

# **Building Structures**

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## Module Descriptor

Module Code: TEC5STR

Version: 5.00

Status: Final

Date: 22/07/2020

# Summary Module Details

### Module details

**Module Title:** Building Structures

**Module Leader:** Paul Fitchett

**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 covers key aspects of the theory and practice of building structures. It builds on the structural elements within the preceding construction technology modules. It enables students to analyse, interpret, apply and communicate information regarding the structural systems of buildings in a professional manner, such as understanding design calculations for building control.

It comprises the following topics: the nature and relevance of structures, the extent of parameters, structural information and data such as design codes and 'rules of thumb', structural theory, structural calculations, and practical application for building control.

## Taken on which Programmes

BSc (Hons) Construction Management (C)

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

## Module Aims

This module aims to:

- Enable students to analyse, interpret, apply and communicate information regarding the structural systems of buildings in a professional manner, such as understanding design calculations for building control, and developing their skills in understanding buildings as mechanisms;
- Establish the learning experience within the context of construction application, thus enabling the integration of theoretical knowledge and understanding, with best industrial practice.

## Module Learning Outcomes

- LO1. Examine the well-established principles of building structures and the way those principles have developed.
- LO2. Apply key concepts, theories and principles in structures and undertake analysis of the appropriateness of different approaches.
- LO3. Analyse information to develop technical arguments in the selection and application of structures in simple situations.
- LO4. Apply relevant legislation, standards and regulations to develop a range of structural solutions in simple situations.
- LO5. Present, interpret and communicate technical information on simple situations clearly and concisely, using sketches, drawings, calculations or in written form.

## Indicative Module Content

### Module topics

- **The nature and relevance of the module together with structural information and data**  
Provides an overview of the content of the module and how the knowledge of a better understanding of the mechanics of a building can complement the skills of a construction manager.
- **Loadings and forces**  
Describes the methods of calculating dead loads and imposed loads and explains how the principles of resolution of forces and static equilibrium is used to find the reactions of structures to these loads.
- **Structural materials**  
Explains how common structural materials behave when they are subject to the forces created in a building.

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- **Design of structural elements**

Describes how the shape of the structural element and the properties of the material define the strength of that element. The topic covers the different ways in which structural elements can fail and how these failures can be prevented.

- **Structures as mechanisms**

Analyses how the individual elements can be connected in a building and the flow paths of loads through the building, together with a consideration of failure mechanisms for the building as a whole.

- **Practical application to structures**

Explains how the simplified line drawings that are used for analysis relate back to real life structures.

- **Sustainability of structures**

Describes the need for efficient designs that are structurally sound, do not use more materials than are necessary and will achieve the design life of the structure.

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, LO5	<b>Assessment 1</b> Coursework	1,600	40%
LO1, LO2, LO3, LO4, LO5	<b>Assessment 2</b> Coursework	2,400	60%

**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).

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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.