MODULE DESCRIPTIONS

Catalog

Module designation	***Drawing geometry B***		
Semester(s) in which the module is taught	2		
Person responsible for the module	Lecturer Zhang Chantao		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led approaches, interaction, and practice-based methods, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32， Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module			
Module objectives/intended learning outcomes	CLO 1	Be able to accurately and effectively express engineering problems using drawings and text by applying basic knowledge and techniques of Engineering graphing, fundamental principles of various projection methods, and spatial visualization skills.	R2
	CLO 2	Be capable of communicating with others on graphical issues in engineering through oral presentations, written reports, and diagrams by applying the fundamental principles of various projection methods and national drawing standards, and be able to understand basic Engineering graphings prepared by others.	R10
Content	◆ The marking form requirements of font, drawing, drawing proportion, drawing line and size in drawing standards;（wgt: 6/60） ◆ Basic principles and rules of projection method;（wgt: 6/60） ◆ Projection of lines, points on lines, projection characteristics of lines at various positions; （wgt: 8/60） ◆ Superposition of basic planes; Cutting of basic planes; The handover of basic planes; Simple three-dimensional dimension marking; （wgt: 20/60） ◆ Formation and classification of curves; Projection of curve; Projection of circles, projection of cylindrical spirals; Formation and classification of curved surfaces; The representation of surface; The projection of a point on a surface; Straight surface, curved surface, basic surface and curved surface on a solid; Projection drawing of two curved or curved surfaces intersecting.（wgt: 14/60）		

	◆ Analysis of the formation of assembly; The three views of the assembly and its drawing method;（wgt: 6/60）
Examination forms	closed-book examination, homework, classroom tests ,classroom discussion
Study and examination requirements	1. Usual performance (40%): homework (24%), classroom tests (8%)，classroom discussion (8%). 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Lu Chuanxian (Ed.), Civil Engineering graphing (6th Ed.), China Architecture and Building Press, 2017.12. 2. Bibliography (1) Qian Shuxiang (Ed.), Descriptive Geometry and Engineering graphing, Chemical Industry Press, 2017.10. (2) Hu Shouzhong, Illustrated Geometry and Engineering graphing (7th Ed.), China Water Resources and Hydropower Press, 2021 .08.
Version	23th Dec, 2024

Module designation	***Introduction to Civil Engineering***		
Semester(s) in which the module is taught	2		
Person responsible for the module	Lecturer Nong Jinlong		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24 Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Drawing geometry		
Module objectives/intended learning outcomes	CLO 1	Enable students to gain a relatively comprehensive understanding of the fields, methodologies, achievements, and developments in civil engineering both domestically and internationally from the very beginning of their academic journey. During the engineering education process, help students initially develop a sense of professional identity and an understanding of engineering approaches.	R8
	CLO 2	From the perspective of an introductory discipline, help students understand the integrative and social nature of civil engineering, as well as its unification of technology, economy, and management, thereby laying a preliminary foundation for their major studies. Further, stimulate students' interest in civil engineering, enhance their self-directed learning abilities, and foster an awareness of independent learning.	R8
	CLO 3	Provide students with a clear and logical understanding of the fundamental concepts of the engineering discipline, and enable them to effectively utilize online and technological tools to gather learning resources and expand learning pathways.	R8
Content	◆ Introduction（wgt: 1/45） ◆ Civil engineering materials （wgt: 4/45）		

	◆ Foundation and underground engineering（wgt: 4/45） ◆ Construction work（wgt: 4/45） ◆ Road works（wgt: 4/45） ◆ Railway and urban rail engineering（wgt: 4/45） ◆ Tunnel engineering（wgt: 4/45） ◆ Bridge engineering（wgt: 4/45） ◆ Port engineering（wgt: 4/45） ◆ Water conservancy and hydropower engineering（wgt: 4/45） ◆ The application of digital technology in civil engineering（wgt: 4/45） ◆ Civil engineering project management（wgt: 4/45）
Examination forms	Opened-book examination, classroom quizzes, homework,classroom interaction and thematic discussion
Study and examination requirements	1. Usual performance (50%): homework (20%),classroom interaction and thematic discussion (20%), classroom quizzes(20%) 2. examination (50%) : opened-book examination 3. Homework should be completed by students independently after each class. 4. Classroom quizzes include various methods of testing. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Introduction to Civil Engineering, 5th edition, edited by Ye Zhiming, Higher Education Press, 2020 2. Bibliography (1) Introduction to Civil Engineering, edited by Ding Dajun, China Architecture & Building Press, 2010. (2) Introduction to Civil Engineering (Major), edited by Luo Fuwu, Wuhan University of Technology Press, 2012. (3)The online learning materials provided by the teacher for the course. (4) Hold academic lectures related to civil engineering at our school.
Version	23th Dec, 2024

Module designation	***Graphing of Engineering***		
Semester(s) in which the module is taught	3		
Person responsible for the module	Senior Engineer XiaoJiangBin		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led approaches.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24, including 8 experimental hours. Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Introduction of Civil Engineering.		
Module objectives/intended learning outcomes	CLO 1	Be able to accurately and effectively express complex civil engineering problems using drawings, charts, and written text.	R2
	CLO 2	Be capable of communicating and exchanging information effectively with industry professionals and the general public through oral presentations, written documents, and graphical representations, while recognizing the differences in communication approaches between professional and non-professional audiences.	R10
Content	◆ Drawing Methods (wgt: 8/45) ◆ Elevation Projections (wgt: 10/45) ◆ Reinforced Concrete Structure Drawings and Steel Structure Drawings (wgt: 10/45) ◆ Building Drawings (wgt: 8/45) ◆ Drawings of Bridges, Culverts, and Tunnel Engineering (wgt: 6/45) ◆ Drawings of Hydraulic Engineering Works (wgt: 3/45)		
Examination forms	Closed-book examination, homework, In-class quizzes, Classroom discussions		
Study and examination requirements	1. Usual performance (40%): homework (24%), In-class quizzes (8%), Classroom discussions (8%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		

Reading list	1. Textbooks Lu Chuanxian (Chief Editor). Civil Engineering graphing (6th Edition). China Architecture & Building Press, May 2022. Lu Chuanxian (Chief Editor). Workbook of Civil Engineering graphing (6th Edition). China Architecture & Building Press, May 2022. 2. Bibliography Qian Shuxiang (Chief Editor). Descriptive Geometry and Engineering graphing. Chemical Industry Press, October 2017. Zhu Hui (Chief Editor). Descriptive Geometry and Engineering graphing (7th Edition). Shanghai Science and Technology Press, August 2013.
Version	23th Dec, 2024

Module designation	**CAD *Technological base***		
Semester(s) in which the module is taught	3		
Person responsible for the module	Jiamei Huang		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Personalized methods and practice-based approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24, including 8 experimental hours. Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Drawing geometry; Graphing of Engineering		
Module objectives/intended learning outcomes	CLO 1	Be able to accurately and effectively express complex civil engineering problems through drawings, charts, and written descriptions.	R2
	CLO 2	Be capable of analyzing, designing, and calculating complex problems in the field of civil engineering using appropriate technologies and modern engineering tools.	R5
Content	◆ Basic Knowledge of AutoCAD (wgt: 3/90) ◆ Basic Shape Drawing (wgt: 15/90) ◆ Floor Plan Drawing (wgt: 9/90) ◆ Elevation Drawing (wgt: 6/90) ◆ Side View Drawing (wgt: 6/90) ◆ Detail Drawing of Architectural Components (wgt: 6/90)		
Examination forms	Classroom Discussion, On-machine experiment, homework		
Study and examination requirements	1. Usual performance (40%): Classroom Discussion (10%), On-machine experiment (15%); homework (15%); 2. examination (60%) : On-machine examination 3. Homework should be completed by students independently after each class. 4. The Classroom Discussion is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. On-machine experiment should be completed by students during the class. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Recommended Textbook Zheng Xinzhi & Weng Yuexia (Chief Editors). Architectural CAD. Hunan Normal University Press, 2019.		

	2. Bibliography Deng Peng (Chief Editor). Fundamentals of Civil Engineering CAD — A Basic Course on AutoCAD Software (2nd Edition). Huazhong University of Science and Technology Press, 2018. Chen Longfa (Chief Editor). Civil Engineering CAD. China Architecture & Building Press, 2012. 3. Other Learning Resources Xuexi Qiangguo Learning Platform. Xinhua Ideological and Political Platform: https://xhsz.news.cn/ Chinese University MOOC (MOOC of China): https://www.icourse163.org/
Version	23th Dec, 2024

Module designation	***Theoretical mechanics***		
Semester(s) in which the module is taught	3		
Person responsible for the module	Lecturer Huang Jiamei		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led methods, including lectures and questioning techniques, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32 Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Advanced Mathematics; University Physics; University Physics Experiments; Introduction to civil engineering		
Module objectives/intended learning outcomes	CLO 1	Be able to apply relevant theories of statics to simplify complex structures into appropriate mechanical models, and analyze internal forces in structural components using static equilibrium conditions.	R1
	CLO 2	Be able to preliminarily solve and qualitatively analyze related engineering problems by applying formulas and theorems of theoretical mechanics based on component stress analysis, and propose corresponding optimization or solution strategies.	R2
Content	◆ Introduction (wgt: 2/60) ◆ Axioms of Statics and Force Analysis of Objects (wgt: 8/60) ◆ Planar Force Systems (wgt: 14/60) ◆ Spatial Force Systems (wgt: 8/60) ◆ Friction (wgt: 8/60) ◆ Kinematics of a Point (wgt: 4/60) ◆ Simple Motion of Rigid Bodies (wgt: 2/60) ◆ Relative Motion of a Point (wgt: 2/60) ◆ Basic Equations of Particle Dynamics (wgt: 2/60) ◆ Principle of Linear Momentum (wgt: 2/60) ◆ Kinetic Energy Theorem (wgt: 2/60) ◆ D'Alembert's Principle (wgt: 4/60) ◆ Principle of Virtual Displacement (wgt: 2/60)		
Examination forms	Closed-book examination, homework, In-class quizzes, Pre-class preparation		
Study and examination requirements	1. Usual performance (40%): homework (16%), In-class quizzes (12%), Pre-class preparation (12%); 2. examination (60%) : closed book examination. 3. Homework should be completed by students independently after		

	each class. 4. In-class quizzes must be completed independently by students within the scheduled class time. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggested Teaching Materials Theoretical Mechanics I (9th Edition), edited by the Theoretical Mechanics Teaching and Research Section, Harbin Institute of Technology. Higher Education Press, 2023. 2. Bibliography 3. Theoretical Mechanics (3rd Edition), authored by Li Junfeng and Zhang Xiong. Tsinghua University Press, 2021. Theoretical Mechanics (3rd Edition), edited by the Theoretical Mechanics Teaching and Research Section, Northwestern Polytechnical University; Chief Editor: Zhi Xizhe. Higher Education Press, 2021. Theoretical Mechanics (2nd Edition), edited by Wang Lifeng and Fan Qinshan. China Machine Press, 2021. Theoretical Mechanics (Translated Edition, 3rd Edition), by [Russia] Marchiev, translated by Li Junfeng. Higher Education Press, 2006. Problem Book of Theoretical Mechanics (50th Edition), by [Russia] Mischelski, translated by Li Junfeng. Higher Education Press, 2013.
Version	23th Dec, 2024

Module designation	**Mechanics of materials**		
Semester(s) in which the module is taught	3		
Person responsible for the module	Jiamei Huang		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led methods and practice-based approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:90 Contact hours: 48, Self-Study Hours:42		
Credit points	3		
Required and recommended prerequisites for joining the module	Advanced Mathematics; Theoretical mechanics		
Module objectives/intended learning outcomes	CLO 1	Be able to apply knowledge of mathematics, natural sciences, engineering fundamentals, and specialized knowledge to construct mechanical models for complex engineering problems.	R1
	CLO 2	Be able to apply fundamental principles of mathematics, natural sciences, and engineering science to identify the apparent features of complex civil engineering problems and analyze their key contributing factors.	R2
Content	◆ Introduction and Basic Concepts (wgt: 3/90) ◆ Axial Tension and Compression (wgt: 9/90) ◆ Geometric Properties of Cross-Sections (wgt: 3/90) ◆ Torsion (wgt: 9/90) ◆ Bending Stress (wgt: 12/90) ◆ Deflection of Beams under Bending (wgt: 9/90) ◆ Stress States and Strength Theories (wgt: 9/90) ◆ Combined Deformation and Calculation of Connections (wgt: 9/90) ◆ Buckling of Compression Members (wgt: 9/90)		
Examination forms	Self-Study, Classroom quiz, homework		
Study and examination requirements	1. Usual performance (40%): Self-Study (10%), Classroom quiz (10%); homework (20%); 2. examination (60%) : On-machine examination 3. Homework should be completed by students independently after each class. 4. Classroom quiz should be completed by students during the class. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggested Textbook Mechanics of Materials I (6th Edition), edited by Sun Xunfang, Fang Xiaoshu, and Guan Laitai. Higher Education Press, 2019.		

	2. Bibliography Architectural Mechanics, edited by Li Yongsuo and Guo Jian. Wuhan University of Technology Press, 2014. Mechanics of Materials I (6th Edition), edited by Liu Hongwen. Higher Education Press, 2017. 3. Other Learning Resources Xuexi Qiangguo Learning Platform Xinhua Ideological and Political Platform: https://xhsz.news.cn/ Chinese University MOOC: https://www.icourse163.org/
Version	23th Dec, 2024

Module designation	***Civil Engineering Materials***		
Semester(s) in which the module is taught	3		
Person responsible for the module	Lecturer Nong Jinlong		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led methods and practice-based approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32, including 8 experimental hours. Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Material Mechanics		
Module objectives/intended learning outcomes	CLO 1	Have a solid understanding of the composition, structure, properties, and applications of materials used in the field of civil engineering, and be able to select and apply materials appropriately based on varying engineering conditions.	R4
	CLO 2	Possess basic ability to analyze and improve engineering quality issues caused by material-related problems, and be equipped with skills to test the performance and evaluate the quality of commonly used civil engineering materials.	R7
Content	◆ Basic properties of civil engineering materials（wgt: 4/60） ◆ Gas hardening cementitious material quality（wgt: 4/60） ◆ Cement（wgt: 10/60） ◆ Concrete And Mortar（wgt: 12/60） ◆ Metallic materials（wgt: 7/60） ◆ Wood（wgt: 4/60） ◆ Bitumen（wgt: 7/60） ◆ Synthetic polymer materials（wgt: 4/60） ◆ Thermal insulation materials and sound-absorbing materials（wgt: 4/60） ◆ Coating（wgt: 4/60）		
Examination forms	Closed-book examination, experiment report,homework,classroom quizzes		
Study and examination requirements	1. Usual performance (40%): homework (20%), experiment report (10%),classroom quizzes(10%)		

	2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5.Classroom quizzes include various methods of testing 6. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Civil Engineering Materials, 5th edition, edited by Su Dagen, Higher Education Press, 2015. 2. Bibliography (1) Civil Engineering Materials , edited by Liao Guosheng, published by Metallurgical Industry Press in 2013. (2) Building Materials (2nd edition), co edited by Hunan University, Tianjin University, Tongji University, and Southeast University, published by China Architecture&Building Press in 2011. (3) Civil Engineering Materials ”, edited by Li Qian, published by Tsinghua University Press in 2015.
Version	23th Dec, 2024

Module designation	***Engineering Survey A***		
Semester(s) in which the module is taught	4		
Person responsible for the module	Lecturer Zhou Wenquan		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led methods and practice-based approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32, including 8 experimental hours. Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Introduction of Civil Engineering , Engineering graphing, fundamentals of CAD technology		
Module objectives/intended learning outcomes	CLO 1	Be able to apply the basic principles of leveling, angle measurement, and distance measurement, as well as the theory of measurement errors, to perform indoor data processing of survey results, control accuracy indicators and quality requirements, correctly analyze data, and evaluate and apply measurement results.	R5
	CLO 2	Be capable of independently or collaboratively developing comprehensive surveying technical plans based on the theories and methods of engineering surveying, and of applying surveying knowledge to solve complex civil engineering problems during design, construction, and management stages.	R9
Content	◆ Leveling（wgt: 6/60） ◆ Total station Angle measurement Principle of Angle measurement（wgt: 6/60） ◆ Total station distance and coordinate measurement（wgt: 6/60） ◆ Basic knowledge of measurement error（wgt: 4/60） ◆ Control measurement Control survey overview（wgt: 10/60） ◆ Principles and methods of GNSS surveying（wgt: 2/60） ◆ Surveying and mapping of large scale topographic maps（wgt: 4/60） ◆ The application of topographic maps Reading topographic map（wgt: 4/60） ◆ Mapping and application of large scale digital topographic maps（wgt: 6/60） ◆ Building construction survey Construction control survey（wgt:		

	6/60） ◆ Route construction survey（wgt: 6/60）
Examination forms	Closed-book examination, experiment report, homework
Study and examination requirements	1. Usual performance (40%): homework (20%), experiment report (20%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Civil Engineering Survey (5thEd.), edited by Qin Hui, Tongji University Press, 2019 2. Bibliography (1)Civil Engineering Survey, Song Zhanfeng (Ed.), Central South University Press, 2014; (2) “Engineering Measurement Experiment Guide” self-edited. (3)Civil Engineering Survey, edited by Jin Xiangnong, Ch ina Building and Construction Press, 2019.
Version	23th Dec, 2024

Module designation	**Structural Mechanics (1)(2)**		
Semester(s) in which the module is taught	4/5		
Person responsible for the module	Lecturer Xie Ying		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led methods and interactive approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total: Lecture hours: 80 Self-study hours: 60 Structural Mechanics (I): Lecture hours: 56 Self-study hours: 49 Structural Mechanics (II): Lecture hours: 24 Self-study hours: 21		
Credit points	3.5/1.5		
Required and recommended prerequisites for joining the module	Theoretical Mechanics, Mechanics of Materials		
Module objectives/intended learning outcomes	CLO 1	Be able to apply fundamental knowledge of structural mechanics to analyze and select appropriate simplified computational models for real-world engineering structures, and perform geometric configuration analysis using the rules of geometrically unchangeable systems.	R1
	CLO 2	Be capable of solving internal forces of statically determinate and indeterminate structures using multiple methods and drawing internal force diagrams; be able to draw influence lines for statically determinate structures and calculate displacements of both determinate and indeterminate structures using various methods; be able to solve basic structural dynamics problems.	R1
	CLO 3	Be able to identify key factors that significantly influence structural responses (such as internal forces, displacements, vibrations, and stability) under complex loading conditions.	R2
Content	◆ Introduction (wgt: 2/140) ◆ Analysis of Planar Geometrically Stable Structures (wgt: 10/140) ◆ Force Analysis of Statically Determinate Structures (wgt: 22/140) ◆ Influence Lines (wgt: 13/140) ◆ Displacement Calculation of Statically Determinate Structures (wgt: 18/140)		

	◆ Force Method (wgt: 20/140) ◆ Displacement Method (wgt: 20/140) ◆ Matrix Displacement Method (wgt: 12/140) ◆ Practical Computational Methods and Conceptual Analysis for Statically Indeterminate Structures (wgt: 10/140) ◆ Structural Dynamics (wgt: 16/140) ◆ Elastic Stability of Structures (wgt: 4/140) ◆ Plastic Analysis and Ultimate Load of Structures (wgt: 3/140)
Examination forms	Closed-book examination,, homework， In-class quizzes， Pre-class preparation
Study and examination requirements	1. Usual performance (40%): homework (20%), In-class quizzes (6%)， Pre-class preparation (14%); 2. examination (60%) : closed book examination 3. Homework ， In-class quizzes and Pre-class preparation should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggested Teaching Material Structural Mechanics (4th Edition), edited by Long Yuqiu. Higher Education Press, 2017. 2. Bibliography / Bibliography Structural Mechanics (3rd Edition), edited by Zhu Cimian. Higher Education Press, 2016. Structural Mechanics (7th Edition), edited by Li Liankun. Higher Education Press, 2022. Structural Mechanics (5th Edition), edited by Bao Shihua. Wuhan University of Technology Press, 2018.
Version	23th Dec, 2024

Module designation	***Engineering Geology***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Senior Engineer XiaoJiangBin		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-led methods and practice-based approaches, etc.		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24, including 8 experimental hours. Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Introduction of Civil Engineering; Engineering Graphing.		
Module objectives/intended learning outcomes	CLO 1	Be able to apply fundamental principles of engineering and specialized knowledge, and make use of literature, codes, standards, or technical manuals to analyze complex civil engineering problems and draw valid conclusions.	R2
	CLO 2	Be able to evaluate the impact of engineering practices aimed at solving complex civil engineering problems on the environment and the sustainable development of society.	R7
Content	◆ Introduction (wgt: 2/45) ◆ Minerals and Rocks (wgt: 6/45) ◆ Geological Structures and Their Impact on Engineering (wgt: 8/45) ◆ Soil Classification and Engineering Geological Properties (wgt: 6/45) ◆ Engineering Geological Properties of Rocks and Rock Masses (wgt: 6/45) ◆ Groundwater and Related Engineering Geological Issues (wgt: 8/45) ◆ Adverse Engineering Geological Phenomena (wgt: 7/45) ◆ Engineering Geological Investigation (wgt: 2/45)		
Examination forms	Closed-book examination, experiment report, homework		
Study and examination requirements	1. Usual performance (40%): homework (20%), experiment report (20%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member.		

	5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggested Teaching Material Engineering Geology, edited by Liu Xinrong. China Machine Press, January 2023. 2. Bibliography / Bibliography Fundamentals of Engineering Geology, edited by Wang Tao. China Architecture & Building Press, January 2022. Engineering Geology, edited by Jiang Jingshan. China Architecture & Building Press, March 2017. Engineering Geology (3rd Edition), edited by Shi Zhenming. China Architecture & Building Press, January 2018.
Version	23th Dec, 2024

<table>
<tr><td>Module designation</td><td colspan="3">Principles of Concrete Structure Design</td></tr>
<tr><td>Semester(s) in which the module is taught</td><td colspan="3">5</td></tr>
<tr><td>Person responsible for the module</td><td colspan="3">Lecturer Xie Ying</td></tr>
<tr><td>Language</td><td colspan="3">Chinese</td></tr>
<tr><td>Relation to curriculum</td><td colspan="3">Compulsory / Specialization</td></tr>
<tr><td>Teaching methods</td><td colspan="3">Teacher-led methods, interactive approaches, etc.</td></tr>
<tr><td>Workload (incl. contact hours, self-study hours)</td><td colspan="3">105 hours in total, including 56 lecture hours and 49 self-study hours</td></tr>
<tr><td>Credit points</td><td colspan="3">3.5</td></tr>
<tr><td>Required and recommended prerequisites for joining the module</td><td colspan="3">Mechanics of Materials
Structural Mechanics
Civil Engineering Materials</td></tr>
<tr><td rowspan="3">Module objectives/intended learning outcomes</td><td>CLO 1</td><td>Be able to evaluate the advantages and disadvantages of multiple solutions to complex engineering problems and propose optimized approaches.</td><td>R1</td></tr>
<tr><td>CLO 2</td><td>Be able to formulate components (e.g., joints), structures, systems, or technical schemes that meet specific requirements for complex problems in the field of civil engineering.</td><td>R3</td></tr>
<tr><td>CLO 3</td><td>Be able to integrate theoretical analysis with experimental results to draw reasonable and effective conclusions and apply them to engineering practice.</td><td>R4</td></tr>
<tr><td>Content</td><td colspan="3">◆ Introduction (wgt: 3/105)
◆ Properties of Materials for Concrete Structures (wgt: 10/105)
◆ Design Methods for Concrete Structures (wgt: 4/105)
◆ Axially Loaded Reinforced Concrete Members – Axial Capacity Calculation (wgt: 8/105)
◆ Flexural Members – Ultimate Moment Capacity of Rectangular Sections (wgt: 16/105)
◆ Flexural Members – Shear Strength of Sections (wgt: 16/105)
◆ Torsion Capacity of Reinforced Concrete Members (wgt: 8/105)
◆ Eccentrically Loaded Reinforced Concrete Members – Capacity Calculation (wgt: 16/105)
◆ Crack Control, Deformation, and Durability of Reinforced Concrete Members (wgt: 8/105)
◆ Design of Prestressed Concrete Members (wgt: 16/105)</td></tr>
<tr><td>Examination forms</td><td colspan="3">Closed-book examination,, homework，in-class quizzes，preview</td></tr>
<tr><td>Study and examination requirements</td><td colspan="3">1. Usual performance (40%): homework (20%),in-class quizzes(10%)，preview (10%);
2. examination (60%) : closed book examination
3. Homework ，in-class quizzes and preview should be completed by</td></tr>
</table>

	students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggested Teaching Material Principles of Concrete Structure Design (5th Edition), edited by Shen Pusheng. Higher Education Press, 2020. 2. Bibliography Principles of Structural Design, edited by Ye Jianshu. China Communications Press, 2018. Specifications for Design of Highway Reinforced Concrete and Prestressed Concrete Bridges and Culverts (JTG 3362-2018). China Communications Press, 2018. Load Code for the Design of Building Structures (GB 50009-2012). China Architecture & Building Press, 2012.
Version	23th Dec, 2024

Module designation	***Soil Mechanics and Foundation***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Liang Qiao		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:90h Contact hours: 48h, including 8 experimental hours. Self-Study Hours:42h		
Credit points	3		
Required and recommended prerequisites for joining the module	Introduction of Civil Engineering; Theoretical Mechanics; Material Mechanics; Engineering Geology		
Module objectives/intended learning outcomes	CLO 1	Be able to apply the fundamental concepts, methods, and principles of soil mechanics to establish mechanical models, and analyze and solve complex geotechnical problems in general building engineering.	R1
	CLO 2	Be able to select and design appropriate foundation schemes based on building engineering requirements and geotechnical conditions, and evaluate their impact on society, health, safety, law, culture, and the environment.	R3
	CLO 3	Be able to independently design geotechnical testing plans, safely assemble and properly operate laboratory equipment, process and analyze experimental data, and use the results to assess the physical and mechanical properties of soil and rock masses.	R4
Content	◆ Introduction（wgt: 2/90） ◆ Physical properties and engineering classification of soil（wgt: 10/90） ◆ Stress in foundation soil（wgt: 10/90） ◆ Compressibility and settlement calculation of soil（wgt: 12/90） ◆ Shear strength and bearing capacity of foundation soil（wgt: 10/90） ◆ Earth pressure（wgt: 10/90） ◆ Slope stability（wgt: 8/90） ◆ Geotechnical investigation（wgt: 4/90） ◆ Shallow foundation on natural ground（wgt: 12/90）		

	◆ Pile foundation（wgt: 12/90）
Examination forms	Closed-book examination, experiment report, homework
Study and examination requirements	1. Usual performance (40%): homework (20%), experiment report (20%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Soil Mechanics and Foundation, 5th Ed[M]. Chen Xizhe and Ye Jing, Tsinghua University Press, 2018. 2. Bibliography (1) Soil Mechanics and Foundation[M], 2nd edition, edited by Zhu Jianqun, China Architecture and Building Press, 2017; (2) Soil Mechanics and Foundation Experiment Instruction Book, self-edited. (3) Craig Soil Mechanics (Annotated adaptation of the 8th edition of the original Book) [M], [E]J.A. J.a.kappett R.F.Craig, Machine Press, 2019. (4) Basic Engineering (English · 8th Edition of the original book) [M], [US] Bridger M. (BrajaM. Das), Machine Press, 2016. (5) Foundation and Foundation Engineering (Second edition of the Original) [M], [E] John Atkinson, Cheng Xiaohui, and Guo Hongxian, China Architecture and Building Industry Press, 2022
Version	23th Dec, 2024

Module designation	***Design principle of steel structure***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Associate Professor Ouyang Xiangsen		
Language	Chinese		
Relation to curriculum	Compulsory		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32 Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Theoretical mechanics, Mechanics of materials, mechanics of structures		
Module objectives/intended learning outcomes	CLO 1	Be able to evaluate the strengths and weaknesses of multiple solutions to complex engineering problems and propose optimized approaches.	R1
	CLO 2	Be able to develop components (e.g., joints), structures, systems, or technical schemes that meet specific requirements for complex problems in the field of civil engineering.	R2
Content	◆ Introduction（wgt: 2/60） ◆ Steel structure materials and properties（wgt: 4/60） ◆ Connection of Steel structures（wgt: 16/60） ◆ Axial bearing member（wgt: 14/60） ◆ Flexural member（wgt: 12/60） ◆ Tensile bending and compression bending members（wgt: 12/60）		
Examination forms	Closed-book examination, test report, homework		
Study and examination requirements	1. Usual performance (40%): homework (20%), class design and test (20%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials Principles of Steel Structure Design, edited by Luo Hongguang and Yang Jinglin, Hunan Normal University Press, 2018. 2. Bibliography (1) Principles of Steel Structure Design (2nd Ed.), Zhang Yaochun,		

	Higher Education Press, 2020. (2) Steel Structure (Volume 1) - Steel Structure Foundation (4th edition), edited by Chen Shaofan, China Building and Construction Press, 2018.
Version	23th Dec, 2024

Module designation	***Technology and Organization of Civil Engineering Construction***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Professor Luo Zhang		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods.		
Workload (incl. contact hours, self-study hours)	Total workload:90 Contact hours: 48 Self-Study Hours:42		
Credit points	3		
Required and recommended prerequisites for joining the module	Principles of Concrete Structural Design; Theoretical Mechanics; Material Mechanics		
Module objectives/intended learning outcomes	CLO 1	Be able to independently analyze and solve technical problems during construction and possess fundamental abilities in construction organization and management for civil engineering projects.	R1
	CLO 2	Be able to select appropriate construction methods and apply advanced construction technologies based on varying engineering conditions and work environments to carry out construction and implementation of building projects.	R3
	CLO 3	Have a solid understanding of the basic principles and methods of construction technology and construction organization in civil engineering, and be able to design and organize the implementation of construction projects according to the specific conditions, environment, technologies, and methods of a given project.	R4
Content	◆ Earthwork construction（wgt: 4/90） ◆ Pile foundation engineering（wgt: 2/90） ◆ Masonry engineering（wgt: 2/90） ◆ Concrete structure engineering（wgt: 4/90） ◆ Prestressed concrete engineering（wgt: 2/90） ◆ Structural installation project（wgt: 2/90） ◆ Road and bridge engineering（wgt: 2/90） ◆ Waterproofing project（wgt: 4/90） ◆ Decoration and renovation project（wgt: 4/90） ◆ Introduction to construction organization（wgt: 4/90）		

	◆ Principle of flow construction（wgt: 4/90） ◆ Network planning technology（wgt: 6/90） ◆ Construction organization design of unit project（wgt: 4/90） ◆ General construction organization design（wgt: 4/90）
Examination forms	Closed-book examination, homework
Study and examination requirements	1. Usual performance (40%): homework (20%), Answer questions in the classroom(20%) 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Civil Engineering Construction (1st Edition). [M]. Gao Taotao, Harbin Institute of Technology Press, 2019. 2. Bibliography (1) Civil Engineering Construction. [M].Li Jianfeng. China Electric Power Press, 2016; (2) Construction Project Construction Organization and Management (1st Edition). [M]. Yang Qun. Harbin Institute of Technology Press, 2017
Version	23th Dec, 2024

Module designation	***Building architectural***		
Semester(s) in which the module is taught	4		
Person responsible for the module	Associate Professor Zou Hongbo		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:90 Contact hours: 48. Self-Study Hours:42		
Credit points	3		
Required and recommended prerequisites for joining the module	Descriptive Geometry and Engineering graphing		
Module objectives/intended learning outcomes	CLO 1	Be able to apply fundamental principles of engineering and specialized knowledge, and utilize literature, codes, standards, or technical manuals to analyze complex civil engineering problems and draw valid conclusions.	R2
	CLO 2	Be able to understand both the strengths and limitations of various engineering tools and information technologies when addressing complex architectural design problems.	R5
	CLO 3	Be able to recognize the impact of engineering practices related to complex civil engineering problems on the environment and sustainable social development, and develop an awareness of environmental protection and sustainability.	R7
Content	◆ Introduction（wgt: 2/90） ◆ Architectural graphic design（wgt: 16/90） ◆ Building section design（wgt: 8/90） ◆ Building type and elevation design（wgt: 8/90） ◆ Introduction to building structure Structural（wgt: 2/90） ◆ Wall and foundation（wgt: 14/90） ◆ Stairs（wgt: 6/90） ◆ Floor strata（wgt: 6/90） ◆ Roof（wgt: 6/90） ◆ Doors and Windows（wgt: 6/90） ◆ Industrial building（wgt: 2/90）		

	◆ Industrial plant（wgt: 14/90）
Examination forms	Closed-book examination,Usual performance
Study and examination requirements	1. Usual performance (40%):Classroom quiz (10%), homework (15%),Classroom discussion (10%) 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Building Architecture, 6th Ed.Wang Xuesong, Li Biyu et al., Wuhan University of Technology Press, 2021. 2. Bibliography (1) Building Architecture (7th Ed.), edited by Shu Qiuhua, Wuhan University of Technology Press, 2022. (2) Code for Fire Protection in Building Design, GB50016-2014, 2018 (3) Code for Design of Primary and Secondary Schools, GB 50099-2011, 2018 (4) Design Standards for Office Buildings, JGJ/T 67-2019
Version	23th Dec, 2024

Module designation	***Design of steel structure***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Luo Hongguang		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:75 Contact hours: 40. Self-Study Hours:35		
Credit points	2.5		
Required and recommended prerequisites for joining the module	Mechanics of materials, Structural mechanics, Design principle of steel structure		
Module objectives/intended learning outcomes	CLO 1	Be able to apply fundamental principles of engineering and specialized knowledge, and utilize literature, codes, standards, or technical manuals to analyze complex civil engineering problems and draw valid conclusions.	R1
	CLO 2	Be able to demonstrate innovation awareness in the design phase of solutions to complex engineering problems in the field of civil engineering.	R2
Content	◆ Introduction（wgt: 2/75） ◆ Steel rooftruss single-storey plant design（wgt: 16/75） ◆ Portal rigid frame lighthouse structure design（wgt: 16/75） ◆ Multi-layer steel frame structure design（wgt: 14/75）		
Examination forms	Closed-book examination, Classroom interaction,thematic discussion,homework		
Study and examination requirements	1. Usual performance (40%): Classroom interaction (20%), thematic discussion (15%),homework (5%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials The first edition of *Steel Structure Design*, edited by Song Gaoli, China Building and Construction Press, 2019. 2. Bibliography (1) Ministry of Housing and Urban-Rural Development, Design		

	Standards for Steel Structures (1st edition), China Planning Press, 2018. (2) Ministry of Housing and Urban-Rural Development, Technical Specification for Cold-formed Thin-Walled Steel Structure, China Planning Press, 2002.
Version	23th Dec, 2024

Module designation	***Concrete and masonry structure design***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate Professor Xiao Alin		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:105 Contact hours: 56 Self-Study Hours:49		
Credit points	3.5		
Required and recommended prerequisites for joining the module	Structural mechanics, Civil engineering materials, Design principle of concrete structure		
Module objectives/intended learning outcomes	CLO 1	Have a solid understanding of the basic structural types, construction details, analytical methods, design principles, and construction techniques of concrete and masonry structures.	R2
	CLO 2	Be able to consult and effectively organize relevant technical materials, and apply professional knowledge to real engineering practice. Be able to integrate design, construction, and implementation aspects in building engineering, and develop the ability to identify and solve practical engineering problems.	R6
Content	◆ Beam and plate structure design ◆ Single-storey plant structure design ◆ Multi-layer frame structure design ◆ Masonry materials and mechanical properties ◆ Calculation of Bearing capacity of masonry structural members ◆ Wall design of mixed structure building ◆ Construction measures of lintel, wall beam, beam and wall		
Examination forms	Closed-book examination, homework		
Study and examination requirements	1. Usual score (40%) : homework (20%), class performance (20%); 2. examination (60%) : closed book test		
Reading list	1. Suggest teaching materials (1) Design of Concrete Structure (Fifth Edition), Shen Pusheng, Higher Education Press, 2020.3. (2) Masonry Structure (4th Ed.), Shi Chuxian, China Architecture and Building Press, 2017.12. 2. Bibliography		

	(1) Concrete Structure (Volume), Tianjin University, Tongji University, Southeast University, China Architecture and Building Press, 2020. (2) Code for Load on Building Structures (GB50009-2012), China Architecture and Building Press, 2012.5. (3) Code for Design of Concrete Structures (GB50010-2010), China Building Industry Press, 2015.9. (4) Code for Design of Masonry Structure (GB50003-2011), China Building and Construction Industry Press, 2011.7.
Version	23th Dec, 2024

Module designation	***Seismic Design of Building***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Lecturer Pi Zhengbo		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24 Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Advanced mathematics, Linear algebra, Probability theory and mathematical statistics, structural mechanics, Mechanics of materials, Design Principles of Concrete structure, Design Principles of Steel structure, Concrete and masonry structure design, Design of Steel structure		
Module objectives/intended learning outcomes	CLO 1	Grasp the fundamental concepts and basic theories of seismic design, including seismic effects, seismic performance verification, seismic design of various structural types, base isolation and energy dissipation techniques, elastoplastic seismic response analysis, and performance-based seismic design methodologies.	R1
	CLO 2	Be capable of selecting and designing reasonable structural schemes based on site classifications, seismic intensity, and seismic fortification categories; establish corresponding building structure models; analyze and compute internal forces and modal responses; and produce complete structural construction drawings.	R3
	CLO 3	Be able to review and evaluate seismic design schemes and construction plans for various types of building structures.	R4
Content	◆ Introduction Introduction to seismic design of buildings（wgt: 1/45） ◆ Seismic Design of Foundation and Foundation（wgt: 2/45） ◆ Seismic action and seismic checking calculation of structure（wgt: 3/45） ◆ Seismic performance and design of reinforced concrete structures（wgt: 6/45） ◆ Earthquake-resistant design of masonry structure houses（wgt:		

	5/45） ◆ Aseismic design of single-storey factory building（wgt: 6/45） ◆ Seismic design of multi-story and high-rise steel structure houses（wgt: 6/45） ◆ Design of isolation and energy dissipation（wgt: 5/45） ◆ Analysis of elastoplastic seismic response of structure（wgt: 6/45） ◆ Introduction of performance- based seismic design method（wgt: 5/45）
Examination forms	Closed-book examination,homework
Study and examination requirements	1. Usual performance (40%): homework (20%), in-class question and answer(20%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Readi ng list	1. Structural Dynamics, 2nd Ed. (US)R. Clough and J. Penzin, Higher Education Press, November 2006. 2. Structural Design of Practical High-rise Buildings, 2nd Ed., by Fu Xueyi, China Architecture and Building Press, August 2010. 3. Seismic Analysis and Control of Building Structures, edited by Li Hongnan and Huo Linsheng, Higher Education Press, March 2022. 4. Simulation and Analysis Technology of High-rise Building Structure, edited by Xiao Congzhen, China Building and Construction Press, February 2021. 5. Code for Seismic Design of Buildings GB50011-2016, China Building Industry Press, 2016.
Version	23th Dec, 2024

<table>
<tr><td>Module designation</td><td colspan="3">High-rise buildings</td></tr>
<tr><td>Semester(s) in which the module is taught</td><td colspan="3">7</td></tr>
<tr><td>Person responsible for the module</td><td colspan="3">Lecturer Pi Zhengbo</td></tr>
<tr><td>Language</td><td colspan="3">Chinese</td></tr>
<tr><td>Relation to curriculum</td><td colspan="3">Compulsory / Specialization</td></tr>
<tr><td>Teaching methods</td><td colspan="3">Teacher-Centered Methods，Interactive Methods</td></tr>
<tr><td>Workload (incl. contact hours, self-study hours)</td><td colspan="3">Total workload:60
Contact hours: 32
Self-Study Hours:28</td></tr>
<tr><td>Credit points</td><td colspan="3">2</td></tr>
<tr><td>Required and recommended prerequisites for joining the module</td><td colspan="3">Advanced Mathematics, linear Algebra, Probability Theory and Mathematical Statistics, Structural mechanics, Mechanics of materials, Principles of concrete structure design, Principles of steel structure design, concrete and Masonry structure design, Steel structure design</td></tr>
<tr><td rowspan="3">Module objectives/intended learning outcomes</td><td>CLO 1</td><td>Master the knowledge of structural systems, structural loads, structural design requirements, calculation methods for frame, shear wall, and frame-shear wall structures, as well as relevant structural analysis software and programs; and apply this knowledge to structural design and the analysis and computation of both individual structural components and integrated structural models.</td><td>R1</td></tr>
<tr><td>CLO 2</td><td>Be capable of selecting and designing appropriate structural schemes and construction drawings in accordance with project requirements, wind and seismic intensity for high-rise buildings, and structural seismic fortification categories; and accurately assess the conformity of structural schemes with relevant design and construction codes.</td><td>R3</td></tr>
<tr><td>CLO 3</td><td>Identify and analyze mechanical models to determine effective solutions to complex engineering problems in high-rise building design.</td><td>R4</td></tr>
<tr><td>Content</td><td colspan="3">◆ Introduction（wgt: 2/60）
◆ High-rise building structure system（wgt: 5/60）
◆ High-rise building loads（wgt: 4/60）
◆ High-rise structure design requirements（wgt: 4/60）
◆ Approximate calculation methods of frame, shear wall, frame-shear wall（wgt: 10/60）</td></tr>
</table>

	◆ Design of reinforced concrete frame（wgt: 6/60） ◆ Design of reinforced concrete shear wall（wgt: 6/60） ◆ Structural program calculation and Simplified structure design（wgt: 8/60） ◆ Steel structure design of civil building（wgt: 6/60） ◆ Mixed structure design of high- rise building（wgt: 4/60） ◆ Design of energy dissipation and shock absorption structure（wgt: 5/60）
Examination forms	Closed-book examination, homework，in-class question and answer
Study and examination requirements	1. Usual performance (40%): homework (20%), in-class question and answer(20%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Structural Design of High-rise Buildings, 3rd edition, edited by Qian Jiaru, Zhao Zuozhou, Ji Xiaodong and Ye Liping, China Architecture and Building Press, 2018. 2. Bibliography (1)Structural Dynamics, 2nd Ed., R. Clough and J. Penzin, Higher Education Press, November 2006. (2) Structural Design of Practical High-rise Buildings, Second edition, by Fu Xueyi, China Architecture and Building Press, August 2010. (3)Seismic Analysis and Control of Building Structures, edited by Li Hongnan and Huo Linsheng, Higher Education Press, March 2022. (4)Simulation and Analysis Technology of High-rise Building Structure, edited by Xiao Congzhen, China Building and Construction Press, February 2021.
Version	23th Dec, 2024

Module designation	***Estimated budget for construction projects***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Lecturer Zhang Chantao		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32, Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Descriptive Geometry B, Engineering Graphing, Civil Engineering Construction		
Module objectives/intended learning outcomes	CLO 1	Understand the fundamental principles and methods of construction project cost estimation and project management, as well as the rationale and content behind the formulation of construction cost quotas; and comprehend the principles of project management and economic decision-making in engineering projects based on knowledge of cost composition, pricing methods, and pricing characteristics.	R11
	CLO 2	Be able to apply knowledge of construction cost estimation to compile preliminary and detailed budgets and bills of quantities, and to use current quota standards to prepare construction project budgets and bidding control prices.	R11
Content	◆ Related concepts of construction projects and their decomposition;（wgt: 4/60） ◆ Introduction of project valuation（wgt: 4/60） ◆ The content and composition of the cost of construction and installation, the principle of engineering cost pricing and two modes;（wgt: 4/60） ◆ The concept of the building area, the function of the building area, the terms related to the building area;（wgt:4 /60） ◆ Rules for Calculation of quantities of earth and rock works, pile foundation works, masonry works, concrete works, steel works, doors and windows works, roofing and waterproofing works and specification of quotas.（wgt: 18/60） ◆ Rules for calculating quantities of floor decoration works, wall and column decoration works, ceiling works and Description of quotas; Rules for calculation of quantity of painting, coating and pasting works and specification of quota; Other decorative engineering quantity calculation rules and quota instructions.（wgt: 10/60		

	◆ Measure project measurement and valuation（wgt: 8/60） ◆ Basis, steps and contents of compiling the budget of construction drawing.（wgt: 4/60） ◆ The preparation of the bill of quantities, the preparation of the list of quantities forbidding, the division of the list of quantities, the list of measures, the list of other items, the list of fees, and the list of tax items.（wgt: 4/60）
Examination forms	Open-book examination, homework,classroom tests ,classroom discussion
Study and examination requirements	1. Usual performance (40%): homework (24%), classroom tests (8%), classroom discussion (8%). 2. examination (60%) : open book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Construction Engineering Measurement and Valuation, Editor-in-Chief Cheng Yanhui, Hunan Normal University Press, 2021.07 2. Bibliography (1) Construction Engineering Measurement and Valuation, Liu Yuanfang, editor-in-chief, China Building Materials Industry Press, 2020; (2) Consumption Quota of Building and Decoration Engineering in Hunan Province, issued by Hunan Provincial Construction Project Cost Management Station; (3) “Construction engineering quantity list valuation Code”, “Housing construction and decoration engineering quantity calculation code”, the Ministry of Housing and Urban-Rural Development of the People’s Republic of China, the State Administration of Quality Supervision, Inspection and Quarantine of the People’s Republic of China jointly issued
Version	23th Dec, 2024

Module designation	***Road survey and design***		
Semester(s) in which the module is taught	4		
Person responsible for the module	Professor Cai Chengxiu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:90 Contact hours: 48, including 8 experimental hours. Self-Study Hours:42		
Credit points	3		
Required and recommended prerequisites for joining the module	CAD technology, engineering surveying, and engineering geology		
Module objectives/intended learning outcomes	CLO 1	Be familiar with relevant codes and standards, vehicle dynamics, geometric alignment, driver visual perception and psychology, and driving environments. Master the theories and methods of route design based on topographic maps, including the design and coordination of horizontal, vertical, and cross-sectional alignments, as well as the integration of at-grade and grade-separated intersections.	R2
	CLO 2	Understand the fundamental principles and technical methods for route selection and alignment determination; be capable of evaluating and selecting optimal route schemes based on engineering requirements and geological conditions, and assessing their impacts on society, health, safety, law, culture, and the environment.	R7
Content	◆ Introduction (wgt: 2/90) ◆ Vehicle Operation Theory (wgt: 10/90) ◆ Horizontal Alignment Design (wgt: 12/90) ◆ Vertical Alignment Design (wgt: 12/90) ◆ Cross-sectional Design (wgt: 12/90) ◆ Route Selection (wgt: 8/90) ◆ Route Alignment (wgt: 8/90) ◆ At-Grade Intersection Design (wgt: 8/90) ◆ Grade-Separated Intersection Design (wgt: 8/90) ◆ Survey and Design of New Highways (wgt: 4/90) ◆ Highway Network Planning (wgt: 6/90)		
Examination forms	Closed-book examination, homework, in-class quizzes,in-class design		
Study and examination requirements	1. Usual performance (40%): homework (20%), in-class quizzes (10%);in-class design (10%); 2. examination (60%) : closed book examination		

	3. Homework should be completed by students independently after each class. 4. The practicum is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Recommended Textbook (1) Zhao Yongping (Chief Editor). Road Survey and Design (3rd Edition). Higher Education Press, 2022. 2. Reference Books (1) Zhang Chi (Chief Editor). Road Survey and Design (6th Edition). China Communications Press, 2023. (2) Fang Shou’en, Chen Yuren (Chief Editors). Road Planning and Geometric Design. Tongji University Press, 2021. (3) Zhu Feng (Chief Editor). Road Survey and Design. China Communications Press, 2021. (4) Zhao Yifei, Yang Shaowei (Chief Editors). Expressway Design. China Communications Press, 2006. (5) Technical Standards of Highway Engineering (JTG B01-2014), Ministry of Transport of the People’s Republic of China. (6) Specifications for Highway Route Design (JTG D20-2017), Ministry of Transport of the People’s Republic of China. (7) General Code for Engineering Survey (GB 55018-2021), Ministry of Housing and Urban-Rural Development of the People’s Republic of China. (8) Code for Design of Urban Road Engineering (CJJ 37-2016), Ministry of Housing and Urban-Rural Development of the People’s Republic of China. (9) Code for Environmental Protection Design of Highway Engineering (JTG B04-2010), Ministry of Transport of the People’s Republic of China. (10) Shen Chi (Chief Editor). Selected Cases of Ideological and Political Education in Curriculum. Zhejiang University Press, 2020.
Version	23th Dec, 2024

Module designation	***Subgrade and pavement engineering***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Cai Chengxiu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:90 Contact hours: 48, including 8 experimental hours. Self-Study Hours:42		
Credit points	3		
Required and recommended prerequisites for joining the module	Soil mechanics and foundation engineering 、 Materials of Civil Engineering、Road survey and design		
Module objectives/intended learning outcomes	CLO 1	Be familiar with various norms, and master the basic knowledge, basic process, basic concepts and basic methods of subgrade and pavement engineering design and construction.	R2
	CLO 2	Be familiar with the new concepts, methods and technologies of subgrade and pavement engineering, be capable of solving complex engineering problems based on relevant regulations and standards, and be able to understand and evaluate the impact of engineering practices for complex engineering problems on environmental and social sustainable development.	R6
Content	◆ Introduction (wgt: 2/90) ◆ Characteristics and Design Parameters of Subgrade Soil (wgt: 10/90) ◆ Subgrade Design (wgt: 12/90) ◆ Design of Subgrade Protection and Retaining Structures (wgt: 12/90) ◆ Subgrade Construction (wgt: 12/90) ◆ Traffic Load and Design Parameters of Pavement Materials (wgt: 8/90) ◆ Pavement Base (wgt: 8/90) ◆ Asphalt Pavement Design (wgt: 8/90) ◆ Cement Concrete Pavement Design (wgt: 8/90) ◆ Subgrade and Pavement Drainage Design (wgt: 4/90) ◆ Pavement Construction (wgt: 6/90)		
Examination forms	Closed-book examination, homework, in-class quizzes,in-class design		
Study and examination	1. Usual performance (40%): homework (20%), in-class quizzes		

requirements	(10%);in-class design (10%); 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The practicum is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Recommended Textbooks (1) Huang Xiaoming (Editor-in-Chief), “Subgrade and Pavement Engineering” (7th Edition), Higher Education Press, 2023. 2. Bibliography (1) Huang Xiaoming (Editor-in-Chief), “Subgrade and Pavement Engineering” (6th Edition), Higher Education Press, 2022. (2) Ling Tianqing (Editor-in-Chief), “Road Engineering” (4th Edition), People’s Communications Press, 2019. (3) Wang Fuzhou, Xu Shuang (Editors), “Subgrade and Pavement Engineering”, Jilin University Press, 2015. (4) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D30-2015 “Code for Design of Highway Subgrade”. (5) Ministry of Transport of the People’s Republic of China Industry Standard. JTG B01-2014 “Technical Standards for Highway Engineering”. (6) Ministry of Transport of the People’s Republic of China Industry Standard. JTG/T 3610-2019 “Technical Specifications for Construction of Highway Subgrade”. (7) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D33-2012 “Code for Design of Highway Drainage”. (8) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D50-2017 “Code for Design of Asphalt Pavement”. (9) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D40-2021 “Code for Design of Highway Cement Concrete Pavement”. (10) Ministry of Transport of the People’s Republic of China

	Industry Standard. JTG/T F20-2015 “Technical Specifications for Construction of Highway Pavement Base”. (11) Shen Chi (Editor-in-Chief), “Selected Cases of Ideological and Political Education in Courses”, Zhejiang University Press, 2020.
Version	23th Dec, 2024

Module designation	***Hydraulics and Bridge and Culvert Hydrology***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate Professor Guokun Liu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods.		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24 Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Principles of Materials Mechanics; Structural Mechanics; Concrete Structure Design		
Module objectives/intended learning outcomes	CLO 1	To calculate the flood flow at a specified frequency using different methods, as well as to estimate the design flow based on flow observation data and regional empirical formulas; and to apply the knowledge of bridge and culvert hydraulics learned to solve practical engineering problems such as the scouring of bridge piers and abutments.	R1
	CLO 2	Be capable of analyzing and judging through mechanical models to obtain solutions to complex engineering problems; be able to accurately and effectively express complex engineering problems in civil engineering by means of drawings, charts and words, etc.	R3
Content	◆ Introduction（wgt: 2/45） ◆ Principles of Hydrological Statistics（wgt: 2/45） ◆ Design-flood discharge（wgt: 3/45） ◆ Calculation of Large and Medium Bridge Aperture（wgt: 3/45） ◆ Bridge piers and abutments erosion（wgt: 4/45） ◆ Adjusting structures（wgt: 3/45） ◆ Ocean Bridge and Marine Environment（wgt: 3/45） ◆ Bridge site survey and selection（wgt: 2/45） ◆ Calculation of aperture for small bridges and culverts（wgt: 2/45）		

Examination forms	Closed-book examination, Test report, homework
Study and examination requirements	1. Usual performance (50%): homework (15%), experiment report (15%);Classroom quizzes (20%) 2. examination (50%) : closed book examination
Reading list	1. Suggest teaching materials Hydraulic Engineering of Bridges and Culverts, 5th Edition, edited by Gao Dongguang and Wang Yaling, People's Communications Press Co., Ltd., 2018. 2. Bibliography (1) Hydraulic Engineering of Bridges and Culverts (2nd Edition). Zhang Xueling. People's Communications Press, 1980. (2) Hydraulics and Hydraulic Engineering of Bridges and Culverts (3rd Edition). Ye Zhenguo. People's Communications Press, 2019. (3) Hydraulic Engineering of Bridges and Culverts. Xue Ming. Tongji University Press, 2002. (4) Hydraulics and Hydrology of Bridges and Culverts (2nd Edition). Yang Bin, Wang Xiaowen, Peng Kai, et al. Southwest Jiaotong University Press, 2012. (5) Code for Hydrological Survey and Design of Highway Engineering (JTG C30-2015). People's Communications Press, 2015. (6) Survey and Design of Small Bridges and Culverts for Highways (5th Edition). Sun Jiasi, Wu Jinliang, Zhang Ming. People's Communications Press, 2017. (7) Code for Survey and Design of Highway Bridge Sites (JTG062-91). People's Communications Press, 1993. (8) Engineering Hydrology (4th Edition). Zhan Daojiang, Xu Xiangyang, Chen Yuanfang. China Water & Power Press, 2010.
Version	23th Dec, 2024

Module designation	***Bridge Engineering (1), Bridge Engineering (2)***		
Semester(s) in which the module is taught	6,7		
Person responsible for the module	Associate Professor Liu Zhaofeng		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods.etc.		
Workload (incl. contact hours, self-study hours)	***Bridge Engineering (1)*** Total workload:75 Contact hours: 40 Self-Study Hours:35 ***Bridge Engineering (2)*** Total workload:75 Contact hours: 40 Self-Study Hours:35		
Credit points	***Bridge Engineering (1)*:**2.5, ***Bridge Engineering (2)*:**2.5		
Required and recommended prerequisites for joining the module	Mechanics of Materials, Structural mechanics, Principles of design of concrete structures, soil mechanics and foundation		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the structural characteristics, construction features, force calculation and basic principles of bridge construction of various types of bridges, and have the ability to consult and organize relevant technical data to form a comprehensive analysis of practical problems.	R2
	CLO 2	Be capable of comprehensively applying the design, construction and installation of bridge engineering, and understand the applicability of relevant engineering tools or software to select construction plans or design structures.	R5
Content	***Bridge Engineering (1)*** 1. Overview of Bridge Engineering(4/75) 2. Overall planning and design of bridge(8/75) 3. Roles of the bridge(6/75) 4. bridge deck layout and structure(6/75) 5. Key points ofstructure and design of concrete beam bridge(15/75) 6. Calculation of concrete simple supported beam bridge(10/75) 7. Calculation of concrete continuous system beam bridge(8/75)		

	8. Introduction ofrigid frame bridge (6/75) 9. Girder bridge support (4/75) 10. concrete inclined, curved beam bridge introduction (4/75) 11. Construction of concrete beam bridge (4/75) ***Bridge Engineering (2)*** 1. Overview of the concrete arch bridge (4/75) 2. Arch bridge structure and design (8/75) 3. Arch bridge calculation (10/75) 4. Brief introduction of arch bridge construction methods (4/75) 5. Overall layout of cable-stayed bridge (5/75) 6. Cable-stayed bridge structure (8/75) 7. Cable-stayed bridge calculation (8/75) 8, cable-stayed bridge construction (8/75) 9. Suspension bridge (10/75) 10. Bridge pier (10/75)
Examination forms	final exam, class quiz, after-class assignment, class discussion
Study and examination requirements	1. Usual performance (40%):class quiz(14%), after-class assignment(20%), class discussion(6%); 2. Final exam (60%) : closed book examination 3. After-class assignments should be completed by students independently after each class. 4. To pass the course assessment, students must achieve a minimum of 60 points or a passing grade or above.
Reading list	1. Suggest teaching materials (1) Shao Xudong, Ed. BridgeEngineering (6th Ed.), People's Communications Press, 2023.4. 2. Bibliography (1) Fan Lichu, Ed., Bridge Engineering (Volume 1, Volume 2) (3rd edition), People's Communications Press, 2017.6. (2) Shi Xuefei, Modern Bridge Engineering, People's Communications Press, 2021.4.
Version	23th Dec, 2024

Module designation	***Highway project budget estimate***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Lecturer Zhang Juan		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32, Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Sub-grade pavement engineering, civil engineering construction technology and organization		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying quota, bill of quantities measurement and pricing rules, quota measurement and pricing rules, and the principles of project cost pricing to calculate the construction and installation project cost of highway engineering, land use and demolition compensation cost, other engineering construction costs, and contingency reserve.	R1
	CLO 2	Be able to guide the cost management work at different stages of the entire process of engineering construction projects based on modern engineering cost management theories according to the requirements of the engineering project, and prepare cost documents at different stages.	R2
Content	◆ Introduction（wgt:2/60） ◆ Basis of Highway engineering cost（wgt:16/60） ◆ Highway project cost（wgt: 12/60） ◆ Budget estimates and budgeting（wgt:10/60） ◆ Preparation of bill of Quantities（wgt:12/60） ◆ Preparation of settlement and final accounts（wgt:8/60）		
Examination forms	Closed-book examination , homework		
Study and examination requirements	1. Usual performance (40%): homework (40%); 2. examination (60%) : closed book examination 3.Homework should be completed by students independently after		

	each class. 4.To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Compilation and Management of Highway Engineering Cost(4th Edition), edited by Liu Yan, People’s Communications Press, 2021. 2. Bibliography (1) Highway Engineering Budget Estimate and Bill of Quantities Valuation, edited by Yuan Baoyin and Zhang Ming jian, Harbin Institute of Technology Press, 2018. (2) Highway Engineering Budget and Bill of Quantities Valuation (2nd Edition), edited by Lei Shuhua, People’s Communications Press,2013.
Version	23thDec,2024

Module designation	***Rock mechanics***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Professor Jie Liu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32, including 6 experimental hours. Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Building mechanics; Mechanics of materials; Elastic mechanics; Engineering geology; Theoretical mechanics; Soil mechanics and foundation engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of mastering the basic concepts, mechanical principles and analytical methods of rock mechanics, and be able to apply the measurement methods of rock mechanics parameters, the calculation methods of in-situ stress, elastic-plastic analysis, rock strength theory, rock mass mechanics modeling, etc. to analyze and calculate the bearing capacity of foundation, surrounding rock stress and the stability of rock slope.	R1
	CLO 2	Master the professional knowledge system in this field, have a profound understanding of the core knowledge of rock engineering, and be able to solve the complex rock engineering problems such as rock mass structure analysis and design, rock mass stability check, rock mass structure reinforcement and other related issues in practical engineering.	R2
Content	◆ Introduction (wgt: 3/60) ◆ Rock Engineering Geological Environment (wgt: 10/60) ◆ Physical and Mechanical Properties of Rocks (wgt: 10/60) ◆ Structural Planes and Rock Mechanical Properties (wgt: 10/60) ◆ Engineering Rock Mass Classification (wgt: 5/60) ◆ Rock Strength Theory (wgt: 5/60) ◆ Rock Constitutive Relationship (wgt: 5/60) ◆ Classroom Experiment: Rock Density, Moisture Content, and Water Absorption Rate (wgt: 4/60) ◆ Classroom Experiment: Uniaxial Compressive Strength Determination (wgt: 4/60) ◆ Classroom Experiment: Rock Tensile Strength Test (wgt: 4/60)		

Examination forms	Closed-book examination, classroom test, homework, experiment report
Study and examination requirements	1. Classroom test (5%): homework (15%), experiment report (20%); 2. examination (60%) : closed book examination 3. Classroom test should be completed by students independently after each class; 4. Homework should be completed by students independently after each class. 5. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 6. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Rock Mechanics and Engineering, 2nd Edition, edited by Cai Meifeng, Science Press, 2013. 2. Bibliography (1) Rock Mechanics, 3rd Edition, edited by Xu Zhiying, China Water & Power Press, 1993; (2) Rock Mechanics, 3rd Edition, edited by Zhang Yongxing and Xu Ming, China Architecture & Building Press, 2015; (3) Rock Mass Mechanics, edited by Shen Mingrong and Chen Jianfeng, Tongji University Press, 2006; . (4) Rock Mechanics, 3rd Edition, edited by Zhang Yongxing and Xu Ming, China Architecture & Building Press, 2015; (5) Fundamentals of Rock Mechanics, 4th Edition, by Jaeger JC, Cook NGW, and Zimmerman RW, Blackwell Publishing, 2007. .
Version	9th May 2025

Module designation	***Geotechnical investigation and testing***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Wang Jun		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 60 Contact hours: 32, including 4 experimental hours. Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Soil Mechanics and Foundation Engineering; Rock Mechanics; Engineering Geology		
Module objectives/intended learning outcomes	CLO 1	Through the study of this course, students will understand and master the basic principles, working procedures, research contents, and investigation methods and means of geotechnical engineering investigation. They will also be familiar with the basic investigation methods for common building structures, underground chamber projects, slope projects, foundation pit projects, etc., and be able to conduct geotechnical engineering evaluations.	R2
	CLO 2	According to the tasks of geotechnical engineering investigation and the types of construction projects, they can propose appropriate investigation plans and means. For complex geotechnical engineering problems, they can independently carry out various geotechnical engineering investigations, evaluations, and related calculation and analysis work, taking into account the surrounding environment and the impact on social sustainable development.	R7
Content	◆ Introduction (wgt: 2/60) ◆ Rocks, Rock Masses and Their Engineering Properties (wgt: 4/60) ◆ Classification of Soils and Their Engineering Properties (wgt: 6/60) ◆ Grading, Stages and Basic Requirements of Geotechnical Engineering Investigation (wgt: 6/60) ◆ Engineering Geological Mapping and Investigation (wgt: 4/60) ◆ Engineering Geological Exploration and Sampling (wgt: 6/60) ◆ In-situ Testing of Geotechnical Engineering (wgt: 6/60)		

	◆ Laboratory Tests (wgt: 6/60) ◆ Investigation and Evaluation of Buildings and Structures (wgt: 6/60) ◆ Investigation and Evaluation of Underground Caverns (wgt: 6/60) ◆ Investigation and Evaluation of Slope Engineering (wgt: 4/60) ◆ Analysis and Evaluation of Geotechnical Engineering and Preparation of Investigation Reports (wgt: 4/60)
Examination forms	Closed-book examination, experiment report, homework
Study and examination requirements	1. Usual performance (40%): in-class quizzes(4%)、homework(16%)、course experiment(20%) 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Recommended Textbooks (1) Wang Kuihua (Editor-in-Chief), “Geotechnical Engineering Investigation”, China Architecture & Building Press, 2016 2. Bibliography (1) Xiang Wei, Tang Huiming (Editors-in-Chief), “Geotechnical Engineering Investigation”, 1st Edition, Publisher: Chemical Industry Press, 2015; (2) “Self-compiled Geotechnical Engineering Investigation and Testing Experiment Guidebook”. (3) “GB50021-2001 Code for Geotechnical Engineering Investigation (2009 Edition),” China Architecture & Building Press, 2009 (4) Lin Zongyuan (Editor-in-Chief), “Concise Geotechnical Engineering Investigation and Design Manual”, China Architecture & Building Press, 2003;
Version	23th Dec, 2024

Module designation	***Underground structures***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate Professor Duan Jian		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methodsetc.		
Workload (incl. contact hours, self-study hours)	Total workload:90 Contact hours: 48. Self-Study Hours:42		
Credit points	3		
Required and recommended prerequisites for joining the module	Introduction of Theoretical mechanics, Mechanics of materials, soil mechanics and Foundation Engineering, rock mechanics, Principles of design of concrete structures		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the theories of earth pressure and surrounding rock pressure, underground building structure design methods, and combining mechanical knowledge and concrete reinforcement calculation principles, etc., to conduct feasibility analysis of various underground building structure schemes based on engineering geological conditions, hydrogeological conditions and the actual situation of the surrounding environment, and carry out typical structure internal force calculation, reinforcement calculation, and various engineering safety index verification, etc.	R2
	CLO 2	Be capable of applying the basic methods, principles and related design software of underground building structure design to conduct various underground building structure designs, and understand the superiority and limitations of design software in dealing with complex engineering problems, analyze specific problems specifically, and aim to propose reasonable, economical and safe underground structure types.	R5
Content	◆ Load of underground building structure（wgt: 2/90） ◆ Beam theory of elastic foundation（wgt: 8/90） ◆ Calculation method of underground building structure（wgt: 6/90） ◆ Reliability theory of underground building structure（wgt: 6/90） ◆ Shallow buried structure（wgt: 6/90）		

	◆ Supplementary underground structure（wgt: 6/90） ◆ Caisson and caisson structure（wgt: 6/90） ◆ Underground diaphragm wall structure（wgt: 6/90） ◆ Shield tunnel structure Lining form and structure（wgt: 6/90） ◆ Immersed tube structure（wgt: 6/90） ◆ Retaining structure of foundation pit（wgt: 8/90） ◆ Pipe jacking, tube curtain and box culvert structure（wgt: 6/90） ◆ Integral tunnel structure（wgt: 6/90） ◆ Shotcrete anchor support（wgt: 6/90） ◆ Special structure（wgt: 6/90）
Examination forms	Closed-book examination, homework, course papers, classroom tests
Study and examination requirements	1. Regular grades (40%) : homework (20%), course papers (10%),classroom tests (10%); 2. Exam (60%) : Closed book exam. 3. Homework and course papers should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Zhu Hehua. Underground Building Structure (3rd Ed.). Publishing House: China Building and Construction Press, 2016. 2. Bibliography (1) Wang Shuli. Structural Design of Underground Buildings (3rd Edition). Press: Tsinghua University Press, 2015. (2) Code for Design of Concrete Structures (GB50010- 2010) (2015 edition). (3) Code for Design of Building Foundation (GB50007- 2011). (4) Technical Regulations for Building Foundation pit Support (JGJ120-2012). (5) Technical Standard for Monitoring of Building Foundation Pit Engineering (GB50497-2019).
Version	23th Dec, 2024

Module designation	***Slope engineering and foundation treatment***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate professor Shengnan Li		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:75 Contact hours: 40. Self-Study Hours:35		
Credit points	2.5		
Required and recommended prerequisites for joining the module	Engineering geology、Soil mechanics and foundation engineering、Rock mechanics		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the basic methods and principles of slope engineering and foundation treatment, taking into account the influences of society, health, safety, law, culture and environment comprehensively, and proposing reasonable, economic and safe slope support and foundation treatment schemes.	R3
	CLO 2	Be able to apply the theories of soil mechanics and rock mechanics, design methods of slope engineering and foundation treatment, combined with the theoretical basis of mechanics knowledge and concrete structure design principles, based on engineering geological conditions, hydrogeological conditions and the actual situation of the surrounding environment, to conduct various slope stability evaluations, feasibility analysis of support measures and foundation treatment schemes, and carry out calculations of slope safety stability coefficients, sliding forces/unbalanced thrusts, internal forces and reinforcement calculations of support structures, bearing capacity calculations of composite foundations, and verifications of various engineering safety indicators.	R6
Content	◆ Overview of Slope Engineering (wgt: 6/75) ◆ Types, Characteristics and Mechanisms of Slope Failure (wgt: 8/75) ◆ Geological Investigation Methods for Slope Design (wgt: 8/75)		

	◆ Slope Stability Analysis and Evaluation (wgt: 8/75) ◆ Slope Protection Techniques and Reinforcement Methods (wgt: 10/75) ◆ Basic Methods of Slope Design (wgt: 10/75) ◆ Classification and Design Process of Foundation Treatment (wgt: 10/75) ◆ Composite Foundation Treatment (wgt: 15/75)
Examination forms	Closed-book examination, homework, in-class quizzes
Study and examination requirements	1. Performance（40%）：homework（20%）、in-class quizzes（20%）; 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. in-class quizzes: Complete within the prescribed time; correct basic concepts, clear logic; accurate calculation; standard expression. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Ye Guanbao (Editor-in-Chief). Foundation Treatment, 3rd Edition. Publisher: China Architecture & Building Press, 2009. 2. Bibliography (1) Li Jianlin (Editor-in-Chief). Slope Engineering, 1st Edition. Publisher: Chongqing University Press, 2013. (2) Gong Xiaonan (Author). Foundation Treatment, 2nd Edition. Publisher: China Architecture & Building Press, 2017.
Version	23th Dec, 2024

Module designation	***Subway and Tunnel Engineering***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Peng Di		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 90h, Contact hours: 48h, Self-Study Hours: 42h.		
Credit points	3		
Required and recommended prerequisites for joining the module	Engineering Geology, Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Rock Mechanics, Underground Building Structures		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the fundamental methods and principles of metro and tunnel engineering design, and analyze and design complex engineering problems of tunnel engineering by referring to literature, norms, standards or atlases and other materials to reach effective conclusions.	R2
Content	◆ Introduction（wgt: 2/90） ◆ Subway line design and station building design（wgt: 10/90） ◆ Overall design of railway tunnel and highway tunnel（wgt: 10/90） ◆ Surrounding rock classification and surrounding rock pressure（wgt: 14/90） ◆ Tunnel structure composition and construction（wgt: 8/90） ◆ Underground structure design and calculation methods（wgt: 14/90） ◆ Subway tunnel construction technology（wgt: 16/90） ◆ Bad geological tunnel construction（wgt:8/90） ◆ Design and maintenance of subway tunnel operating environment（wgt: 8/90）		
Examination forms	Closed-book examination, Short Academic Paper, homework		
Study and examination requirements	1. Usual performance (40%): homework (20%), Short Academic Paper (20%); 2. examination (60%) : closed book examination 3. Homework and short academic paper should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials		

	Tunnel Engineering[M], Wang Cheng (Ed.), People's Communications Press, 2019.6 2. Bibliography (1) Tunnel Engineering[M], edited by Zhu Yongquan, China Railway Publishing House, 2015.6. (2) Tunnel Engineering[M], Song Yuxiang, Ed., China Architecture and Construction Press, 2018.1. (3) Subway and Light Rail Engineering[M], Zeng Runzhong, Ed., People's Transportation Press, 2016.6 (4) Tunnel Engineering[M], Chen Qiunan, China Machine Press, 2016.12. (5) Subway and Tunnel Engineering[M], LiXinle, eds., Tsinghua University Press, 2018.8.
Version	23th Dec, 2024

Module designation	***Estimation and Budgeting for Underground Engineering***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Duan Jian		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:60 Contact hours: 32 Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Engineering graphing, Underground building structure, Slope engineering and foundation treatment, Engineering economics and project management, Civil engineering construction technology and organization		
Module objectives/intended learning outcomes	CLO 1	Be capable of systematically mastering the basic theoretical knowledge of underground engineering cost estimation and budgeting, as well as the calculation methods and budget preparation approaches for the project cost of underground engineering construction projects.	R11
	CLO 2	Be able to, in response to various requirements for underground engineering construction projects, apply the knowledge of underground engineering cost estimation and budgeting, select appropriate budget preparation methods, and solve problems related to project cost and project management.	R11
Content	◆ Introduction (wgt: 2/60) ◆ Quota for Underground Engineering (wgt: 4/60) ◆ Budget Cost of Underground Engineering (wgt: 6/60) ◆ Preparation of Construction Drawing Budget for Underground Engineering (wgt: 12/60) ◆ Construction Budget for Underground Engineering (wgt: 12/60) ◆ Review of Budget and Final Account for Underground Engineering (wgt: 4/60) ◆ Method of Compiling Bill of Quantities for Underground Engineering (wgt: 6/60) ◆ Valuation Method Based on Bill of Quantities for Underground Engineering (wgt: 8/60) ◆ Implementation Measures for the Pilot Program of Replacing Business Tax with Value-Added Tax (wgt: 4/60) ◆ Implementation Standards for Replacing Business Tax with		

	Value-Added Tax in Hunan Province (wgt: 2/60)
Examination forms	Closed-book examination, homework
Study and examination requirements	1. Usual performance (40%): homework 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Zhou Bin, Ma Haibin and Liu Jie (eds.), Underground Engineering Estimation and Budgeting, People’s Communications Press, 2017. 2. Bibliography (1) Song Min, Zhong Xin, and Feng Lijie (eds.), Engineering Measurement and Valuation (2nd Edition), Wuhan University Press, 2021. (2) Guo Shurong (ed.), Engineering Estimate and Budget (2nd Edition), China Electric Power Press, 2015. (3) Zhang Jinming (ed.), Construction Drawing Budget, China Electric Power Press, 2015.
Version	23th Dec, 2024

Module designation	***Overall Design Method of Structural Plane***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Lecturer Zhou Kejing		
Language	Chinese		
Relation to curriculum	Elective / Specialization		
Teaching methods	Teacher-Centered Methods，Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:37.5 Contact hours: 24, including 4 experimental hours. Self-Study Hours:13.5		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Drawing Geometry B; Graphing of Engineering ; Design Principle of Concrete Structure		
Module objectives/intended learning outcomes	CLO 1	Be familiar with the expression method, drawing rules and standard structures of the plane integral of concrete structure construction drawings.	R2
	CLO 2	Possess the ability to read and design the plane integral construction drawings of concrete structures.	R2
	CLO 3	Have the ability to perform steel bar detailing and calculate the steel bar quantities of various common concrete structural components based on the standard structures in the plane integral specifications.	R2
Content	◆ Basic knowledge of flat method design (wgt: 1.5/37.5) ◆ Reinforcement calculation for column flat method construction drawings (wgt: 4/37.5) ◆ Construction drawing design and reinforcement calculation for beams (wgt: 4/37.5) ◆ Construction drawing design and reinforcement calculation for shear walls (wgt: 6/37.5) ◆ Construction drawing design and reinforcement calculation for cast-in-place concrete floor and roof slabs (wgt: 6/37.5) ◆ Construction drawing design and reinforcement calculation for independent, strip, raft and pile foundations (wgt: 4/37.5) ◆ Construction drawing design and reinforcement calculation for cast-in-place concrete slab stairs (wgt: 4/37.5) ◆ Finite element simulation (wgt: 8/37.5)		
Examination forms	Closed-book examination, experiment report, homework, in-class quizzes		
Study and examination	1. Usual performance (50%): homework (20%), experiment report		

requirements	(20%), in-class quizzes(10%); 2. examination (50%) : closed book examination. 3. Homework should be completed by students independently after each class. 4. The experiment report requires each student to independently simulate a specific four-layer framework structure project. 5. In-class quizzes must be completed within the prescribed time, with correct calculations and standardized expressions. 6. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials “Plane Integral Design Method of Building Structures”, edited by Peng Liying, Machinery Industry Press, 2010. 2. Bibliography (1) “Structural Flat Method Design and Steel Bar Calculation”, edited by Peng Liying and Liu Kongling, Machinery Industry Press, 2021. (2) “Concrete Structure Construction Drawing Planar Overall Representation Method - Drawing Rules and Construction Details” 22G101-1, 22G101-2, 22G101-3, published by China Architecture Design & Research Group and China Standards Press, 2022.
Version	23th Dec, 2024

Module designation	***Specialized English***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Wei Chen		
Language	English		
Relation to curriculum	Elective / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:37.5 Contact hours: 24, including 0 experimental hours. Self-Study Hours:13.5		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Theoretical Mechanics; Mechanics of Materials; Structural Mechanics; Building Materials; Elasticity Mechanics		
Module objectives/intended learning outcomes	CLO 1	Through the study of this course, students' reading comprehension and comprehensive analysis abilities will be further enhanced, they will become familiar with professional vocabulary, broaden their horizons and thinking, understand the style of scientific and technological texts, and further improve their ability to use English to meet the increasing demands of international scientific and technological exchanges and cooperation. Students will master civil engineering professional vocabulary and related professional knowledge proficiently, and be capable of listening, speaking and writing professional papers. They will also be able to use professional English vocabulary in the field of civil engineering for basic communication and exchange.	R10
Content	◆ Civil Engineering（wgt: 3/37.5） ◆ Building Materials（wgt: 3/37.5） ◆ Structural Load（wgt: 5/37.5） ◆ Structural Design（wgt: 5/37.5） ◆ Reinforced Concrete（wgt: 5/37.5） ◆ Prestressed Concrete（wgt: 4.5/37.5） ◆ Steel Structures（wgt: 3/37.5） ◆ Soil Mechanics（wgt: 3/37.5） ◆ Foundations（wgt: 3/37.5） ◆ Construction（wgt: 3/37.5）		
Examination forms	Open-book examination, classroom test, homework, usual performance		

Study and examination requirements	1. Classroom test (10%): homework (20%), experiment report (20%); 2. Examination (50%) : open-book examination; 3. Classroom test should be completed by students independently after each class; 4. Homework should be completed by students independently after each class; 5. Attend classes punctually, actively engage in discussions, complete in-class tasks diligently, and demonstrate proactive learning attitudes along with sound academic conduct. 6. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials (1) Professional English for Civil Engineering, edited by Tao Yan and Wang Wenxuan, Shanghai Jiao Tong University Press, 2018. (2) Professional English for Civil Engineering (Second Edition), edited by Xia Dongtao and Xiao Benlin, China Architecture & Building Press, 2023. (3) Professional English for Civil Engineering, edited by Zheng Jiashun, Southeast University Press, 2021. 2. Bibliography (1) Civil Engineering English, edited by Zhao Tuanjie and Tian Yanyan, Capital University of Economics and Business Press, 2020; (2) New Edition of Professional English for Civil Engineering, 3rd Edition, edited by Qian Yongmei, Chemical Industry Press, 2019; (3) Professional English for Civil Engineering, edited by Lu Zheng, Machinery Industry Press, 2018.
Version	9th May 2025

Module designation	***BIM and Structural Design Software***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Dr. Huihua Peng		
Language	Chinese		
Relation to curriculum	elective / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:50 Contact hours: 32, including 16 experimental hours. Self-Study Hours:18		
Credit points	3		
Required and recommended prerequisites for joining the module	Drawing geometry 、Engineering Graphing、Fundamentals of CAD technology、Building Architecture、Road survey and design、Soil mechanics and foundation engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of self-study through online resources, learn cutting-edge technologies such as BIM+, participate in BIM-related competitions for college students, grasp the current situation and development trends of the industry; understand the basic knowledge, system architecture and related standards of BIM, be familiar with BIM-related software, and possess the ability to solve practical engineering problems using BIM software.	R5
Content	◆ Part One: Overview of BIM (wgt: 5/50) ◆ Part Two: Fundamentals of BIM Modeling (wgt: 10/50) ◆ Part Two: BIM Application Expansion (wgt: 10/50) ◆ Part Three: Comprehensive BIM Case Practice (Hands-on Computer Practice) (wgt: 25/50)		
Examination forms	BIM final assessment work, homework, lab report (or outcome file), course paper		
Study and examination requirements	1. Usual performance (50%): homework (20%), experiment report (20%), Course paper(10%); 2. examination (50%) : BIM works 3. Homework should be completed by students independently after		

	each class. 4.Course papers and laboratory reports (or outcome documents) should be completed independently by each student. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Recommended Textbook “Fundamentals of BIM Technology Application”, edited by Li Ming, Yin Ganliang, and Li Xin, Machinery Industry Press, 2022. 2. Bibliography (1) “BIM Modeling and Application”, edited by Li Meng, Machinery Industry Press, 2020. (2) “BIM Modeling and Application Technology”, edited by Lu Lihua and Sun Haixia, China Architecture & Building Press, 2018. (3) BIM Handbook (Second Edition), edited by Chuck Eastman et al., China Architecture & Building Press, 2016. 3. Other Learning Resources (1) “Xuexi Qiangguo” Learning Platform. (2) Xinhua Ideological and Political Education: https://xhsz.news.cn/. (3) Selected Cases of Ideological and Political Education in Courses, edited by Shen Chi, Zhejiang University Press, 2020. (4) BIM Modeling Foundation and Application (Learning Through Platform, taught by Peng Huihua): https://mooc1-1.chaoxing.com/course-ans/ps/232528041. (5) Easy Learning of BIM (Jiangxi University of Finance and Economics MOOC):https://www.icourse163.org/learn/JXUFE-1206300836?tid=1466979456#/learn/announce。
Version	23th Dec, 2024

Module designation	***Engineering accident analysis and engineering safety***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Professor Luo Zhang		
Language	Chinese		
Relation to curriculum	Elective course		
Teaching methods	Teacher-Centered Methods，Interactive Methods.		
Workload (incl. contact hours, self-study hours)	Total workload:45 Contact hours: 24 Self-Study Hours:21		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Structural mechanics; Soil mechanics and foundation engineering; Principles of concrete structure design; Construction and organization of civil engineering.		
Module objectives/intended learning outcomes	CLO 1	Be capable of mastering and applying professional knowledge and basic principles of civil engineering to scientifically analyze and handle safety issues in construction projects.	R1
	CLO 2	Be able to master and apply knowledge of safety technology and safety management to prevent engineering accidents, scientifically analyze and handle engineering diseases, and possess general capabilities for early warning and analyzing complex engineering safety problems.	R3
Content	◆ Progress in Geotechnical Engineering Accident Research（wgt: 2/45） ◆ Geotechnical engineering accidents and their handling（wgt: 1/45） ◆ Analysis and treatment of the harm of expansion to building construction（wgt: 1/45） ◆ Hazard analysis and treatment of collapsible loess, soft soil and permafrost to building engineering（wgt: 2/45） ◆ Analysis and treatment of foundation pit engineering accident cases（wgt: 2/45） ◆ Analysis and treatment of common diseases in concrete engineering（wgt: 2/45） ◆ Analysis and treatment of concrete cracks（wgt: 2/45） ◆ Analysis of Concrete Engineering Accident Casest（wgt: 1/45） ◆ Analysis and treatment of masonry structure building engineering accidents（wgt: 1/45） ◆ Analysis and treatment of steel structure engineering accidents（wgt: 1/45）		

	◆ Accident Analysis and Treatment of Decoration Engineering（wgt: 1/45） ◆ Reinforcement technology of civil engineering structure（wgt: 2/45） ◆ Case analysis of civil engineering accidents（wgt: 1/45） ◆ Prevention and treatment methods of civil engineering accidents（wgt: 1/45） ◆ Knowledge of Safety Production Management in Civil Engineering（wgt: 2/45）
Examination forms	Closed-book examination, homework
Study and examination requirements	2. Usual performance (40%):Classroom interaction(10%),Homework and tests (20%), Topic discussion (10%) 2. examination (60%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Analysis of Civil Engineering Accidents and Safety Technology (1st Edition). [M].Luo Zhang. Wuhan University of Technology Press, 2016. 2. Bibliography (1) Engineering accident analysis and engineering safety. [M]Xie Zhengxun, Luo Zhang, Li Wensheng, et al. Peking Press, 2016. (2) Introduction to Disaster Prevention and Reduction in Civil Engineering, [M]. Zhou Yun, Li Wu Ping, etc., Higher Education, 2005.
Version	23th Dec, 2024

Module designation	***Subway and Tunnel Engineering***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Peng Di		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 90h, Contact hours: 48h, Self-Study Hours: 42h.		
Credit points	3		
Required and recommended prerequisites for joining the module	Engineering Geology, Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Rock Mechanics, Underground Building Structures		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the fundamental methods and principles of metro and tunnel engineering design, and analyze and design complex engineering problems of tunnel engineering by referring to literature, norms, standards or atlases and other materials to reach effective conclusions.	R2
Content	◆ Introduction（wgt: 2/90） ◆ Subway line design and station building design（wgt: 10/90） ◆ Overall design of railway tunnel and highway tunnel（wgt: 10/90） ◆ Surrounding rock classification and surrounding rock pressure（wgt: 14/90） ◆ Tunnel structure composition and construction（wgt: 8/90） ◆ Underground structure design and calculation methods（wgt: 14/90） ◆ Subway tunnel construction technology（wgt: 16/90） ◆ Bad geological tunnel construction（wgt:8/90） ◆ Design and maintenance of subway tunnel operating environment（wgt: 8/90）		
Examination forms	Closed-book examination, Short Academic Paper, homework		
Study and examination requirements	1. Usual performance (40%): homework (20%), Short Academic Paper (20%); 2. examination (60%) : closed book examination 3. Homework and short academic paper should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials		

	Tunnel Engineering[M], Wang Cheng (Ed.), People's Communications Press, 2019.6 2. Bibliography (1) Tunnel Engineering[M], edited by Zhu Yongquan, China Railway Publishing House, 2015.6. (2) Tunnel Engineering[M], Song Yuxiang, Ed., China Architecture and Construction Press, 2018.1. (3) Subway and Light Rail Engineering[M], Zeng Runzhong, Ed., People's Transportation Press, 2016.6 (4) Tunnel Engineering[M], Chen Qiunan, China Machine Press, 2016.12. (5) Subway and Tunnel Engineering[M], LiXinle, eds., Tsinghua University Press, 2018.8.
Version	23th Dec, 2024

Module designation	***Engineering Structure Test and Inspection***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Dr. Huihua Peng		
Language	Chinese		
Relation to curriculum	elective / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:37.5 Contact hours: 24, including 8 experimental hours. Self-Study Hours: 13.5		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Materials of Civil Engineering, Principles of Concrete Structure Design, Principles of Steel Structure Design, Soil Mechanics and Foundation Engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying modern technologies and instruments such as resistance strain gauges, conventional structural mechanics testing equipment, rebound hammers, and crack observation devices to inspect common structures in engineering, laying a foundation for learning professional courses and engaging in professional work, and initially possess the ability to analyze and solve practical engineering problems.	R4
	CLO 2	Be capable of flexibly applying various civil engineering structure inspection, identification techniques and reinforcement and renovation methods in accordance with the requirements of design, construction and scientific research tasks, and solve problems such as engineering structure defects, possessing the ability to analyze and solve complex engineering problems in the field of civil engineering.	R5
Content	◆ I. Basic Overview of Engineering Structure Testing, Inspection and Reinforcement (wgt: 2.5/37.5) ◆ II. Foundation Inspection and Reinforcement (wgt: 4/37.5) ◆ III. Masonry Structure Inspection and Reinforcement (wgt: 4/37.5) ◆ IV. Reinforced Concrete Structure Inspection and Reinforcement (wgt: 6/37.5) ◆ V. Timber Structure Inspection and Reinforcement (wgt: 4/37.5) ◆ VI. Steel Structure Inspection and Reinforcement (wgt: 4/37.5) ◆ VII. Structural Uprighting and Translation (wgt: 4/37.5) ◆ VIII. Bridge Inspection and Reinforcement (wgt: 4/37.5)		

	◆ IX. Experiment (wgt: 15/37.5)
Examination forms	Closed-book examination, experiment report, homework, in-class test
Study and examination requirements	1. Usual performance (50%): homework (20%), experiment report (20%), in-class test（10%）; 2. examination (50%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Recommended Textbook Detection and Reinforcement of Engineering Structures, edited by Zhang Zhiguo, Deng Nianchun, and Wei Huanwei, Machinery Industry Press, 2022. 2. Bibliography (1) Detection and Reinforcement of Engineering Structures (Third Edition), edited by Song Yu and Lai Chunjing, Science Press, 2016. (2) Structural Testing and Inspection in Civil Engineering (Second Edition), edited by Liu Ming, Higher Education Press, 2021. (3) Inspection, Appraisal and Reinforcement of Civil Engineering Structures, edited by Lyu Henglin, China Architecture & Building Press, 2019. (4) Testing and Inspection of Building Structures, edited by Yi Weijian et al., China Architecture & Building Press, 2016. (5) Structural Testing of Buildings, edited by Liu Jie et al., Machinery Industry Press, 2012. (6) Testing and Inspection of Building Structures (Second Edition), edited by Yao Zhengang et al., Tongji University Press, 2009. 3. Other Learning Resources (1) “Xuexi Qiangguo” Learning Platform. (2) Xinhua Ideological and Political Education: https://xhsz.news.cn/. (3) Engineering Structure Testing (MOOC of Beijing Jiaotong University):https://www.icourse163.org/course/NJTU-1205723809?from=searchPage&outVendor=zw_mooc_pcssjg。
Version	23th Dec, 2024

Module designation	***Geological disasters prevention and cure***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Li Shengnan Associate Professor		
Language	Chinese		
Relation to curriculum	elective / Specialization		
Teaching methods	Teacher-Centered Methods、Interactive Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 37.5 Contact hours: 24, Self-Study Hours:13.5		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Rock mechanics、 Slope Engineering and Foundation Treatment、Underground Structures、Principles of Concrete Structure Design		
Module objectives/intended learning outcomes	CLO 1	Be capable of evaluating the impact of engineering practices addressing complex engineering problems in the field of civil engineering on environmental and social sustainable development.	R1
Content	◆ Introduction (wgt: 4.5/37.5) ◆ Unstable Slopes and Their Control (wgt: 7/37.5) ◆ Landslides and Their Prevention and Control (wgt: 7/37.5) ◆ Rockfalls and Their Prevention and Control (wgt: 7/37.5) ◆ Debris Flows and Their Prevention and Control (wgt: 7/37.5) ◆ Ground Subsidence and Its Prevention and Control (wgt: 7/37.5) ◆ Ground Settlement and Its Prevention and Control (wgt: 7/37.5)		
Examination forms	Open-book exam、In-class interaction、Discussion、homework		
Study and examination requirements	1.In-class interaction(15%)、Discussion(15%)、homework(20%) 2. Final exam (50%) : Open-book exam 3. Homework should be completed by students independently. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials Jian Wenbin and Wu Zhenxiang (eds.), Geological Disasters and Their Prevention and Control, People’s Communications Press Co., Ltd., 2017. 2. Bibliography (1) Xu Guangli and Ma Xiaohan (eds.), Reference Atlas for Design of Geological Hazard Control Engineering, China University of Geosciences Press, 2013. (2) Men Yuming (ed.), Design of Geological Hazard Control Engineering, Metallurgical Industry Press, 2011. (3) Jiang Zhongxin (ed.), Outline of Design for Geological Hazard		

	Control Engineering in Mountainous Areas after Earthquakes, Southwest Jiaotong University Press, 2013. (4) Technical Code for Design of Building Slope Engineering GB 50330-2013 (5) Technical Code for Rock and Soil Anchoring and Shotcrete Support Engineering GB50086-2015 (6) Code for Geotechnical Investigation GB50021-2009 (7) Code for Design of Concrete Structures GB 50010-2010 (8) Code for Design of Masonry Structures GB50003-2011 (9) Technical Code for Design and Construction of Landslide Control Engineering DZ/T 0219-2006 (10) Technical Code for Design of Geological Hazard Control Engineering DB50/5029-2004
Version	23th Dec, 2024

Module designation	***Prefabricated building***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate Professor Xiao Alin		
Language	Chinese		
Relation to curriculum	elective / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:37.5 Contact hours:24. Self-Study Hours:13.5		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Civil Engineering Materials, Principles of Concrete Structure Design, Concrete and Masonry Structure Design, Construction Technology and Organization in Civil Engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of rationally choosing the prefabricated concrete structure system in accordance with the design requirements, understand the advantages, disadvantages and applicability of each structure system, and master proficiently the design and construction techniques and methods of prefabricated concrete composite floor slabs and frame structures.	R1
	CLO 2	Be familiar with the commonly used building materials, new processes and technologies in prefabricated concrete structures, and master proficiently the principles of new methods and technologies and their applications in prefabricated building design. Understand the relationship between prefabricated buildings and building industrialization, as well as the impact of developing prefabricated buildings on environmental and social sustainable development.	R3
Content	◆ Commonly Used Materials for Prefabricated Concrete Structures ◆ Basic Provisions for Prefabricated Concrete Structural Systems and Structural Design ◆ Design of Prefabricated Reinforced Concrete Composite Floor Slabs ◆ Design of Prefabricated Concrete Frame Structures ◆ Design of Precast Concrete Components ◆ Production and Intelligent Manufacturing of Precast Concrete Components ◆ Construction Techniques for Prefabricated Concrete Buildings ◆ Construction Organization for Prefabricated Concrete Buildings ◆ Application of BIM Technology in Prefabricated Concrete		

	Buildings
Examination forms	Closed-book examination, homework
Study and examination requirements	1. Usual score (40%) : homework (20%), class performance (20%); 2. examination (60%) : closed book test
Reading list	1. Suggest teaching materials Prefabricated Concrete Structures[M].Huang Liang, Feng Peng, Zhang Jian. China Architecture & Building Press, May 2020. 2. Bibliography (1) Construction Technology and Management of Prefabricated Concrete Structures by Chen Weiping. China Electric Power Press, November 2018. (2) Construction Technology of Prefabricated Concrete Structures by Wang Xin, Liu Xiaochen. China Architecture & Building Press, January 2019. (3) Technical Specification for Prefabricated Concrete Structures (JGJ 1-2014), China Architecture & Building Press, August 2014. (4) Technical Standard for Prefabricated Concrete Buildings (GB/T 51231-2016), China Architecture & Building Press, May 2017. (5) Code for Design of Concrete Structures (GB50010-2010), China Architecture & Building Press, September 2015.
Version	23th Dec, 2024

Module designation	***Hydromechanics***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Lecturer Xiao Chunyun		
Language	Chinese		
Relation to curriculum	elective / Specialization		
Teaching methods	Teacher-Centered Methods，Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:37.5 Contact hours: 24, including 4 experimental hours. Self-Study Hours:13.5		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Introduction of Civil Engineering; Advanced Mathematics ; Theoretical Mechanics; Material Mechanics;		
Module objectives/intended learning outcomes	CLO 1	Enable students to apply the general laws of fluid motion and relevant fundamental concepts, principles and methods of mechanics, and be capable of designing basic fluid mechanics experiments using similarity theory. Pay attention to cultivating students' ability to raise and solve problems, laying a foundation for their study of civil engineering professional courses, professional technical work or scientific research.	R1
Content	◆ Introduction（wgt: 2/37.5） ◆ Hydrostatics (wgt: 4/37.5) ◆ Fluid Kinematics (wgt: 4/37.5) ◆ Fundamentals of Fluid Dynamics (wgt: 4/37.5) ◆ Irrotational and Rotational Flow in Two Dimensions (wgt: 4/37.5) ◆ Dimensional Analysis and Similarity Principles (wgt: 4/37.5) ◆ Flow Resistance and Head Loss (wgt: 8/37.5) ◆ Open Channel Flow (wgt: 5.5/37.5)		
Examination forms	Closed-book examination, In-class discussion； homework； In-class experiment		
Study and examination requirements	1. Usual performance (50%):In-class discussion(15%) ; homework(15%)； In-class experiment(20%) 2. examination (50%) : closed book examination 3. Homework should be completed by students independently after each class. 4. The experiment report is a collaborative group effort, but it must		

	clearly outline the individual responsibilities and contributions of each member. 5. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Recommended Textbook: [1] Liu Hennian et al. (eds.), Fluid Mechanics (3rd Edition), China Architecture & Building Press, 2016. 2. Bibliography: [1] Yan Zongyi (ed.), Fluid Mechanics, Higher Education Press, 2015. [2] Wang Hongwei (ed.), My Understanding of Fluid Mechanics, National Defense Industry Press, June 2022. [3] Cai Zengji, Long Tianyu (eds.), Fluid Mechanics, Pumps and Fans (5th Edition), China Architecture & Building Press, 2018. 3. Other Learning Resources: [1] National Excellent Course Resources Network [2] XuetangX MOOC Platform [3] Architectural Cloud Course [4] “Xuexi Qiangguo” Learning Platform [5] WeChat Official Account of People’s Daily [6] Shen Chi (ed.), Selection of Typical Cases of Curriculum-based Ideological and Political Education [M], Zhejiang University Press, 2020.
Version	23th Dec, 2024

Module designation	***Construction Engineering Economy***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Associate Professor Guokun Liu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods		
Workload (incl. contact hours, self-study hours)	Total workload: 24 Contact hours: 24		
Credit points	1.5		
Required and recommended prerequisites for joining the module	Advanced Mathematics, Probability Theory, Construction Regulations, Project Management		
Module objectives/intended learning outcomes	CLO 1	Students are required to have a basic knowledge of engineering economics, understand the fundamental principles and procedures of engineering economic analysis, master the elements of engineering economics, grasp the theory of the time value of money, and possess the basic thinking of economics.	R1
	CLO 2	Students are required to master the methods for evaluating the economic effectiveness of projects, the methods for analyzing the uncertainty of project plans, and the basic methods of value engineering.	R3
Content	◆ Introduction （wgt: 2/24） ◆ Time value of money （wgt: 2/24） ◆ Economic Evaluation Indicators for Engineering Projects （wgt: 2/24） ◆ Comparison and Optimization of Investment Plans （wgt: 2/24） ◆ Uncertainty Analysis （wgt: 2/24） ◆ Value Engineering （wgt: 2/24） ◆ Construction project bidding and contract management （wgt: 4/24） ◆ Construction project safety control and on-site management （wgt: 2/24） ◆ Construction project progress control （wgt: 2/24） ◆ Construction project quality and cost control （wgt: 4/24）		

Examination forms	Closed-book examination, Test report, homework
Study and examination requirements	1. Usual performance (50%): homework (30%), experiment report (10%);Classroom quizzes (10%) 2. examination (50%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Construction Engineering Economics, edited by Meng Junna, Wuhan University of Technology Press, July 2014.2. Bibliography (1) National First Class Constructor Qualification Examination Book Writing Committee, “Construction Engineering Economics,” China Architecture&Building Press, 2021. (2) Engineering Project Management, edited by Ding Shizhao, published by China Architecture&Building Press in 2014 (3) Construction Project Management, 3rd edition, edited by Tian Jinxin, Higher Education Press, 2015.
Version	23th Dec, 2024

Module designation	***Construction regulations***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Professor Zhang Luo		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Teacher-Centered Methods，Interactive Methods		
Workload (incl. contact hours, self-study hours)	Total workload: 25 Contact hours: 16，self-study 9		
Credit points	1		
Required and recommended prerequisites for joining the module	Engineering graphing, Building architecture, Soil mechanics and foundation, Civil engineering construction and organization, Project management, Engineering economics, etc		
Module objectives/intended learning outcomes	CLO 1	Be capable of evaluating the extent to which engineering practice affects society, health, safety, law and culture, and understand the responsibilities that should be assumed.	R1
Content	◆ Basic knowledge of construction engineering regulations（wgt: 2/25） ◆ Interpretation of the Building Law of the People's Republic of China（wgt: 2/25） ◆ Interpretation of the Urban and Rural Planning Law of the People's Republic of China（wgt: 2/25） ◆ Interpretation of the Urban Real Estate Management Law of the People's Republic of China（wgt: 2/25） ◆ Legal system for bidding and tendering of construction projects（wgt: 2/25） ◆ Legal System for Survey and Design of Construction Projects（wgt: 2/25） ◆ Construction Engineering Supervision Law System（wgt: 3/25） ◆ Legal System for Quality Management of Construction Projects（wgt: 2/25） ◆ Legal System for Safety Production Management of Construction Projects（wgt: 2/25） ◆ Legal System for Contract Management of Construction Projects（wgt: 2/25） ◆ Legal resolution channels and litigation system for		

	construction project disputes（wgt: 2/25） ◆ Legal system for environmental protection and energy conservation in construction projects（wgt: 2/25）
Examination forms	Closed-book examination, Test report, homework
Study and examination requirements	1. Usual performance (50%): Homework (30%), Test report (10%);Classroom quizzes (10%) 2. Examination (50%) : closed book examination 3. Homework should be completed by students independently after each class. 4. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Construction Regulations “Northwest Polytechnical University Press, May 2022. (1) Engineering Construction Regulations, edited by Yang Weijun, China Building Materials Industry Press, August 2015 (2) Construction Engineering Regulations and Related Knowledge (2023 Edition), edited by Ding Shizhao, published by Architecture Industry Press, May 2023
Version	23th Dec, 2024

Module designation	***Acquaintanceship Practice***		
Semester(s) in which the module is taught	2		
Person responsible for the module	Professor Luo Hongguang		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Half a year in school		
Module objectives/intended learning outcomes	CLO 1	Be capable of understanding the impact of engineering practices for complex civil engineering problems on the environment and social sustainable development, and establish the awareness of environmental protection and social sustainable development.	R1
Content	◆ Building engineering technology,Highway engineering technology,Municipal engineering technology（wgt: 22/50）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Practice journal (40%),Question and Answer session (20%),internship report (40%) 2. Practicum should be completed by students independently. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials Yuan Ao. Civil Engineering Professional Understanding Practice Guide, Southwest Jiaotong University Press, 2014. 2. Bibliography Industry Design and Construction Code.		
Version	23th Dec, 2024		

Module designation	***Engineering Graphing Course Design***		
Semester(s) in which the module is taught	3		
Person responsible for the module	Senior Engineer XiaoJiangBin		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Introduction of civil engineering、Drawing geometry 、Engineering Graphing		
Module objectives/intended learning outcomes	CLO 1	Be capable of accurately and effectively expressing complex civil engineering problems through means such as drawings, charts and words.	R2
	CLO 2	Be capable of effectively communicating and exchanging ideas with colleagues in the civil engineering field and the general public regarding complex engineering problems in this domain through oral, written, and graphical means, and understand the differences in communication with colleagues and the public.	R10
Content	◆ - Reading architectural engineering drawings (wgt: 10/50) ◆ - Drawing concrete structure component diagrams (wgt: 10/50) ◆ - Drawing architectural engineering drawings (wgt: 20/50) ◆ Course design defense (wgt: 10/50)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); design drawing (70%) : (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials (1) Lu Chuanxian (Editor-in-Chief), “Civil Engineering Graphics” (6th Edition), China Architecture & Building Press, June 2022. (2) Lu Chuanxian (Editor-in-Chief), “Civil Engineering Graphics Exercise Book” (6th Edition), China Architecture & Building Press, June 2022. 2. Bibliography (1) Qian Shuxiang (Editor-in-Charge), “Drawing Geometry and Engineering Graphing”, Chemical Industry Press, October 2017. (2) Zhu Hui (Editor-in-Charge), “Drawing Geometry and Engineering		

	Graphing” (7th Edition), Shanghai Science Press, August 2013.
Version	23th Dec, 2024

Module designation	***Engineering measuring practice***		
Semester(s) in which the module is taught	4		
Person responsible for the module	Lecturer Zhou Wenquan		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	4		
Required and recommended prerequisites for joining the module	Engineering graphing, fundamentals of CAD technology		
Module objectives/intended learning outcomes	CLO 1	Be capable of conducting fieldwork such as leveling, angle measurement, and distance measurement using measuring instruments, and perform internal calculations on the measurement results, while controlling precision indicators and quality requirements. Be able to draw topographic maps and analyze, evaluate, and apply their data.	R5
	CLO 2	Be able to independently or collaboratively dev elop complete measurement technical plans bas ed on the theories and methods of engineering surveying, and form teams to cooperate in set ting up instruments, reading, recording, checkin g, internal processing, drawing topographic ma ps, and writing internship reports. Possess the ability to comprehensively solve problems in e ngineering surveying.	R9
Content	◆ Analysis and formulation of measurement plan (wgt: 4/100) ◆ Layout of traverse points (wgt: 10/100) ◆ Field measurement of bench marks and traverse points (wgt: 30/100) ◆ Interior calculation (wgt: 10/100) ◆ Plotting of traverse points, detailed surveying and drawing (wgt: 30/100) ◆ Writing of measurement internship report (1 copy) (wgt: 8/100) ◆ Defense of engineering measurement internship (wgt: 8/100)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Performance(20%); Internship report (30%) : topographic map (30%), defense(20%); 2. Each group should draw a topographic map and an internship		

	summary report, and each member should submit one Internship report。 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Civil Engineering Survey (5thEd.), edited by Qin Hui, Tongji University Press, 2019 2. Bibliography (1)Civil Engineering Survey, Song Zhanfeng (Ed.), Central South University Press, 2014; （2） Civil Engineering Survey, edited by Jin Xiangnong, Ch ina Building and Construction Press, 2019. （3） Ministry of Housing and Urban-Rural Development of the People’s Republic of China, GB55018—2021 “General Specifications for Engineering Surveying”, 2021. (4) State Bureau of Surveying, Mapping and Geoinformation, GB/T20257.1—2017 “Map Symbols for National Basic Scales - Part 1: 1:500, 1:1000, 1:2000 Topographic Maps”, 2017.
Version	23th Dec, 2024

Module designation	***Construction organization practicum***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Professor Luo Zhang		
Language	Chinese		
Relation to curriculum	Compulsory		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 25h, Contact hours: 10h, Self-Study Hours: 15h.		
Credit points	1		
Required and recommended prerequisites for joining the module	Building construction; Soil mechanics and foundation; Principles of concrete structure design; Construction and organization of civil engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of scientifically applying the advanced construction techniques and fundamental principles of civil engineering, and utilize BIM technology and others to scientifically organize the construction of civil engineering projects, thereby obtaining effective knowledge of construction organization.	R1
	CLO 2	Be able to design scientific and reasonable construction plans for engineering problems in the construction field of civil engineering projects, and organize and implement the construction of civil engineering projects.	R3
Content	◆ The main content of the construction organization design text of the unit project.（wgt: 4/25） ◆ Drawing points of the bar chart of the construction schedule.（wgt: 2/25） ◆ Main content and drawing requirements of the construction site plan.（wgt: 2/25） ◆ Curriculum design defense.(wgt: 2/25）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Process performance (40%); Text (20%) : design drawing (10%), defense (30%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials		

	Civil Engineering Construction (1st Edition). [M]. Gao Taotao, Harbin Institute of Technology Press, 2019. 2. Bibliography (1) Civil Engineering Construction. [M].Li Jianfeng. China Electric Power Press, 2016; (2) Construction Project Construction Organization and Management (1st Edition). [M]. Yang Qun. Harbin Institute of Technology Press, 2017
Version	23th Dec, 2024

Module designation	***Corporate Professional Practice* (1)/(2)**		
Semester(s) in which the module is taught	6/7		
Person responsible for the module	Associate Professor Duan Jian		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Practice-Based Methodsetc.		
Workload (incl. contact hours, self-study hours)	Total workload: 200h, Contact hours: 88h, Self-Study Hours: 112h.		
Credit points	8		
Required and recommended prerequisites for joining the module	An on-campus three-year course of study		
Module objectives/intended learning outcomes	CLO 1	Through practice, one acquires the initial ability to evaluate the impact of an enterprise's production process on society, health, safety, law and culture, and can understand the responsibilities they should undertake.。	R6
	CLO 2	Through practice, students' engineering awareness, engineering quality and engineering practice ability can be enhanced, and they can initially evaluate the impact of the enterprise's production process on the environment and social sustainable development.	R7
	CLO 3	During the practical process, I can communicate effectively with team members, handle the relationships both inside and outside the team properly, and work independently or in collaboration with team members.	R9
Content	◆ Theoretical Teaching（wgt: 5/200） ◆ Site practice (construction engineering technology, highway engineering technology, municipal engineering technology, railway engineering technology and other engineering industries)（wgt: 190/200） ◆ Internship defense（wgt: 5/200）		
Examination forms	Internship log ; Practice reports ; And defense.		
Study and examination requirements	1. Internship log (50%); Practice reports (30%); And defense (20%). 2. Practice should be completed by students independently after each class.		

	3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	Construction technical specifications for various industries; Industry construction quality acceptance code.
Version	23th Dec, 2024

<table>
<tr><td>Module designation</td><td colspan="3">Practicum of House Architecture</td></tr>
<tr><td>Semester(s) in which the module is taught</td><td colspan="3">4</td></tr>
<tr><td>Person responsible for the module</td><td colspan="3">Associate Professor Zou Hongbo</td></tr>
<tr><td>Language</td><td colspan="3">Chinese</td></tr>
<tr><td>Relation to curriculum</td><td colspan="3">Compulsory / Specialization</td></tr>
<tr><td>Teaching methods</td><td colspan="3">Individualized Methods.etc.</td></tr>
<tr><td>Workload (incl. contact hours, self-study hours)</td><td colspan="3">Total workload:150
Contact hours: 66.
Self-Study Hours:84</td></tr>
<tr><td>Credit points</td><td colspan="3">6</td></tr>
<tr><td>Required and recommended prerequisites for joining the module</td><td colspan="3">Drawing geometry 与 Engineering Graphing</td></tr>
<tr><td rowspan="3">Module objectives/intended learning outcomes</td><td>CLO 1</td><td>Be capable of applying the fundamental principles of engineering basics and professional knowledge, and by referring to literature, norms, standards or atlases and other materials, analyzing complex engineering problems in civil engineering to reach effective conclusions.</td><td>R2</td></tr>
<tr><td>CLO 2</td><td>Be capable of understanding the impact of engineering practices for complex engineering problems in the field of civil engineering on the environment and social sustainable development, and establish the awareness of environmental protection and social sustainable development.</td><td>R7</td></tr>
<tr><td>CLO 3</td><td>Be capable of evaluating the impact of engineering practices addressing complex engineering problems in the field of civil engineering on environmental and social sustainable development.</td><td>R7</td></tr>
<tr><td>Content</td><td colspan="3">◆ Architectural design scheme (wgt: 10/150)
◆ Floor plan design (wgt: 25/150)
◆ Detailed drawing design (wgt: 25/150)
◆ Architectural section design (wgt: 15/150)
◆ Building form and facade design (wgt: 15/150)
◆ Drawing production (wgt: 50/150)
◆ defense（wgt: 10/150）</td></tr>
<tr><td>Examination forms</td><td colspan="3">Design specification, Design drawings</td></tr>
<tr><td>Study and examination requirements</td><td colspan="3">1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%);
2. Practicum should be completed by students independently after</td></tr>
</table>

	each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Building Architecture, 6th Ed.Wang Xuesong, Li Biyu et al., Wuhan University of Technology Press, 2021. 2. Bibliography (1) Building Architecture (7th Ed.), edited by Shu Qiuhua, Wuhan University of Technology Press, 2022. (2) Code for Fire Protection in Building Design, GB50016-2014, 2018 (3) Code for Design of Primary and Secondary Schools, GB 50099-2011, 2018 (4) Design Standards for Office Buildings, JGJ/T 67-2019
Version	23th Dec, 2024

Module designation	***Foundation engineering practicum A***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Liang Qiao		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Engineering Geology, Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Rock Mechanics, Underground Building Structures, Subway and tunnel engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of consulting and applying technical materials such as manuals, atlases, standards and norms, and applying the basic principles of foundation and substructure engineering to establish mechanical models for analyzing and calculating the bearing capacity and deformation of independent foundations and pile foundations, and determining the structural and construction schemes for the design of independent foundations and pile foundations.	R1
	CLO 2	Be capable of understanding and evaluating the impact of independent foundation and pile foundation design schemes on society, health, safety, law, culture and environment, and be able to fully consider and utilize the above factors to optimize the foundation scheme.	R3
	CLO 3	Be capable of comprehensively analyzing the design process, organizing the design results, writing design specifications and drawing structural construction drawings, and applying relevant software to simulate experiments to verify the design results.	R4
Content	◆ Analysis of design materials and literature review（wgt: 4/50） ◆ Independent column foundation scheme design（wgt: 10/50） ◆ pile foundation scheme design（wgt: 10/50） ◆ drawing（wgt: 8/50） ◆ Program evaluation and analysis（wgt: 8/50）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%);		

	2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Soil Mechanics and Foundation, 5th Ed[M]. Chen Xizhe and Ye Jing, Tsinghua University Press, 2018. 2. Bibliography (1) Soil Mechanics and Foundation[M], 2nd Ed. Zhu Jianqun, China Architecture and Building Press, 2017; (2) Foundation engineering practicum A guidebook, self-edited. (3) Craig Soil Mechanics (Annotated adaptation of the 8th edition of the original Book) [M], [E]J.A. J.a.kappett R.F.Craig, Machine Press, 2019. (4) Basic Engineering (English · 8th Edition of the original book) [M], [US] Bridger M. (BrajaM. Das), Machine Press, 2016. (5) Foundation and Foundation Engineering (Second edition of the Original) [M], [E] John Atkinson, Cheng Xiaohui, and Guo Hongxian, China Architecture and Building Industry Press, 2022 (6) Code for Design of Building Foundation[S] (GB50007- 2011); (7) General Code for Building and Municipal Foundation[S] (GB55003-2021); (8) Technical Code for Building Pile Foundation[S] (JGJ 94- 2008).
Version	23th Dec, 2024

Module designation	***Steel structure practicum***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Luo Hongguang		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	4		
Required and recommended prerequisites for joining the module	Mechanics of materials, Structural mechanics, Design principle of steel structure, Design of steel structure		
Module objectives/intended learning outcomes	CLO 1	For complex engineering problems in the field of civil engineering, formulate components (nodes), structures, systems or technical solutions that meet specific requirements.	R1
	CLO 2	Be capable of integrating theoretical analysis with experimental results to obtain reasonable and effective conclusions and apply them to engineering practice.	R2
Content	◆ Analysis and formulation of design options（wgt: 10/100） ◆ Design effect combination value of structural member（wgt: 10/100） ◆ Design and Calculation of Structural Members（wgt: 20/100） ◆ Verification of structures or members（wgt: 10/100） ◆ drawing（wgt:20/100） ◆ Design calculation specification compilation（wgt:20/100） ◆ Course Design Defense（wgt:10/100）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. process representation (20%); Design specification (30%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials The first edition of *Steel Structure Design*, edited by Song Gaoli, China Building and Construction Press, 2019. 2. Bibliography		

	(1) Ministry of Housing and Urban-Rural Development, Design Standards for Steel Structures (1st edition), China Planning Press, 2018. (2) Ministry of Housing and Urban-Rural Development, Technical Specification for Cold-formed Thin-Walled Steel Structure, China Planning Press, 2002.
Version	23th Dec, 2024

Module designation	***Practicum of concrete and masonry structure***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate Professor Xiao Alin		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload:180 Contact hours: 66 Self-Study Hours:114		
Credit points	6		
Required and recommended prerequisites for joining the module	Structural mechanics, Civil engineering materials, Design principle of concrete structure,Design of concrete and masonry structures		
Module objectives/intended learning outcomes	CLO 1	Be capable of comprehensively applying the fundamental principles of concrete structure design, knowledge of Materials of Civil Engineering, mechanics, and related advanced technologies to complete the design of concrete structures or components.	R1
	CLO 2	Be capable of comprehensively analyzing the design process, organizing design results, writing design specifications, and drawing structural construction drawings.	R3
Content	◆ Analysis and formulation of design scheme ◆ The combined value of design effects of structural components ◆ Reinforcement design and calculation ◆ Check of structure or component ◆ Drawing ◆ Design calculation manual preparation ◆ Defense		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Process performance (20%), calculation specification (30%), design drawing (30%), defense (20%). 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1.Suggest teaching materials (1) Design of Concrete Structure (5th Ed.), Shen Pusheng, Higher Education Press, 2020.3. (2) Principles of Concrete Structure Design (5th Ed.), Shen Pusheng,		

	Higher Education Press, 2020.5 2. Bibliography (1) Code for the Design of Concrete Structures (GB50010- 2010), China Building and Construction Press, 2015.9. (2) Code for Load on Building Structures (GB50009-2012), China Building and Construction Press, 2012.5.
Version	23th Dec, 2024

Module designation	***Construction engineering budget practicum***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Lecturer Zhang Chantao		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Descriptive Geometry B, Engineering Graphing, Civil Engineering Construction		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the knowledge of construction project budgeting and estimation, in a multi-disciplinary environment, to select appropriate budgeting methods during the process of designing and developing solutions, make economic decisions, or manage projects based on the results.	R11
Content	◆ Basis, steps and contents for the preparation of construction drawing budget documents. (wgt: 4/50) ◆ Calculation of building area and quantities of building and installation works. (wgt: 18/50) ◆ Calculation of quantities for decoration works and measure items. (wgt: 10/50) ◆ Measurement and valuation of measure items. (wgt: 10/50) ◆ Preparation of construction drawing budget calculation sheets. (wgt: 8/50)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (70%) ; defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	11. Suggest teaching materials Construction Engineering Measurement and Valuation, Editor-in-Chief Cheng Yanhui, Hunan Normal University Press, 2021.07 2. Bibliography (1) Construction Engineering Measurement and Valuation, Liu		

	Yuanfang, editor-in-chief, China Building Materials Industry Press, 2020; (2) Consumption Quota of Building and Decoration Engineering in Hunan Province, issued by Hunan Provincial Construction Project Cost Management Station; (3) “Construction engineering quantity list valuation Code”, “Housing construction and decoration engineering quantity calculation code”, the Ministry of Housing and Urban-Rural Development of the People’s Republic of China, the State Administration of Quality Supervision, Inspection and Quarantine of the People’s Republic of China jointly issued
Version	23th Dec, 2024

Module designation	***Course Design of Road survey and design***		
Semester(s) in which the module is taught	4		
Person responsible for the module	Professor Cai Chengxiu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Fundamentals of CAD technology 、 Engineering surveying 、 Engineering geology、Road survey and design		
Module objectives/intended learning outcomes	CLO 1	Possess the ability to utilize handbooks, atlases, standards, norms and consult relevant technical materials, and apply the basic principles of route geometric design, Road design software, CAD technology fundamentals, Engineering surveying knowledge and related advanced technologies to complete the design of road plan, profile and cross-section geometric shapes.	R4
	CLO 2	Be capable of organizing design results, writing design specifications and drawing construction drawings. Be able to combine handbooks , atlases , standards , norms with the basic principles of Road survey and design and apply them to the feasibility analysis of solutions for engineering practical problems , and conduct preliminary analysis and argumentation.	R7
Content	◆ Literature review (wgt: 15/100) ◆ Analysis and formulation of design schemes (wgt: 15/100) ◆ Horizontal, vertical and transverse calculations (wgt: 20/100) ◆ Preparation of design calculation manual (wgt: 20/100) ◆ Drawing production (wgt: 20/100) ◆ Defense (wgt: 10/100)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class.		

	3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggested Textbooks (1) Zhao Yongping, ed., Road Survey and Design (3rd Edition), Higher Education Press, 2022. 2. Bibliography (1) Zhang Chi, ed., Road Survey and Design (6th Edition), People’s Communications Press, 2023. (2) Fang Shou’en, Chen Yuren, eds., Road Planning and Geometric Design, Tongji University Press, 2021. (3) Zhu Feng, ed., Road Survey and Design, People’s Communications Press, 2021. (4) Zhao Yifei, Yang Shaowei, eds., Expressway Design, People’s Communications Press, 2006. (5) Ministry of Transport of the People’s Republic of China. JTG B01-2014 Technical Standards for Highway Engineering. (6) Ministry of Transport of the People’s Republic of China. JTG D20-2017 Specifications for Highway Route Design. (7) Ministry of Housing and Urban-Rural Development of the People’s Republic of China. GB55018-2021 General Specifications for Engineering Surveying. (8) Ministry of Transport of the People’s Republic of China. CJJ 37-2016 Specifications for Design of Urban Road Engineering. (9) Ministry of Transport of the People’s Republic of China. JTG B04-2010 Specifications for Environmental Protection Design of Highways. (10) Shen Chi, ed., Selected Cases of Ideological and Political Education in Courses, Zhejiang University Press, 2020.
Version	23th Dec, 2024

Module designation	***Concrete practicum A***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Lecturer Xie Ying		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	4		
Required and recommended prerequisites for joining the module	Mechanics of materials、Mechanics of structure、Materials of Civil Engineering、Principles of Concrete Structure Design		
Module objectives/intended learning outcomes	CLO 1	Be capable of evaluating the advantages and disadvantages of multiple solutions to complex engineering problems and providing optimization methods.	R1
	CLO 2	Be able to demonstrate an innovative consciousness in the design stage of solutions to complex engineering problems in the field of civil engineering.	R3
	CLO 3	Be capable of integrating theoretical analysis with experimental results to obtain reasonable and effective conclusions and apply them to engineering practice.	R4
Content	◆ Analysis and formulation of design schemes (wgt: 8/100) ◆ Determination of control sections and calculation of internal forces (wgt: 12/100) ◆ Reinforcement design and calculation (wgt: 20/100) ◆ Checking of structures or components (wgt: 16/100) ◆ Drawing of design drawings (wgt: 20/100) ◆ Preparation of design calculation reports (wgt: 20/100) ◆ Course design defense (wgt: 4/100)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials Structural Design Principles, edited by Ye Jianshu, People’s		

	Communications Press, 2018. 2. Bibliography (1) Principles of Concrete Structure Design (5th Edition), edited by Shen Pusheng, Higher Education Press, 2020; (2) Code for Design of Concrete Structures GB 50010-2010 (2015 Edition), China Architecture & Building Press, 2015. (3) Specifications for Design of Highway Reinforced Concrete and Prestressed Concrete Bridges and Culverts JTG 3362-2018, People's Communications Press, 2018. (4) Code for Loads on Building Structures GB 50009-2012, China Architecture & Building Press, 2012.
Version	23th Dec, 2024

Module designation	***Course Design of Roadbed and Pavement Engineering***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Cai Chengxiu		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Soil mechanics and foundation engineering 、 Materials of Civil Engineering 、 Road survey and design 、 Subgrade and pavement engineering		
Module objectives/intended learning outcomes	CLO 1	Possess the ability to apply manuals, atlases, standards, norms and consult relevant technical materials, and complete the design of retaining walls for roadbed slopes by integrating the basic principles of roadbed design, RZ Geotechnical Retaining Wall Design Software, CAD technology fundamentals, roadbed and pavement engineering knowledge and related advanced technologies. Also, be capable of organizing the design results, writing design specifications and drawing construction plans for retaining walls.	R3
	CLO 2	Be able to combine the basic principles of pavement design with practical engineering problems, apply manuals, atlases, standards and norms to solve pavement structure analysis and combination design, write design specifications and draw pavement structure diagrams, and conduct feasibility analysis and preliminary analysis and argumentation of the schemes.	R7
Content	◆ Literature review (wgt: 15/100) ◆ Analysis and formulation of design schemes (wgt: 15/100) ◆ Horizontal, vertical and transverse calculations (wgt: 20/100) ◆ Preparation of design calculation manual (wgt: 20/100) ◆ Drawing production (wgt: 20/100) ◆ Defense (wgt: 10/100)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score		

	of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	11. Suggested Textbook (1) Huang Xiaoming, ed., Subgrade and Pavement Engineering (7th Edition), Higher Education Press, 2023. 2. Bibliography (1) Huang Xiaoming, ed., Subgrade and Pavement Engineering (6th Edition), Higher Education Press, 2022. (2) Ling Tianqing, ed., Road Engineering (4th Edition), People’s Communications Press, 2019. (3) Wang Fuzhou, Xu Shuang, eds., Subgrade and Pavement Engineering, Jilin University Press, 2015. (4) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D30-2015 Specifications for Design of Highway Subgrades. (5) Ministry of Transport of the People’s Republic of China Industry Standard. JTG B01-2014 Technical Standards for Highway Engineering. (6) Ministry of Transport of the People’s Republic of China Industry Standard. JTG/T 3610-2019 Specifications for Construction of Highway Subgrades. (7) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D33-2012 Specifications for Highway Drainage Design. (8) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D50-2017 Specifications for Design of Asphalt Pavement. (9) Ministry of Transport of the People’s Republic of China Industry Standard. JTG D40-2021 Specifications for Design of Highway Cement Concrete Pavement. (10) Ministry of Transport of the People’s Republic of China Industry Standard. JTG/T F20-2015 Specifications for Construction of Highway Pavement Base. (11) Shen Chi, ed., Selected Cases of Curriculum-based Ideological and Political Education, Zhejiang University Press, 2020.
Version	23th Dec, 2024

Module designation	***Bridge engineering practicum***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Liu Zhaofeng		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods, Interactive Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	4		
Required and recommended prerequisites for joining the module	Mechanics of Materials, Structural mechanics, Principles of design of concrete structures, Soil mechanics and Foundation, Bridge engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of applying the basic principles of bridge structure characteristics, construction features and force calculation, and consulting and organizing relevant technical materials to establish a reasonable mechanical calculation model for the force analysis of bridge structures.	R2
	CLO 2	Be able to comprehensively utilize the knowledge of bridge structure design, calculation and construction to design and draw bridge structure schemes that meet specific technical standards.	R3
Content	1. Drawing up the structure size（wgt: 16/100） 2. The internal force calculation ofthe bridge panel（wgt: 16/100） 3. The internal force calculation ofthe main beam（wgt: 16/100） 4. Transverse beam internal force calculation（wgt: 16/100） 5. Drawing（wgt: 16/50） 6. Design calculation manual preparation（wgt: 12/100） 7. Defense of the design （wgt: 8/100）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%), design description (40%), design drawing (30%), defense (20%) 2. Practicum should be completed by students independently after each class. 3. To pass the course assessment, students must achieve a minimum of 60 points or a passing grade or above.		
Reading list	1. Teaching materials (1) Shao Xudong, Ed. Bridge Engineering (6th Ed.), People's Communications Press, 2023.4. 2. Bibliography		

	(1) Fan Lichu, Ed., Bridge Engineering (Volume 1, Volume 2) (3rd edition), People's Communications Press, 2017.6. (2)Shi Xuefei, Modern Bridge Engineering, People's Communications Press, 2021.4.
Version	23th Dec, 2024

<table>
<tr><td>Module designation</td><td colspan="3">Highway engineering budget practicum</td></tr>
<tr><td>Semester(s) in which the module is taught</td><td colspan="3">7</td></tr>
<tr><td>Person responsible for the module</td><td colspan="3">Lecturer Zhang Juan</td></tr>
<tr><td>Language</td><td colspan="3">Chinese</td></tr>
<tr><td>Relation to curriculum</td><td colspan="3">Compulsory / Specialization</td></tr>
<tr><td>Teaching methods</td><td colspan="3">Individualized Methods.etc.</td></tr>
<tr><td>Workload (incl. contact hours, self-study hours)</td><td colspan="3">Total workload:50h,Contact hours: 22h,Self-Study Hours: 28h.</td></tr>
<tr><td>Credit points</td><td colspan="3">2</td></tr>
<tr><td>Required and recommended prerequisites for joining the module</td><td colspan="3">Sub-grade pavement engineering, civil engineering construction technology and organization ,Highway project budget estimate</td></tr>
<tr><td rowspan="3">Module objectives/intended learning outcomes</td><td>CLO 1</td><td>Consolidate the professional knowledge of highway engineering budget and estimate, be familiar with the process and thinking of budget and estimate, master the compilation methods of highway engineering budget and estimate documents, standardize design, reasonably guide construction, save costs, and cultivate students’ ability to solve practical engineering problems.</td><td>R1</td></tr>
<tr><td>CLO 2</td><td></td><td></td></tr>
<tr><td>CLO 3</td><td></td><td></td></tr>
<tr><td>Content</td><td colspan="3">◆ Analysis of the design plan and literature review (wgt: 4/50)
◆ Calculation of the estimated budget cost (wgt: 18/50)
◆ Filling in the estimated budget form (wgt: 16/50)
◆ Writing the compilation instructions (wgt: 8/50)
◆ Project summary and analysis (wgt: 4/50)</td></tr>
<tr><td>Examination forms</td><td colspan="3">Budget Document</td></tr>
<tr><td>Study and examination requirements</td><td colspan="3">1. Literature review (10%); Budget Document (70%) : design drawing (30%), defense (20%);
2. Practicum should be completed by students independently after each class.
3.To pass the course, students must achieve a minimum overall score</td></tr>
</table>

	of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Compilation and Management of Highway Engineering Cost(4th Edition), edited by Liu Yan, People’s Communications Press, 2021. 2. Bibliography (1) Highway Engineering Budget Estimate and Bill of Quantities Valuation, edited by Yuan Baoyin and Zhang Ming jian, Harbin Institute of Technology Press, 2018. (2) Highway Engineering Budget and Bill of Quantities Valuation (2nd Edition), edited by Lei Shuhua, People’s Communications Press,2013.
Version	23thDec,2024

Module designation	***Concrete practicum B***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Lecturer Xie Ying		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 58h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Mechanics of materials、Mechanics of structure、Materials of Civil Engineering、Principles of Concrete Structure Design		
Module objectives/intended learning outcomes	CLO 1	Be capable of evaluating the advantages and disadvantages of multiple solutions to complex engineering problems and providing optimization methods.	R1
	CLO 2	Be able to demonstrate an innovative consciousness in the design stage of solutions to complex engineering problems in the field of civil engineering.	R3
	CLO 3	Be capable of integrating theoretical analysis with experimental results to obtain reasonable and effective conclusions and apply them to engineering practice.	R4
Content	◆ Analysis and formulation of design schemes (wgt: 2/50) ◆ Determination of control sections and calculation of internal forces (wgt: 6/50) ◆ Reinforcement design and calculation (wgt: 10/50) ◆ Checking of structures or components (wgt: 8/50) ◆ Drawing of design drawings (wgt: 10/50) ◆ Preparation of design calculation reports (wgt: 10/50) ◆ Course design defense (wgt: 4/50)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials “Principles of Concrete Structure Design” (5th Edition), edited by		

	Shen Puseng, Higher Education Press, 2020. 2. Bibliography (1) Principles of Structural Design, edited by Ye Jianshu, People's Communications Press, 2018. (2) Code for Design of Concrete Structures GB 50010-2010 (2015 Edition), China Architecture & Building Press, 2015. (3) Specifications for Design of Highway Reinforced Concrete and Prestressed Concrete Bridges and Culverts JTG 3362-2018, People's Communications Press, 2018. (4) Code for Loads on Building Structures GB 50009-2012, China Architecture & Building Press, 2012.
Version	23th Dec, 2024

Module designation	***Geotechnical investigation and testing practicum***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Wang Jun		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50 Contact hours: 22 Self-Study Hours:28		
Credit points	2		
Required and recommended prerequisites for joining the module	Soil Mechanics and Foundation Engineering； Rock mechanics；Engineering geology		
Module objectives/intended learning outcomes	CLO 1	具有运用标准、规范和查阅有关技术资料的能力。能够根据标准、规范，制定岩土工程勘察的方法和试验测试的方案，并获得相关结论。	R2
	CLO 2	通过结合相关勘察资料、整理测试数据、总结勘察成果资料，对场地条件进行综合评价，提出场地整改和处理的意见和建议，评价对周边环境的影响，撰写勘察文字报告和绘制相关图纸。	R7
Content	◆ Analysis and formulation of engineering schemes (wgt: 10/50) ◆ Analysis of indoor test results and in-situ test data (wgt: 10/50) ◆ Drawing of borehole logs, profiles and plans (wgt: 10/50) ◆ Preparation of achievement reports (wgt: 10/50) ◆ Course design defense (wgt: 10/50)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1.Suggested Textbooks (1) Wang Kuihua (Editor-in-Charge), “Geotechnical Engineering Investigation”, China Architecture & Building Press, 2016 2. Reference Books (1) Xiang Wei, Tang Huiming (Editors-in-Charge), “Geotechnical Engineering Investigation”, 1st Edition, Publisher: Chemical Industry Press, 2015; (2) “Geotechnical Engineering Investigation and Testing Experiment		

	Guide", Self-compiled. (3) "GB50021-2001 Code for Geotechnical Engineering Investigation (2009 Edition)", China Architecture & Building Press, 2009 (4) Lin Zongyuan (Editor-in-Charge), "Concise Handbook of Geotechnical Engineering Investigation and Design", China Architecture & Building Press, 2003;
Version	23th Dec, 2024

Module designation	***Foundation engineering practicum B***		
Semester(s) in which the module is taught	5		
Person responsible for the module	Professor Liang Qiao		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	4		
Required and recommended prerequisites for joining the module	Engineering Geology, Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Rock Mechanics, Underground Building Structures, Subway and tunnel engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of consulting and applying technical materials such as manuals, atlases, standards and norms, and applying the basic principles of foundation and substructure engineering to establish mechanical models for analyzing and calculating the bearing capacity and deformation of independent foundations and pile foundations, and to determine the structural and construction schemes for the design of independent foundations and pile foundations.	R1
	CLO 2	Be capable of understanding and evaluating the impact of independent foundation and pile foundation design schemes on society, health, safety, law, culture and environment, and be able to fully consider and utilize the above factors to optimize the foundation scheme.	R3
	CLO 3	Be capable of comprehensively analyzing the design process, organizing the design results, writing design specifications and drawing structural construction drawings, and applying relevant software to simulate experiments to verify the design results.	R4
Content	◆ Analysis of design materials and literature review（wgt: 8/100） ◆ Independent column foundation scheme design（wgt: 20/100） ◆ pile foundation scheme design（wgt: 20/100） ◆ drawing（wgt: 20/100） ◆ Construction scheme design（wgt: 18/100） ◆ Program evaluation and analysis（wgt: 14/100）		
Examination forms	Design specification, Design drawings		
Study and examination	1. Literature review (10%); Design specification (40%) : design		

requirements	drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Soil Mechanics and Foundation, 5th Ed[M]. Chen Xizhe and Ye Jing, Tsinghua University Press, 2018. 2. Bibliography (1) Soil Mechanics and Foundation[M], 2nd Ed. Zhu Jianqun, China Architecture and Building Press, 2017; (2) Foundation engineering practicum A guidebook, self-edited. (3) Craig Soil Mechanics (Annotated adaptation of the 8th edition of the original Book) [M], [E]J.A. J.a.kappett R.F.Craig, Machine Press, 2019. (4) Basic Engineering (English · 8th Edition of the original book) [M], [US] Bridger M. (BrajaM. Das), Machine Press, 2016. (5) Foundation and Foundation Engineering (Second edition of the Original) [M], [E] John Atkinson, Cheng Xiaohui, and Guo Hongxian, China Architecture and Building Industry Press, 2022 (6) Code for Design of Building Foundation[S] (GB50007- 2011); (7) General Code for Building and Municipal Foundation[S] (GB55003-2021); (8) Technical Code for Building Pile Foundation[S] (JGJ 94- 2008).
Version	23th Dec, 2024

Module designation	***Underground engineering budget practicum***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Duan Jian		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methodsetc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Theoretical mechanics, Mechanics of materials, soil mechanics and Foundation Engineering, rock mechanics, Principles of design of concrete structures		
Module objectives/intended learning outcomes	CLO 1	Be capable of comprehensively applying the design principles of Underground Structures, Principles of Concrete Structure Design, soil mechanics, mechanics knowledge and related advanced technologies to complete the design of Underground Structures or components.	R2
	CLO 2	Be able to comprehensively analyze the design process, organize the design results, write design specifications and draw structural construction drawings. Possess the ability to use manuals, atlases, standards, specifications and consult relevant technical materials. Be capable of applying manuals, atlases, standards and specifications to the feasibility analysis of solutions and conduct preliminary analysis and argumentation.	R3
Content	◆ Theoretical Teaching （wgt: 4/50） ◆ Analysis and formulation of design scheme（wgt:6/50） ◆ The combined value of design effect of control section（wgt: 6/50） ◆ Reinforcement design and calculation（wgt: 10/50） ◆ Check of structure or component（wgt: 6/50） ◆ Drawing（wgt: 8/50） ◆ design calculation manual preparation（wgt: 6/50） ◆ Course design defense（wgt: 4/50）		
Examination forms	Literature review ; Design specification; design drawing; defense		

Study and examination requirements	1. Literature review (20%); Design specification (30%); design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).
Reading list	1. Suggest teaching materials Zhu Hehua. Underground Building Structure (3rd Ed.). Publishing House: China Building and Construction Press, 2016. 2. Bibliography Wang Shuli. Structural Design of Underground Buildings (3rd Ed.). Press: Tsinghua University Press, 2015. Code for Design of Concrete Structures (GB50010-2010) (2015 edition). Code for Design of Building Foundation (GB50007- 2011). Technical Regulations for Building Foundation Pit Support (JGJ120-2012). Technical Standard for Monitoring of Building Foundation Pit Engineering (GB50497-2019).
Version	23th Dec, 2024

Module designation	***Foundation engineering practicum A***		
Semester(s) in which the module is taught	6		
Person responsible for the module	Associate professor Shengnan Li		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Engineering geology、Soil mechanics and foundation engineering、Rock mechanics、Slope Engineering and Foundation Treatment		
Module objectives/intended learning outcomes	CLO 1	Be capable of evaluating the impact of engineering practices addressing complex engineering problems in the field of civil engineering on environmental and social sustainable development.	R7
Content	◆ Analysis and formulation of design schemes (wgt: 4/50) ◆ Design effect combination values of control sections (wgt: 8/50) ◆ Support design and calculation (wgt: 10/50) ◆ Checking of structures or components (wgt: 8/50) ◆ Drawing production (wgt: 8/50) ◆ Preparation of design calculation manual (wgt: 12/50)		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials Ye Guanbao (Editor-in-Chief). Foundation Treatment, 3rd Edition. Publisher: China Architecture & Building Press, 2009. 2. Bibliography (1) Li Jianlin (Editor-in-Chief). Slope Engineering, 1st Edition. Publisher: Chongqing University Press, 2013. (2) Gong Xiaonan (Author). Foundation Treatment, 2nd Edition. Publisher: China Architecture & Building Press, 2017.		
Version	23th Dec, 2024		

Module designation	***Subway and Tunnel Engineering practicum***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Peng Di		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 100h, Contact hours: 44h, Self-Study Hours: 56h.		
Credit points	4		
Required and recommended prerequisites for joining the module	Engineering Geology, Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Rock Mechanics, Underground Building Structures, Subway and tunnel engineering		
Module objectives/intended learning outcomes	CLO 1	Be capable of consulting and applying manuals, atlases, standards, specifications and technical materials, designing tunnel lining structures by applying the principles of load-structure method or stratum-structure method, and choosing appropriate software for programming calculation.	R3
Content	◆ Analysis of design materials and literature review（wgt: 10/100） ◆ Tunnel surrounding rock classification and surrounding rock pressure calculation（wgt: 20/100） ◆ Determination of geometric elements of tunnel lining（wgt: 20/100） ◆ Internal force calculation of tunnel lining（wgt: 20/100） ◆ tunnel lining section strength check and reinforcement design（wgt: 20/100） ◆ Tunnel anchoring shotcrete initial support design（wgt: 10/100）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., “Pass”or equivalent).		
Reading list	1. Suggest teaching materials Tunnel Engineering[M], Wang Cheng (Ed.), People’s Communications Press, 2019.6 2. Bibliography (1) Tunnel Engineering[M], edited by Zhu Yongquan, China Railway Publishing House, 2015.6. (2) Tunnel Engineering[M], Song Yuxiang, Ed., China Architecture		

	and Construction Press, 2018.1. (3) Subway and Light Rail Engineering[M], Zeng Runzhong, Ed., People's Transportation Press, 2016.6 (4) Tunnel Engineering[M], Chen Qiunan, China Machine Press, 2016.12. (5) Subway and Tunnel Engineering[M], LiXinle, eds., Tsinghua University Press, 2018.8. (6)Code for Design of Railway Tunnels[S] (TB 10003-2016) (7) Specifications for Design of Highway Tunnels Section 1 Civil Engineering[S](JTG 3370.1-2018).
Version	23th Dec, 2024

Module designation	***Underground engineering budget practicum***		
Semester(s) in which the module is taught	7		
Person responsible for the module	Associate Professor Duan Jian		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 50h, Contact hours: 22h, Self-Study Hours: 28h.		
Credit points	2		
Required and recommended prerequisites for joining the module	Engineering graphing, Underground building structure, Slope engineering and foundation treatment, Engineering economics and project management, Civil engineering construction technology and organization		
Module objectives/intended learning outcomes	CLO 1	This can meet the requirements of various underground engineering projects, apply the professional knowledge of underground engineering budget estimates, select appropriate budget estimate compilation methods, accurately evaluate the feasibility and economic benefits of project construction, and cultivate students' ability to solve practical engineering problems.	R11
Content	◆ Analysis of design materials and literature review（wgt: 8/50） ◆ Calculation of underground engineering volume and budget estimate cost (wgt: 18/50) ◆ Preparation of budget estimate tables (wgt: 14/50) ◆ Program evaluation and analysis（wgt: 10/50）		
Examination forms	Design specification, Design drawings		
Study and examination requirements	1. Literature review (10%); Design specification (40%) : design drawing (30%), defense (20%); 2. Practicum should be completed by students independently after each class. 3. To pass the course, students must achieve a minimum overall score of 60 points or attain a passing grade (e.g., "Pass"or equivalent).		
Reading list	1. Suggest teaching materials Zhou Bin, Ma Haibin and Liu Jie (eds.), Underground Engineering Estimation and Budgeting, People's Communications Press, 2017. 2. Bibliography (1) Song Min, Zhong Xin, and Feng Lijie (eds.), Engineering Measurement and Valuation (2nd Edition), Wuhan University Press, 2021. (2) Guo Shurong (ed.), Engineering Estimate and Budget (2nd Edition), China Electric Power Press, 2015.		

	(3) Zhang Jinming (ed.), Construction Drawing Budget, China Electric Power Press, 2015. (4) Yang Jianlin (ed.), Building Engineering Quota and Budget, Tsinghua University Press, 2019. (5) National Uniform Municipal Engineering Budget Quota, gyd-1999.
Version	23th Dec, 2024

Module designation	***Bachelor Thesis***		
Semester(s) in which the module is taught	8		
Person responsible for the module	Associate Professor Liu Zhaofeng		
Language	Chinese		
Relation to curriculum	Compulsory / Specialization		
Teaching methods	Individualized Methods, Practice-Based Methods.etc.		
Workload (incl. contact hours, self-study hours)	Total workload: 750h, Contact hours: 160h, Self-Study Hours: 590h.		
Credit points	30		
Required and recommended prerequisites for joining the module	Theoretical courses and practical teaching sessions from 1 to 7 semesters		
Module objectives/intended learning outcomes	CLO 1	Be capable of comprehensively applying the theoretical knowledge and professional skills of this major to design civil engineering structures or components that meet specific requirements, and to write corresponding technical plans.	R3
	CLO 2	Be capable of comprehensively considering the constraints such as social, health, safety, legal, cultural and environmental factors faced in professional practice to optimize civil engineering design or construction plans.	R3
	CLO 3	Be capable of integrating the theoretical and technical knowledge learned to independently solve engineering design problems and demonstrate innovative consciousness.	R3
	CLO 4	Be capable of applying professional CAD technology or modern engineering tools to model and simulate civil engineering structures, and analyze, calculate and design the engineering problems involved in the graduation project topic.	R5
	CLO 5	Be capable of skillfully applying relevant technical standards based on the background of the graduation project topic to compare and select solutions for engineering problems in the design process.	R6
	CLO 6	During the graduation project and defense process, be able to effectively communicate with team members and peers regarding the engineering issues involved in the graduation project, and be capable of conducting technical exchanges by using industry norms, standards, drawings, modeling, and other means.	R7
Content	1. Lookup and collect information related to the subject. （wgt:		

	25/750） 2. In-depth understanding of the content of the graduation project, requirements, the key technology to solve the problem.（wgt: 50/750） 3. Analyze and digest the main content and requirements of the project, digest the collected information, and formulate the basic ideas and process plans for the completion of the project.（wgt: 50/750） 4. Write literature review and proposal report.（wgt: 25/750） 5. Analyzed the original data of the subject and drew up the overall design scheme.（wgt: 25/750） 6. Analysis and calculation, comprehensive application of relevant theoretical knowledge and literature research, to put forward solutions to the difficulties of the subject.（wgt: 100/750） 7. Select the appropriate parameters, simulation calculation software, analyze the simulation results, optimize the overall design scheme.（wgt: 100/750） 8. From the technical, economic and other aspects of the evaluation to obtain the best overall design scheme; Improve the analysis and calculation.（wgt: 100/750） 9. According to the design scheme and modeling calculation results, the application of CAD and other drawing software to draw the structure diagram, structure diagram, reinforcement diagram, etc.（wgt: 150/750） 10. Write the design calculation manual.（wgt: 75/750） 11. Make defense PPT file, graduation defense, sorting out information and filing.（wgt: 50/750）
Examination forms	Design specification, Design drawings
Study and examination requirements	1. Evaluation by instructor (40%), evaluation by reviewing teacher (20%), and evaluation by defense panel (40%) 2. Complete the required design content and submit the design drawings and descriptions 3. To pass the course assessment, students must achieve a minimum of 60 points or a passing grade or above.
Reading list	1. Suggest textbooks (1) Zhao Qing (Ed.), Guidance on Graduation Design for Civil Engineering Majors, Wuhan University Press, 2013.10. 2. Bibliography (1)Zhou Xiaoyong(Ed.), Civil Engineering Graduation Design Guide: Roa d and Bridge Engineering Volume, China U niversity of Geosciences Press, 2017.10. (2)Liang Xingwen, Shi Qingxuan, Gu idance of Graduation Design for Civil Eng ineering-Housing Construction Engineering, China Architecture and Construction Press, 2023.8. (3) Yuan Juyun, Li Jingpei, Chen Guangjing, Graduation Design Guide for Civil Engineering-Geotechnical Engineering Branch, Water Resources and Hydropower Press, 2002.03.
Version	23th Dec, 2024