

Materials and Construction Syllabus

Course Name (CH)	材料与建造 (英)		
Course Name (EN)	Materials and Construction		
Course ID	020491	Language	英文
Credits	1	Credit hours	16
Category	Basic Course	Assessment	Review
Prerequisite	NA		
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1.Introduction and Objectives

1.1Introduction

This course is a professional basic course for the second year of architecture major. It enables students to understand the importance of construction technology in architectural design, and to be familiar with the basic principles, design methods and application technology of architectural construction design.

Through the systematic study of the combination of building materials and the connection of building construction parts, the students will have the ability to perceive the composition of buildings, the characteristics of building components and fittings made of different materials, as well as the related construction technologies of damp proof, waterproof, fire prevention, corrosion prevention, thermal insulation, sound insulation, etc. of buildings, and be familiar with the correct expression method of detailed drawings of building construction technology.

1.2 Objectives

Course objective 1: understand and master the relationship between construction technology and architectural design; Be familiar with and master the principles and techniques of architectural construction design;

Course objective 2: master the relevant construction design knowledge of each part;

Course objective 3: be familiar with relevant construction knowledge and specifications at home and abroad of various commonly used building materials;

Course objective 4: establish a set of effective self-learning methods; Cultivate the ability to comprehensively apply relevant knowledge.

1.3 Graduation Requirements Fulfilled by the Course

No.	Graduation Requirements	Details of Criteria
1	Engineering Knowledge	Master the basic theory and knowledge of architecture, the general technical system of architecture, and the ability of architectural design; master the general procedures and methods of architectural design; through the study of technical courses, understand the nature of building materials and structures and their design methods, and understand the instrumental and practical principles of architectural design.
2	Design/Development Solutions	Master the basic knowledge, the basic theory and operational methods of architectural design.
3	Research	Master the basic knowledge and theory of architecture, master the historical lineage and the characteristics of space and time of Chinese and foreign architecture from ancient to contemporary; master the basic knowledge of architectural tectonics, structure, mechanics, etc.; master the form and technological characteristics of architecture, and its relationship with the cultural system.
4	Utilizing Contemporary Tools	Learn the skills to conduct design research in a laboratory approach.
5	Sustainable Development	Understand and evaluate the impact of professional engineering practice for complex engineering problems on the above aspects, and consciously apply it comprehensively in design practice.
6	Professional Norms	Master the professional ethics and professional knowledge of architects.
7	Project Management	Understand the basic contents of laws, regulations and standards related to architecture, city and culture; Preliminarily have the ability to comply with and apply the current architectural design codes and standards in architectural design, and can be applied in a multidisciplinary environment.

No.	Graduation Requirements	Details of Criteria
8	Life-long Learning	Develop the awareness of independent learning and lifelong learning, and cultivate the ability to continuously learn and adapt to the development in the professional field.

1.4 Mapping between Course Objectives and Graduation Requirements

Course Objectives Graduation Requirements	Objective 1	Objective 2	Objective 3	Objective 4
Engineering Knowledge	●	●	●	●
Design/Development Solutions	●	●	●	●
Research	●	●	●	●
Utilizing Contemporary Tools				●
Sustainable Development	●	●	●	●
Professional Norms	●	●	●	●
Project Management	●	●	●	●
Life-long Learning	●	●	●	●

2. Teaching Contents, Requirements, Framework, Methods

No.	Themes	No.	Contents	Requirements	Teaching Objectives	Teaching Method	Credit Hours	Extracurricular Hours
1	Introduction	1	Elementary Knowledge	familiarity	Objective 1,4	Course lectures (in English), Self-directed study, Course discussions	2	2
		2	Construction Design	understanding				
		3	Expression of Detailed Design	mastery				
2	Floor and	1	Floor Systems	mastery	ective		2	2

No.	Themes	No.	Contents	Requirements	Teaching Objectives	Teaching Method	Credit Hours	Extracurricular Hours
	Roof Systems	2	Building Ground	familiarity				
		3	Roof Systems	familiarity				
3	Wall Systems	1	Basic Construction of Masonry Walls	familiarity	Objective 1,2		2	4
		2	Basic Construction of Partitions	familiarity				
4	Foundation Systems	1	Introduction	familiarity	Objective 1,2		2	2
		2	Types of Foundation Systems	familiarity				
5	Finish Work	1	Stucco	mastery	Objective 2,3		2	4
		2	Ceramic Tile	mastery				
		3	Stone Finish	mastery				
		4	Wood Finish	mastery				
		5	Suspended Ceiling	mastery				
6	Moisture and Thermal Protection	1	Introduction	familiarity	Objective 2,3		2	4
		2	Roofs	mastery				
		3	External Walls	mastery				
7	Doors and Windows	1	Elements of Doors and	familiarity	Objective 2,3		2	2

No.	Themes	No.	Contents	Requirements	Teaching Objectives	Teaching Method	Credit Hours	Extracurricular Hours
			Windows					
		2	Operation of Doors and Windows	mastery				
		3	Glazed Curtain wall	understanding				
		4	Special Doors and Windows	understanding				
8	Stairs and Elevators	1	Stairs	mastery	Objective 2,3		2	4
		2	Ramps	familiarity				
		3	Elevators	familiarity				
		4	Escalators	understanding				
		5	Accessibility Guidelines	familiarity				
9	Final Assignment	1	Program	mastery	Objective 4		1	10

3.Course Teaching Value

Through the interpretation of the history of this course, the deeds of famous architects and the famous buildings, and also through the fulfillment of the class works and final assignment, students can realize the comprehensiveness of professional work, cultivate the ability to analyze and solve problems independently, make preliminary preparations for the cultivation of professional knowledge, working methods, practical conditions, division of labor and coordination and other professional abilities.

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 40%;

2) Final Assignment: students are required to complete by oneself a detailed wall section under the guidance of the instructor, and to submit the report at the end of the semester, accounting for 60%.

Students who fail to complete the course study should retake the course in accordance to the teaching regulations. The instructor may determine the way of retaking the course (either "retake the full course" or "only re-submitting the assignments") according to the specific situation of the student.

Assessment	Weight	Objectives	Remarks
Final Assignment	60%	Objective 1	students are required to complete by oneself a detailed wall section under the guidance of the instructor, and to submit the report at the end of the semester
		Objective 2	
		Objective 3	
		Objective 4	
Class Attendance	40%	Objective 4	students are required to fully participate in all course lectures and course discussions

5.Scoring Criteria

5.1 Assignment Scoring Criteria

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

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	100-90	89-80	79-70	69-60	59-0
Objectives 1~4	Hand in the assignment on time; The presentation of the final assignment reflects outstanding achievement in both content and execution, including the summary of the key concepts, the analysis of the problems, the expression of drawings, the content of the construction design.	Hand in the assignment on time; The presentation of the final assignment reflects high achievement in both content and execution, including the summary of the key concepts, the analysis of the problems, the expression of drawings, the content of the construction design.	Hand in the assignment on time; The presentation of the final assignment fulfills all the requirements in both content and execution, including the summary of the key concepts, the analysis of the problems, the expression of drawings, the content of the construction design.	Late assignment without an extension in a short time; The presentation of the final assignment fulfills the basic requirements in both content and execution, including the summary of the key concepts, the analysis of the problems, the expression of drawings, the content of the construction design.	Missing or late assignments serious over time; The presentation of the final assignment does not fulfill the requirements in both content and execution, including the summary of the key concepts, the analysis of the problems, the expression of drawings, the content of the construction design.

5.2 Class Attendance 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 4	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.

6.References

Book Title	Authors	Publisher	Edition	ISBN	Remarks
Building construction illustrated	Francis D.K.Ching	John Wiley & Sons	Fifth edition	978-1-118-45834-1	Textbook
建筑构造	孟刚	同济大学出版社	第二版	978-7-5608-9979-4	Reference Book