

**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>	Theory of Plates and Shells
<b>Course Code:</b>	CA8007M
<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>	BC8007M Theory of Plates and Shells
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

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## Part II Course Details

### 1. Abstract

The course provides enhanced knowledge in solid mechanics and advanced structural mechanics.

### 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 and exploit various modelling avenues for structural engineering components and obtaining exact and/or approximate solutions;		✓	✓	
2.	enrich research capability in plates and shells; and			✓	✓
3.	apply the theory of plates and shells in engineering designs.				✓
* 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	
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 (Mix); Tutorial (Mix); Laboratory ()
	3 hrs per week including lectures and tutorials. Lectures and tutorials will be conducted in class and/or online via internet.

### 4. Assessment Tasks/Activities

Assessment Tasks / Activities	CILO No.			Weighting*	Remarks
	1	2	3		
Continuous Assessment: 100%					
Tests and/or assignments	✓	✓	✓	100%	
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)
Tests and /or assignments	CAPACITY for SELF-DIRECTED LEARNING to understand the principles of plates and shells	High	Significant	Basic	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)
Tests and /or assignments	CAPACITY for SELF-DIRECTED LEARNING to understand the principles of plates and shells	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**

Variational principles: strain energy, Lagrange method, Ritz method, Galerkin method, Levy's method, Kantorovich method.

Rectangular plates: bending of plates, simply supported plates, Navier solution, clamped plates, vibration and buckling of plates. Circular plates: plates in polar coordinates, simply supported and clamped circular plates, vibration and buckling of circular plates. Theory of shells, cylindrical shells, shallow and deep shells. Symplectic method for plates and shells.

**2. Reading List**

**2.1 Compulsory Readings**

1.	Nil
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**2.2 Additional Readings**

1.	A.C. Ugural, Stresses in Plates and Shells, McGraw-Hill International Edition, 1999. ISBN: 0-07-116793-5.
2.	S. Timoshenko and S. Woinowsky-Kreiger, Theory of Plates and Shells, McGraw-Hill Education, 1969, ISBN: 0070858209.
3.	J.S. Rao, Dynamics of Plates, Narosa Publishing House, 1999, ISBN: 81-7319-250-2.