University of the Built Environment
EST. 1919

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Fire Engineering

Module Descriptor

Module Code:	BSE4FEN
Version:	V1.00
Status:	Final
Date:	25/03/2026

Summary Module Details

Module details

Module Title: Fire Engineering

Module Leader: TBC

Module Mode: Supported online learning

Semester: Spring (UK)

Level: 4

Credits: 20 Hours

Learning Hours: 200

Contact & Study Hours

Directed Study Time: 90 hrs (45%)

Self-directed Study Time: 50 hrs (25%)

Assessment Study Time: 60 hrs (30%)

Assessment Type

Coursework: 80%

Computer Marked Assessment: 20%

Module Summary

This module focuses on the role of building services in supporting fire safety and resilience. It explores the principles of fire dynamics, regulatory frameworks, and the integration of fire safety measures into building design. Topics include fire detection and alarm systems, smoke control and extraction, active suppression technologies (sprinklers, misting, gaseous systems), and passive protection strategies. Students will examine means of escape design, evacuation modelling, and the coordination of fire systems with wider MEP services. Practical case studies will highlight the interaction between regulatory compliance, health and safety, and the protection of life, property, and business continuity.

Taken on which Programmes

CertHE Building Services Engineering **(C)**

Core (C) or Elective (E)

Module Aims

This module aims to:

- Provide an understanding of the principles of fire dynamics and the regulatory frameworks governing fire safety in buildings.
- Explore the design and application of fire detection and alarm systems, smoke control, and active suppression technologies such as sprinklers, misting, and gaseous systems.
- Develop knowledge of passive fire protection strategies and their integration with wider building services.
- Examine approaches to means of escape design and evacuation modelling to ensure life safety and resilience.
- Highlight the importance of regulatory compliance, health and safety, and coordinated fire strategies in protecting life, property, and business continuity.

Module Learning Outcomes

LO1 Explain the principles of fire detection, suppression, and smoke control systems in buildings.

LO2 Interpret and apply key requirements of fire safety legislation, codes, and standards relevant to building services.

LO3 Analyse how building layout, materials, and services design influence fire risk and occupant safety.

LO4 Demonstrate an understanding of ethical responsibility and public safety in fire systems design, including the consequences of non-compliance or poor practice in building services engineering.

Indicative Module Content

Module topics

Principles and Regulatory Frameworks

The module begins with the fundamentals of fire dynamics, the spread of smoke and heat, and the key regulatory frameworks that govern fire safety in buildings. Students develop an understanding of how codes, standards, and legislation shape fire engineering practice.

Detection, Suppression, and Smoke Control

This theme focuses on active fire protection systems, including fire detection and alarm systems, smoke control and extraction methods, and suppression technologies such as sprinklers, misting, and gaseous systems. The emphasis is on how these systems are designed, applied, and integrated within buildings.

Passive Protection and Means of Escape

Attention then shifts to passive fire protection measures such as compartmentation, fire-resistant materials, and protected escape routes. Students explore the principles of means of escape design and evacuation modelling, linking these strategies to occupant safety and regulatory compliance.

Integration, Resilience, and Case Studies

The final theme consolidates learning by examining the coordination of fire safety measures with wider MEP services. Through case studies, students evaluate the interaction between regulation, health and safety, and business continuity, reflecting on how integrated fire strategies protect life, property, and long-term resilience.

Overview of Assessment

Each module follows a progressive structure of **two summative assessments** designed to build confidence, competence and professional judgement.

Assessment 1 is a computer-marked assessment (CMA) that provides early feedback and supports consolidation of core knowledge and principles. Positioned mid-module, it acts as both a confidence booster and a diagnostic opportunity to identify areas requiring further support, ensuring students are well prepared for the final assessment.

Assessment 2 is an integrated applied task that develops professional competence and judgement through two complementary components.

Part 1 – Developing Professional Judgement
Students interpret and communicate technical information using provided drawings, schedules and structured templates. They analyse well-defined engineering scenarios and present clear, concise technical responses. At this level, no original design production is required; evidence is demonstrated through mark-ups, brief technical commentary and completion of pro-forma documentation.

Part 2 – Applied Professional Output and Reflection
Students produce applied outputs in authentic industry formats (e.g., technical specifications, compliance notes, risk assessments or structured reports). This component aligns with Senior Technician practice and End Point Assessment expectations, requiring clear, usable professional documentation suitable for real project contexts. A structured reflective element supports the development of professional judgement and readiness for progression.

Module learning outcomes	Assessment	Word count or equivalent	Weighting
LO1 & LO2	**Assessment 1** CMA	600 words equivalent	20%
LO1, LO2, LO3 & LO4	**Assessment 2** Coursework	2,400 words equivalent	80%

Module Pass Mark (as a weighted average of all assessments): 40%

Students will also be offered optional pre-course reading and self-assessment activities to refresh basic technical and mathematical skills before starting the module.

Students are encouraged to complete optional pre-course reading and diagnostic quizzes to familiarise themselves with key environmental and scientific principles prior to engaging with the module content.

Key Module Learning Resources

Core Sources and Texts

The core reading resources within each module will be provided via the specific Virtual Learning Environment (VLE) module pages and within the e-Library. Additional reference material and supplementary resources to support your studies are available through the University e-Library.

Module tools

Students will have access to study materials, dedicated academic support, student forums, and learning activities via an online learning platform (VLE).

The module page on the VLE is broken down into structured study weeks to help students plan their time, with each week containing a mixture of reading, case studies, videos/recordings and interactive activities to go through. Online webinars/seminars led by the Module Leader can be attended in real time and provide opportunities to consolidate knowledge, ask questions, discuss topics and work through learning activities together. These sessions are recorded to support students who cannot attend and to enable students to recap the session and work through it at their own pace. Module forums on the VLE provide further opportunities to discuss topics with other students, complete collaborative work and get extra help from the module team.

Professional online resources

The e-Library provides access to trusted, quality online resources, selected by subject specialists, to support students' study. This includes journals, industry publications, magazines, academic books and a dissertation/work-based library. For a list of the key industry specific and education resources available please visit the VLE e-Library.

Other relevant resources

Access is also provided to further information sources that include the British Library and Open University UK catalogues, as well as providing a monthly current awareness service entitled, ***Knowledge Foundations*** - a compendium of news, research and resources relating to the educational sector and the Built Environment.

The module resource list is available on the module VLE page and is updated regularly to ensure materials are relevant and current.