Programme Specification

Building Services Engineering [SHAPE]

Version: 2029-30, v2.0, Validated

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Building Services Engineering [SHAPE]

Highest award: BEng (Hons) Building Services Engineering

Interim award: BEng Building Services Engineering

Awarding institution: UWE Bristol

Affiliated institutions: School for Higher and Professional Education

Teaching institutions: School for Higher and Professional Education

Study abroad: No

Year abroad: No

Sandwich year: No

Credit recognition: No

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

Professional, statutory or regulatory bodies: Not applicable

Modes of delivery: Full-time, Part-time

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

For implementation from: 01 August 2029

Programme code: K29E00

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The BEng (Hons) Building Services Engineering equips students with the knowledge, skills, and practical experience required to design and manage building services systems that support sustainable, healthy, and efficient built environments.

Students gain expertise in mechanical and electrical services, energy systems, sustainability strategies, and digital modelling. Emphasis is placed on the integration of systems within complex buildings, as well as life safety, user comfort, and climate resilience.

With strong links to industry, the programme offers opportunities for site visits, real-world case studies, guest lectures, and professional mentorship. Students are supported in developing core professional attributes and digital fluency using tools such as energy modelling software.

The programme is accredited by the Chartered Institution of Building Services Engineers (CIBSE) and meets the academic requirements for Incorporated Engineer (IEng) registration, providing a pathway towards Chartered Engineer (CEng) status.

Features of the programme: Hands-On Facilities: Students learn in state-of-the-art engineering labs and studios, including renewable energy systems, HVAC rigs, and digital fabrication tools.

Sustainability Focus: The programme embeds low-carbon design, energy efficiency, and sustainable materials across all levels.

Digital Skills: Core digital competencies are developed across the course, including data analysis tools, and energy performance simulation.

Industry Engagement: Students benefit from guest lectures, real-world projects, and networking opportunities with local and national employers.

Educational Aims: The aim of the programme is to provide an outstanding educational experience that prepares graduates for careers in building services

engineering, equipping them with the knowledge, skills, creativity, and professional commitment to make a meaningful contribution to their discipline and society.

The educational aims of the programme are to:

Develop scientific and analytical expertise to formulate effective, innovative, and sustainable engineering solutions.

Equip graduates with management, digital, and professional skills to provide leadership, exercise sound judgement, and recognise opportunities in evolving contexts such as Building Information Modelling (BIM) and digital engineering.

Foster confidence and decision-making ability, enabling graduates to take leading roles in professional practice.

Encourage creativity and multi-dimensional thinking in design, problem-solving, and systems integration.

Engender an enquiring and research-informed mindset, providing the tools and confidence to undertake independent investigation and commit to life-long learning.

Develop practical competences relevant to laboratory work, engineering workshops, and workplace practice.

Enable proficiency in computer-based methods including simulation, modelling, and data-driven analysis, while encouraging experimentation with emerging technologies.

Promote an understanding of the economic, social, and environmental context in which building services engineers operate, embedding professional responsibility and sustainability throughout.

Programme Learning Outcomes:

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

Programme Learning Outcomes

PO1. Critically evaluate and apply advanced knowledge, skills, and behaviours in professional building services engineering practice, demonstrating independent problem-solving, reflective judgement, and preparedness for professional recognition with industry bodies. [keyword: Professional Practice]

PO2. Critically appraise diverse stakeholder perspectives in the development of buildings, demonstrating leadership and advanced communication skills in interdisciplinary project environments. [keyword: Collaborative Practice]

PO3. Critically evaluate ethical challenges in building engineering, applying current codes of ethics with particular reference to equality, diversity, inclusion, and sustainability, and exercise professional responsibility in the delivery of complex engineering projects. [keyword: ethics]

PO4. Integrate and critically appraise management and procurement strategies within building development, exercising professional judgement in contract administration, tendering, and the economic evaluation of engineering solutions. [keyword: economic]

PO5. Apply and critically evaluate advanced mathematical, scientific, and engineering principles in the design, modelling, and optimisation of complex building services systems, and synthesise innovative solutions across mechanical, electrical, and public health domains. [keyword: technical]

PO6. Critically interpret and apply statutory, legal, and regulatory frameworks, including health and safety, fire, and life-safety legislation, to the design and management of building engineering projects, demonstrating professional accountability. [keyword: legal]

PO7. Critically analyse the economic, social, technological, and environmental context of building services engineering, and lead the evaluation and selection of sustainable design strategies. [keyword: sustainability]

PO8. Critically apply and evaluate digital methods and analytical techniques in building services design, using industry-standard software and data-driven approaches to support decision-making, integration, and innovation in complex engineering projects. [keyword: digital]

PO9. Independently plan, execute, and critically evaluate a substantial investigative study, demonstrating innovation, creativity, and originality in the development of building services engineering knowledge or practice. [keyword: innovation]

Assessment strategy: Authentic and Practice-Focused

Assessments are designed to mirror the professional demands of building services engineering and to align with CIBSE accreditation requirements and the Engineering Council AHEP4 outcomes. Tasks simulate industry practice, requiring students to integrate technical analysis, design development, and professional communication.

Programmatic Design and Progression

Assessment is designed programmatically, offering a balanced mix of formats and a clear progression in challenge across levels. Students build confidence by moving from foundational skills towards more complex and professional tasks. Early assessments focus on developing core technical and communication abilities, while later work introduces greater integration, collaboration, and digital practice. By the final stage, students demonstrate autonomy, leadership, and professional judgement through independent projects and advanced problem-solving. This scaffolding approach ensures graduates develop competence in technical writing, group collaboration, digital fluency, and oral communication, while integrating knowledge across disciplines in preparation for professional practice.

Integrated Assessment Components:

Technical and Laboratory Reports – Assess experimental investigation, data interpretation, and applied problem-solving in mechanical, electrical, and public health systems.

Design Portfolios and System Proposals – Require students to develop and justify integrated building services solutions, incorporating schematics, simulations, and performance analysis.

Digital Modelling Submissions – Assess competence in energy modelling, airflow simulation, and data-driven design using industry-standard tools.

Oral Presentations, Poster Papers, and Vivas – Test clarity of communication, ability to justify decisions, and readiness for professional dialogue.

Examinations and Structured Problem-Solving Tests – Provide targeted assessment of mathematical foundations and engineering principles.
Capstone Project (Level 6) – A substantial independent design or research project demonstrating synthesis, innovation, and professional-level outputs.

Inclusivity and Feedback Literacy
Assessment design is informed by the UWE Framework for Inclusive Assessment and the wider Enhancement Framework (EF). Students encounter a diverse range of formats, ensuring accessibility and recognising varied learning styles. Feedback is embedded throughout, with formative checkpoints, interim reviews, and staged submissions to support iterative improvement. Feedback literacy is developed through guided reflection and explicit links between formative and summative tasks.

Development of Professional Attributes
The assessment approach emphasises the development of transferable skills essential for graduate engineers, including:
Communication – through written reports, visual outputs, and professional presentations.
Collaboration – through group design projects and peer review.
Critical Thinking and Reflection – through design justifications, case study evaluations, and reflective logs.
Digital Competence – through assessments requiring CAD, BIM, simulation, and analytical software.
Professional Judgement – through tasks that require consideration of ethics, sustainability, health and safety, and economic factors.

Alignment with Graduate Outcomes
Assessments are scaffolded to ensure progression from foundational knowledge at Level 4 to professional readiness at Level 6. The strategy supports development of the UWE Graduate Attributes (ambition, inclusivity, innovation, collaboration, and enterprise) while preparing students for progression to Incorporated Engineer (IEng) registration.

Student support: The BEng (Hons) Building Services Engineering programme at SHAPE is committed to providing robust, inclusive, and personalised support that enables students and apprentices to thrive academically, professionally, and personally.

Tutors Support

All students and have access to a team of academic tutors who provides one-to-one support throughout the course. This helps students reflect on their academic progress, set development goals, and navigate university life. Tutors act as a key point of contact for academic and wellbeing concerns and provide a consistent relationship across the student journey.

Skills Development and Digital Training

The programme embeds digital and academic skills development within modules, supported by targeted workshops, drop-ins, and online resources. Students gain confidence using a range of digital platforms. SHAPE's library and learning support teams offer additional assistance in areas such as:

- Academic writing and referencing
- Data analysis and visualisation
- Information literacy
- Time management and revision strategies

The programme follows UWE's Framework for Inclusive Teaching, ensuring learning materials, assessments, and support mechanisms are accessible to all. Students from a variety of backgrounds benefit from inclusive practices that respect individual learning needs and cultural identities.

Feedback and Reflective Learning

The course place strong emphasis on feedback literacy, helping students and apprentices interpret, apply, and respond to feedback. This includes:

- Formative reviews in design and technical modules
- Reflective logs and self-assessment tasks
- Guidance on using feedback for future improvement

Technology-Enhanced Learning

All students have access to UWE's digital learning platforms.

These provide:

- Recorded lectures and asynchronous learning materials
- Assignment submission and feedback portals
- Discussion boards and collaborative tools
- Access to software licenses for off-site use

Part B: Programme Structure

Year 1

Full-time students must take 120 credits in Year 1.

Part-time students must take 90 credits in Year 1.

This structure diagram demonstrates the student experience of level 6 of BEng(Hons) Building Services Engineering through to Graduation. Such a journey would be typical of a student at School for Higher and Professional Education (SHAPE) in Hong Kong, including: level and credit requirements, interim award requirements, module diet, including compulsory and optional modules.

Students join via Direct Entry at Level 6. For any direct entry into level 6, all the core learning outcomes for year 1 and year 2 must first be achieved. A formal mapping of feeder programmes shows this in detail, such as those prepared for the Higher Diplomas in IVE Hong Kong. For non-feeder programmes proof of having met the learning outcomes shall be assessed on a case-by-case basis.

Year 1 Compulsory Modules (Full-time)

Full-time students must take 120 credits from the modules in Compulsory Modules (Full-time).

Module Code	Module Title	Credit
UBLLXE-30-3	Design Project 2029-30	30
UBLL7U-15-3	Energy Performance and Retrofit 2029-30	15
UBLL7P-15-3	Interactive Systems and Comfort Controls 2029-30	15

UBLL7N-30-3	Zero Carbon Buildings 2029-30	30
UBLL7X-30-3	Building Services Innovations 2029-30	30

Year 1 Compulsory Modules (Part-time)
Part-time students must take 90 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBLL7N-30-3	Zero Carbon Buildings 2029-30	30
UBLL7X-30-3	Building Services Innovations 2029-30	30
UBLLXE-30-3	Design Project 2029-30	30

Year 2
Part-time students must take 30 credits in Year 2.

Year 2 Compulsory Modules (Part-time)
Part-time students must take 30 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBLL7P-15-3	Interactive Systems and Comfort Controls 2030-31	15
UBLL7U-15-3	Energy Performance and Retrofit 2030-31	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of the BEng Building Services Engineering programme develop advanced knowledge and skills in engineering analysis, system design, sustainability, and digital practice. They demonstrate professional judgement in economic, legal, and ethical contexts, apply innovative and collaborative approaches to complex building projects, and are prepared for recognition by industry bodies and progression towards chartered engineer status.

Part D: External Reference Points and Benchmarks

The programme aligns with the CIBSE Guidance Notes to the Academic Content Requirements for Degree in Building Services Engineering. Stated requirements regarding academic content and skills development have been rigorously implemented. Maintaining the accreditation of the programme is seen as a critical requirement.

Engineering Council UK standard for The Accreditation of Higher Education Programmes, 4th edition (AHEP 4). The output statements, as interpreted by the professional body, the Chartered Institution of Building Services Engineers, have been the critical driver for both generic and programme specific learning outcomes. Skills matrices have been compiled to demonstrate comprehensive inclusion of the broad range of outcomes over the modular structure are based on these statements.

The curriculum reflects QAA's Subject Benchmark Statement for Engineering (2023).

The Royal Academy of Engineering and Engineering Council jointly created statement of ethical principles to guide engineering practice and behaviour, as reflected in AHEP4.

IfATE Occupational standards for building services degree apprenticeship. Reference to the IfATE standards have been made to confirm that no significant omissions or contradictions have been made in compiling the programme specific learning outcomes, or in the strategies adopted for teaching, learning and assessment across programmes.

Enterprise Educators UK guidance for embedding enterprise in the curriculum for degrees in the build environment.

The programme has been mapped to the UNSDGs and AdvanceHE's Education for Sustainable Development competencies, ensuring sustainability is embedded throughout the course.

Together, these reference points guide the programme's structure, emphasising progression from foundational to specialised knowledge and embedding sustainability, ethics, and social responsibility at every level. This framework ensures that students meet rigorous educational standards and prepares them to address the complex, multidisciplinary challenges in contemporary architecture.

Part E: Regulations

Approved to University Regulations and Procedures.