UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Advanced Structural Design
Module Code	CSE7014-B
Academic Year	2021/2
Credits	20
School	Department of Civil and Structural Engineering
FHEQ Level	FHEQ Level 7

Contact Hours	
Type	Hours
Online Lecture (Synchronous)	8
Practical Classes or Workshops	32
Directed Study	160

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

Module Aims

To experience the complete design process from the initial consideration of a very open-ended

client's brief through to the presentation of your proposed design solution in the form of a

report with detailed engineering drawings and supporting analysis and calculations..

Outline Syllabus

Although the design brief will vary slightly from year to year depending on the design question selected by the lecturer, each problem will include the following elements; any geometrical constraints defined in the brief; the principles of sustainable construction; site and site/ground conditions. Development of alternative distinct and viable solutions. Critical appraisal of at least 2 distinct and viable solutions to identify a recommended solution. Detailed Design; determination of the size and structural details of all the principal structural elements including the foundations using the design guidance available in Structural Eurocodes and other specialist design guides. Materials selection and specification commensurate with the site exposure conditions. Construction: risk assessment and method statement. Outline construction programming. Buildability.

Learning Outcomes	
Outcome Number	Description
01	Extend, integrate and apply the knowledge and understanding from previous study to develop conceptual and detailed solutions to structural engineering problems through a process of appraisal, analysis and validation.
02	Synthesise, prioritise and critically evaluate information obtained from a range of sources to establish structural engineering design objectives.
03	Formulate creative and innovative solutions by a systematic process of critical appraisal and review by judging alternative proposals against the design objectives
04	Formulate creative and innovative solutions by a systematic process of critical appraisal and review by judging alternative proposals against the design objectives
05	Present solutions in the form of a technical report including detailed engineering drawings and supporting solutions.
06	Plan and manage your time to complete a demanding technical exercise within a pre-determined timescale.

Learning, Teaching and Assessment Strategy

This is a student-led exercise. The design brief will normally be based on one question from a past IStructE chartered member examination paper. The design process and specialist aspects of the brief will be explored in formal on-line lectures delivered to all students. Students normally work in groups of 3 to 5 and different solutions are expected from each group. Each group of students will then be required to develop their own design through a process of individual study with individual tutorial support provided online on a weekly basis by the lecturing staff. Oral feedback will be provided by the lecturing staff at the online weekly meeting. Some formal online lectures and tutorial support will be provided by external industrialists who are chartered civil and structural engineers with industrial experience. Module learning outcomes will be assessed by a Design Report. The progress of students will be assessed and feedback will be given to guide their learning and understanding of the design process during the online weekly meeting.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Dissertation or Project Report	Design report including Feasibility study, drawings and supporting calculations (approx. 4000 words)	100%

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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