

**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>	Fire Safety Engineering for Built Environment I
<b>Course Code:</b>	CA8019M
<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>	BC8019M Fire Safety Engineering for Built Environment I
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

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## Part II Course Details

### 1. Abstract

This course aims to provide students with in-depth theoretical base for fire science, fire dynamics and fire modelling and to further the study on the fire properties of materials in building technology.

### 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.	explore the in-depth knowledge in pyrolysis of solid, ignition phenomena, combustion mechanism, fire science and fire dynamics; list the fire characteristics and fire resistance properties of building material;				
2.	evaluate the application of the advanced development and researches in fire engineering to building fires;				
3.	apply the advanced development and researches techniques and mathematical models to solve fire engineering problems.				✓
* 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 and Class Tests	Explore, evaluate and apply knowledge in pyrolysis, combustion and fire dynamics	✓	✓	✓	27
Presentation	Assignment Presentation			✓	12

Semester Hours:	hours per week
Lecture/Tutorial/Laboratory Mix:	Lecture (-); Tutorial (-); Laboratory (-)
	Lec/Tut/Self-learning mixed mode (total contact hours: 39 hours). The course will be offered outside Hong Kong.

### 4. Assessment Tasks/Activities

Assessment Tasks / Activities	CILO No.			Weighting*	Remarks
	1	2	3		
Continuous Assessment: 100%					
Assignments	✓	✓	✓	50%	
Class Tests	✓			30%	
Presentation		✓	✓	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)
Assignments	Ability to appreciate CILO 1 to 3	High	Significant	Basic	Not even reach marginal level
Class Tests	Ability to appreciate CILO 1	High	Significant	Basic	Not even reach marginal level
Presentation	Ability to appreciate CILO 2 to 3	High	Significant	Basic	Not even reach marginal level

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)
Assignments	Ability to appreciate CILO 1 to 3	High	Significant	Moderate	Basic	Not even reach marginal level
Class Tests	Ability to appreciate CILO 1	High	Significant	Moderate	Basic	Not even reach marginal level
Presentation	Ability to appreciate CILO 2 to 3	High	Significant	Moderate	Basic	Not even reach marginal level

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

**1. Keyword Syllabus**

Fire processes. Thermochemistry. Premixed and diffused flames. Thermal decomposition. Combustion. Compartmental fires. Building fire modeling.

**2. Reading List**

**2.1 Compulsory Readings**

1.	Nil
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**2.2 Additional Readings**

1.	Drysdale, D. (2011) An Introduction to Fire Dynamics, John Wiley & Sons, 3rd Edition.
2.	Karlsson, B. and Quintiere, J.G., (1999) Enclosure Fire Dynamics, CRC Press, 1st Edition.
3.	Philip J. DiNenno (Ed.) (2002) The SFPE Handbook of Fire Protection Engineering, Society of Fire Protection Engineers, National Fire Protection Association, 3rd Edition.
4.	Yeoh, G.H. and Yuen, K.K. (2009) Computational Fluid Dynamics in Fire Engineering - Theory, Modeling & Practice, Elsevier.
5.	Yuen, R.K.K. (1998) Pyrolysis and Combustion of Wood in a Cone Calorimeter. PhD Thesis, University of New South Wales, Australia.