Programme Specification

Integrated Mechanical Engineering with Manufacturing {Apprenticeship-UCW} [UCW]

Version: 2026-27, v1.0, Validated

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Integrated Mechanical Engineering with Manufacturing {Apprenticeship-UCW} [UCW]

Highest award: BEng (Hons) Integrated Mechanical Engineering with Manufacturing

Interim award: BEng Integrated Mechanical Engineering with Manufacturing

Interim award: DipHE Integrated Mechanical Engineering with Manufacturing

Interim award: CertHE Integrated Mechanical Engineering with Manufacturing

Awarding institution: UWE Bristol

Affiliated institutions: University Centre Weston

Teaching institutions: University Centre Weston, UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: No

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

Apprenticeship: ST0025 V1.2

Modes of delivery: Full-time

Entry requirements: The University's Standard Entry Requirements

Tariff points as appropriate for the year of entry - up to date requirements are available through the courses database.

For implementation from: 01 September 2026

Programme code: H3HB00

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The Mechanical Engineering with Manufacturing Degree is designed for students who want to combine academic study with real-world engineering practice. This industrially focused programme integrates technical knowledge, engineering skills, business understanding, and sustainability through applied projects directly aligned with workplace needs. The degree is developed to meet the requirements of both the QAA Subject Benchmark Statement for Engineering (2023) and the Manufacturing Engineer standard (2026). Apprentices will graduate as confident and capable engineers, able to apply their learning to solve complex problems and deliver engineering solutions that make a real difference in industry and society. Professional development is at the core of the curriculum. From the start, apprentices follow a structured pathway from student engineer to qualified graduate engineer, supported by both academic and workplace mentors. Throughout the programme, they will identify, develop, and demonstrate the competencies required of professional engineers, as defined by industry standards and professional bodies.

Apprentices study a broad range of manufacturing engineering topics, including:
•Manufacturing systems and technologies
•Engineering design
•Materials and manufacturing processes
•Automation and digital manufacturing
•Quality assurance, sustainability, and process improvement
Electrical, electronic and control systems content is embedded to support understanding of mechatronic and automated manufacturing systems.

Project-based learning is embedded across the curriculum, with a strong emphasis on developing essential Engineering Habits of Mind, including:
•Problem-finding and problem-solving

•Visualising and systems thinking
•Improving and adapting

Apprentices build a strong foundation in core mechanical engineering principles, including engineering science, materials, thermofluids, stress analysis, dynamics, design, systems and manufacturing. These are developed progressively across the programme and applied in both academic modules and real-world workplace projects. Core content also includes electrical and electronic systems, ensuring apprentices are equipped to work on electromechanical and mechatronic challenges commonly found in modern industry.
As apprentices work full-time in industry, they continuously apply their academic learning to real engineering tasks, gaining valuable experience in multidisciplinary environments. Dedicated project weeks and collaborative activities provide further opportunities to tackle live engineering problems, working alongside peers, academic staff, and industry professionals.

This integrated approach to learning ensures apprentices not only gain the technical expertise expected of a manufacturing engineer but also understand the broader role engineering plays in business, industry, and society. It is a modern, inclusive and flexible curriculum designed to prepare a diverse range of learners for the future of engineering.

Features of the programme: 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, an apprentice will:

Be able to work as a graduate mechanical engineer across the engineering and manufacturing sectors, equipped to contribute as an effective member of multidisciplinary teams. Graduates will be prepared to work within a range of industrial environments, including advanced manufacturing, automotive, aerospace, energy, and automation.

Have acquired the knowledge and understanding of scientific and engineering principles and methods necessary to underpin a modern education in mechanical and manufacturing engineering. The programme will provide both insight into and practical experience in the design, creation, optimisation, and maintenance of complex manufacturing systems and engineered products, with a focus on quality, efficiency, and digital manufacturing. It will also explore the environmental and sustainability impacts of manufacturing and engineering decisions.

Have demonstrated an ability to integrate their knowledge and understanding of core engineering and manufacturing disciplines in order to solve a substantial range of problems, including those of a complex, real-world nature. This includes addressing challenges in production processes, supply chains, automation, material selection, and lean manufacturing—both individually and as part of a cross-functional team.

Have developed and demonstrated understanding of the professional competencies and social responsibilities required of an engineer working in manufacturing and wider engineering contexts. Embedded activities throughout the curriculum support the development of engineering habits of mind, including problem-solving, systems thinking, and continuous improvement. As a consequence, apprentices will be able to critically appraise the value, feasibility, and sustainability of engineering and manufacturing innovations in terms of productivity, business improvement, digital transformation, and environmental impact.

Have the requisite academic knowledge, practical skills, and professional preparation for progression to higher degrees in mechanical, manufacturing, or related engineering disciplines. This includes readiness for further study or professional registration (e.g., Incorporated or Chartered Engineer), with an appreciation of how advanced manufacturing techniques, digital tools, and sustainable engineering practices are shaping the future of the industry.

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 across mechanical engineering applications.

PO2. Use systems incorporating digital hardware, software, communication, processing algorithms, interfacing circuits and parameter sensing and actuating devices.

PO3. Model mechanical 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.

PO6. Communicate and operate effectively either as individuals or as members of a team.

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

In year 1 the Professional Skills for Engineers module develops professional attributes and engineering habits of mind through activities and assessments that encourage reflections through a structured portfolio and presentations. 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 of the design as students are assessed on key technical material during or at the end of the first semester, then moving to an exercise where the knowledge and skill is assessed in the context of an engineering design problem and then with a controlled assessment at the end of the module. The written examination references and builds upon design activities undertaken during the module and provides an efficient vehicle for integrating the different module elements and assessing individual knowledge. The assessment strategy is programmatic and connects the two immersive project weeks with the task from the first feeding into the second where a

more technical treatment is considered bringing the content from these two modules together.

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 should create the culture required for students to embrace active learning styles., an activity that should mean that they are fully engaged and aware of how to prepare for that assessment. The assessment at level 4 should create the culture required for students to embrace active learning styles.

At level 5 Structural Mechanics provides an example of how content and assessment is developed from level 4 to level 5. The immersive project weeks are used by the project orientated modules Project Management and Engineering Research. The module Project Management takes over from the level 4 version and is a module that 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 problem to be tackled and forms the vehicle for the assessment is designed to be motivational and accessible and is assessed through group presentation. The assessments for the manufacturing modules, such as the audits in the Quality systems control module, imitate the requirements of industrial reporting required of graduate engineers. This theme of industrial reporting is continued into the level 6 manufacturing and systems modules.

Engineering Research is designed to have a significant impact on our operation. Apprentices work in groups to scope out research ideas. They then work with technical and academic staff to develop a project proposal that will pitched as an individual presentation that will feed forward to an individual written proposal.

In the final year of the programme, apprentices are able to work on individual and group projects to showcase their understanding and skill as engineering practitioners. The design of the Engineering Research module will strengthen performance, management and consistency of the End Point Assessment Project. Optional modules provide the opportunity to pursue specialist areas of materials, and

a variety of assessment approaches are used for these modules. The interdisciplinary Group Design and Integration Project t brings mechanical, automotive, electronic engineers and roboticists together on projects that are electromechanical in nature. Typical problem fields could involve projects in biomechanics, assistive living, autonomous vehicles, robotics or electric powered vehicles. Projects from these areas would each have the potential to demonstrate modern developments and impact of engineering. The assessment for this module replicates a professional environment with group design review meetings forming part of the assessment.

Student support: Student Support and Welfare from UCW HEART team
UCW Academic Skills Development team
Espresso Engineering and Espresso Maths drop-in support stations at UWE as well as Maths support drop-in sessions at UCW
Personality and professional strengths finding activities throughout the 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 learners
Academic personal and degree apprentice tutors
Personal degree apprentice training coordinator and assessors
Video capture of course content delivery
E-assessments for rapid feedback

Part B: Programme Structure

Year 1

The student must take 120 credits from the modules in Year 1.
Year 1 will be taught by UCW.

Year 1 Compulsory Modules

The student must take 120 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit

UFMEAS-15-1	Professional Skills for Engineers 2026-27	15
UFMFNS-15-1	Thermofluids 2026-27	15
UFMEB9-15-1	Design Fundamentals And Manufacturing Workshop 2026-27	15
UFMFPS-15-1	Applied Electrical Technology 2026-27	15
UFMFMS-30-1	Dynamics Modelling and Simulation 2026-27	30
UFMFLS-30-1	Solid Mechanics, Materials and Manufacturing 2026-27	30

Year 2
The student must take 90 credits from the modules in Year 2.
Year 2 will be taught by UCW.

Year 2 Compulsory Modules
The student must take 90 credits from the modules in Compulsory modules.

Module Code	Module Title	Credit
UFMEB5-15-2	Project Management for Engineers 2027-28	15
UFMFUS-15-2	Systems Design 2027-28	15
UFMFSS-30-2	Structural Mechanics 2027-28	30
UFMFRS-15-2	Engineering Research 2027-28	15
UFMFXA-15-2	Quality Control Systems 2027-28	15

Year 3
The student must take 75 credits from the modules in Year 3.
Level 5 modules in Year 3 will be taught by UCW. Level 6 modules in Year 3 will be taught by UWE Bristol.

Year 3 Compulsory Modules
The student must take 60 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMEBV-30-2	Applied Thermodynamics for Manufacturing 2028-29	30
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2028-29	15
UFMEAR-15-3	Professionalism for Engineering Apprentices 2028-29	15

Year 3 Optional Modules
The student must take 15 credits from the modules in Optional Modules.

Module Code	Module Title	Credit
UFMFU6-15-3	Composite Engineering 2028-29	15
UFMF7K-15-3	Materials and Structures for Special Applications 2028-29	15

Year 4
The student must take 75 credits from the modules in Year 4.

Learners must have achieved 330 credits before they can pass through gateway and take the End-Point Assessment module UFMEBH-30- 3 . The End-Point Assessment module UFMEBH-30-3 will begin in year 4 but it will be completed beyond the end of year 4. The duration of the programme will be 4 years 4 months.

Year 4 will be taught by UWE Bristol.

Year 4 Compulsory Modules
The student must take 75 credits from the modules in Compulsory Modules.

Learners must have achieved 330 credits before they can pass through gateway and take the End-Point Assessment module UFMEBH-30-3.

Module Code	Module Title	Credit
UFMEBH-30-3	Mechanical Engineering with Manufacturing (Integrated) End Point Assessment 2029-30	30

UFMFPB-15-3	Reliability Engineering and Asset Management 2029-30	15
UFMFV8-15-3	Group Design and Integration Project 2029-30	15
UFMFTB-15-3	Lean Factory Design 2029-30	15

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, project management and manufacturing.

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 (Oct 2019)

Qualification characteristics for Degree Apprenticeships

Strategy 2030

University policies

Staff research projects

Relevant PSRB requirements: UK Engineering Councils UK Spec

Industrial Advisory Board

Manufacturing Engineer Degree Apprenticeship Standard

Appendix 1 - presents the Programme/Apprenticeship Standard mapping to Manufacturing Engineer standard (ST0025 1.2)

Part E: Regulations

Approved variants to University Academic Regulations and Procedures.

The following relate to UFMEBH-30-3 Mechanical Engineering with Manufacturing (Integrated) End Point Assessment:

Regulation D5 (Requirements to pass a module):
This module has two assessment tasks, each with a mark expressed as a grade:
Task 1: Project with report, presentation and questioning is graded Pass/Fail
Task 2: Professional discussion underpinned by a portfolio is graded Distinction/Pass/Fail.
The overall module outcome is graded Distinction/Pass/Fail in line with the Manufacturing Engineer apprenticeship standard's assessment plan.

Regulations D6 (Failure of a Module) and D7 (Retaking a Module):
For the purposes of the apprenticeship outcome only, a resit or retake will be capped at a Pass, unless the university determines there are exceptional circumstances requiring a resit or retake. There is no capping of this module for the degree outcome.
The apprentice's employer will need to agree that either a resit or retake is an appropriate course of action.

Regulation D11 (Arrangements for Awards Classifications):
The End-Point Assessment module grade will count towards the overall degree

classification.

Additional requirements:
Compensation is not permitted for an End-Point Assessment module.

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.