

Subject Description Form

Subject Code	BSE535
Subject Title	Design Considerations for Fire Safety Management
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	<p>To provide fire protection engineers with appropriate design knowledge for fire safety management.</p> <p>To review the design criteria in various fire safety design.</p> <p>To review main performance characteristics, limitations and applications of existing fire safety systems.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. have a clear understanding of appropriate design knowledge for fire safety management; b. understand the design criteria in various fire safety design; c. appreciate the role of fire safety management systems in providing fire safety; d. understand merits, limitations and application of existing prescriptive fire safety systems; e. improve the fire safety provisions and management strategies.
Subject Synopsis/ Indicative Syllabus	<p>Fire safety management by design: Fire safety concept, objectives of fire safety, the rationale of fire safety design, systems approach to fire safety design, National Fire Protection Association Decision Tree.</p> <p>Application of fire science: Application of scientific results such as ignition, flammability limit, thermal inertia, flame propagation and various extinguishing mechanisms.</p> <p>Health hazard of human/fireman: Health hazard associated with combustion products; Toxic combustion products, asphyxiants, narcosis-producing products, e.g., CO & HCN; Irritants tenability limits for incapacitation.</p> <p>Design of passive fire safety measures: Fire properties of performance of building materials and structures, fire resistance, compartmentations, fire hazards in industrial processes, escape route design, fire tests.</p> <p>Design of active fire safety measures: Design of various fire services systems including water-based systems, non-water based systems and smoke control systems; Integration of fire safety measures with other services installations.</p> <p>Design approach: Performance specification, alternatives to an equivalent level of fire safety, design innovation.</p>

	<p>Risk analysis and assessment: Fire risk ranking, components of the ranking method, statistical records.</p> <p>Risk assessment model: Integration of the other models related to fire such as ignition model, fire spread model, smoke spread model, evaluation on the response and performance of the fire system, human response; Use of fire safety engineering software such as FPETOOL and HAZARD1.</p> <p>Reliability of engineering systems: Reliability of various fire safety measures and their impact to the fire safety design.</p> <p>Fire safety administration in the building industry: The principles and techniques of fire safety administration, planning for emergencies, the structure of the fire safety administration within an organisation.</p> <p>Evacuation: Human factors, evacuation pattern, means of escape, design software.</p> <p>Personnel management: The functions of fire safety manager, fire safety team, fire safety engineer/surveyors, loss control, training of personnel.</p> <p>System management: Maintenance, commissioning, operation and testing of fire safety features, inspection safety check lists and statistics, fire investigation and reports, security and fire safety.</p> <p>Case studies and application of research: Hotels, commercial buildings, place of assemble and entertainment, residential buildings, industrial buildings, hospitals, special buildings such as tunnels, air-supported structures.</p>																																												
<p>Teaching/Learning Methodology</p>	<ul style="list-style-type: none"> • Lectures and seminars • Student seminars and tutorials 																																												
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="459 1211 1487 1648"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a.</th> <th>b.</th> <th>c.</th> <th>d.</th> <th>e.</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Continuous assessment</td> <td>40%</td> <td></td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Based on examination mark (60%) and continuous assessment mark (40%). The continuous assessment is made up of course work, seminar and case study.</p> <p>Tutorial Work</p> <p>Tutorial work will mainly focus on problem solving based on examination type questions and practical examples.</p>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a.	b.	c.	d.	e.		1. Examination	60%	✓	✓	✓	✓			2. Continuous assessment	40%		✓			✓		Total	100%						
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Reading List and References

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