

# **Construction Technology**

## **3**

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### Module Descriptor

Module Code: CON5TE3

Version: 4.00

Status: Final

Date: 18/03/2021

# Summary Module Details

### Module details

**Module Title:** Construction Technology 3

**Module Leader:** Dominic Bottone

**Module Mode:** Supported online learning

**Semester:** Spring (UK)

**Level:** 5

**Credits:** 20

**Learning Hours:** 200

### Contact and Study Hours

**Directed Study Time:** 90 hrs (45%)

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

**Assessment Study Time:** 60 hrs (30%)

### Assessment Type

Coursework: 100%

Computer Marked Assessment: 0%

Self-directed Research Project: 0%

Portfolio: 0%

## Module Summary

This module develops students' knowledge of the theory and practice of building technology and sustainability for complex projects. It comprises the following broad subject areas: advanced construction techniques; technology/process innovation and development; components; building services; civil engineering; sustainability; legislation; building regulation; contaminated land; works incorporating existing buildings; (complex sites). It includes consideration of a range of complexities due to the site, the environment, construction or unusual situations.

## Taken on which Programmes

BSc (Hons) Building Control (C)

BSc (Hons) Building Surveying (C)

BSc (Hons) Construction Management (C)

BSc (Hons) Quantity Surveying (C)

**Core (C) or Elective (E)**

# Module Aims

This module aims to:

- Build upon students' previously developed knowledge in order that they may be better able to address building process and technological, structural and environmental issues for complex projects;
- Provide an introduction to issues on complex projects;
- Develop building, technology and environment theory; principles; materials; regulation and legislation; civil engineering; services; construction techniques; construction; innovation; contamination/ hazardous situations and sustainability;
- Encourage competence in the skills of communicating; essays, sketching and drawing to address building, environment, technology and complex project matters;
- Build on a foundation of building, technology and environment knowledge and understanding, so that it can be developed further in other modules.

# Module Learning Outcomes

- LO1. Demonstrate knowledge and critical understanding of the principles of complex construction projects from perspectives of building process, structures and construction technology, sustainability and the environment.
- LO2. Develop technical arguments in the selection and application of techniques, including construction and environmental issues; and apply and evaluate within complex projects.
- LO3. Discuss, address and/or apply legislation, standards or regulations on complex projects.
- LO4. Critically evaluate and communicate clearly, concisely, effectively and independently on the appropriateness of different approaches in investigating complex construction projects in order to devise solutions.

# Indicative Module Content

## Module topics

- **Sustainability and the built environment**

Establishes the potential impact that large scale building projects have on the natural environment and acknowledges ways in which this can be assessed and potentially reduced.

- **Innovation in design**

Complex projects demand innovative technological and organisational solutions in meeting a client's time, cost, and quality criteria demands. Here students address the arguments that arise in evaluating and selecting appropriate technical design solutions or procurement routes within a sustainable context.

This includes the consideration and analysis of different, complex building and structural forms using international case studies and/or notional projects. Exploration includes the identification of the major components within complex structures and

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how they work conceptually as part of a system to distribute and transfer loads to foundations and provide necessary stability.

- **Construction legislation: building regulations**

Considers context within which building regulations are used by governments in setting minimum standards for design in areas such as health and safety, hygiene, energy conservation and accessibility. It then moves on to consider how the complex projects need to move outside of the Approved Documents for key areas such as environmental performance and fire safety.

- **Construction legislation, hazardous materials and environments**

The complexity of a project can often be increased by the presence of deleterious materials in a building or the potential for contaminants within the soil. This topic considers the legal obligations and procedural consequences for compliance when encountering materials such as asbestos in an existing building or encountering the potential for contamination when developing brownfield sites.

- **Alterations and extensions to buildings**

The retention or demolition of existing buildings requires evaluations to be undertaken supported by detailed surveys. This topic considers the nature of these investigations and potential solutions in underpinning of foundations, the design of temporary works or the methods used for demolition.

- **Civil engineering**

Complexities arise out of the vast infrastructure works required to provide innovative solutions to large-scale and high-rise projects on urban sites. Work here addresses factors that determine the appropriate solutions for constructing deep basements in constricted sites taken from a range of technical solutions. This topic also acknowledges the wide range of civil engineering projects including roads, bridges and marine structures that present additional complex challenges in relation to building procurement and structural design.

- **Building services**

Building Services can account for half of the construction cost of complex building projects. It is also an area where innovative solutions can be used to achieve significant carbon reduction when considered in combination with decisions on structure, fabric and orientation. This topic acknowledges the broad range of services installations including drainage, fire safety, security and lightning protection, and approaches for each that assist with carbon emission reduction. This concentrates on selecting appropriate alternative strategies in terms of heating, cooling, ventilation and lighting.

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	<b>Assessment 1</b> Coursework	1,200	30%
LO1, LO2, LO3, LO4	<b>Assessment 2</b> Coursework	2,800	70%

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

## 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.