

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

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|--|---|
| Course Title: | Fire Safety Engineering for Built Environment II |
| Course Code: | CA8020 |
| 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: <i>(Course Code and Title)</i> | Nil |
| Precursors: <i>(Course Code and Title)</i> | Nil |
| Equivalent Courses: <i>(Course Code and Title)</i> | BC8020 Fire Safety Engineering for Built Environment II |
| Exclusive Courses: <i>(Course Code and Title)</i> | Nil |

Part II Course Details

1. Abstract

This course aims to provide students with an understanding of the critical appraisal in current technology developments and reliability study of various fire engineering systems and to provide the students with the understanding the performance-based building fire codes and the performance-based codes for fire engineering systems.

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 and understand the performance-based building fire codes and the performance-based codes for fire engineering systems; | | | | |
| 2. | evaluate and analyze the reliability of various fire engineering systems; | | | | |
| 3. | apply current technologies of fire engineering for the design simple fire services systems. | | | | ✓ |
| | | 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 | |
| Lectures and Class Tests | Explore evaluation and apply performance-based fire engineering and design | ✓ | ✓ | ✓ | 27 |
| Presentation | Assignment presentation | | ✓ | ✓ | 12 |

| | |
|----------------------------------|---|
| Semester Hours: | 3 hours per week |
| Lecture/Tutorial/Laboratory Mix: | Lecture (2); Tutorial (1); Laboratory (0) |

4. Assessment Tasks/Activities (ATs)

| Assessment Tasks/Activities | CILO No. | | | Weighting | Remarks |
|-----------------------------|----------|---|---|-----------|---------|
| | 1 | 2 | 3 | | |
| Continuous Assessment: 100% | | | | | |
| Assignments | ✓ | ✓ | ✓ | 50% | |
| Class Tests | ✓ | | | 30% | |
| Presentation | | ✓ | ✓ | 20% | |
| 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) |
|-----------------|-----------------------------------|--------------------------|---------------------|---------------------|-----------------|-----------------------------------|
| Assignments | Ability to appreciate CILO 1 to 3 | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| Class Tests | Ability to appreciate CILO 1 | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| Presentation | Ability to appreciate CILO 2 to 3 | 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) |
|-----------------|-----------------------------------|--------------------------|-----------------|-------------------------|-----------------------------------|
| Assignments | Ability to appreciate CILO 1 to 3 | High | Significant | Basic | Not even reaching marginal levels |
| Class Tests | Ability to appreciate CILO 1 | High | Significant | Basic | Not even reaching marginal levels |
| Presentation | Ability to appreciate CILO 2 to 3 | High | Significant | Basic | Not even reaching marginal levels |

Part III Other Information

1. Keyword Syllabus

Critical appraisal in current technology developments. Reliability study. Audio/visual advisory systems. Automatic actuating devices. Fire alarm systems and fire control centre. Fire detection. Performance based building fire codes. Use of computing models and computational fluid dynamic models in assisting the design of fire engineering systems. Performance-based codes for the fire engineering systems.

2. Reading List

2.1 Compulsory Readings

| | |
|----|-----|
| 1. | Nil |
|----|-----|

2.2 Additional Readings

| | |
|----|---|
| 1. | Drysdale, D. (2011) <i>An Introduction to Fire Dynamics</i> , John Wiley & Sons, 3rd Edition. |
| 2. | Karlsson, B. and Quintiere, J.G., (1999) <i>Enclosure Fire Dynamics</i> , CRC Press, 1st Edition. |
| 3. | Philip J. DiNenno (Ed.) (2002) <i>The SFPE Handbook of Fire Protection Engineering</i> , Society of Fire Protection Engineers, National Fire Protection Association, 3rd Edition. |
| 4. | Yeoh, G.H. and Yuen, K.K. (2009) <i>Computational Fluid Dynamics in Fire Engineering - Theory, Modeling & Practice</i> , Elsevier. |
| 5. | Yuen, R.K.K. (1998) <i>Pyrolysis and Combustion of Wood in a Cone Calorimeter</i> . PhD Thesis, University of New South Wales, Australia. |
| 6. | National Fire Protection Association (2013) <i>National Fire Alarm and Signaling Code</i> . |