Programme Specification

Mechanical Engineering and Technology (Vehicle Technology) {Foundation} [Oct][FT][GCET][4yrs]

Version: 2021-22, v1.0, 08 Mar 2021

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Mechanical Engineering and Technology (Vehicle Technology) {Foundation} [Oct][FT][GCET][4yrs]

Highest award: BEng (Hons) Mechanical Engineering and Technology (Vehicle Technology)

Interim award: BEng Mechanical Engineering and Technology (Vehicle Technology)

Interim award: DipHE Mechanical Engineering and Technology (Vehicle Technology)

Interim award: CertHE Mechanical Engineering and Technology

Awarding institution: University of the West of England, Bristol

Affiliated institutions: Not applicable

Teaching institutions: Global College of Engineering and Technology (GCET)

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: Not applicable

Apprenticeship: Not applicable

Mode of delivery: Full-time

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

For implementation from: 01 September 2021

Programme code: H39B13-OCT-FT-GE-H39A

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The curriculum is designed for students seeking an engineering education closely aligned to engineering practice. Technical knowledge, engineering practice, business awareness and sustainability are integrated through projects and revisited to produce confident graduates able to apply their skills to novel situations and create engineering solutions that benefit society.

Professional development is placed at the heart of the curriculum. From day one, students are taken on a journey from student engineer to graduate engineer, preparing them for life as an engineering professional. Students will identify, develop and demonstrate competencies expected of a professional engineer in the workplace. Projects and activities, embedded throughout the curriculum, are designed to develop the engineering habits of mind such as: Problem-finding, Problem-solving, Visualising, Systems Thinking, Improving, and Adapting. Foundation principles of engineering science, skills and practice are integrated throughout all years of study.

Mechanical engineers are employed throughout the engineering sector in the creation, maintenance and improvement of engineering operations. Consequently mechanical engineering graduates need to be able to integrate engineering knowledge skills from across engineering and be able to be an effective member of a multidisciplinary team. Mechanical engineering topics of engineering analysis, design, structures, stress analysis, dynamics, materials, thermofluids, systems and manufacturing are developed throughout the core and taken to an advanced level in the optional modules. Sufficient electrical and electronic content has been included in the core programme for the study of engineering problems involving electromechanical and mechatronic systems with the option of further studying

advanced artefacts.

The ability to work in multidisciplinary teams on projects that require a broader view of the role of engineering in industry and society is developed through the core programme using project weeks to bring
students together in problem finding and solution spaces where students are able to interact with each other, academics and external practitioners.

The integration of knowledge, skills and practice allows the tacking of real engineering challenges and encourage students to engage with the wider role that mechanical engineers and specifically engineering
habits of mind can play in tackling global challenges. This is an accessible and modern engineering curriculum designed to attract students from diverse backgrounds able to see the future role of engineering and technology in industry and society.

Programme is delivered in full-time and part-modes of study. We have a number of flexible entry routes to the programme that promote industrial collaboration and the advancement of working individuals.

The programme has 3 pathways to allow students to select their specialism within the field of mechanical engineering and its related technologies, these are Vehicle Technology, Manufacturing and Mechatronics. The design of the programme, and in particular the focus on the development of engineering habits and behaviours required by engineering origanisations of graduate engineers is intended to ensure that the Educational Aims and Learning Outcomes are relevant to full-time learners with limited or no prior experience
of the engineering profession and to those learners who are based in industry either as degree apprentices or as experienced engineers working towards higher academic and professional qualifications.

Educational Aims: Be able to work as a graduate mechanical engineer across the engineering sector able to work as an effective member of a multidisciplinary team.

Have acquired the knowledge and understanding of scientific principles and methods necessary to underpin an education in engineering. The programme will provide insight into, and practical skills in, the creation and maintenance of complex engineering products and will explore the environmental impact of engineering.

Have demonstrated an ability to integrate their knowledge and understanding of core subject material in order to solve a substantial range of engineering problems, including ones of a complex nature either individually or as part of a team.

Have developed and demonstrated understanding of the competencies and social responsibilities required by a professional engineer in the workplace and society. Activities to scaffold this development are embedded throughout the core curriculum to develop the engineering habits of mind. Consequently, students will be able to critically appraise the value and effectiveness of future engineering innovations in the field in terms of business improvement and environmental sustainability.

Have the requisite academic knowledge, skills and preparation for progression to study for higher degrees in appropriate engineering disciplines.

Programme Learning Outcomes:

Programme Learning Outcomes

PO1. Apply established and novel mechanical analysis concepts to solve engineering problems involving design, operations and manufacture that arise across mechanical engineering applications and technologies.

PO2. Model mechanical engineering systems and be able to specify and assess technical designs.

PO3. Describe the manufacturing, financial and marketing implications of design proposals.

PO4. Identify the links between design, manufacturing and production management and assess the capabilities of manufacturing systems software used in the design, maintenance and improvement of manufacturing facilities.

PO5. Communicate and operate effectively either as individuals or as members of a team.

PO6. Pursue independent study and research to undertake enquiry into novel and unfamiliar concepts and implement change in an engineering environment.

PO7. Make considered judgements and decisions on complex engineering issues in which not all facts and consequences are accurately known.

Part B: Programme Structure

Year 1

Year 1 Compulsory Modules

Module Code	Module Title	Credit
UFMFEG-30-0	Engineering Experimentation 2021-22	30
UFMFBG-30-0	Foundation Mathematics: Algebra and Calculus 2021-22	30
UFCFGK-30-0	Professional and Academic Skills 2021-22	30
UFCEXX-30-0	Program Design and Implementation 2021-22	30

Year 2

Year 2 Compulsory Modules

Module Code	Module Title	Credit
UFMFN3-30-1	Design, Materials and Manufacturing 2022-23	30
UFMFF3-15-1	Energy and Thermodynamics 2022-23	15
UFMFJ9-30-1	Engineering Mathematics 2022-23	30
UFMFG3-15-1	Fluid Dynamics 2022-23	15
UFMFH3-30-1	Stress & Dynamics 2022-23	30

Year 3

Year 3 Compulsory Modules

Module Code	Module Title	Credit
UFMFMC-30-2	Automotive Technology 2023-24	30
UFMF88-30-2	Design and Electromechanical Systems 2023-24	30
UFMFL8-15-2	Dynamics 2023-24	15
UFMFK9-15-2	Engineering Mathematics 2 2023-24	15
UFMFHA-15-2	Project Management 2023-24	15
UFMFQA-15-2	Stress Analysis 2023-24	15

Year 4

Year 4 Compulsory Modules

Module Code	Module Title	Credit
UFMFU7-15-3	Computational Methods 2024-25	15
UFMFX8-30-3	Engineering Project 2024-25	30
UFCF95-15-3	Entrepreneurial Skills 2024-25	15
UFMFXJ-15-3	Vibrational Dynamics 2024-25	15

Year 4 Optional Modules Group 1
Students must select 15 credits from Optional Modules Group 1

Module Code	Module Title	Credit
UFMFU6-15-3	Composite Engineering 2024-25	15
UFMFYJ-15-3	Control Engineering 2024-25	15
UFMFD7-15-3	Energy Technologies 2024-25	15

UFMFV8-15-3	Group Design and Integration Project 2024-25	15
UFMF7K-15-3	Materials and Structures for Special Applications 2024-25	15
UFMFP9-15-3	Mechanics of Materials 2024-25	15

Year 4 Optional Modules Group 2
Students must select 30 credits from Optional Modules Group 2

Module Code	Module Title	Credit
UFMFNC-30-3	Automotive Manufacturing 2024-25	30
UFMFT9-30-3	Motorsport Performance 2024-25	30

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of this programme will be equipped with a broad understanding of mechanical analysis and design, combined with knowledge of engineering practice, information technology and project management.

The programme produces graduates with a broad-based ‘systems’ approach to engineering problem solving. Graduates from this programme will be equipped to work in multi-disciplinary teams, able to critically appraise existing ideas and practice and produce creative solutions to engineering problems.

Part D: External Reference Points and Benchmarks

QAA UK Quality Code for HE

Framework for higher education qualifications (FHEQ)

Subject benchmark statement for Higher Education qualifications in engineering (Feb 2015)

Strategy 2030

University policies

Staff research projects

Relevant PSRB requirements: AHEP3

Industrial Advisory Board

Level 6 Degree Apprenticeship Standard: Manufacturing Engineer

Level 6 Degree Apprenticeship Standard: Aerospace Engineer

Part E: Regulations

B: Approved variant to University Academic Regulations and Procedures

The following variant regulations have been approved by the University Regulations to comply with conditions set out be Engineering Council UK.

The degree classification for the 480 credit honours degree(with an integrated foundation year) BEng (Hons) Mechanical Engineering and Technology pathways (Mechatronics, Vehicle Technology and Manufacturing) is based upon:

the best marks for 100 credits at level 6 and the best marks achieved for the next 100 credits at level 5 or above.

Marks achieved for the 100 level 6 credits are weighted three times the value of the marks for the 100 credits at level 5 or above.

The calculation at level 6 must always use the full credit and mark for the level 6 project module UFMFX8-30-3 followed by the best marks associated with the remaining level 6 credits.

Where the credit size of the best marks associated with the remaining level 6 modules would give a credit total greater than 100, only the relevant portion of credit is counted. The unused credit may be counted towards the set of best marks at level 5 or above.

The classification method for direct entrants to the BEng in Mechanical Engineering and Technology pathways (Mechatronics, Vehicle Technology and Manufacturing) will include the marks and whole credit for the project.

Condoned Credit

The permitted maximum condoned credit is 30 credits for a Bachelors or Integrated Masters degree and a maximum of 20 credits in a Masters degree.

The awarding of condoned credit may be considered for an overall module mark in the range 30% to 39%.

As a consequence Engineering Council UK regulations about the offer of excused credit for modules critical to the awarding of accreditation, excused credit will not be available on this award.