Syllabus of Building Construction and Structures

Course Name（CH）	建筑构造与结构（英）		
Course Name（EN）	Building construction and structures		
Course ID	020531	Language	English
Credits	2	Credit hours	34
Category	Mandatory	Assessment	Review
Prerequisite	Material and Construction（020491）		
Written by	Qian JIN	Approved by	

1.Introduction and Objectives

1.1 Introduction

This course is designed for Year 3 undergraduate students in Architecture. It will help students understand the relationship between architectural space, function and structure, which should be fully considered in the whole architectural design process. In the meanwhile, the construction detail design capability will be further enhanced in this course.

1.2 Objectives

Course Objective 1: students will develop a comprehensive understanding on common structural systems and their design principles, master knowledge on material properties, construction technologies, and learn skills on structural analysis.

Course Objective 2: students will understand how structure design stimulates and affects architectural design, by learning to incorporate structural design starting from the concept design process. The course will help student form a 'structure-architecture' integrated design methodology.

Course Objective 3: students will further understand design principles and methods for construction details, and complete the detail drawings for their own architectural design practice.

1.3 Graduation Requirements Fulfilled by the Course

No.	Graduation Requirements	Details of Criteria
1	Engineering Knowledge	1-3 Understanding basic knowledge of material and structure, mastering the methodology to design them.
2	Ability of Research	4-1 Mastering basic theory of architecture, and basic knowledge of material, details, and structure of architecture.
3	Ability to use advanced tools	5-2 Mastering skills of design and graphics, with or without aid of computer tools.

1.4 Mapping between Course Objectives and Graduation Requirements

Course Objectives / Graduation Requirements	Objective 1	Objective 2	Objective 3
Engineering Knowledge	●		
Ability of Research		●	●
Ability to use advanced tools		●	●

2.Teaching Contents, Requirements, Framework, Methods

No.	Themes	No.	Contents	Requirements	Teaching Objectives	Teaching Method	Credit Hours	Extracurricular Hours
1	Concepts of structure design and methodologies	1	Concepts of structure design	understand	Objective 1	Course lectures (in English)	16	0
		2	Features of truss, cable, arch, beam and column, plate and grid, membrane and net, shell systems, and their corresponding design methods	learn				
		3	Principles of structural design	master				

No.	Themes	No.	Contents	Requirements	Teaching Objectives	Teaching Method	Credit Hours	Extracurricular Hours
2	Structural design practice	1	Structural system design	master	Objective 2	Self-directed study, Course discussions	9	0
		2	Primary structural member design	master				
3	Construction detail design practice	1	Construction of roof	master	Objective 3	Self-directed study, Course discussions	9	0
		2	Construction of floor	master				
		3	Construction of facades	master				

3. Course Teaching Value

This course is designed to satisfy the need of practical application of architecture. Students will learn to incorporate consideration on structure and construction details in architectural design from an early design stage. The course will stimulate students' interests in structure and construction, help them understand aesthetics based on Rationalism, understand the complicated relationship between aesthetics and design, and perform construction design from the perspective of health and safety.

4. Assessment, Grading and Requirement of Retaking the Course

Students are expected to complete all assignments and will be graded according to the following scale.

1) Class Attendance: students are required to fully participate in all course lectures and course discussions, accounting for 10%;

2) Essay Assignment: students are required to complete an essay to analyze one type of structural system and its application, accounting for 20%;

3) Final Design: students are required to complete a Student Centre design, including preliminary structural design (30%) and construction details (40%).

Students who fail to complete the course study should retake the full course in

accordance to the teaching regulations.

Assessment	Weight	Objectives	Remarks
Class Attendance	10%	Objective 1	Students are required to fully participate in all course lectures and course discussions
Essay	20%	Objective 1	Structural system analysis
Structural design	30%	Objective 2	Architectural and structural design of student center
Construction detail design	40%	Objective 3	Construction detail design of student center

5. Scoring Criteria

5.1 Class Attendance Scoring Criteria

Objectives	Scoring Description				
	100-90	89-80	79-70	69-60	59-0
Objectives 1~3	Full attendance in classes. Excellent performance in course discussions.Answering all the questions from the instructor correctly.	The student has one record of absence in classes. High performance in course discussions. The correct rate of answering the questions from the instructor is not less than 80%.	The student has two records of absence in classes. Good performance in course discussions. The correct rate of answering the questions from the instructor is not less than 70%.	The student has three records of absence in classes. Acceptable performance in course discussions. The correct rate of answering the questions from the instructor is not less than 60%.	The student has four or more records of absence in classes. The performance in course discussions is less than satisfactory. The correct rate of answering the questions from the instructor is below the qualified level.

5.2 Assignment Scoring Criteria

Objectives	Scoring Description				
	100-90	89-80	79-70	69-60	59-0

Objectives	Scoring Description				
	100-90	89-80	79-70	69-60	59-0
Objectives 1～3	Full attendance in classes. Excellent performance in course discussions. Answering all the questions from the instructor correctly.	The student has one record of absence in classes. High performance in course discussions. The correct rate of answering the questions from the instructor is not less than 80%.	The student has two records of absence in classes. Good performance in course discussions. The correct rate of answering the questions from the instructor is not less than 70%.	The student has three records of absence in classes. Acceptable performance in course discussions. The correct rate of answering the questions from the instructor is not less than 60%.	The student has four or more records of absence in classes. The performance in course discussions is less than satisfactory. The correct rate of answering the questions from the instructor is below the qualified level.

Objectives	Scoring Description				
	100-90	89-80	79-70	69-60	59-0
1-3	The essay of analysing a structural system is excellent. The student's performance reflects outstanding understanding of the structural design concepts and principles. The final design presentation and the explanation of and the key concepts, structural system and details are exceptional.	The essay of analysing a structural system is good. The student's performance reflects good understanding of the structural design concepts and principles. The final design presentation and the explanation of and the key concepts, structural system and details are good.	The essay of analysing a structural system is reasonable. The student's performance reflects understanding of the structural design concepts and principles. The final design presentation and the explanation of and the key concepts, structural system and details are reasonable.	The essay of analysing a structural system is acceptable. The student's performance reflects some understanding of the structural design concepts and principles. The final design presentation and the explanation of and the key concepts, structural system and details are acceptable.	The essay of analysing a structural system is not satisfactory. The student's performance reflects little understanding of the structural design concepts and principles. The final design presentation and the explanation of and the key concepts, structural system and details are unsatisfactory.

6.References

Book Title	Authors	Publisher	Edition	ISBN	Remarks
Structures	Daniel L. Schodek; Martin Bechthold	Prentice-Hall	7th Edition	ISBN 9780130488794	Text book