

Module Details	
Module Title	Individual Research Project Civil and Structural Engineering
Module Code	CSE6012-B
Academic Year	2024/5
Credits	20
School	School of Built Environment, Architecture & Creative Industries
FHEQ Level	FHEQ Level 6

Contact Hours	
Type	Hours
Lectures	4
Project Supervision	12
Supervised time in studio/workshop	24
Directed Study	160

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

Module Aims
<p>The module has 5 main aims:</p> <ol style="list-style-type: none"> 1. Provide a student driven research project, utilising skills developed during all stages of academic study. 2. Further develop skills in the selection and application of appropriate engineering tools including computer aided engineering, manufacturing methods and test rigs. 3. Further develop personal skills in research, integration, application, evaluation and synthesis of knowledge through an industrial or academic research relevant project. 4. Provide a framework for the consideration of ethical and health and safety engineering practice to a professional level. 5. Appreciate UN sustainable development goals and current sustainability challenges in relevant areas.

Outline Syllabus

The individual research project provides the principal opportunity for students to develop and demonstrate their ability to apply scientific and engineering principles to the solution of open-ended practical problems, enables students to enhance many of the personal skills valued by industry including appreciation and understanding of professional ethics, health and safety etc. It is impossible to be prescriptive about the activities that each student should undertake as this relates to the specific investigation being undertaken, such as renewable energy, railway, airports, highways, hydropower schemes, bridges, skyscrapers, water treatment work etc. which cover sustainability challenges. The project may take a variety of forms, and may include but not limited to:

1. Critical reference to previous work on the project topic, competing theories, processes and methodologies, economic, social and market considerations, in particular, UN sustainable development goals, climate crisis etc, in relevant areas.
2. Analysis and modelling, which may involve computing.
3. System and organisation design.
4. Implementation.
5. Experimentation, verification and/or other testing and evaluation.
6. Interpretation of results and concluding remarks.

The balance of the elements above will depend on the type of project work undertaken. In particular, students undertaking this module as part of an MEng degree will produce an extended set of 'recommendations for further work' which will constitute the specification for their Stage 4 Advanced Final Year Project.

Learning Outcomes

Outcome Number	Description
01	Select and apply appropriate engineering tools, sustainability principles, research methods, data analysis techniques and time management methods for the successful completion of an academic or industrially relevant individual project
02	Apply ethical and health and safety considerations in the context of a given engineering problem. Demonstrate appropriate understanding of sustainability challenges in relevant research field.
03	Develop and apply personal skills in data management, scientific analysis, IT and creative problem solving and communicate the results in oral and written form to an academic and or industrial audience

Learning, Teaching and Assessment Strategy

The individual research project represents a large single piece of work that students will be asked to undertake during the undergraduate course. This work represents the culmination of a student's academic experience and is designed to draw upon the skills and knowledge that students have acquired at the University of Bradford. Whilst in previous years, much of the work that students have undertaken has been based upon information received through formal lectures and tutorials etc., the distinguishing feature of the individual research project is that it is essentially based on independent learning, mostly using the self-study skills acquired during the previous years. Therefore, students are individually responsible for the direction of study and the pace at which students work. Whilst students will be allocated a project supervisor, who can provide academic support and guidance where appropriate. The individual research project also provides students with the major opportunity of undergraduate studies to thoroughly research and learn about a particular subject of student's interests. The relevant knowledge students acquired from the individual research project may have a strong impact on their future employment intentions and career development.

Students will be expected to take ownership of their project, employing independent and directed study hours to achieve their project goals. Academic support will be in the form of one to one tutorials with a designated member of academic staff. Where appropriate, workshop sessions will provide additional support for students in terms of project management, quality control, budgeting and presentation skills.

Learning methods will depend on the nature of the project being undertaken. Students may engage with advanced Computer Aided Engineering applications, research focused laboratory equipment and manufacturing technologies, with learning support provided by either their academic supervisor, research or technical staff.

Learning and teaching methods include a combination of lectures and face to face tutorial/supervision.

Students will prepare a project report detailing their objectives, methodologies, analysis and conclusions arising from their studies. The structure of the report will be dependent on the project undertaken and will be defined in conjunction with academic tutors.

Students will also submit a folder of work including any computer models, engineering drawings, tests data and background research to support their report.

Students will also demonstrate their knowledge in the field of the project and their communication skills via an oral presentation to an academic and/or industrial audience.

Formative assessment will be provided during tutorial sessions with academic supervisors in an informal manner. Draft versions of project reports, asset folders and presentations can be submitted for academic consideration prior to formal summative submission for formative feedback.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Presentation	Oral presentation of project findings (30Mins)	20%
Summative	Dissertation or Project Report	Project report detailing the research finding of the project (4000 words)	80%

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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