City University of Hong Kong
Course Syllabus

offered by Department of Architecture and Civil Engineering
with effect from Semester A 2024 / 2025

Part I Course Overview

Course Title:	Advanced Mechanics
Course Code:	CA8006M
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:	R8
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)*	BC8006M Advanced Mechanics
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

The course provides fundamental knowledge and classical principles in continuum mechanics including the theory on elasticity and plasticity and expands the horizons on applied mechanics of the attendees.

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.	discover the fundamental principles of continuum mechanics;	30%	✓	✓	
2.	analyze and apply continuum mechanics using tensor analysis;	30%	✓	✓	
3.	discover the concepts on stress and strain in three-dimension domain; and	20%		✓	✓
4.	discover and apply the advanced topics in elasticity and Lagrangian rigid body dynamics.	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 real-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. Learning and Teaching Activities (LTAs)

LTA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
Lectures	Introducing theory, concepts and problem solving	✓	✓	✓	✓	
Tutorials	Introducing theory, concepts and problem solving	✓	✓	✓	✓	

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

4. Assessment Tasks/Activities (ATs)

Assessment Tasks/Activities	CILO No.				Weighting	Remarks
	1	2	3	4		
Continuous Assessment: 100%						
Tests and/or assignments	✓	✓	✓	✓	100%	
Examination: 0%						
					100%	

5. Assessment Rubrics

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
Tests and/or assignments	Ability to understand and apply the scientific methods in solving theoretical and application problems.	High	Significant	Moderate	Basic	Not even reaching marginal levels

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
Tests and/or assignments	Ability to understand and apply the scientific methods in solving theoretical and application problems.	High	Significant	Basic	Not even reaching marginal levels

Part III Other Information

1. Keyword Syllabus

Elasticity: State of stress and strain at a point, stress-strain relationships; Curved beams, beams on elastic foundations
Non-linear mechanics: Bifurcation, and Chaos; Fractal, Fourier and p-elements; Monte Carlo simulation
Plasticity

2. Reading List

2.1 Compulsory Readings

1.	Nil

2.2 Additional Readings

1.	Eutiquio C. Young, Vector and Tensor Analysis, Marcel Dekker, Inc., New York, 1993.
2.	Y.C. Fung, Foundations of Solid Mechanics, Prentice Hall, Inc., New Jersey, 1965.