

Subject Description Form

Subject Code	BRE462
Subject Title	Advanced Construction Technology
Credit Value	3
Level	4
Pre-requisite	BRE361 & BRE350
Objectives	<ol style="list-style-type: none"> 1. Learn the selected topics on advanced construction technology in building construction 2. Foster guided learning and critical investigation on the cutting edge technologies in building construction 3. Appreciate the future trends, difficulties and challenges in the construction of tall buildings
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a) grasp the selected construction technologies and conduct preliminary analysis on their application scenarios; keep students abreast with the up-to-date technologies in tall buildings construction; b) Compare alternative solutions in building construction technologies (contemporary versus conventional; sustainable versus Non-sustainable; automated versus manual); c) Further enhance their communication skills through drawings, oral and written presentation in a team environment; d) Foster their life-long learning through independent thinking, self-study and critical reviews, in-depth investigations on some construction planning and management issues.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. High performance concrete including high strength concrete and self-compacting concrete. 2. Demolition: Code of Practice and Building Regulations for demolition works. 3. Advanced prefabrication practices in building construction. 4. Site layout planning: Basic principles in site layout planning, with due consideration to access, storage, accommodations, services, plants, health and safety, and related building regulations. 5. Resources planning: planning materials, manpower and equipment resources based on progress schedule; tower crane utilization, basic techniques in resource leveling. 6. Building Information Modelling (BIM) in construction process scheduling and management control.

7. Alternation and Addition Works (A & A works): Structural survey / appraisal, conversion, preservation, fulfillment of latest legal requirements on building and fire safety and other associated issues, project management for A & A works.

Teaching/Learning Methodology

Lectures
Lectures are designed to help the students gain basic knowledge and understanding on each selected topic.

Case studies: In-class reading and discussions
Case studies on each topic are intended to illustrate the theories and regulatory requirements. Reading materials are provided for in-class reading and discussions in the tutorial session.
In case study, representative construction technologies used for buildings / projects in Hong Kong, Shanghai, and other metropolitan areas, Guest speakers may be invited if appropriate.

Group Projects
The students will work in groups on topics about advanced construction technology to study as a focus group and prepare a report covering both theory and application cases. Both oral presentation and written report are required for assessment. In addition, there will be another group project on either site planning study or alternation and addition works (A & A works) which are closely related to their duties in the industry in the future.

Test / Written Examination
Test and written examination would be used to test student on the skills to solve problems on individual basis. The type of test / written examination would be in the form of multiple choice questions and/or open-end problem based questions.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	e
1. Group Project 1 (Presentation & Report)	30 %	√	√	√	√	
2. Group Project 2 (Site Planning or A & A Works)	30 %	√	√	√	√	
3. Test / Written Examination	40%	√	√		√	
Total	100 %					

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
Group projects will require students good understandings on the related construction technologies. Extensive reading and critical review are required. Project report will

	<p>require the students to demonstrate their collective work as a team with contributions from each team member with effective communications among team members.</p> <p>Written examination is used to demonstrate students' ability in analyzing issues and problems on an individual basis.</p>	
Student Study Effort Required	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.
	Other student study effort:	
	▪ Reading and writing assignments	40 Hrs.
	▪ Group project	40 Hrs.
	Total student study effort	119 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Buildings Department (2003). Code of Practice for Precast Concrete Construction, Buildings Department, Hong Kong SAR Government 2. Buildings Department (2004), Code of Practice for Demolition of Buildings, Buildings Department, Hong Kong SAR Government 3. Caldarone M. (2009). High Strength Concrete: a Practical Guide. Taylor & Francis. 4. Raton B. (2003). The Civil Engineering Handbook, 2nd edition, CRC Press. 5. Chudley R. and Greeno R. (2012). Advanced Construction Technology, 5th edition, Pearson. 6. Chudley R. and Greeno R. (2016). Building Construction Handbook, 11th Edition. Routledge. 7. Chew M. Y. L. (2012). Construction Technology for Tall Buildings, 4th edition, World Scientific. 8. Parker D., Wood A. (2013). The Tall Buildings Reference Book, Routledge (ebook). 9. Cooke, R (2007), Building in the 21st Century, Blackwell. 10. Watt D. (2007), Building Pathology: Principles and Practice, 2nd edition, Blackwell. 11. Macdonald S (ed.) (2003), Concrete: Building Pathology, Blackwell Science. 12. Crotty (2012), The impact of Building Information Modelling: Transforming Practices, Spon. 	