UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Individual Research Project
Module Code	ENG6003-D
Academic Year	2024/5
Credits	40
School	School of Engineering
FHEQ Level	FHEQ Level 6

Contact Hours	
Type	Hours
Independent Study	162
Project Supervision	24
Practical Classes or Workshops	30
Laboratories	72
Directed Study	112

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

Module Aims

The module has 4 main aims:
1. Provide an academic and/or industrially relevant student-driven project, utilising skills developed during all stages of academic study.
2. Further develop skills in the selection and application of appropriate engineering software tools including Computer Aided Engineering (CAE), artificial intelligence (AI) and data analysis, manufacturing methods and test rigs.
3. Further develop skills in product, process and system design or research methodology through an industrial and/or academic research-relevant project.
4. Provide a framework for the consideration of modern engineering practice in ethics, health & safety and sustainability to a professional level.

Outline Syllabus

It is not possible to be prescriptive about the activities each student should undertake in each semester as this relates to the specific investigation being undertaken. The project may take a variety of forms, and may include:
1. Critical reference to previous work on the project topic, competing theories, processes, and methodologies, economic, social and market considerations.
2. Analysis and modelling, which may include data analysis, data visualisation, computer-aided engineering, computer simulation, AI/machine learning (ML) and programming.
3. System and organisation design.
4. Manufacture and Implementation.
5. Methodology selection, experimentation/testing, verification and evaluation.
6. Interpretation of results, discussion and conclusions.
The balance of the elements above will depend on the type of project work undertaken. A seminar series will be delivered to all students, including material on health & safety, project management, finding sources, plagiarism & referencing, time management, report writing skills, costing, presentation skills, sustainability and ethics. Real-life case studies will be presented.

Learning Outcomes

Outcome Number	Description
01	Selection and application of appropriate engineering and software tools (including AI/ML), 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.
03	Develop and apply appropriate personal skills such as in data management, scientific and data analysis, IT/programming, creative problem solving, and oral/written communication to an academic and or industrial audience.

Learning, Teaching and Assessment Strategy

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 supervision with a designated member of academic staff. Lecture sessions will provide additional support for students regarding project management, costing and writing/presentation skills. Learning methods will depend on the nature of the project being undertaken. Students may engage with specialised software applications (such as CAE, AI/ML), research□focused laboratory equipment and manufacturing technologies. Learning support will be provided by either their academic supervisor, research or technical staff. Students will prepare a project report detailing their objectives, methodologies, analysis, discussion and conclusions arising from their studies. The report's structure will depend on the project undertaken and will be defined in conjunction with the academic supervisor. 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 require the submission of written reports and delivering presentations. Draft versions of project reports and presentations can be submitted for academic consideration prior to formal summative submission for formative feedback.

This module satisfies the below Learning Outcomes as specified by the Accreditation of Higher Education Programmes: Fourth Edition (AHEP4) as published by the Engineering Council in-line with the UK Standard for Professional Engineering Competence (UK-SPEC). These outcomes specify five key areas of learning which partially (C) or fully (M) meet the academic requirement for CEng registration: Science and Mathematics (1), Engineering Analysis (2-4), Design and Innovation (5-6), The Engineer and Society (7-11), and Engineering Practice (12-18). Further details of these learning outcomes can be found at https://www.engc.org.up/ahep/M1, C1, M2, C2, M4, C4, M5, C5, M7, C7, M8, C8, M10, C10, M13, C13, M15, C15, M16, C16, M17, C17, M18, C18.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Dissertation or Project Report	Project Report	80%
Summative	Presentation	Project report detailing the research finding of the project (80 Poster Presentation	20%
Formative	Coursework	Formative feedback on draft versions of summative assessments	N/A

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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