

Module Details	
Module Title	Structural Design Project
Module Code	CSE5014-B
Academic Year	2024/5
Credits	20
School	School of Built Environment, Architecture & Creative Industries
FHEQ Level	FHEQ Level 5

Contact Hours	
Type	Hours
Lectures	24
Tutorials	36
Directed Study	140

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Academic Year

Module Aims
<p>The Structural Design project provides students with the opportunity to develop a design solution to meet the needs of a 'client' taking into account a broad range of issues such as aesthetics, structural design, people's needs, the construction process and health and safety. Students must produce a sustainable solution, taking into consideration the Climate Emergency and the UNSDGs, in particular SDGs 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production) and 13 (Climate Action), while demonstrating an awareness of emerging technologies and ways of working in the industry. The purpose of the module is to emulate the 'real-life' issues that students will need to consider when they enter the industry.</p> <ol style="list-style-type: none"> 1. To strengthen problem solving ability, team working skills, time management and communication skills through participation in a realistic civil engineering project. 2. To appreciate the scope of issues that influence a particular project, and the compromises that are necessary for the realization of an economically and viable engineering solution. 3. To learn to exercise good engineering judgement, and to make and defend design decisions. 4. To establish an appreciation for the ethical implications of design decisions. 5. To develop an understanding of the basic aspects of health and safety in civil engineering. 6. To develop an understanding of embodied carbon and how it may impact our design choices 7. To explore the advantages of reuse and renovation in the construction industry.

Outline Syllabus

The development of solutions to representative practical problems in Civil Engineering. This task is carried out in a group to realistically simulate the nature of the procedure in the construction industry. Factors such as resource availability, sustainability, buildability, durability, life cycle costs, structural form, selection of construction materials, aesthetics, maintenance and health and safety are taken into consideration. Completing a risk assessment of a construction-based operation. Understanding the ethical implications of a proposed design, how it impacts society and the surrounding environment. Reuse of existing materials/components/buildings.

Learning Outcomes

Outcome Number	Description
01	Design a group-based project that includes interrelations between architectural, structural, social, environmental and economic aspects of civil engineering.
02	Devise methods of construction/working that comply with health and safety regulations.
03	Evaluate the feasibility of options and select the best solution to a particular civil engineering problem from a range of viable options.
04	Communicate effectively with other engineers using hand sketches
05	Write a Risk Assessment for a construction activity.
06	Understand the benefits of reuse/repurpose of existing structures.
07	Articulate knowledge gained in a Viva situation.
08	Exercise professional judgement when faced with complex engineering challenges

Learning, Teaching and Assessment Strategy

The teaching and assessment methods have been developed to enable students to utilise knowledge and skills from other modules in their programme, such as Design of Steel and Concrete and Soil Mechanics. Students will also need to carry out independent research to gain a deeper understanding of the issues and to attain knowledge beyond the scope of what is covered in taught sessions. Tutors will use timetabled tutorials to meet with students, monitor their progress, tackle specific issues and provide formative feedback.

There will be a strong focus on collaborative team-work. Students will work in groups, which will be determined by the module leader, ensuring that all groups are diverse where possible in terms of characteristics such as gender, nationality, etc. This will encourage students to learn how to work in diverse environments and to adopt inclusive working practices.

The module will be mainly assessed through three items: a presentation covering the conceptual design of two schemes for a new proposed structure (assessing learning outcomes 1, 4 and 7) and two reports. The first report will describe the preferred scheme in greater depth and contain a method statement, construction plan and a risk assessment (assessing learning outcomes 1, 2, 3, 4, 5, 8). The second report will consider the renovation/modification of an existing structure (learning outcomes 6, 8)

There will also be weekly formative assessment in which project groups will meet with the tutors during the tutorial sessions.

To improve fairness and to encourage participation by all group members, a peer assessment will be conducted after the submission of each report. Where appropriate, and supported by evidence such as attendance records, individual marks maybe adjusted within each group.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Presentation	Presentation of initial design schemes (20 mins)	20%
Summative	Coursework - Written	Detailed design	50%
Summative	Coursework - Written	Modification to existing structure	30%

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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