

**Department of Civil and Environmental Engineering**  
**Hong Kong University of Science and Technology**  
Spring 2024-25

Course code	<b>CIVL 3210</b>
Title of course	<b>Introduction to Construction Management</b>
Class Time & Venue	Two 1.5-hour lectures with an additional hour of tutorial per week <ul style="list-style-type: none"> <li>▪ Lectures: Mon &amp; Wed 9:00am – 10:20am, LTD (Lift 22, 1/F, Academic Building)</li> <li>▪ Tutorial 1: TBA</li> <li>▪ Tutorial 2: TBA</li> </ul>
Instructor	Prof. Yantao Yu                      Office: Room 3576                      Email: <a href="mailto:ceyantao@ust.hk">ceyantao@ust.hk</a>
Prerequisites	None
Credit	[3-1-0:3]
Course description	This course covers the basic knowledge, skills and techniques in construction management, including: introduction to the construction industry, initial and feasibility studies, impact assessment, tendering process, contract strategy and management, cost estimation and control, project finance, resource allocation, and site safety.
Textbook(s) and/or other materials	1. Halpin, D. W. (2011). <i>Construction Management</i> , Fourth Edition, John Wiley & Sons, Inc.  2. Fisk, E. R. and Reynolds, W. D. (2010). <i>Construction Project Administration</i> , Ninth Edition, Pearson Education, Inc.
Course Objectives	At the end of this course, students will be able to: <ol style="list-style-type: none"> <li>1. Understand the construction industry and the inter-organizational relationship in construction projects;</li> <li>2. Compare and contrast different tendering processes and the contract documents involved;</li> <li>3. Compare and contrast different project delivery systems and contracts;</li> <li>4. Estimate and evaluate the cost of various construction processes; and</li> <li>5. Perform economic appraisal and cost control of projects.</li> </ol>
Topics	The following topics are covered in this course: <ul style="list-style-type: none"> <li>▪ Basic concepts of construction management</li> <li>▪ Bid package preparation</li> <li>▪ Issues during the construction phase</li> <li>▪ Value engineering</li> <li>▪ Construction contracts</li> <li>▪ Risk allocation and liability sharing</li> <li>▪ Project cash flow</li> <li>▪ Project funding</li> <li>▪ Cost estimating and cost control</li> </ul>

Computer usage	No specific software required
Lab Projects	No lab work is 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: 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; and VI. Formulate and solve a range of construction engineering and management problems.
Relationship to the program objectives	<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>  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)  <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>  This course uses real world examples for illustration and discussions in class and for practices in take-home assignments. (ILO III, VI)
Relationship to program outcomes	<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>  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)  <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>  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)  <i>PO8: Obtain in-depth knowledge in the area of environmental engineering.</i>  This course is one of the required courses in the area of Construction Engineering and Management. (ILO I, II, III, IV)  <i>PO10: Recognize the importance of seeking further specialization within civil and environmental engineering and the need for life-long learning.</i>

	<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"> <li>1. <b>In-class exercises and homework assignments (40%)</b> related to Construction Engineering and Management allow for assessment of students' understanding of Construction Engineering and Management. [PO 5, 7, 8, 10, 11]</li> <li>2. <b>Midterm exam (20%) and Final exam (40%)</b> allows for assessment of students' ability to apply their knowledge and technical skills to solve problems in Construction Engineering and Management. [PO 5, 8, 11]</li> </ol>
Prepared by	Prof. Yantao Yu
Date	20 January 2025