

Department of Civil and Environmental Engineering
The Hong Kong University of Science and Technology
Spring Semester, 2022-23

Rubric	CIVL 3210
Title of course	Introduction to Construction Management
Class time & venue	Two 1.5-hour lectures with an additional hour of tutorial per week. - Lectures: Tues, Thurs 3:00 pm – 4:20 pm, LTC (Lifts 25-26) - Tutorial 1: Mondays 4:30 pm – 5:20 pm, LTG (Lifts 25-26) - Tutorial 2: Mondays 1:30 pm – 2:20 pm, LTG (Lifts 25-26)
Instructors	Dr. Jack C.P. Cheng (ceicheng@ust.hk ; Room 4606)
Teaching Assistants	Mr. GONG, Xingbo (Terence) (xgongai@connect.ust.hk), Mr. WU, Zhaoji (George) (zwubz@connect.ust.hk), Ms. XU, Yuqing (Rannie) (yxudv@connect.ust.hk), Mr. CHEN, Zhengyi (Joey) (zchenfq@connect.ust.hk)
Prerequisites	None
Credits	[3-1-0:3]
Course description	This course covers the basic knowledge, skills and techniques in construction management. It entails an introduction to the construction industry, initial and feasibility studies, impact assessment, tendering process, local statutory ordinances, contract strategy and management, cost estimation and control, project finance, resource allocation, and site safety.
Textbook(s) and/or other materials	Reference book: Halpin, D.W. and Senior B.A. (2017). <i>Construction Management</i> , 5 th edition, John Wiley & Sons, Inc.
Course objectives	At the end of this course, students will be able to: 1. Understand the construction industry and the inter-organizational relationship in construction projects, 2. Compare and contrast different tendering processes and the contract documents involved, 3. Compare and contrast different project delivery systems and contracts, 4. Estimate and evaluate the cost of various construction processes, 5. Perform economic appraisal and cost control of projects.
Topics	The following topics are covered in this course: <ul style="list-style-type: none"> • Basic concepts of the construction industry • Phases of a construction project • Bid package preparation • Introduction to project feasibility study and impact assessments • Construction contracts and project delivery systems • Project estimating and cost control • Project finance and appraisal • Resource allocation • Construction safety
Computer usage	No specific software required

Laboratory projects	No lab work required
Contribution to the professional component	75% engineering topics 25% communication and professional engineer
Intended Learning Outcomes (ILOs) of this course	On successful completion of this course, students are expected to be able to: <ul style="list-style-type: none"> I. Identify key features of the construction industry and the different stages in a construction project. II. Perform construction contract administration. III. Conduct cost estimation, cost control and project financing. IV. Specify the responsibilities of different parties in construction safety and project management. V. Appreciate a broad variety of engineering problems. VI. Formulate and solve a range of construction engineering and management problems.
Relationship to the program objectives	<p><i>PEO1: Provide students with professional skills in the design, construction and management of the civil infrastructure, as well as an awareness of environmental sustainability.</i></p> <p>This course provides students with knowledge of construction projects and the industry, feasibility studies, contract documents, cost estimating, and quality and safety management in Construction Engineering and Management. (ILO I, II, III, IV, V, VI)</p> <p><i>PEO4: Expose students to real world engineering projects as well as cutting edge research to improve their understanding of the profession and technological advancements that can improve current practice.</i></p> <p>This course uses real world examples for illustration and discussions in class and for practices in take-home assignments. (ILO III, VI)</p>
Relationship to program outcomes	<p><i>PO5: Develop an ability to identify and formulate civil and environmental engineering problems, and propose feasible solutions with an appreciation of their underlying assumptions, uncertainties, constraints, and technical limitations.</i></p> <p>Students have to identify construction engineering and management problems, and propose feasible solutions through case reviews and discussions in class as well as take-home assignments. (ILO III, VI)</p> <p><i>PO7: Develop an appreciation of the breadth of civil and environmental engineering, and acquire basic knowledge in several disciplines to enable effective performance within a multidisciplinary work environment.</i></p> <p>This course provides a wide range of subjects in Construction Engineering and Management, which helps students appreciate the breadth of civil engineering and the complexity of a construction project. (ILO I, II, IV, V)</p> <p><i>PO8: Obtain in-depth knowledge in the area of environmental engineering.</i></p> <p>This course is one of the required courses in the area of Construction Engineering and Management. (ILO I, II, III, IV)</p> <p><i>PO10: Recognize the importance of seeking further specialization within civil and environmental engineering and the need for life-long learning.</i></p>

	<p>This course provides a big picture of a construction project, which helps student relate various civil engineering disciplines and recognize the need for further understanding of them. (ILO I, II, III, V)</p> <p><i>PO11: Instill a deep sense of professional responsibilities and the importance of ethical and societal considerations, including public health, safety, environmental conservation, welfare etc.</i></p> <p>Students will learn the importance of professional responsibilities and societal considerations for business relationships in the construction industry. (ILO II, IV)</p>
Assessment of outcomes	<p>This course contributes to the assessment of program outcomes as follows:</p> <ol style="list-style-type: none"> 1. In-class exercises and homework assignments (20%) related to Construction Engineering and Management allow for assessment of students' understanding of Construction Engineering and Management. [PO 5, 7, 8, 10, 11] 2. A mid-term exam (30%), and a final exam (50%) allow for assessment of students' ability to apply their knowledge and technical skills to solve problems in Construction Engineering and Management. [PO 5, 8, 11]
Notes	<ul style="list-style-type: none"> • It is our collective responsibility to make each class a stimulating learning experience. I will start and end each class on time. At the same time, I expect you to show up for class on time. Please see http://www.ust.hk/vpao/conduct/good_learning_experience.pps for other proper classroom behaviors so that learning of everyone is fostered. • Take-home assignments should be submitted in class on the due date. Any late submission will not be graded and will be given zero mark. • In-class exercises will be conducted through the Internet-based Personal Response System (iPRS). Student may use either smart devices (smart phones/tablets) or ordinary PRS handsets as answering device. • PRS exercises will NOT be announced in advance. The exercises will be conducted randomly and spontaneously. In some classes, there may be no PRS exercise at all; in other classes we may have several PRS exercises. Sometimes PRS exercises will be conducted at the beginning of class; sometimes PRS exercises will be conducted during the middle, or at the end of class. • For each PRS exercise, 10 marks are given for correct answer, 5 marks for incorrect answer, and 0 marks for no answer. If you miss any given PRS exercise, there will be NO opportunity to retake that particular PRS exercise and 0 marks will be given to the exercise. The 2 worst scores will be discarded at the end of the semester. • PLEASE DO NOT USE MORE THAN ONE PRS DEVICE.
Prepared by	Dr. Jack C.P. Cheng
Date	7 February 2023

Tentative Class Schedule for CIVL 3210

(Note: The actual topics covered in each lecture may vary depending on the class pace.)

Week	Class	Date	Lecture Topic
1	1	7 February 2023 (Tues)	Course Overview Basic Concepts of Construction Management
	2	9 February 2023 (Thurs)	Basic Concepts of Construction Management
2	3	14 February 2023 (Tues)	Stages in a Construction Projects – Project Life Cycle, Preparing Bid Package
	4	16 February 2023 (Thurs)	Stages in a Construction Projects – Prequalification, Construction Bonds
3	5	21 February 2023 (Tues)	Stages in a Construction Projects – Bidding Process, Construction Phase
	6	23 February 2023 (Thurs)	Stages in a Construction Projects – Construction Phase, Retainage, Progress Reporting
4	7	28 February 2023 (Tues)	Stages in a Construction Projects – Progress Reporting, Value Engineering
	8	2 March 2023 (Thurs)	Construction Project Delivery Systems
5	9	7 March 2023 (Tues)	Construction Contracts
	10	9 March 2023 (Thurs)	Construction Contracts
6	11	14 March 2023 (Tues)	Construction Contracts
	12	16 March 2023 (Thurs)	Construction Safety
7	13	21 March 2023 (Tues)	Construction Safety
	14	23 March 2023 (Thurs)	Legal Structure
8	15	28 March 2023 (Tues)	Midterm exam
	16	30 March 2023 (Thurs)	Construction Cost Estimating
9	17	4 April 2023 (Tues)	Construction Cost Estimating
		6 April 2023 (Thurs)	Midterm break
10		11 April 2023 (Tues)	Midterm break
	18	13 April 2023 (Thurs)	Construction Project Funding – Financial Statements
11	19	18 April 2023 (Tues)	Construction Project Funding - Public Private Partnership (PPP)
	20	20 April 2023 (Thurs)	Cost Control and Earned Value Method
12	21	25 April 2023 (Tues)	Cost Control and Earned Value Method
	22	27 April 2023 (Thurs)	Lean Construction and Supply Chain Management
13	23	2 May 2023 (Tues)	Lean Construction and Supply Chain Management
	24	4 May 2023 (Thurs)	BIM and Digital Construction
14	25	9 May 2023 (Tues)	BIM Project Management; Course Review
* Midterm Break from 5 April 2023 to 11 April 2023			
* Last day of classes in Spring 2023 semester – 9 May 2023			