bridge, bridge bearings, bridge piers and abutments. content of courses： Bridge Components and Classification (2/64 Weight, Level: Memory) Bridge Overall Planning and Design (Weight: 4/64, Level: Understanding+Application+Creation) Bridge Function (Weight 4/64, Level: Memory + Understanding + Application) Bridge deck layout and structure (weight 2/64, level: memory) Simply supported beam bridge (weight 16/64, level: memory + understanding + analysis + creation) Continuous system beam bridge (weight 18/64, level: memory + understanding + analysis + creation) Arch Bridge (Weight 8/64, Level: Memory + Understanding + Analysis) Suspension bridge and cable-stayed bridge (weight 2/64, level: memory) Bridge piers and abutments (weight 6/64, level: Memory + Understanding) Bridge construction (weight 2/64, level: memory + understanding)
Assessment format	1. The course assessment consists of process assessment and summative assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Bridge Engineering (Volume I), edited by Fan Lichu, People's Communications Press Co., Ltd., May 2017. 2. "Code for Design of Highway Bridges and Culverts" (JTG D60-2015), edited by China Communications Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., November 2015. 3. Highway Reinforced Concrete and Prestressed Concrete Bridge and Culvert Design Code (JTG 3362—2018), edited by China Communications Construction Company Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., November 2018. 4. "Code for Design of Urban Bridges" (CJJ 11-2011) (2019 edition),

	edited by Shanghai Municipal Engineering Design and Research Institute, China Architecture & Building Press, August 2019.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Road and bridge construction organization

<table>
<tr><td>Module Name</td><td colspan="3">Road and bridge construction organization</td></tr>
<tr><td>Semester of module instruction</td><td colspan="3">7th semester</td></tr>
<tr><td>Module Owner</td><td colspan="3">Chen Weilong</td></tr>
<tr><td>language</td><td colspan="3">the Chinese language</td></tr>
<tr><td>Relationship to the course</td><td colspan="3">Elective for major</td></tr>
<tr><td>teaching method</td><td colspan="3">Teacher-centered methods: case teaching, questioning;
Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions);</td></tr>
<tr><td>Workload (including teaching hours and self-study hours)</td><td colspan="3">Total workload (estimated): 60 class hours
Teaching hours: 2 hours per week for 13.5 weeks, 27 hours in total
Self-study hours: 2 hours per week for 15 weeks, totaling 30 hours, including: homework and self-study</td></tr>
<tr><td>credit</td><td colspan="3">2 credits</td></tr>
<tr><td>Prerequisites and recommendations for joining this module</td><td colspan="3">Cognitive Internship in Civil Engineering, Civil Engineering Materials, Engineering Geology, Architectural Engineering Drawing and Reading</td></tr>
<tr><td rowspan="3">Module Objective/Expected Learning Outcomes</td><td>Course Learning Outcomes</td><td>description</td><td>Support graduation requirements</td></tr>
<tr><td>CLO1</td><td>Master the fundamental concepts, principles, processes, and methodologies of road and bridge construction project organization, thereby developing a comprehensive understanding of construction organization design. Be well-versed in the relevant laws, regulations, standards, specifications, and technical requirements involved in construction organization design, laying a solid theoretical foundation for practical engineering applications.</td><td>R7</td></tr>
<tr><td>CLO3</td><td>Cultivate students' rigorous and serious work attitude and sense of responsibility, and treat road and bridge engineering construction organization design in detail to ensure that every work meets the requirements of specifications.</td><td>R6</td></tr>
<tr><td>content</td><td colspan="3">"Construction Organization of Road and Bridge Engineering" is an elective course recommended by the "National Quality Standards for Undergraduate Programs in Regular Higher Education Institutions", serving as a cornerstone for civil engineering graduates. Prerequisites include "Civil Engineering Cognitive Internship", "Civil Engineering Materials", and "Engineering Geology", forming essential foundations</td></tr>
</table>

	for advanced coursework. content of courses： Chapter 1 Introduction (Weight: 2/30, Level: Memory) Chapter 2 Construction Project Preparation (2/30 Weight, Level: Memorization + Understanding) Chapter 3: Construction Process Organization and Flow Construction Principles (Weight: 4/30, Level: Memorization + Understanding + Application + Analysis) Chapter 4 Network Planning Techniques (Weight: 4/30, Level: Memorization + Understanding + Application + Analysis) Chapter 5 Construction Organization Design (Weight: 4/30, Level: Memorization + Understanding + Application) Chapter 6: Progress Control in Construction Phase of Engineering Projects (Weight: 4/30, Level: Memorization + Understanding + Application + Analysis) Chapter 7 Quality Management in Engineering Projects (Weight: 4/30, Level: Understanding + Application + Analysis) Chapter 8 Construction Safety Management of Engineering Projects (3/30 Weight, Understanding + Application + Analysis) Chapter 9 Management of Road Construction Production Factors (3/30 weight, Understanding + Application + Analysis)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process-based assessment, scored on a percentage basis, accounts for 40% of the final grade. It evaluates students' after-class assignments, periodic tests, self-directed performance, and classroom participation (including discussions), with corresponding point allocations. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through a closed-book written test, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Highway Construction Organization Design, edited by Cao Shengyu, People's Communications Press, January 2019 2. Highway Construction Organization Design and Management, edited by Wu Xinchao, Higher Education Press, November 2011
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Road and bridge project estimate

Module Name	Road and bridge project estimate		
Semester of module instruction	6th semester		
Module Owner	Niu Laichun		
language	the Chinese language		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: lectures, case teaching, questioning; Interactive methods: inquiry-based problem learning, teaching seminars (including group discussions); Practical approach: Project practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 25 class hours Teaching hours: 2 hours per week for 9 weeks, 18 hours in total Self-study hours: 1 hour per week for 7 weeks, totaling 7 hours, including after-class assignments and exam preparation time.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Roadbed and pavement engineering, bridge engineering, road and bridge construction		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Construct a knowledge system of road and bridge engineering cost, understand the cost composition of the whole cycle and process, understand the engineering cost management and economic decision-making problems involved in road and bridge engineering, master the management principles and economic decision-making methods involved in engineering projects;	R11
	CLO2	The management principles and economic decision-making methods are applied to the whole life cycle of road and bridge engineering to solve the complex engineering problems in the field of road and bridge engineering cost and management, and the ability to prepare road and bridge engineering investment estimate, design estimate, construction drawing budget and bill of quantities.	R11
content	Through this course, students will build a comprehensive knowledge system for road and bridge engineering cost estimation, gaining a thorough understanding of cost components throughout the entire		

	lifecycle and construction process. The curriculum addresses key cost management challenges in road and bridge projects, including the pricing basis for roadbeds, pavements, bridges, culverts, tunnels, safety facilities, embedded pipelines, landscaping, and environmental protection. Students will master quantity-based and quota-based measurement methods for bill of quantities (BOL) in these engineering disciplines. The program equips students with the ability to prepare investment estimates, design budgets, construction drawing budgets, and BOLs for road and bridge projects. Furthermore, it cultivates practical problem-solving skills by applying metrology principles and technical methods to address real-world challenges in highway engineering. content of courses： Chapter 1: Overview of Road and Bridge Engineering Cost Estimation (Weight: 1/18, Level: Memorization) Chapter 2 Pricing Basis for Highway Engineering (Weight: 1/18, Level: Memorization + Understanding) Chapter 3: Bill of Quantities and Bidding for Highway Projects (Weight: 2/18, Level: Understanding and Application) Chapter 4: Roadbed Engineering Measurement and Cost Estimation (3/18 Weight, Level: Understanding + Application + Analysis) Chapter 5: Road Engineering Measurement and Cost Estimation (Weight: 2/18, Level: Understanding + Application + Analysis) Chapter 6: Measurement and Pricing of Bridge and Culvert Projects (3/18 Weight, Level: Understanding + Application + Analysis) Chapter 7 Tunnel Engineering Measurement and Cost Estimation (Weight: 2/18, Level: Understanding + Application + Analysis) Chapter 8: Safety Facilities and Embedded Pipeline Engineering Measurement and Pricing (Weight: 2/18, Level: Understanding + Application + Analysis) Chapter 9: Greening and Environmental Protection Engineering Measurement and Pricing (Weight: 1/18, Category: Applied) Chapter 10 Comprehensive Case Analysis (Weight: 1/18, Level: Evaluation)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It primarily evaluates the teaching content through written exams, assessing the achievement of the course's knowledge, ability, and literacy objectives.
Learning and Exam Requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. Highway Engineering Measurement and Pricing, edited by Zhong Xiaohong and Dong Li, China Machine Press, January 2021. 3. Case Study of Highway Engineering Cost Estimation, Li Haiqing,

	People's Communications Press, January 2021. 4. "Standard Construction Bidding Documents for Highway Engineering", edited by the Ministry of Transport of the People's Republic of China, People's Transport Publishing House, January 2018. 5. Highway Engineering Budget Quota: JTG/T3832—2018, edited by the Ministry of Transport of the People's Republic of China, published by People's Communications Press in January 2018. 6. "Methods for Preparation of Budget Estimates for Highway Engineering Construction Projects: JTG/T3830—2018", edited by the Highway Engineering Quota Station, People's Communications Press, January 2018.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation

Application of road and bridge engineering software

Module Name	Application of road and bridge engineering software		
Semester of module instruction	5th semester		
Module Owner	Yang Xu		
language	Chinese		
Relationship to the course	Elective courses		
teaching method	Teacher-centered methods: lecture, question; Methods of interaction: group discussion; Practical methods: engineering case practice		
Workload (including teaching hours and self-study hours)	Total workload (estimated): 25 class hours Teaching hours: 2 hours per week for 9 weeks, 18 hours in total Self-study hours: 1 hour per week for 7 weeks, totaling 7 hours, including: periodic assignments, self-directed learning, etc.		
credit	1 credit		
Prerequisites and recommendations for joining this module	Construction Engineering Drawing and Interpretation, Mechanics of Materials, Structural Mechanics, Principles of Concrete Structure Design		
Module Objective/Expected Learning Outcomes	Course Learning Outcomes	description	Support graduation requirements
	CLO1	Students can independently choose modeling strategies, analyze the sensitivity of boundary conditions of complex bridge structures (such as curved beam bridges), verify the conformity of calculation results with bridge specifications, and evaluate the influence of different modeling methods on the reliability of results.	**R5**
content	This course centers on digital design in bridge engineering, systematically cultivating software application capabilities through seven practical modules. Starting with finite element modeling principles and software basics, it progresses to load distribution calculations, 3D structural modeling, prestressed system design, and extends to construction process simulation, operational status analysis, and post-processing techniques. By integrating real-world engineering cases throughout instruction, the program emphasizes the deep integration of design standards and software implementation. It establishes a complete workflow of "modeling-analysis-optimization" to help civil engineering students and professionals master core skills in mainstream bridge design software. Students will develop practical abilities to independently complete medium-complexity bridge structure modeling, design analysis, and output of results, laying a technical foundation for digital management throughout the entire lifecycle of bridge		

	engineering. content of courses： Project 1: Introduction to the Basic Principles of Finite Element Modeling for Bridge Structures (Weight: 2/18, Level: Application + Understanding) Project 2: Software Interface and Initialization (2/18, Level: Application + Understanding) Practice Project 3: Horizontal Distribution Calculation (Weight 2/18, Level: Analysis + Evaluation) Project 4: Comprehensive Information Input and Structural Geometric Modeling (Weight 4/18, Level: Analysis + Evaluation) Practical Project 5: Prestressed Steel Strand Design and Reinforcement Design (Weight: 2/18, Level: Analysis + Evaluation) Practice Project 6: Construction Analysis and Operation Analysis (Weight: 4/18, Level: Analysis + Evaluation) Practice Project 7: Post-processing (Weight 2/18, Level: Analysis + Evaluation)
Assessment format	1. The course assessment consists of process assessment and final assessment. 2. Grade Evaluation: The final course grade = 40% of process assessment + 60% of final assessment (1) Process assessment, with a percentage score, accounts for 40% of the total score. (2) The final assessment, with a full score of 100 points, accounts for 60% of the total grade. It evaluates the teaching content mainly through the bridge structure analysis and calculation book, and assesses the achievement of the course's knowledge objectives, ability objectives and literacy objectives.
Learning and exam requirements	The course is scored out of 100, with 60 being the passing mark.
Reading List	1. "Bridge Doctor V4.0.1 User Manual", edited by Shanghai Tonghao Civil Engineering Consulting Co., Ltd., October 2018. Website: http://www.doctorbridge.com/plandesignbag 2. "Code for Design of Highway Bridges and Culverts" (JTG D60-2015), edited by China Communications Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., November 2015. 3. Highway Reinforced Concrete and Prestressed Concrete Bridge and Culvert Design Code (JTG 3362—2018), edited by China Communications Construction Company Highway Planning and Design Institute Co., Ltd., published by People's Communications Press Co., Ltd., November 2018. 4. Bridge Engineering (5th Edition), edited by Shao Xudong, People's Communications Press Co., Ltd., May 2019.
version number	Version 2022 took effect in September 2022 V2022.1, update: ECTS-based credit and workload calculation