

Sustainable and Innovative Construction

Module Descriptor

Module Code: CON7SDC

Version: 8.00

Status: Final

Date: 15/09/2022

Summary Module Details

Module details

Module Title: Sustainable and Innovative Construction

Module Leader: Graeme Larsen

Module Mode: Supported online learning

Semester: Autumn (UK) and Spring (UK)

Level: 7

Credits: 20

Learning Hours: 200

Contact & Study Hours

Directed Study Time: 60hrs (30%)

Self-directed Study Time: 70hrs (35%)

Assessment Study Time: 70hrs (35%)

Assessment Type

Coursework: 100%

Computer Marked Assessment: 0%

Self-directed Research Project: 0%

Portfolio: 0%

Module summary

This module develops the principles of construction technology, including modern, innovative and traditional construction. Within the framework of a sustainable built environment, assessment methods and relevant codes and regulations are explored in providing for a sustainable agenda.

Taken on which programmes

MSc Building Surveying (C)

MSc Construction Management (C)

MSc Quantity Surveying (C)

MSc Real Estate (E)

Core (C) or Elective (E)

Module Aims

This module aims to examine:

- Construction principles and technology with reference to sustainability.
- Innovative building technology principles.
- Sustainability in the built environment.
- Sustainable and innovative issues of construction.

Module Learning Outcomes

- LO1. Appraise current knowledge, research and practice and develop a comprehensive and critical understanding of innovative construction technology and processes.
- LO2. Evaluate different construction and innovative construction technologies, and critically analyse the application of sustainability principles.
- LO3. Critically appraise innovative construction technology used for developing sustainable buildings.
- LO4. Communicate effectiveness using various media used to illustrate appropriate construction technology.

Indicative Module Content

Module topics

- **Construction**

This topic introduces the environmental and sustainability impacts and innovative approaches to construction technology. It covers innovative and sustainable materials, products, components and elements that have led to new, more sustainable methods of construction. It questions and evaluates the impact and longer-term consequences for both the construction industry and the built environment.

- **Design, Quality and Performance of Sustainable and Innovative Materials**

This topic focuses on the design for sustainability in the specifications, quality and performance of materials and products including the Royal Institute of British Architects (RIBA) Plan of Work, compliance and performance monitoring, performance standards, product selection and specification.

- **Temporary and Substructure Works**

This topic focuses on temporary and substructure works, including site investigation, types of foundation and foundation construction.

- **Traditional Construction**

The topic covers different types of basic wall and floor construction technology. Roofs and more advanced wall and floor construction are considered in other topics later in the module.

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- **Framed Structures, Modern Methods of Construction and Cladding to Frames**

This topic covers concrete frames, steel frames, timber frames, hybrid frames, cladding systems, systems building, on-site and off-site production and reasons for building with modern methods of construction (MMC) from an innovation and sustainability perspective.

- **Roofs, Floors and Stairs**

This topic provides an overview of some of the more innovative and sustainable roofing, floor and stair design solutions. The topic covers roof types and structures, roof finishes and access issues, including more traditional domestic forms of floor and stair construction, and then moves on to details for commercial and industrial buildings. This also covers the requirements for stairs and ramps in the Building Regulations and different types of floor and stairs, their performance, functional requirements, construction and finishes.

- **Finishes, Services and Fire Precautions**

This topic introduces different finishes, services and fire precautions for commercial and industrial buildings, including the more innovative and sustainable solutions that are currently being developed. Students recognise the design of different mechanical and electrical (M&E) systems, internal environment, sources of energy, water supply and sanitation, lifts and escalators, how they operate, and will learn about alternative and more energy-efficient services that are being developed. The key reference for Fire Precautions is the Building Regulations Part B: Fire Safety. The topic covers fire safety, fire regulations and fire protection measures, and students are encouraged to refer to their own country's fire regulations.

This content will be reviewed and updated regularly to reflect the legal, moral and financial changes in professional standards and practice.

Overview of Summative Assessment

Module learning outcomes	Assessment	Word count or equivalent	Weighting
LO1, LO2, LO3, LO4	Assessment 1 Coursework	2,000	40%
LO1, LO2, LO3, LO4	Assessment 2 Coursework	3,000	60%

Module Pass Mark (as a weighted average of all assessments): 50%

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 UCEM 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 website and is updated regularly to ensure materials are relevant and current.