Module Specification

Engineering Research and Collaborative Project

Version: 2026-27, v1.0, 29 Jul 2024

Contents

Part 1: Information

Module title: Engineering Research and Collaborative Project

Module code: UFME78-30-2

Level: Level 5

For implementation from: 2026-27

UWE credit rating: 30

ECTS credit rating: 15

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: Professional Practice for Engineers 2024-25

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 academic research that involves the use of physical and/or computing resources, working collaboratively to develop a project proposal, and to successfully project manage a work-based project.

A series of lectures and seminars will introduce topics such as effective project planning, academic literature review, ethics, data analysis, technical resources,

requirements, identifying a suitable topic etc. Some of these areas will have been introduced in earlier modules, allowing for this module to build upon their knowledge, to produce a detailed research proposal for their collaborative work-based project.

Following the research proposal, students will build on their project management skills, continuing from Professional Practice for Engineers where students were introduced to project management ideas and reflected on the role of engineers in business and society. In this module students are introduced to the remaining part of project life cycle such as Project Execution, Closure and Review.

Students will be involved in Project Execution to implement a project management plan through the project plan, monitoring and control, change control management, team leadership and conflict management. The module will allow students to understand how to commercialise an engineering solution (business idea) and is designed to help engineering students understand the overall scope of starting an innovative business using engineering solutions.

The module also covers the Closure and Review phase concerned with handover of final project outputs and acceptance of the outputs by the project sponsor. This phase will enable the students to understand the process required to prepare the acceptance of delivery by the users, handover of the delivery from project to production environment, review processes team disbandment and the distribution of the lessons learnt.

Today’s business world remains dynamic and competitive, and the module focuses will enable students to identify potential areas of innovative business opportunities together with the internal and external forces that play against and supports the thriving of innovative business ideas.

Features: Work based industry relevant project.

Educational aims: The aim of this module is to develop engineering and technology research skills and practice, as well as further developing project management skills to successfully manage a collaborative work-based project.

Outline syllabus: This module is designed to introduce students to various approaches to research methodology in an engineering and technology environment. As well as covering Project Management Processes and Engineering Business Environment.

Research: 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: dissertation structure and presentation
Understanding plagiarism, copyright and intellectual property
Preparation of a research proposal.

Project Management Processes and Business Environment: A Project Execution Plan and consideration of the commercial exploitation of an innovative engineering solution will be implemented through a work-based engineering project. Key topics covered include:

Business Model Canvas
The analysis of Business Environment
Finance for Innovative Business

Business Systems and Management
Managing People in Organisation
Business and Sustainability
Processes required for effective execution of the project management plan
Effective decision-making during project monitoring and control
Processes required for the Change Control Management, Team Leadership and Conflict Management
Stakeholder management

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 combination of lectures, group tutorials and seminars. The module will involve a substantial element of independent research and learning.

A collaborative work-based project will be used to bring students, academic and technical staff together and provide an environment for students to discuss and plan project approach and execution.

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

MO1 Identify and critically evaluate relevant literature to support the proposed project.

MO2 Identify and evaluate ethical, societal, legal, financial and environmental issues in the context of the project research.

MO3 Select and apply appropriate processes for effective management within a project life cycle, identifying risk factors, resource requirements, and constraints.

MO4 Demonstrate effective evidence-based decision making resulting from the execution of an effective project management plan.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 36 hours

Total = 0

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufmgqs-15-2.html

Part 4: Assessment

Assessment strategy: Group Presentation - Project Proposal (30 minutes)
Group presentation outlining project proposal and research, project feasibility, project approach, risk factors, resources and constraints.

Group Portfolio – Project Management Documentation
Group portfolio that collates key project documentation, evidencing project management, decision making, and implementation of key processes.

Individual Report – Project Evaluation (1,500 words)
Individual end of project report, evaluating the success of the project, the management of the project, decisions made, and the quality of the initial project research and considerations.

The resit assessments repeats the same pattern as given in the summative assessment.

Assessment tasks:

Presentation (First Sit)
Description: Group Presentation - Project Proposal (30 minutes)
Weighting: 35 %

Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2

Portfolio (First Sit)
Description: Group Portfolio – Project Management Documentation
Weighting: 30 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO3, MO4

Report (First Sit)
Description: Individual Report – Project Evaluation (1,500 words)
Weighting: 35 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Presentation (Resit)
Description: Group Presentation - Project Proposal (30 Minutes)
Weighting: 35 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2

Portfolio (Resit)
Description: Group Portfolio – Project Management Documentation
Weighting: 30 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO3, MO4

Report (Resit)
Description: Individual Report – Project Evaluation (1,500 words)

Weighting: 35 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electro-mechanical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2024-25

Electro-mechanical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2024-25

Aeronautical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2024-25