

Subject Description Form

Subject Code	BSE2302
Subject Title	Fire Services
Credit Value	3
Level	2
Pre-requisite Co-requisite Exclusion	BSE1201 Thermofluids Nil Nil
Objectives	<ol style="list-style-type: none"> 1. To introduce all relevant building and fire services rules, regulations and codes of practice. 2. To provide knowledge of various fire services technologies and their installations. 3. To introduce the application of fire services engineering.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a) identify and interpret the relevant rules/ codes of practice/ standards (e.g. British Standards, etc.) and local statutory regulations for all fire protection system designs and installations; b) appraise and select appropriate fire protection systems, and analyze a design or an installation or make improvements upon the evaluation of alternative systems; c) develop and perform fire protection engineering calculations for engineering design and installation; d) prepare appropriate design layouts and diagrams; e) recognize the procedures/ methods of physical installations of fire services; and f) integrate the fire engineering systems with other designers and building services contractors.
Subject Synopsis/ Indicative Syllabus	<p><u>Subject Synopsis</u></p> <p>This subject introduces the basic concept of the fire services systems, regulations, codes of practice and technologies with distribution schematics which lead students to a good understanding with professional knowledge of various fire services systems. Fire services system components and equipment will be discussed to reinforce student's understanding of the actual systems. Theories will be introduced wherever necessary to understand the fundamentals and principles.</p> <p><u>Indicative Synopsis</u></p> <p>Basics: Fire safety in buildings. Water supply and storage, pipe sizing and fire safety engineering calculations.</p> <p>Technology: Fire detection and alarm systems. Water-based systems such as fire hydrant/ hose reel systems and sprinkler systems. Foam and dry powder systems. Gas protection systems. Smoke control systems. System integration with other electrical and mechanical services.</p> <p>Installations: General practices and safety requirements in relation to the systems stated. System components and arrangements. Installations for high rise buildings.</p> <p>Rules and regulations: Appreciation of rules, local fire codes, building regulations and codes of practice in relation to fire services.</p> <p>Operation and maintenance: Appreciation of general practice on the operation and maintenance related to the systems stated.</p> <p>Contract practice: Appreciation of fire services technology procurement and site management.</p>
Teaching/Learning Methodology	<p>A system approach is to be taken. Online lectures will deliver fundamental knowledge of theories and facts which will lead to achievement of all intended learning outcomes.</p> <p>Online tutorials will be provided to supplement lectures and seminars. The tutorials will facilitate learning to achieve all the intended learning outcomes.</p> <p>Student-based seminars will be used to allow students to search for information, study cases and present their findings. There will also be online assessment, laboratory sessions and end-of-semester</p>

examination. Practices will be discussed through plant room visit.

Independent study by students, such as literature and information searching, preparation of seminar report and presentation, is required to achieve all the intended learning outcomes.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
		a	b	c	d	e	f
Coursework							
▪ Online assessment	15	✓	✓	✓	✓		✓
▪ Student-based seminar	15	✓	✓	✓	✓	✓	✓
▪ Laboratory work	10		✓		✓	✓	
End-of-semester examination	60	✓	✓	✓	✓		✓
Total	100						

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

1. Online assessment is delivered with questions to evaluate the students' understanding on codes requirements, the basics, technology, design and calculations on some fire services installations etc. Most intended learning outcomes can be achieved through this assessment.
2. Student-based seminar with online group presentation and group report submission is to assess students' abilities to search for information, interpret codes, analyze fire protection systems and integrate them with others building services systems etc. They will facilitate learning and achieve all intended learning outcomes.
3. Laboratory work allows students to watch videos of experiments to appraise fire services systems and their components. Intended learning outcomes, in particular (b), (d) and (e) will be achieved.
4. The end-of-semester examination is the final assessment for students to ensure their understanding and learning abilities. Nearly all intended subject learning outcomes will be achieved.

Student Study Effort Expected	Online contact:	
	▪ Lectures	20 Hrs.
	▪ Tutorials	9 Hrs.
	▪ Seminar	2 Hrs.
	▪ Laboratory	6 Hrs.
	▪ Online assessment	2 Hrs.
	Other student study effort:	
	▪ Self-preparation and self-study	36 Hrs.
	▪ Seminar preparation	6 Hrs.
	▪ Preparing laboratory work and reports	9 Hrs.
	▪ Test preparation	10 Hrs.
	▪ Examination preparation	20 Hrs.
	Total student study effort	120 Hrs.
Reading List and References	<p>Chartered Institution of Building Services Engineers (CIBSE) Guide E: Fire Safety Engineering, CIBSE, London, UK, 2017.</p> <p>Code of Practice for Fire Safety in Buildings 2011, Buildings Department, Hong Kong Special Administrative Region (HKSAR), the latest version.</p> <p>Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment, Fire Services Department (FSD), HKSAR, the latest version.</p> <p>Fire Protection Handbook, 20th Edition, National Fire Protection Association (NFPA), Quincy, USA, 2008.</p> <p>Justin Duncan, Fire Protection Systems, 2nd Edition, American Society of Plumbing Engineers, 2001.</p> <p>List of FSD Circular Letters, FSD, HKSAR.</p> <p>Loss Prevention Council LPC Rules for Automatic Sprinklers Installations Incorporating British Standard BS EN 12845 – Fixed firefighting systems – Automatic sprinkler systems – Design, installation and maintenance (with suitable modification pertinent to Hong Kong), LPC, UK, 2003.</p> <p>NFPA Standards, American National Standards Institute/ National Fire Protection Association, USA.</p>	