Module Specification

Engineering Research

Version: 2025-26, v4.0, 23 Apr 2025

Contents

Part 1: Information

Module title: Engineering Research

Module code: UFMFRS-15-2

Level: Level 5

For implementation from: 2025-26

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module will prepare students to be able to effectively plan and manage an extensive piece of engineering research that involves the use of physical and/or computing resources. A series of tutorials will introduce topics such as effective academic and technical literature review, ethics, data analysis, technical resources, requirements, identifying a suitable topic etc. Some of these areas will have been introduced in earlier modules and in this module will be built upon to produce a detailed research proposal and plan.

Features: Not applicable

Educational aims: The aim of this module is to develop engineering and technology research skills and practice including the development of a feasible research proposal that could be implemented as a piece of advanced engineering research and development.

Outline syllabus: This module is designed to introduce students to various approaches to research methodology in an engineering and technology environment. It will develop the ability to formulate research proposals, select appropriate methods of analysis and prepare and present research outcomes. Key topics covered include:
The Research Process: theory and practical implications including action and case study research
Ethical considerations for engineers undertaking research
Risk assessment and management, planning and budgeting
The research proposal, research strategy and project plan
Search techniques, literature abstraction and the preparation of a literature review
Issues of reliability, validity and generalisability for researchers
Features of Qualitative and Quantitative data
Collection of primary data: experimental design, survey methods, sampling design and procedure
Analysis of quantitative data: an overview of statistical procedures
Use of secondary data in the research process
Collection and analysis of qualitative data: interviewing and observation methods
Communicating results effectively
Understanding plagiarism, copyright and intellectual property with respect to a research project.
Preparation of a research proposal.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered to promote discussion and active engagement with the material. The module material will be

delivered with a small group tutorials and on-line supplementary materials. The module will involve a substantial element of independent research and learning.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Develop a coherent, evidenced, and feasible research proposal with a clearly defined engineering research question, supported by relevant literature and considering real-world or academic applications.

MO2 Create an effective research plan, addressing risks, resource limitations, and broader professional and ethical considerations.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 126 hours

Face-to-face learning = 24 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/E546F8A9-2391-2670-5D58-6A4EE61C6B78.html?lang=en-GB

Part 4: Assessment

Assessment strategy: The assessment strategy is designed to support students as they develop a detailed project proposal that identifies a clear research question, contains an initial literature review, considers ethical, resource and professional considerations, security, details an achievable project plan, identifies the knowledge and skills required for the completion of the proposed project including new knowledge that student will need to acquire and a reflection on the project development process.

Tasks in tutorials will facilitate group discussions and formative feedback throughout the module to support students in preparing their research proposal.

During the term, students will develop elements of their portfolio, aligned to the weekly topics. A combination of pass/fail e-assignments and technical documentation such as risk assessments for engineering research work will form a coherent engineering research portfolio.

The resit strategy will involve students submitting a reworking of the research documentation in the portfolio or creation of a new portfolio.

Assessment tasks:

Portfolio (First Sit)
Description: Contains a series of elements which demonstrate an understanding of requirements needed for engineering research and development.
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Portfolio (Resit)
Description: Contains a series of elements which demonstrate an understanding of requirements needed for engineering research and development.
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electronic Engineering {Foundation} [Frenchay] WITHDRAWN BEng (Hons) 2023-24

Aerospace Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Aerospace Engineering {Apprenticeship-UWE} [UCW] BEng (Hons) 2023-24

Mechanical Engineering with Manufacturing {Apprenticeship-UWE} [UCW] BEng (Hons) 2023-24

Mechanical Engineering {Apprenticeship-UCW} [UCW] FdSc 2023-24

Mechanical Engineering {Apprenticeship-UCS} [UCS] WITHDRAWN FdSc 2023-24

Mechanical Engineering {Apprenticeship-GlosColl} [GlosColl] FdSc 2023-24

Automotive Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Aerospace Engineering with Pilot Studies {Foundation} [Frenchay] BEng (Hons) 2023-24

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Mechatronics {Apprenticeship-UCW} [UCW] FdSc 2023-24

Electronic and Computer Engineering {Apprenticeship-GLOSCOLL} [GlosColl] BEng (Hons) 2023-24

Aerospace Engineering {Apprenticeship-UCW} [UCW] BEng (Hons) 2023-24

Mechatronics Engineering {Foundation} [Frenchay] MEng 2023-24

Mechatronics Engineering {Foundation}[Frenchay] BEng (Hons) 2023-24

Electrical and Electronic Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Robotics {Foundation} [Frenchay] BEng (Hons) 2023-24

Electronic and Computer Engineering [GlosColl] BEng (Hons) 2023-24

Civil Engineering [Frenchay] MEng 2024-25

Mechanical Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Mechatronics Engineering [Frenchay] MEng 2024-25

Aerospace Engineering [Frenchay] BEng (Hons) 2024-25

Aerospace Engineering [Frenchay] MEng 2024-25

Aerospace Engineering with Pilot Studies [Frenchay] BEng (Hons) 2024-25

Electronic and Computer Engineering [Frenchay] BEng (Hons) 2024-25

Aerospace Engineering with Pilot Studies [Frenchay] MEng 2024-25

Robotics [Frenchay] BEng (Hons) 2024-25

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2024-25

Mechanical Engineering [Frenchay] BEng (Hons) 2024-25

Mechanical Engineering [Frenchay] MEng 2024-25

Automotive Engineering [Frenchay] BEng (Hons) 2024-25

Automotive Engineering [Frenchay] MEng 2024-25

Mechatronics Engineering [Frenchay] BEng (Hons) 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2023-24

Automotive Engineering [Frenchay] - Withdrawn MEng 2024-25

Aerospace Engineering [Frenchay] MEng 2024-25

Automotive Engineering [Frenchay] BEng (Hons) 2024-25

Automotive Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Aerospace Engineering [Frenchay] BEng (Hons) 2024-25

Aerospace Engineering {Apprenticeship-UCW} [UCW] BEng (Hons) 2023-24

Aerospace Engineering {Apprenticeship-UWE} [UCW] BEng (Hons) 2023-24

Aerospace Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Aerospace Engineering with Pilot Studies [Frenchay] BEng (Hons) 2024-25

Aerospace Engineering with Pilot Studies [Frenchay] MEng 2024-25

Aerospace Engineering with Pilot Studies {Foundation} [Frenchay] BEng (Hons) 2023-24

Electronic and Computer Engineering [Frenchay] BEng (Hons) 2024-25

Electronic and Computer Engineering [GlosColl] BEng (Hons) 2023-24

Electronic and Computer Engineering {Apprenticeship-GLOSCOLL} [GlosColl] BEng (Hons) 2023-24

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2024-25

Electrical and Electronic Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Mechatronics Engineering [Frenchay] MEng 2024-25

Mechatronics Engineering {Foundation} [Frenchay] MEng 2023-24

Mechatronics Engineering {Foundation}[Frenchay] BEng (Hons) 2023-24

Mechatronics Engineering [Frenchay] BEng (Hons) 2024-25

Robotics [Frenchay] BEng (Hons) 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2023-24

Civil Engineering [Frenchay] MEng 2024-25

Robotics [Frenchay] BEng (Hons) 2024-25

Aerospace Engineering with Pilot Studies [Frenchay] MEng 2024-25

Aerospace Engineering [Frenchay] MEng 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering [Frenchay] MEng 2022-23

Mechanical Engineering [Frenchay] MEng 2022-23

Mechanical Engineering [Frenchay] BEng (Hons) 2022-23

Aerospace Engineering {Apprenticeship-UCW} [UCW] BEng (Hons) 2022-23

Electronic Engineering [Frenchay] BEng (Hons) 2022-23