City University of Hong Kong
Course Syllabus

offered by Department of Architecture and Civil Engineering
with effect from Semester A 2017/18

Part I Course Overview

Course Title:	Earthquake and Offshore Engineering
Course Code:	CA6011
Course Duration:	1 Semester (Some courses offered in Summer Term may start a few weeks earlier than the normal University schedule. Please check the teaching schedules with CLs before registering for the courses.)
Credit Units:	3
Level:	P6
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	BC6011 Earthquake and Offshore Engineering
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

The course provides fundamental knowledge and design principles in earthquake and offshore engineering.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	apply fundamental principles of structural dynamics;	20%	✓		
2.	analyze dynamic response of structures;	20%	✓		
3.	analyze stationary random vibration in sea wave;	20%	✓	✓	
4.	analyse time series and random vibration in earthquake;	20%	✓	✓	
5.	apply theories to design.	20%	✓	✓	✓
		100%			

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)
(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.					Hours / week (if applicable)
		1	2	3	4	5	
Lecture	Theory on offshore structure and earthquake experiment	✓	✓	✓	✓		
Tutorial	Application on offshore and earthquake experiment	✓	✓	✓	✓	✓	
Laboratory	Computer implementation of theories			✓	✓	✓	

Semester Hours:	3 hours per week
Lecture/Tutorial/Laboratory Mix:	Lecture (-); Tutorial (-); Laboratory (-)
	3 hours per week including lectures, tutorial and laboratory sessions.

4. Assessment Tasks/Activities
(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks / Activities	CILO No.					Weighting	Remarks
	1	2	3	4	5		
Continuous Assessment: 50%							
Coursework	✓	✓	✓			30%	
Mid-term Test			✓	✓		20%	
Examination: 50% (duration: 3 hours)							
						100%	

To pass a course, a student must obtain minimum marks of 30% in both coursework and examination components, and an overall mark of at least 40%

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)/ Pass (P) on P/F basis	Failure (F)
Coursework	Vibration algorithm implementation	High	Significant	Moderate	Basic	Not even reaching marginal levels
Mid-term Test	Understanding the characteristics of wave and earthquake	High	Significant	Moderate	Basic	Not even reaching marginal levels
Examination	Ability to apply theories	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus
(An indication of the key topics of the course.)

Free vibration: one- and multi-degrees of freedom system. Newmark integration. Earthquake time series. Time response to earthquake. Wave force. Stationary random response. Non-stationary random response. Torsion response. Design of building structures for earthquake. Offshore structures.

2. Reading List

2.1 Compulsory Readings
(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Nil

2.2 Additional Readings
(Additional references for students to learn to expand their knowledge about the subject.)

1.	Anil K. Chopra. Dynamics of structures : theory and applications to earthquake engineering. Upper Saddle River, NJ : Prentice Hall, c2001; 2nd edition.
2.	J.M.T. Thompson, H.B. Stewart. Nonlinear dynamics and chaos. Chichester ; New York : Wiley, c2002; 2nd ed.