

## Form 2B

# City University of Hong Kong

## Information on a Course

offered by Department of Architecture and Civil Engineering  
with effect from Semester A in 2014/2015

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### Part I

<b>Course Title:</b>	Fracture Mechanics
<b>Course Code:</b>	CA6246
<b>Course Duration:</b>	1 Semester (Some CA 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>	P6
<b>Medium of Instruction:</b>	English
<b>Prerequisites:</b>	Nil
<b>Precursor:</b>	Nil
<b>Equivalent Courses:</b>	Nil
<b>Exclusive Courses:</b>	Nil

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### Part II

#### Course Aims:

The course provides the student with an understanding of fundamental concepts including linear-elastic fracture mechanics, elastic-plastic fracture mechanics and various fracture mechanisms; and also application covering both the experimental and computational aspects.

#### Course Intended Learning Outcomes (CILOs):

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	Explain the linear-elastic fracture mechanics concept and the relationship between stress intensity factor and fracture energy.	---
2.	Explain the elastic-plastic fracture mechanics and understand the meaning of the J contour integral.	---
3.	Explain the fracture mechanism in different types of materials including metals, polymers and ceramics.	---
4.	Apply the fracture mechanics concept in designing fracture-related experiments and the corresponding modeling work.	---

## Teaching and Learning Activities (TLAs):

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

**Semester Hours:** 3 hours per week

**Lecture/Tutorial/Laboratory Mix:** Lecture (2); Tutorial (1)

CILO No.	TLAs	Total Hours (if applicable)
CILO 1	<ul style="list-style-type: none"><li>Lecture and tutorial/project on linear-elastic fracture mechanic</li></ul>	9
CILO 2	<ul style="list-style-type: none"><li>Lecture and tutorial/project on elastic-plastic fracture mechanics</li></ul>	9
CILO 3	<ul style="list-style-type: none"><li>Lecture and tutorial/project on fracture mechanisms</li></ul>	9
CILO 4	<ul style="list-style-type: none"><li>Lecture and tutorial/project on application of fracture mechanics</li></ul>	12

## Assessment Tasks/Activities:

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

**Coursework:** 50%

**Examination:** 50% (Examination duration = 3 hours)

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%.

CILO No.	Type of assessment tasks/activities	Weighting (if applicable)	Remarks
CILO 1	<ul style="list-style-type: none"><li>Assignment, quiz and examination</li></ul>	---	<ul style="list-style-type: none"><li>Nil</li></ul>
CILO 2	<ul style="list-style-type: none"><li>Assignment, quiz and examination</li></ul>	---	<ul style="list-style-type: none"><li>Nil</li></ul>
CILO 3	<ul style="list-style-type: none"><li>Assignment, quiz and examination</li></ul>	---	<ul style="list-style-type: none"><li>Nil</li></ul>
CILO 4	<ul style="list-style-type: none"><li>Assignment, quiz and examination</li></ul>	---	<ul style="list-style-type: none"><li>Nil</li></ul>

## Grading of Student Achievement:

### Grading Pattern:

Standard

Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

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## **Part III**

### **Keyword Syllabus:**

Fracture mechanics, linear-elastic, elastic-plastic, fracture mechanism, stress intensity factor, fracture energy, J-integral.

### **Recommended Reading:**

- **Texts:**
    1. T.L. Anderson, "Fracture Mechanics, Fundamentals and Applications", 2nd edition, CRC Press, 1994
    2. S. Suresh, "Fatigue of Materials", 2nd edition, Cambridge University Press, 1998
  - **Online Resources:**
    1. Nil
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