

Module Details	
Module Title	Structural Design Project
Module Code	CSE5014-B
Academic Year	2020/1
Credits	20
School	Department of Chemical Engineering
Subject Area	Chemical and Process Engineering
FHEQ Level	FHEQ Level 5
Pre-requisites	N/A
Co-requisites	N/A

Contact Hours	
Type	Hours
Online Lecture (Synchronous)	24
Online Tutorials (Synchronous)	24
Online Seminar (Synchronous)	12
Directed Study	140

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims

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 provide a basic understanding of the philosophy, development & application of BIM within the Civil Engineering context.

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. History and development of BIM. Collaborative and inter-disciplinary working. BIM software tools/applications. BIM capabilities such as costing & estimating & clash detection.

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	Describe the development and application of BIM as a process.
07	Articulate knowledge gained in a Viva situation.
08	Exercise professional judgement when faced with complex engineering challenges

Learning, Teaching and Assessment Strategy

Concepts relating to design, health and safety, sustainability and ethics will be introduced using interactive online lectures, delivered by tutors and guest lecturers from different disciplines.

Group project work will take place during directed study hours. Tutors will use timetabled online tutorials to meet with groups, monitor their progress and tackle specific issues. Formative assessment is ongoing through the semester with project groups receiving regular feedback from the tutors during the tutorial sessions.

There will be a strong focus on collaborative team work and self-directed study. Students will work within groups, with each member focussing on a different aspect. They will be expected to use knowledge gained from the scheduled lectures and from other modules in the Civil and Structural Engineering degree programme (e.g. Steel and Concrete Design) and 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.

The module will be mainly assessed through three items: an interim report covering the conceptual design of two schemes (assessing learning outcomes 1 and 4), a second report describing the preferred scheme in greater depth and containing a method statement, construction plan and a risk assessment (assessing learning outcomes 1, 2, 3, 4, 5 and 6) and a group presentation of the initial conceptual design schemes (assessing learning outcome 7).

There will also be weekly formative assessment in which project groups will meet with the tutors online during the tutorial sessions, discuss their progress and receive feedback (learning outcomes 1, 2, 3, 4, 5, 6). Marks will also be awarded for lecture/tutorial attendance, consistency and quality of progress throughout the semester and contribution to the team effort in preparing the design report. Each group will be expected to keep a weekly log book as evidence of their progress and a record of the tasks completed by individual members.

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Presentation	Presentation of initial design schemes	20 mins	30%
Summative	Coursework	Detailed design	N/A	50%
Summative	Coursework	Interim report covering the two conceptual design schemes	N/A	20%

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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