



Programme Specification

Automotive Engineering {Foundation} [Frenchay]

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Automotive Engineering {Foundation} [Frenchay]

Highest award: BEng (Hons) Automotive Engineering

Interim award: BEng Automotive Engineering

Interim award: DipHE Automotive Engineering

Interim award: CertHE Automotive Engineering

Awarding institution: UWE Bristol

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: Yes

Credit recognition: No

School responsible for the programme: CATE School of Engineering, College of Arts, Technology and Environment

Professional, statutory or regulatory bodies:

Institution of Mechanical Engineers (IMechE)

Modes of delivery: Full-time, Sandwich

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

For implementation from: 01 September 2026

Programme code: H33H00

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 automotive engineering education closely aligned to engineering practice. Technical knowledge, engineering practice, business awareness and sustainability are integrated through projects and revisited throughout the programme 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.

The programme will produce Automotive Engineering graduates who will also have a strong Mechanical Engineering knowledge that will allow employment throughout the engineering sector. Automotive Engineering is characterised by the coordination of multidisciplinary teams to produce innovative design solutions and an integrated systems approach to performance improvement and manufacturing. The programme is designed to encourage students to integrate engineering knowledge and skills from across engineering and to work alongside students from other engineering disciplines.

Mechanical engineering analysis, design, structures, stress analysis, dynamics, materials, thermofluids, systems and manufacturing are developed throughout the core modules at levels 4 and 5. Automotive specialist core modules are offered at levels 5 and 6 that include the critically important study of automotive powertrains, vehicle dynamics and emerging technologies to make possible new engineering

designs and create power and fuel systems for automotive products designed for a sustainable future for automotive transport.

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.

The integration of knowledge, skills and practice allows the tackling of real engineering challenges and encourage students to engage with the wider role that 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 in industry and society.

Features of the programme: Challenging group and individual assessments create a student engineer community within curriculum using the state-of-the art engineering building and automotive engineering facilities.

The programme has a strong core of essential engineering learning to foster a strong cohort community making use of problem-based and project-based learning.

The programme as an industry informed curriculum.

Themed modules scaffold the journey from student engineer to graduate engineer.

Professional and personal development embedded throughout all levels of the programme.

Real engineering problems in core curriculum where students can explore industrial, environmental and societal impact of discipline.

Mathematics skills aligned taught in engineering context.

Educational Aims: Be able to work as a graduate engineer in the automotive sector and related disciplines. Students will have demonstrated the appropriate level of knowledge and understanding of automotive engineering so that they will be in a position to secure employment as automotive specialists and in the wider engineering domain.

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 of complex engineering products, particularly in relation to automotive engineering and will explore the environmental impact of automotive technologies.

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. As a consequence, 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.

Be equipped to make an early contribution to the success of an engineering organisation having demonstrated strategic management and leadership skills within the context of a significant innovative engineering project requiring technical and business expertise.

Programme Learning Outcomes:

On successful completion of this programme graduates will achieve the following learning outcomes.

Programme Learning Outcomes

- PO1. Apply established and novel mechanical analysis concepts to solve engineering problems involving design, operations and manufacture that arise within automotive engineering applications.
- PO2. Use automotive engineering systems incorporating hardware, software and processing algorithms.
- PO3. Model automotive engineering systems and be able to specify and assess technical designs
- PO4. Understand the manufacturing, financial and marketing implications of design proposals.
- PO5. 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 within the automotive specialism.
- PO6. Communicate and operate effectively as individuals and as members of a team.
- PO7. Pursue independent study, research and investigations to undertake enquiry into novel and unfamiliar concepts and implement change in an engineering environment.
- PO8. Make considered judgements and decisions on complex engineering issues in which not all facts and consequences are accurately known.

Assessment strategy: The assessment strategy for the curriculum is designed to connect topics and levels within the curriculum and to enable students to reflect upon their development. The assessment methods on the programme are aligned to the requirements of the Institution of Mechanical Engineers who place high importance on the demonstration of authentic and verifiable learning outcomes for each individual student. This consideration can lead to a reliance on written examinations and limit the scope for project or group work activities. We have therefore widened the range of activities within our examinations to include more open book examinations, questions based on pre-seen scenarios, questions that build on

practical laboratory-based activities and computer-based examinations where students demonstrate the use of software to solve engineering problems. The assessment strategy is designed to work for large module cohorts, typically associated with this programme (100-450).

The above Factors influence and inform the design of this programme's assessment strategy.

In year 1 the Professionalism Skills for Engineers module develops professional attributes and engineering habits of mind through activities and assessments that encourage reflections through a structured portfolio. As part of the portfolio we have the concept of a "passport" where students demonstrate key professional skills such as workshop skills, library skills and health and safety awareness. This "replicates" part of the experience of an engineering apprentice but for one who is working in an academic environment.

The assessment strategies of the other core level 4 modules each designed to make sure that the content covered is connected. Solid Mechanics, Materials and Manufacturing and Dynamics Modelling and Simulation are strong examples where students are assessed on key technical engineering material at the end of the first and second semesters.

The assessment strategy takes a programmatic view in order to connect the immersive activities across modules at a specific level or across levels for an engineering theme.

For example, the level 4 module Thermofluids has an examination where examination questions are based around previously completed laboratory sessions, an activity that should mean that they are fully engaged and aware of how to prepare for that assessment. The assessment at level 4 is then built on for the level 5 module Applied Thermofluids where technical aspects of this engineering theme are developed from the previous level this change of emphasis should create the culture required for students to embrace active learning styles.

Generally speaking at level 5 Structural Mechanics, Dynamics, Applied Mechatronics as well as Applied Thermofluids all provide examples of how content and assessment is developed from level 4 to level 5.

The level 5 module Project Management for Engineers takes over from the level 4 module Professional Skills for Engineers, where the previous module relies on the importance and creation of the team with key roles allocated and the dynamics of the team monitored through a regular peer assessment process. The level 5 module helps students understand the importance of project management in an engineering problem context and forms the vehicle for the assessment that is designed to be motivational and accessible and is assessed through a portfolio of work.

The level 5 module Automotive Powertrain Technologies is designed to be a link to level 6 module Emerging Automotive Technology and is a point of difference from the Mechanical Engineering programme, aiming to enhance cohort identify heading to a much more bespoke Level 6. This module focuses on both fundamental thermodynamic cycles of engines, and modern propulsion system for automotive applications and is assessed via a 'portfolio' comprising of written coursework and laboratory activity.

In the final year of the programme students are able to work on their individual engineering project as well as group activities to showcase their understanding and skill as engineering practitioners. Alongside the core Engineering in Society, Advanced FEA for Design, and a series of core automotive topics of Emerging Automotive Technology, Vehicle Dynamics and Vehicle Design Fundamentals, optional modules covering two essential themes of materials and manufacturing provide the opportunity to pursue specialist areas. The assessment methods used across the core modules range from journal style articles and viva (Individual project) through to open book computer-based examinations (Vehicle Dynamics), written assignments (Emerging Automotive Technology) presentations (Vehicle Design Fundamentals) and portfolio of multiple tasks (Engineering in Society).

The level 6 module Advanced FEA for Design provides an exciting new development that brings FEA, a fundamental engineering tool, to the students in the context of

engineering design which will certainly help support most students who will be using FEA as part of their individual project. The assessment for this module replicates a postgraduate viva experience challenging the students to present technical work in a professional environment.

Student support: Espresso Maths drop-in support stations at the School of Engineering

Personality and professional strengths finding activity at start of programme.

Mathematics diagnostic testing and follow-up interventions early in Level 4.

Mathematics drop-in sessions aligned with mathematics teaching in Level 4 .

Development of group work skills and attributes.

Academic Personal Tutors to liaise with Disability Advisors to support to all SpLD students

Academic Personal Tutors to support all students with issues of academic studies and continuation

Success Coaches to support all students with issues of motivation, confidence and well-being

Video capture of course content delivery

E-assessments for rapid feedback

Part B: Programme Structure

Year 1

Full time and sandwich students must take 120 credits from the modules in Year 1.

Year 1 Compulsory Modules (Full Time and Sandwich)

Full time and sandwich students must take 120 credits from the modules in Compulsory Modules (Full Time and Sandwich).

Module Code	Module Title	Credit
UFMFEG-30-0	Engineering Experimentation 2026-27	30
UFMFHG-15-0	Foundation Group Project 2026-27	15

UFMFBG-30-0	Foundation Mathematics: Algebra and Calculus 2026-27	30
UFMFAG-30-0	Foundation Mechanics 2026-27	30
UFMFCEG-15-0	Introduction to Mechatronics 2026-27	15

Year 2

Full time and sandwich students must take 120 credits from the modules in Year 2.

Year 2 Compulsory Modules (Full Time and Sandwich)

Full time and sandwich students must take 120 credits from the modules in Compulsory Modules (Full Time and Sandwich).

Module Code	Module Title	Credit
UFMEAS-15-1	Professional Skills for Engineers 2027-28	15
UFMEB9-15-1	Design Fundamentals And Manufacturing Workshop 2027-28	15
UFMFNS-15-1	Thermofluids 2027-28	15
UFMFPS-15-1	Applied Electrical Technology 2027-28	15
UFMFMS-30-1	Dynamics Modelling and Simulation 2027-28	30
UFMFLS-30-1	Solid Mechanics, Materials and Manufacturing 2027-28	30

Year 3

Full time and sandwich students must take 120 credits from the modules in Year 3.

Year 3 Compulsory Modules (Full Time and Sandwich)

Full time and sandwich students must take 120 credits from the modules in Compulsory Modules (Full Time and Sandwich).

Module Code	Module Title	Credit
UFMEBE-15-2	Automotive Powertrain Technologies 2028-29	15

UFMEB5-15-2	Project Management for Engineers 2028-29	15
UFMFTS-30-2	Applied Thermofluids 2028-29	30
UFMFL8-15-2	Dynamics 2028-29	15
UFMFSS-30-2	Structural Mechanics 2028-29	30
UFMFUS-15-2	Systems Design 2028-29	15

Year 4

Full time students must take 120 credits from the modules in Year 4.

Sandwich students must take 15 credits from the modules in Year 4.

Year 4 Compulsory Modules (Full Time)

Full time students must take 105 credits from the modules in Compulsory Modules (Full Time).

Module Code	Module Title	Credit
UFMEB6-15-3	Engineering in Society 2029-30	15
UFMEBA-15-3	Advanced FEA for Design 2029-30	15
UFMFWS-15-3	Emerging Automotive Technology 2029-30	15
UFMFX8-30-3	Engineering Project 2029-30	30
UFMFXS-15-3	Vehicle Design Fundamentals 2029-30	15
UFMFVS-15-3	Vehicle Dynamics 2029-30	15

Year 4 Compulsory Modules (Sandwich)

Sandwich students must take 15 credits from the modules in Compulsory Modules (Sandwich).

Students on the sandwich route take a placement year and study UFMF89-15-3 Industrial Placement.

Module Code	Module Title	Credit
UFMF89-15-3	Industrial Placement 2029-30	15

Year 4 Optional Modules (Full Time)

Full time students must take 15 credits from the modules in Optional Modules (Full Time).

Module Code	Module Title	Credit
UFMFYS-15-3	Advanced Manufacturing Technology 2029-30	15
UFMFU6-15-3	Composite Engineering 2029-30	15
UFMF7K-15-3	Materials and Structures for Special Applications 2029-30	15

Year 5

Sandwich students must take 105 credits from the modules in Year 5.

Year 5 Compulsory Modules (Sandwich)

Sandwich students must take 90 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit
UFMEBA-15-3	Advanced FEA for Design 2030-31	15
UFMFWS-15-3	Emerging Automotive Technology 2030-31	15
UFMFX8-30-3	Engineering Project 2030-31	30
UFMFXS-15-3	Vehicle Design Fundamentals 2030-31	15
UFMFVS-15-3	Vehicle Dynamics 2030-31	15

Year 5 Optional Modules (Sandwich)

Sandwich students must take 15 credits from the modules in Optional Modules (Sandwich).

Module Code	Module Title	Credit
UFMFYS-15-3	Advanced Manufacturing Technology 2030-31	15

UFMFU6-15-3	Composite Engineering 2030-31	15
UFMF7K-15-3	Materials and Structures for Special Applications 2030-31	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of this programme will be equipped with a broad understanding of mechanical and automotive 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 (March 2023)

Strategy 2030

University policies

Staff research projects

Relevant PSRB requirements: AHEP4

Industrial Advisory Board

Part E: Regulations

Approved to University Regulations and Procedures.

The PSRB requirements below are permitted within the regulations.

The following requirements apply to awards which have been accredited by a PSRB that comes under the auspices of the Engineering Council UK:

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

- The awarding of compensated credit may be considered for an overall module mark in the range of 30% to 39% for Levels 4-6 and 40%-49% for Level 7.
- Major individual and group-based project modules must not be compensated.
- This requirement applies to Award Boards from (for learners at all levels) 2023/24 onwards.