Programme Specification

Civil Engineering [Frenchay]

Version: 2023-24, v1.2, 14 Feb 2024

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Civil Engineering [Frenchay]

Highest award: MEng Civil Engineering

Interim award: BEng (Hons) Civil Engineering

Interim award: BEng Civil Engineering

Interim award: DipHE Civil Engineering

Interim award: CertHE Civil 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:

Joint Board of Moderators

Modes of delivery: Full-time, Part-time, Sandwich

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

For implementation from: 01 September 2023

Programme code: H29G00

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The award sets out to provide an accredited, intellectually demanding, engaging and outstanding learning experience enabling an outcome of ready and able graduates.

Features of the programme:

Educational Aims: The fundamental aims of the programme are to develop students:

Knowledge and understanding of engineering science necessary to develop engineering solutions and processes for an effective career in Civil and Environmental Engineering.

Knowledge and understanding of the engineering contribution to sustainable development.

Creative and innovative ability in the synthesis of solutions to complex problems with a holistic systems approach.

Ability to reflect critically upon their learning, as the foundation for continuing professional development and progression to Chartered Engineer.

Skills in communicating effectively with other professionals from a variety of disciplines, clients and the public, with understanding and respect for the objectives and values of other stakeholders.

To provide a learning environment based upon:

A variety of classroom, laboratory, and online learning experiences and resources,

supported by the Faculty's Learning Innovation Unit and Technical Services team

Industry standard laboratory equipment and IT software.

A variety of assessment approaches, linked to professional as well as academic standards (where appropriate).

A strong environmental thread to include inputs by the Departments' Research Centres with expertise in Water, Transport, and Sustainable Materials.

And to provide the opportunity for:

Research and consultancy led case study and problem solving learning, led by the Department's Research Centres with expertise in Water, Transport, and Sustainable Materials.

Industrial interaction and experiential learning.

Hands on industry led case studies and problem based learning in the field and laboratory.

Career guidance and PSRB membership to Chartered level.

Programme Learning Outcomes:

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

Knowledge and Understanding

A1. A comprehensive knowledge and understanding of the scientific principles and methodology necessary to underpin their education in their engineering discipline, and an understanding and know-how of the scientific principles of related disciplines, to enable appreciation of the scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies. (SM1m)

A2. Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems (SM2m)

A3. Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own engineering discipline and the ability to evaluate them critically and to apply them effectively (SM3m)

A4. Awareness of developing technologies related to own specialisation (SM4m)

A5. A comprehensive knowledge and understanding of mathematical and computational models relevant to the engineering discipline, and an appreciation of their limitations (SM5m)

A6. Understanding of concepts from a range of areas, including some outside engineering, and the ability to evaluate them critically and to apply them effectively in engineering projects (SM6m)

Intellectual Skills

B1. Understanding of engineering principles and the ability to apply them to undertake critical analysis of key engineering processes (EA1m)

B2. Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques (EA2)

B3. Ability to apply quantitative and computational methods, using alternative approaches and understanding their limitations, in order to solve engineering problems and implement appropriate action (EA3m)

B4. Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems (EA4)

B5. Ability to use fundamental knowledge to investigate new and emerging technologies (EA5m)

B6. Ability to extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems (EA6m)

B7. Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics (D1)

B8. Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards (D2)

B9. Work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies (D3m)

B10. Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal (D4)

B11. Demonstrate the ability to generate an innovative design for products, systems, components or processes to fulfil new needs (D8m)

Subject/Professional Practice Skills

C1. Plan and manage the design process, including cost drivers, and evaluate outcomes (D5)

C2. Communicate their work to technical and non-technical audiences (D6)

C3. Demonstrate wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations (D7m)

C4. Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise (EL1m)

C5. Knowledge and understanding of the commercial, economic and social context of engineering processes (EL2)

C6. Knowledge and understanding of management techniques, including project and change management, that may be used to achieve engineering objectives, their limitations, and how they may be applied appropriately (EL3m)

C7. Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate (EL4)

C8. Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues, and an awareness that these may differ internationally (EL5m)

C9. Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk (EL6m)

C10. Understanding of the key drivers for business success, including innovation, calculated commercial risks and customer satisfaction (EL7m)

C11. Understanding of contexts in which engineering knowledge can be applied (for example operations and management, application and development of technology, etc.) (P1)

C12. Knowledge of characteristics of particular equipment, processes or products, with extensive knowledge and understanding of a wide range of engineering materials and components (P2)

C13. Ability to apply relevant practical and laboratory skills (P3)

C14. Understanding of the use of technical literature and other information sources (P4)

C15. Knowledge of relevant legal and contractual issues (P5)

C16. Understanding of appropriate codes of practice and industry standards (P6)

C17. Awareness of quality issues and their application to continuous improvement (P7)

C18. Ability to work with technical uncertainty (P8)

C19. A thorough understanding of current practice and its limitations, and some appreciation of likely new developments (P9m)

C20. Ability to apply engineering techniques taking account of a range of commercial and industrial constraints (P10m)

C21. Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader (P11m)

Transferable Skills and other attributes

D1. Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities (G1)

D2. Plan self-learning and improve performance, as the foundation for lifelong learning/CPD (G2)

D3. Monitor and adjust a personal programme of work on an ongoing basis (G3m)

D4. Exercise initiative and personal responsibility, which may be as a team member or leader (G4)

Assessment strategy: The assessment strategy has been designed to test the programme learning outcomes.

Student support:

Part B: Programme Structure

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

Part-time students must take 60 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
UBGMYD-15-1	Civil and Environmental Engineering Field Study 2023-24	15
UBGMKD-15-1	Civil Engineering Technology and Design 2023-24	15
UBGMY9-15-1	Construction and Environmental Materials 2023-24	15
UBGMSQ-15-1	Engineering Graphics and Communication 2023-24	15
UBGMXQ-30-1	Engineering Principles for Civil Engineering 2023-24	30

UFMFYG-15-1	Mathematics for Civil and Environmental Engineering 2023-24	15
UBGMT9-15-1	Surveying 2023-24	15

Year 1 Compulsory Modules (Part-time)
Part-time students must take 60 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBGMKD-15-1	Civil Engineering Technology and Design 2023-24	15
UBGMY9-15-1	Construction and Environmental Materials 2023-24	15
UBGMSQ-15-1	Engineering Graphics and Communication 2023-24	15
UBGMT9-15-1	Surveying 2023-24	15

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

Part-time students must take 60 credits from the modules in Year 2.

Year 2 Compulsory Modules (Full-time and Sandwich)
Full-time and Sandwich students must take 105 credits from the modules in Compulsory Modules (Full-time and Sandwich).

The UWEBIC cohort in Year 2 in 2021/22 who could not complete the level 1 UBGMT9-15-1 Surveying module or equivalent on the UWEBIC programme due to Covid-19 will take UBGM71-15-1 Surveying Practice. This will be an additional 15 credits on their programme.

Students who completed the level 1 UBGMT9-15-1 Surveying module or equivalent on the UWEBIC programme are not required to take UBGM71-15-1 Surveying Practice.

Module Code	Module Title	Credit

UFMFF7-15-2	Applications of Mathematics in Civil and Environmental Engineering 2024-25	15
UBGMVQ-15-2	Design of Structural Elements 2024-25	15
UBGMNU-30-2	Hydraulics and Engineering Applications 2024-25	30
UBGMU9-15-2	Project and Risk Management 2024-25	15
UBGMUQ-15-2	Soil Mechanics 2024-25	15
UBGMV9-15-2	Structural Analysis 2024-25	15

Year 2 Compulsory Modules (Part-time)
Part-time students must take 60 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBGMYD-15-1	Civil and Environmental Engineering Field Study 2024-25	15
UBGMXQ-30-1	Engineering Principles for Civil Engineering 2024-25	30
UFMFYG-15-1	Mathematics for Civil and Environmental Engineering 2024-25	15

Year 2 Compulsory Modules Group 2 (Full-time and Sandwich)
The UWEBIC cohort in Year 2 in 2021/22 who could not complete the level 1 UBGMT9-15-1 Surveying module or equivalent on the UWEBIC programme due to Covid-19 will take UBGM71-15-1 Surveying Practice. This will be an additional 15 credits on their programme.

Students who completed the level 1 UBGMT9-15-1 Surveying module or equivalent on the UWEBIC programme are not required to take UBGM71-15-1 Surveying Practice.

Module Code	Module Title	Credit
UBGM71-15-1	Surveying Practice 2024-25	15

Year 2 Optional Modules (Full-time and Sandwich)
Full-time and Sandwich students must take 15 credits from the modules in Optional Modules (Full-time and Sandwich).

Module Code	Module Title	Credit
UBGMLU-15-2	Engineering Geology Design Project 2024-25	15
UBGMTQ-15-2	Hydrology and Flood Risk Estimation 2024-25	15
UBGLX8-15-2	Transport Engineering Design 2024-25	15

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

Sandwich students must take 15 credits from the modules in Year 3.

Part-time students must take 75 credits from the modules in Year 3.

Year 3 Compulsory Modules (Full-time)
Full-time students must take 105 credits from the modules in Compulsory Modules (Full-time).

Module Code	Module Title	Credit
UBGMM3-15-3	Advanced Structural Analysis 2025-26	15
UBGMW9-15-3	Computational Civil Engineering 2025-26	15
UBGMWQ-15-3	Geotechnics 2025-26	15
UBGMQP-30-3	Individual Civil Engineering Project 2025-26	30
UBGLY9-15-3	Infrastructure Design and Implementation Project 2025-26	15
UBGMGR-15-3	Strategic Issues in Engineering 2025-26	15

Year 3 Compulsory Modules (Part-time)
Part-time students must take 75 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UFMFF7-15-2	Applications of Mathematics in Civil and Environmental Engineering 2025-26	15
UBGMVQ-15-2	Design of Structural Elements 2025-26	15
UBGMU9-15-2	Project and Risk Management 2025-26	15
UBGMUQ-15-2	Soil Mechanics 2025-26	15
UBGMV9-15-2	Structural Analysis 2025-26	15

Year 3 Compulsory Modules (Sandwich)
Sandwich students must take 15 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit
UBGLVX-15-3	Placement 2025-26	15

Year 3 Optional Modules (Full-time)
Full-time students must take 15 credits from the modules in Optional Modules (Full-time).

Module Code	Module Title	Credit
UBGMPD-15-3	Environmental Assessment 2025-26	15
UBGMX9-15-3	Hydraulic Modelling for Flood Risk Management 2025-26	15
UBGLXP-15-3	Traffic Management and Safety 2025-26	15

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

Sandwich students must take 105 credits from the modules in Year 4.

Part-time students must take 90 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
UBGMSR-15-M	Advanced Construction Materials and Technology 2026-27	15
UBGMTA-15-M	Advanced Soil Mechanics and Foundation Design 2026-27	15
UBLMGW-15-M	BIM in Design Coordination 2026-27	15
UBGMVA-30-M	Group Civil and Environmental Engineering Project 2026-27	30
UBGMUA-15-M	Non Linear Structural Analysis 2026-27	15
UBLM7A-15-M	Project Management Principles 2026-27	15

Year 4 Compulsory Modules (Part-time)
Part-time students must take 75 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBGMM3-15-3	Advanced Structural Analysis 2026-27	15
UBGMNU-30-2	Hydraulics and Engineering Applications 2026-27	30
UBGLY9-15-3	Infrastructure Design and Implementation Project 2026-27	15

UBGMGR-15-3	Strategic Issues in Engineering 2026-27	15

Year 4 Compulsory Modules (Sandwich)
Sandwich students must take 90 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit
UBGMM3-15-3	Advanced Structural Analysis 2026-27	15
UBGMW9-15-3	Computational Civil Engineering 2026-27	15
UBGMWQ-15-3	Geotechnics 2026-27	15
UBGMQP-30-3	Individual Civil Engineering Project 2026-27	30
UBGLY9-15-3	Infrastructure Design and Implementation Project 2026-27	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
UBGMUR-15-M	Advanced Water and Wastewater Engineering Design 2026-27	15
UBGMTR-15-M	Bridge Engineering 2026-27	15
UBGMFX-15-M	Transport Infrastructure Design 2026-27	15

Year 4 Optional Modules (Part-time)
Part-time students must take 15 credits from the modules in Optional Modules (Part-time).

Module Code	Module Title	Credit
UBGMLU-15-2	Engineering Geology Design Project 2026-27	15

UBGMTQ-15-2	Hydrology and Flood Risk Estimation 2026-27	15
UBGLX8-15-2	Transport Engineering Design 2026-27	15

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

Module Code	Module Title	Credit
UBGMPD-15-3	Environmental Assessment 2026-27	15
UBGMX9-15-3	Hydraulic Modelling for Flood Risk Management 2026-27	15
UBGLXP-15-3	Traffic Management and Safety 2026-27	15

Year 5
Sandwich students must take 120 credits from the modules in Year 5.

Part-time students must take 75 credits from the modules in Year 5.

Year 5 Compulsory Modules (Part-time)
Part-time students must take 60 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBGMW9-15-3	Computational Civil Engineering 2027-28	15
UBGMWQ-15-3	Geotechnics 2027-28	15
UBGMQP-30-3	Individual Civil Engineering Project 2027-28	30

Year 5 Compulsory Modules (Sandwich)
Sandwich students must take 105 credits from the modules in Compulsory Modules (Sandwich).

Module Code	Module Title	Credit

UBGMSR-15-M	Advanced Construction Materials and Technology 2027-28	15
UBGMTA-15-M	Advanced Soil Mechanics and Foundation Design 2027-28	15
UBLMGW-15-M	BIM in Design Coordination 2027-28	15
UBGMVA-30-M	Group Civil and Environmental Engineering Project 2027-28	30
UBGMUA-15-M	Non Linear Structural Analysis 2027-28	15
UBLM7A-15-M	Project Management Principles 2027-28	15

Year 5 Optional Modules (Part-time)
Part-time students must take a minimum of 15 credits from the modules in Optional Modules (Part-time).

Module Code	Module Title	Credit
UBGMPD-15-3	Environmental Assessment 2027-28	15
UBGMX9-15-3	Hydraulic Modelling for Flood Risk Management 2027-28	15
UBGLXP-15-3	Traffic Management and Safety 2027-28	15

Year 5 Optional Modules (Sandwich)
Sandwich students must take 15 credits from the modules in Optional Modules (Sandwich).

Module Code	Module Title	Credit
UBGMUR-15-M	Advanced Water and Wastewater Engineering Design 2027-28	15
UBGMTR-15-M	Bridge Engineering 2027-28	15
UBGMFX-15-M	Transport Infrastructure Design 2027-28	15

Year 6
Part-time students must take 60 credits from the modules in Year 6.

Year 6 Compulsory Modules (Part-time)
Part-time students must take 45 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBGMSR-15-M	Advanced Construction Materials and Technology 2028-29	15
UBGMTA-15-M	Advanced Soil Mechanics and Foundation Design 2028-29	15
UBGMUA-15-M	Non Linear Structural Analysis 2028-29	15

Year 6 Optional Modules (Part-time)
Part-time students must take a maximum of 15 credits from the modules in Optional Modules (Part-time). Advanced Water and Wastewater Engineering Design UBGMUR-15-M or Transport Infrastructure Design UBGMFX-15-M can also be chosen from Optional Modules (Part-time) in Year 7 instead.

Module Code	Module Title	Credit
UBGMTR-15-M	Bridge Engineering 2028-29	15

Year 7
Part-time students must take a minimum of 60 credits from the modules in Year 7.

Year 7 Compulsory Modules (Part-time)
Part-time students must take 60 credits from the modules in Compulsory Modules (Part-time).

Module Code	Module Title	Credit
UBLMGW-15-M	BIM in Design Coordination 2029-30	15
UBGMVA-30-M	Group Civil and Environmental Engineering Project 2029-30	30
UBLM7A-15-M	Project Management Principles 2029-30	15

Year 7 Optional Modules (Part-time)
Part-time students must take a maximum of 15 credits from the modules in Optional Modules (Part-time).

Module Code	Module Title	Credit
UBGMUR-15-M	Advanced Water and Wastewater Engineering Design 2029-30	15
UBGMFX-15-M	Transport Infrastructure Design 2029-30	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

This programme of study requires students to develop a sound intellectual knowledge and understanding of civil and environmental engineering science, design and application; enabling creative and innovative synthesis of holistic solutions to complex problems. Alongside these skills students are required to develop effective communication across multiple formats, to both technical and non-technical audiences.

Part D: External Reference Points and Benchmarks

QAA UK Quality Code for HE:
Framework for higher education qualifications (FHEQ);
Subject benchmark statements;
Qualification characteristics for Foundation degrees and Master's degrees.

Strategy 2020

University policies

Staff research projects

The programme draws on the benchmark statements in Engineering as shown in the Learning Outcomes.

Faculty and University policies on teaching, learning and assessment including a strong emphasis on formative work, skills development and innovative approaches to teaching and learning.

The programme is underpinned by staff consultancy, professional practice and research.

The course team have excellent links with local employers who advise the course team on the content and structure of the programme through an Industrial Advisory Board that meets three times a year.

Professional body requirements: The programme (all modes of study) is to be assessed for accreditation by the Joint Board of Moderators.

Part E: Regulations

Approved to variant University Academic Regulations and Procedures.

The following variant regulation for compensation applies to students on this award which has been accredited by a PSRB that comes under the auspices of Engineering Council UK.

The variant applied to Level 4 September 2023 intake onwards (Note - Compensation applied to all levels not just new students).

- 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 30% to 39%.

No excused credit.