

**City University of Hong Kong  
Course Syllabus**

**offered by  
Department of Architecture and Civil Engineering  
with effect from Semester A 2022 / 2023**

**Part I Course Overview**

<b>Course Title:</b>	Earthquake and Offshore Engineering
<b>Course Code:</b>	CA8011
<b>Course Duration:</b>	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.)
<b>Credit Units:</b>	3
<b>Level:</b>	R8
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	Nil
<b>Precursors:</b> <i>(Course Code and Title)</i>	Nil
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	BC8011 Earthquake and Offshore Engineering
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

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## 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)

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%	✓	✓	✓
* If weighting is assigned to CILOs, they should add up to 100%.		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)

TLA	Brief Description	CILO No.					Hours / week (if applicable)
		1	2	3	4	5	
Lecture	Knowledge transfer	✓	✓	✓	✓		2
Discussion	Knowledge application	✓				✓	1

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

Assessment Tasks / Activities	CILO No.					Weighting*	Remarks
	1	2	3	4	5		
Continuous Assessment: 100%							
Essay and Lab Project	✓	✓	✓	✓		60%	
Presentation	✓				✓	20%	
Mid-term test			✓	✓		20%	
Examination: 0%							
* The weightings should add up to 100%.						100%	

## 5. Assessment Rubrics

### Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
Essay and Lab Project	Understand and apply theories and knowledge in offshore engineering	High	Presentable	Acceptable	Not even reaching marginal levels
Presentation	Test the presentation skill	High	Presentable	Acceptable	Not even reaching marginal levels
Mid-term test	Ability to understand and apply theories and knowledge	High	Presentable	Acceptable	Not even reaching marginal levels

### Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
Essay and Lab Project	Understand and apply theories and knowledge in offshore engineering	High	Presentable	Comfortable	Just acceptable	Below marginal
Presentation	Test the presentation skill	High	Presentable	Comfortable	Just acceptable	Below marginal
Mid-term test	Ability to understand and apply theories and knowledge	High	Presentable	Comfortable	Just acceptable	Below marginal

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

**1. Keyword Syllabus**

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**

1.	Nil
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**2.2 Additional Readings**

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.