Programme Specification

Mechanical Engineering [Sep][PT][Frenchay][2yrs]

Version: 2022-23, v1.1, 31 May 2022

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Mechanical Engineering [Sep][PT][Frenchay][2yrs]

Highest award: MSc Mechanical Engineering

Interim award: PGCert Mechanical Engineering

Interim award: PGDip Mechanical Engineering

Awarding institution: UWE Bristol

Affiliated institutions: Not applicable

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: No

Credit recognition: No

Department responsible for the programme: FET Dept of Engineering Design & Mathematics, Faculty of Environment & Technology

Contributing departments: Not applicable

Professional, statutory or regulatory bodies:

Institution of Mechanical Engineers (IMechE)

Apprenticeship: Not applicable

Mode of delivery: Part-time

Entry requirements: For the current entry requirements see the UWE public website

For implementation from: 01 September 2018

Programme code: H30B12-SEP-PT-FR-H30B12

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The aim of the Faculty's MSc programmes is to respond to the need for effective engineering practitioners by offering programmes that are an intellectually challenging mix of taught engineering science and experiential learning. The practitioner approach is intended to produce engineers with a strong orientation towards problem solving, underpinned by theoretical knowledge.

The aim of the Mechanical Engineering MSc programme is to produce graduates with a broad understanding of mechanical analysis and design, combined with awareness of engineering practice, information technology, project management and business issues. The MSc course is distinguished by a greater emphasis upon critical appraisal of existing ideas and practice, original thought and creative ability.

This programme will produce graduates with a wide range of expertise relevant to industry in general and in particular industries related to mechanical design, operations and manufacture. The programme covers a broad range of advanced engineering topics including modelling and simulation of mechanical systems, computer vision and modern control, analysis of structural integrity and fluid system design, as well as project management both in groups and individually. In addition, being an accredited Masters level qualification, graduates will obtain the necessary educational qualifications to become Chartered Engineers through the IMechE.

Educational Aims: The educational aims of the faculty's taught postgraduate programmes are:

To provide an intellectual experience of advanced study, underpinned by staff expertise, research and experience;

To enable the student to further and deepen his/her knowledge, understanding and

analytical abilities in a stimulating and challenging academic environment; to prepare the student for further professional development in his/her chosen field;

To offer postgraduate opportunities for part-time students in employment.

After completion of this programme, students should be able to:

Apply established and novel mechanical analysis concepts to the solution of engineering problems, involving design, simulation and modelling.

Simulate mechanical engineering systems so as to be able to judge the efficacy and implications of design proposals.

Make considered judgements and decisions on complex engineering issues in which not all facts and consequences are accurately known;

Be able to evaluate the importance of innovation and critically assess the key of operations management strategies.

Programme Learning Outcomes:
On successful completion of this programme graduates will achieve the following learning outcomes.

Knowledge and Understanding

A1. The principles governing the behaviour of mechanical components and systems.

A2. The properties, characteristics and selection of materials used in mechanical components and systems.

A3. Engineering science and technology with particular emphasis on areas related to mechanical systems.

A4. The principles and practice of operations management.

A5. The complexity of large-scale engineering systems and projects, with particular emphasis upon mechanical systems.

Intellectual Skills

B1. The ability to produce solutions to problems through the application of engineering knowledge and understanding.

B2. Be able to use scientific principles in the modelling and analysis of engineering systems, processes and products.

B3. The ability to select and apply appropriate methods of modelling and analysing relevant problems.

B4. The ability to understand issues relating to innovation and operations management.

B5. A professional attitude to the responsibilities of engineering practitioners.

B6. The ability to use independent thinking and analysis in the development of engineering solutions.

B7. Critically review available literature on topics related to engineering

Subject/Professional Practice Skills

C1. Use relevant design, test and measurement equipment.

C2. Use experimental methods in the laboratory relating to engineering design and test

C3. Demonstrate practical testing of engineering ideas through laboratory work or simulation with technical analysis and critical evaluation of results.

C4. Use a wide range of computing and information technology systems.

C5. Demonstrate the ability to apply engineering techniques taking account of industrial and commercial constraints

C6. Execute and manage multi-disciplinary projects.

Transferable Skills and other attributes

D1. Communication skills: to communicate orally or in writing, including, for instance, the results of technical investigation, to peers and/or to "problem owners".

D2. Self-management skills: to manage one's own time; to meet deadlines; to work with others having gained insights into the problems of team-based system development.

D3. IT skills in context: to use software in the context of problem-solving investigation and to interpret findings.

D4. Problem formulation: to express problems in appropriate notations.

D5. Progression to independent learning: to gain experience of, and to develop skills in, learning independently of structured class work. For example, to develop the ability to use online facilities to further self-study.

D6. Comprehension of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities.

D7. Working with others: to be able to work as a member of a team; to be aware of the benefits and problems that teamwork can bring.

Part B: Programme Structure

Year 1

The student must take a minimum of 60 credits from the modules in Year 1.

Year 1 Compulsory Modules

Students must take at least one, or both compulsory module(s) shown in year 1. Students must take the remaining compulsory module (from Compulsory Module Choices) in year 2.

Module Code	Module Title	Credit
UMMC9U-15-M	Innovation in Operations Management 2022-23	15
UFMFXC-15-M	Masters Group Project 2022-23	15

Year 1 Optional Modules

Students choose 90 optional credits over years 1 and 2 (no more than 60 optional credits per year).

Module Code	Module Title	Credit
UFMFWL-15-M	Computational Fluid Dynamics 2022-23	15

UFMFRC-30-M	Computer Vision and Modern Control 2022-23	30
UFMEEC-15-M	Concurrent Engineering and Design for Manufacture 2022-23	15
UFMENU-15-M	Design of Fluid Systems 2022-23	15
UFMFCC-15-M	Industrial Applications of Vision and Automation 2022-23	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2022-23	15
UFME7K-15-M	Intelligent and Adaptive Systems 2022-23	15
UFMFVL-15-M	Mechanics of Composites 2022-23	15
UFMEBP-15-M	Structural Integrity in Design 2022-23	15

Year 2
The student must take a minimum of 60 credits from the modules in Year 2.

Year 2 Compulsory Module Choices
Students must take the remaining compulsory module (if not completed in Year 1):
EITHER
UFMFXC-15-M - Masters Group Project
OR
UMMC9U-15-M - Innovations in Operations Management

Module Code	Module Title	Credit
UMMC9U-15-M	Innovation in Operations Management 2023-24	15
UFMFXC-15-M	Masters Group Project 2023-24	15

Year 2 Compulsory Modules
The student must take 60 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit

UFMFTF-60-M	Dissertation (Masters) 2023-24	60

Year 2 Optional Modules
Students choose 90 optional credits over years 1 and 2 (no more than 60 optional credits per year).

Module Code	Module Title	Credit
UFMFWL-15-M	Computational Fluid Dynamics 2023-24	15
UFMFRC-30-M	Computer Vision and Modern Control 2023-24	30
UFMEEC-15-M	Concurrent Engineering and Design for Manufacture 2023-24	15
UFMENU-15-M	Design of Fluid Systems 2023-24	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2023-24	15
UFME7K-15-M	Intelligent and Adaptive Systems 2023-24	15
UFMFVL-15-M	Mechanics of Composites 2023-24	15
UFMEBP-15-M	Structural Integrity in Design 2023-24	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

The MSc Mechanical Engineering produces effective engineering practitioners by offering programmes that are an intellectually challenging mix of taught engineering science and experiential learning.

The Mechanical Engineering MSc programme produces graduates with a broad understanding of mechanical analysis and design, combined with awareness of engineering practice, information technology, project management and business issues. The MSc course is distinguished by a greater emphasis upon critical appraisal of existing ideas and practice, original thought and creative ability. In

addition, being an accredited Masters level qualification, graduates will obtain the necessary educational qualifications to become Chartered Engineers through the IMechE.

Graduates of MSc Mechanical Engineering are able to;

demonstrate expertise relevant to industry and industries related to mechanical design, operations and manufacture.

show understanding of modelling/ simulation of mechanical systems, computer vision and modern control, analysis of structural integrity and fluid system design,

apply established and novel mechanical analysis concepts to the solution of engineering problems, involving design, simulation and modelling.

simulate mechanical engineering systems to be able to judge the efficacy and implications of design proposals.

Part D: External Reference Points and Benchmarks

Description of how the following reference points and benchmarks have been used in the design of the programme:

This programme has been prepared with reference to a number of external benchmarks, including the QAA Subject Benchmark Statement for Engineering, the QAA Framework for HE Qualifications and the university's Learning and Teaching Strategy.

The QAA Framework for HE Qualifications defines a programme at masters level as: "at, or informed by, the forefront of an academic or professional discipline. Students will have shown originality in the application of knowledge, and they will understand how the boundaries of knowledge are advanced through research. They will be able to deal with complex issues both systematically and creatively, and they will show originality in tackling and solving problems".

Part E: Regulations

Approved to University Regulations and Procedures.