Programme Specification

Aerospace Engineering {Foundation} [Frenchay]

Version: 2025-26, v2.0, Validated

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Aerospace Engineering {Foundation} [Frenchay]

Highest award: BEng (Hons) Aerospace Engineering

Interim award: BEng Aerospace Engineering

Interim award: DipHE Aerospace Engineering

Interim award: CertHE Aerospace Engineering

Awarding institution: UWE Bristol

Teaching institutions: UWE Bristol

Study abroad: Yes

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: Not applicable

Modes of delivery: Full-time, Sandwich

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

For implementation from: 01 September 2025

Programme code: H49100

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, Improving, Adapting, and Systems and Critical Thinking. Foundation principles of engineering science, skills and practice are integrated throughout all years of study.

Aerospace engineers are predominantly employed throughout the aerospace, aviation and the wider technical sector in the design, manufacture and improvement of aerospace vehicles, integrated systems, and associated operations. Consequently, aerospace 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. Aerospace engineering topics including systems design, engineering analysis, materials, structures, stress analysis and manufacturing, aerodynamics, thermofluids, flight and propulsion are developed throughout the core modules and taken an advanced level in the optional modules. Approaches commonly found in the Aerospace industry such as flight simulation, systems engineering, safety management systems and have been included in the core programme of study.

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 as a team, under the supervision of 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 aerospace 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.

The Foundation Year entry route provides the opportunity for students to enter the programme from an academic background that is different to that normally required for the study of engineering undergraduate programmes.

Features of the programme: Distinctive Features:

Immersive Project Weeks create student engineer community within curriculum and new building.

Integrated Learning Framework and use of problem-based and project-based learning.

Industry informed curriculum

Engineering Practice modules to scaffold the journey from student engineer to graduate engineer.

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

Interdisciplinary projects

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: As a result of successful completion of this programme, a student will be able to work as a graduate Aerospace engineer across the engineering sector 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 design, operation manufacture and improvement of complex aerospace vehicles 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. 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.

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

Programme Learning Outcomes

PO1. Understand, identify and demonstrate the role and professional values of the engineer in industry, including upholding legal, ethical, health and safety requirements.

PO2. Apply mathematical and scientific principles, concepts and theories appropriate to aerospace engineering, as a method for formulating, assessing and communicating solutions for complex problems

PO3. Model aerospace vehicles, components and systems using analytical, numerical and experimental techniques, compatible with industrial practice

PO4. Evaluate the manufacturing, financial, marketing implications of design proposals developed

PO5. Apply an integrated or systems approach, and established and novel engineering analysis concepts to solve complex aerospace engineering problems

PO6. Communicate and operate effectively either as members of inter-disciplinary or multi-disciplinary teams; managing time and resources to given constraints

PO7. Pursue independent study, 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 new curriculum is firmly aligned with the requirements of the Royal Aeronautical Society (RAeS), which places high importance on authentic and verifiable learning outcomes for each individual student. Our approach ensures these standards are met while also encouraging learning and development through a variety of assessment methods. To achieve this, we use a balanced mix of examinations, presentations, and practical demonstrations, designed to assess both individual performance and group collaboration. While written examinations remain a key component, we have broadened the scope to include open-book exams, scenario-based questions, tasks linked to laboratory work, and computer-based assessments where students demonstrate the application of engineering software to solve real-world problems. This variety ensures assessments are rigorous, relevant, and reflective of professional practice.

In level 4, assessments integrate technical understanding with design-based

exercises and controlled tasks, while immersive project weeks connect learning across modules. Students also complete structured portfolios and presentations, including a “passport” system to evidence essential professional skills such as workshop competence, health and safety awareness, and library research—replicating aspects of an engineering apprenticeship within an academic setting.
At level 5, assessments become more complex, with project-oriented modules emphasising teamwork and peer review. Students tackle real-world engineering challenges, assessed through group presentations and collaborative outputs. By level 6, students undertake substantial individual and group projects, demonstrating technical expertise and professional competence. Optional modules provide opportunities for specialisation, using assessment methods tailored to the subject area.
Industry-linked projects, such as the Aerospace Design Project, replicate professional environments through design review meetings, while the Masters Group Capstone Project offers an interdisciplinary experience simulating a business and technical development team.

At M level, students are assessed through reports and seminars, demonstrating entrepreneurial thinking alongside detailed technical design—clearly differentiating MEng from BEng outcomes.
This strategy ensures assessments are authentic, verifiable, and aligned with professional standards, while promoting active learning and preparing students for success in modern engineering practice.

Student support: Student Support:

Espresso Engineering and Espresso Maths drop-in support stations

Personality and professional strengths finding activity at start of programme.

Mathematics diagnostic testing and follow-up interventions early in year 1.

Development of group work skills and attributes.

Academic mentors to provide continuity of support to SpLD students

Academic personal tutors

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 2025-26	30
UFMFHG-15-0	Foundation Group Project 2025-26	15
UFMFBG-30-0	Foundation Mathematics: Algebra and Calculus 2025-26	30
UFMFAG-30-0	Foundation Mechanics 2025-26	30
UFMFCG-15-0	Introduction to Mechatronics 2025-26	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

UFMFRU-15-1	Introduction To Aerospace Engineering 2026-27	15
UFMEBR-15-1	Design, Build, Fly 2026-27	15
UFMEBU-30-1	Aerospace Engineering Maths 2026-27	30
UFMEAS-15-1	Professional Skills for Engineers 2026-27	15
UFMFQU-15-1	Aerospace Thermofluids 2026-27	15
UFMFLS-30-1	Solid Mechanics, Materials and Manufacturing 2026-27	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
UFMEBY-15-2	Flight Dynamics and Control 2027-28	15
UFMEB5-15-2	Project Management for Engineers 2027-28	15
UFMFSU-15-2	Aerospace Systems Design 2027-28	15
UFMFFK-15-2	Flight Mechanics 2027-28	15
UFMFTU-15-2	Fundamental Aero-Propulsion 2027-28	15
UFMFRK-15-2	Fundamental Aerodynamics 2027-28	15
UFMFSS-30-2	Structural Mechanics 2027-28	30

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 60 credits from the modules in Compulsory Modules (Full-time).

Module Code	Module Title	Credit
UFMEB6-15-3	Engineering in Society 2028-29	15
UFMFUU-15-3	Aerospace Group Design Project 2028-29	15
UFMFX8-30-3	Engineering Project 2028-29	30

Year 4 Compulsory Modules (Sandwich)
Sandwich students must take 15 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit
UFMF89-15-3	Industrial Placement 2028-29	15

Year 4 Optional Modules (Full-time)
Full-time students must take 60 credits from the modules in Optional Modules (Full-time).

Module Code	Module Title	Credit
UFMEBT-15-3	Rotorcraft Theory 2028-29	15
UFMFVU-15-3	Aero Structures 2028-29	15
UFMFWU-15-3	Avionics 2028-29	15
UFMFU6-15-3	Composite Engineering 2028-29	15
UFMF7V-15-3	Digital Manufacturing in Aerospace 2028-29	15
UFMFYU-15-3	Further Aero-Propulsion 2028-29	15
UFMFXU-15-3	Further Aerodynamics 2028-29	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2028-29	15

UFMF8V-15-3	Space Engineering 2028-29	15
UFMFCH-15-3	Spaceflight 2028-29	15

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

Year 5 Compulsory Modules (Sandwich)
Sandwich students must take 45 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit
UFMFUU-15-3	Aerospace Group Design Project 2029-30	15
UFMFX8-30-3	Engineering Project 2029-30	30

Year 5 Optional Modules (Sandwich)
Sandwich students must take 60 credits from the modules in Optional Modules (Sandwich).

Module Code	Module Title	Credit
UFMEBT-15-3	Rotorcraft Theory 2029-30	15
UFMFVU-15-3	Aero Structures 2029-30	15
UFMFWU-15-3	Avionics 2029-30	15
UFMFU6-15-3	Composite Engineering 2029-30	15
UFMF7V-15-3	Digital Manufacturing in Aerospace 2029-30	15
UFMFYU-15-3	Further Aero-Propulsion 2029-30	15
UFMFXU-15-3	Further Aerodynamics 2029-30	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2029-30	15
UFMF8V-15-3	Space Engineering 2029-30	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of this programme will be equipped with a broad understanding of systems design, engineering analysis, materials, structures, stress analysis and manufacturing, aerodynamics, thermofluids, flight and aero-propulsion.

The programme produces graduates with an integrated or systems engineering approach to engineering problem solving. Graduates from this programme will also 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 (Oct 2019)

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.
- Compensation restrictions do not apply to a Level 3 foundation year.