

Subject Description Form

Subject Code	CSE30303
Subject Title	Construction Management
Credit Value	3
Level	3
Exclusion	CSE303 Construction Management I
Objectives	To provide students with the basic knowledge applicable to Hong Kong related to management of a civil engineering project. Students should gain basic knowledge in contemporary construction engineering and management with consideration of practical constraints and develop a variety of skills in construction management as well as decision optimization.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (i) Have the knowledge of the unique characteristics of construction industry, its stakeholders, and social and environmental constraints in managing a civil construction project; (ii) Have the knowledge of construction project development process and the inputs and outputs of the process such as specifications and contracts; (iii) Have the knowledge of construction project management and company organization; (iv) Develop skills in cost estimate, construction project scheduling, quality management, and safety management; (v) Have the ability to use decision analysis techniques such as linear programming to optimize management decisions; (vi) Use critical path scheduling software to analyse construction projects; (vii) Use building information modeling (BIM) software to analyse construction projects; (viii) Recognize the need for, and to engage in life-long learning; (ix) Develop computer application skills, English proficiency, communication ability, and work ethics as needed for a construction management career. Emphasis is placed on developing students' competence and confidence in writing and presentation in English in the context of construction management.

Subject Synopsis/ Indicative Syllabus	1. <u>Introduction to construction industry and project management</u> (1 week) The characteristics of construction industry, construction project development process, sustainability considerations in project development. 2. <u>Organisations</u> (1 week) Organisations of head offices of a consulting engineer and a construction firm; site organisations of a consulting engineer and a contractor. 3. <u>Contract Administration</u> (2 week) Types of civil engineering contracts; parties to a contract; responsibilities of the Engineer; tendering procedures and negotiation; contract documents; relationship between design and construction; pre-tender, pre-contract and post-contract planning; variations; claims; contract determination; final payment; settlement of disputes. 4. <u>Specification and Quantities</u> (1 week) Types and principles of specification writing; preparation of Bills of Quantities; prime cost and provisional sums; types of Bills of Quantities; Contract price fluctuations; interim payment. 5. <u>Safety on Site and Safety Management</u> (1 week) Identification of hazardous situations; precautions and training; safety of temporary works; safety audit; promotion of the importance of safety; safety costs; safety officer; reporting procedures on accidents; insurances. 6. <u>Linear Programming</u> (3 weeks) L.P. Models; transportation and assignment problems; graphical method; Simplex Technique; primal and dual; special algorithms. 7. <u>Quality Management of Construction Project</u> (1 weeks) Introduction to quality management processes; including quality assurance; quality acceptance; and quality control. 8. <u>Critical Path Networks and Computer Applications</u> (2weeks) Introduction to CPM/PERT as a tool for planning and scheduling, as compared to the traditional Gantt Chart programming; time-cost tradeoff; work breakdown structures (WBS); computer applications. 9. <u>Building Information Modeling (BIM) and Applications</u> (1 week) Introduction to BIM as a tool for construction planning, project process integration, and project administration; computer applications.
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Teaching/Learning Methodology	Lectures will be delivered to serve as an introduction to the topics, to provide an overview of knowledge, and to define significant areas. Case studies, specific applications of the knowledge will be demonstrated. Students will be given handouts on the main points of the lectures and are required to read the relevant chapters in the recommended reference books as well as articles and research papers in related journals.																																																															
Assessment Methods in Alignment with Intended Learning Outcomes	<table><tr><th rowspan="2">Specific assessment methods/tasks</th><th rowspan="2">% weighting</th><th colspan="9">Intended subject learning outcomes to be assessed</th></tr><tr><th>i</th><th>ii</th><th>iii</th><th>iv</th><th>v</th><th>vi</th><th>vii</th><th>viii</th><th>ix</th></tr><tr><td>1. Coursework</td><td>30%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr><tr><td>2. Final Examination</td><td>70%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td>100%</td><td colspan="9"></td></tr></table> Students must pass the final examination and achieve a passing overall score / grade to pass the subject. Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: The students will be assessed with two components, i.e., the assignment and a final examination at the end of the semester. Various assignments will be provided to assess students’ learning outcomes of (i) to (v). Special assignments on business communication and development of schedules using computer programs will be used to assess learning outcome (vi) and (vii). The examination will help students consolidate knowledge learnt in lectures and tutorials and thus achieving intended learning outcomes (i) to (v).											Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed									i	ii	iii	iv	v	vi	vii	viii	ix	1. Coursework	30%	✓	✓	✓	✓	✓	✓	✓	✓	✓	2. Final Examination	70%	✓	✓	✓	✓	✓					Total	100%									
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Student Study Effort Expected	Class contact:						Average hours per week																																																									
	▪ Lectures / Tutorials						3 Hrs.																																																									
	Other student study effort:																																																															
	▪ Self Study						6 Hrs.																																																									
	Total student study effort						9 Hrs.																																																									
Reading List and References	“Modern Construction Project Management”, by Tang S.L., Poon, S.W., Ahmed, S.M. and Wong, Francis K.W., Hong Kong University Press, 2 nd ed., 2003.																																																															

	“Project management for construction: Fundamental concepts for owners, engineers, architects, and builders”, by Hendrickson, C. and Au, T., 2008. “An Introduction to Management Science—Quantitative Approaches to Decision Making,” by Anderson, et al., 2009.
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