## Subject Description Form

| | |
|---|---|
| Subject Code | **BSE4317** |
| Subject Title | **Fire Engineering Safety Management** |
| Credit Value | 3 |
| Level | 4 |
| Pre-requisite<br>Co-requisite<br>Exclusion | BSE3321 Fire Services<br>Nil<br>Nil |
| Objectives | (a) To introduce the concepts and practices of fire safety management to ensure the performance of fire engineering systems<br>(b) To understand the fire risks and legislation aspects in the fire safety management practice<br>(c) To understand the performance characteristics, limitations and applications of fire engineering systems |
| Intended Learning Outcomes | Upon the completion of the subject, students will be able to:<br>(a) Evaluate a broad range of practical fire engineering system designs and suitability of fire safety management requirements<br>(b) Design and evaluate fire engineering systems for typical and non-typical fire safety management plans<br>(c) Make innovative solutions to fire engineering risk and safety management strategies |
| Subject Synopsis/ Indicative Syllabus | **Fire engineering systems and building elements:** Standard fire conditions and full-scale fire tests, building material properties at elevated temperature, building element behavior under fire and smoky conditions, smoke management and pressurization, safety principles, basic designs, codes and standards.<br><br>**Human behavior in fire:** fire and smoke effects to human, human behavioral and psychological responses, skin burns, visibility, toxicity and the N-gas model, tenable conditions and fractional effective dose, people movement in fire emergency, applications in fire safety design and management, case study.<br><br>**Fire risk and fire safety management:** Principles and technique, performance-based fire designs, system response and performance evaluation, rationale for safety requirement, fire risk assessment analysis and models, fire risk indexing, fault tree, decision tree, engineering economics, fire safety administration in building industry, fire safety and emergency plans, safety and security. |
| Teaching/Learning Methodology | Teaching approach includes lectures, student-based seminars, case studies and tutorials. Applications of engineering equations, technical data, regulations, standards and guidance notes prepared by various statutory bodies and others will be discussed in lectures, assisted with tutorials, and case study discussions to achieve the expected learning outcomes (a) and (b). Student participation is expected in the solving of selected examples in tutorial work, including examination questions and longer open-ended problems. In-class assignment (s) included problem solving and assessments are used to ensure the learning process. Each student group will work for an assigned seminar topic related to the fire engineering safety management, present the topic to class and submit an investigation report. It is used to achieve the learning outcome (c). |

**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 | | | |
| In-class assessment (Test) | 20 | ✓ | ✓ | | | | |
| Seminar | 20 | ✓ | | ✓ | | | |
| End-of-semester-examination | 60 | ✓ | ✓ | ✓ | | | |
| Total | 100 % | | | | | | |

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

Written assessment is used to evaluate the learning outcomes (a) and (b). Students are expected to apply the delivered subject contents to solve for designed questions.

Student-based seminar is used to evaluate the learning outcomes (b) and (c). Each student group will work for an assigned seminar topic related to the fire engineering safety management, present the topic to class and submit an investigation report.

Written examination is used to evaluate all the specified learning outcomes.

Students must attain at least grade D in both coursework and final examination (whenever applicable) in order to attain a passing grade in the overall result.

**Student Study Effort Expected**

| | |
|---|---|
| Class contact: | |
| • Lecture | 20 Hrs. |
| • Tutorial | 10 Hrs. |
| • Seminar | 6 Hrs. |
| • Assessment | 2 Hrs. |
| Other student study effort: | |
| • Coursework | 30 Hrs. |
| • Self study | 52 Hrs. |
| Total student study effort | 120 Hrs. |

**Reading List and References**

DELLA-GIUSTINA, Daniel E. Fire Safety Management Handbook. CRC Press, 2014.

HURLEY, Morgan J., et al. (ed.). SFPE handbook of fire protection engineering. Springer, 2015.