



Programme Specification

Civil Engineering [Frenchay]

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Civil Engineering [Frenchay]

Highest award: MSc Civil Engineering

Interim award: PGCert Civil Engineering

Interim award: PGDip Civil Engineering

Awarding institution: UWE Bristol

Teaching institutions: 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:

Joint Board of Moderators

Modes of delivery: Full-time, Part-time

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

For implementation from: 01 September 2018

Programme code: H20H12

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The MSc Civil Engineering programme is a postgraduate course which aims at educating Engineering Professionals with the necessary in-depth scientific and technical knowledge in the broad field of Civil Engineering. The programme is intended to provide students with firm technical bases while nurturing decision-making and leadership potential. It prepares graduates to practice their profession at an advanced level and with a unique exposure to the international environment to better understand global issues of Civil Engineering.

Features of the programme:

Educational Aims: The aim of the Faculty's MSc programme in Civil Engineering is to respond to the need for effective engineering and infrastructure practitioners by offering programmes that are an intellectually challenging consisting of a mixture of taught engineering science and experiential learning. The practitioner approach is intended to produce engineers with a strong orientation towards problem solving, underpinned by theoretical knowledge.

This MSc programme is distinguished by a greater emphasis upon critical appraisal of existing ideas and practice, original thought and creative ability.

The educational aims of the faculty's taught postgraduate programmes are:

To provide an intellectual experience of advanced study, underpinned by staff expertise, research and experience;

To enable the student to further and deepen his/her knowledge, understanding and analytical abilities in a stimulating and challenging academic environment;

To prepare the student for further professional development in his/her chosen field;

To offer postgraduate opportunities for part-time students in employment.

The MSc Civil Engineering programme aims to:

Provide students with an enhanced base of knowledge and current and reflective practice necessary to further develop their career in Civil Engineering as a Professional Engineer aiming for Chartered Engineer registration with the Engineering Council;

Enhance specialist knowledge in selected areas of Civil Engineering which build upon studies at the undergraduate level;

Further develop skills of independent learning and critical appraisal;

Develop a broader insight into aspects of Civil Engineering design;

Develop critical insight into broader management issues relating to Civil Engineering in particular and construction in general;

Provide the opportunity to progress to the next level of study as appropriate.

Programme Learning Outcomes:

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

Knowledge and Understanding

- A1. Selected specialist areas of Civil Engineering to an advanced level
- A2. Further broadening aspects of Civil Engineering design
- A3. Generic quantitative modelling relevant to Civil Engineering problems
- A4. Techniques applicable to specific research and advanced scholarship
- A5. Engineering management issues and decision making relating to Civil Engineering and construction
- A6. The global and social responsibilities of engineers and the environmental impact of their activity

Intellectual Skills

- B1. Systematic understanding of general and specialist Civil Engineering knowledge
- B2. Critical awareness of current problems and/or new insights into the Civil Engineering discipline
- B3. Critical appraisal of contributions of contemporaries
- B4. Critical evaluation of engineering methodologies and where appropriate proposal of new hypotheses
- B5. Critical evaluation of current research and advanced scholarship
- B6. Significant independent learning
- B7. Originality in the application of knowledge

Subject/Professional Practice Skills

- C1. Address complex issues in Civil Engineering both systematically and creatively
- C2. Make sound judgements in the absence of complete data
- C3. Demonstrate self-direction and originality in problem solving
- C4. Act autonomously in planning and implementing tasks
- C5. Communicate effectively to specialist and non-specialist audiences
- C6. Ability to continue to advance personal knowledge and understanding in Civil Engineering
- C7. Ability to develop new skills to a high level

Transferable Skills and other attributes

- D1. Apply a conceptual engineering approach to the solution of complex problems
- D2. Make decisions in complex and unpredictable situations
- D3. Use creativity and innovation in problem solving

- D4. Make management decisions at the strategic and operational levels
- D5. Use computing and Information Technology Tools in the solution of Civil Engineering problems
- D6. Exercise initiative and personal responsibility
- D7. Develop independent learning skills required for continuing professional development

Assessment strategy: Knowledge and understanding:

Assessment of A1 and A2 is through unseen time constrained assignments, and open ended case studies and assignments.

Assessment of A3 is through hands-on computer laboratory work, assignments and project work.

Assessment of A4 is through dissertation and assignments.

Assessment of A5 is through unseen examinations, case studies and assignments.

Assessment of A6 is through case studies and assignments.

Intellectual skills:

Assessment of B1, B2, B3 and B4 is through unseen examinations, other time constrained individual assignments, case studies and open- ended assignments.

Assessment of B5, B6 and B7 is through project work, case studies and assignments.

Subject practical skills:

Assessment of C1 and C2 through unseen examinations, laboratory reports, projects, case studies and assignments.

Assessment of C3, and C4 mainly through the Individual Project.

Assessment of C5 through presentations and project reports.

Assessment of C6, C7 assignments and the Individual Project.

Transferable/ key skills:

Assessment of D1, D2 and D3 is through coursework and assignments and project work.

Assessment of D4 and D5 is included as an element of most assessment methods.

D6 is assessed through assignments and Masters Project.

Assessment of D7 is through project reports and presentations.

Student support:

Part B: Programme Structure

Year 1

Full-time students must take 180 credits from the modules in Year 1.

Part-time students must take a minimum of 60 credits from the modules in Year 1 but can choose to study Masters Project UBGMRK-60-M in Year 1 or Year 2.

Year 1 Compulsory Modules (Full-time)

Full-time students must take 180 credits from the modules in Compulsory Modules (Full-time).

Module Code	Module Title	Credit
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UBGMSR-15-M	Advanced Construction Materials and Technology 2023-24	15
UBGMTA-15-M	Advanced Soil Mechanics and Foundation Design 2023-24	15
UBGMUR-15-M	Advanced Water and Wastewater Engineering Design 2023-24	15
UBLMGW-15-M	BIM in Design Coordination 2023-24	15
UBGMTR-15-M	Bridge Engineering 2023-24	15
UBGMRK-60-M	Masters Project 2023-24	60
UBGMUA-15-M	Non Linear Structural Analysis 2023-24	15
UBLM7A-15-M	Project Management Principles 2023-24	15
UBGMFX-15-M	Transport Infrastructure Design 2023-24	15

Year 1 Compulsory Modules (Part-time)

Part-time students must take a minimum of 60 credits from the modules in Compulsory Modules (Part-time) (Students can choose to study Masters Project UBGMRK-60-M in Year 1 or Year 2).

Module Code	Module Title	Credit
UBGMSR-15-M	Advanced Construction Materials and Technology 2023-24	15
UBGMTA-15-M	Advanced Soil Mechanics and Foundation Design 2023-24	15
UBGMTR-15-M	Bridge Engineering 2023-24	15
UBGMRK-60-M	Masters Project 2023-24	60
UBGMUA-15-M	Non Linear Structural Analysis 2023-24	15

Year 2

Part-time students must take a minimum of 60 credits from the modules in Year 2 but must complete Masters Project UBGMRK-60-M in Year 2 if they haven't already completed it in Year 1.

Year 2 Compulsory Modules (Part-time)

Part-time students must take a minimum of 60 credits from the modules in Compulsory Modules (Part-time) (Students can choose to study Masters Project UBGMRK-60-M in Year 1 or Year 2).

Module Code	Module Title	Credit
UBGMUR-15-M	Advanced Water and Wastewater Engineering Design 2024-25	15
UBLMGW-15-M	BIM in Design Coordination 2024-25	15
UBGMRK-60-M	Masters Project 2024-25	60
UBLM7A-15-M	Project Management Principles 2024-25	15
UBGMFX-15-M	Transport Infrastructure Design 2024-25	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

This programme offers students the opportunity to study aspects of infrastructure with modern techniques where candidates experience a wide variety of civil engineering sub-disciplines. The MSc structure creates highly skilled and technical competent engineers able to plan, design and analyse infrastructure with modern technologies, applying innovative techniques used in industry. The programme structure provides students with (i) Understanding of civil engineering principles at the forefront of sector, (ii) Analysis of civil engineering methods, materials, technologies and processes and (iii) Awareness of civil engineering in a real-world context using laboratory techniques, experimental design and field trips.

Part D: External Reference Points and Benchmarks

This programme has been prepared and designed with reference to a number of external benchmarks and reference points. These include:

QAA Subject Benchmark Statement for Engineering

QAA Framework for HE Qualifications

The Engineering Council's Accreditation of Higher Education Programmes-UK
Standard for Professional Engineering Competence (Third Edition)

The Joint Board of Moderators 2017 Guidelines for Developing Degree Programmes

Civil Engineering Industrial Advisory Board (IAB)

University's Learning and Teaching Strategy and Strategy 2020

The QAA Framework for HE Qualifications defines a programme at Masters level as: "at, or informed by, the forefront of an academic or professional discipline. Students will have shown originality in the application of knowledge, and they will understand how the boundaries of knowledge are advanced through research. They will be able to deal with complex issues both systematically and creatively, and they will show originality in tackling and solving problems".

The Subject Benchmark Statement for Engineering outlines a set of skills expected of a graduate in an engineering discipline (Section 4 of the Statement refers), while noting that they should be interpreted in the context of the particular engineering discipline which is being studied. These skills map closely to many of the skills contained in the learning outcomes for the proposed programme of study. The MSc in Civil Engineering has been designed to enhance and develop these skills to postgraduate level. In particular this programme requires students to demonstrate skills at a postgraduate level relating to the specification, management and solution of engineering problems. There is also considerable emphasis on the analysis and design of engineering solutions at postgraduate level, and the ability to research and critically evaluate alternative proposals. Consequently, we believe that the MSc award will build on and enhance the skills in the Subject Benchmark Statement for Engineering.

The Engineering Council is a signatory to the Washington and Sydney Accords, which provide a mechanism for mutual recognition by signatory countries of accreditation processes and, by extension, of accredited degrees for CEng and IEng degrees respectively. From the Engineering Council's Accreditation of Higher Education Programmes-UK Standard for Professional Engineering Competence (Third Edition), Masters degrees accredited for further learning varies in nature and purpose. This Masters degree offers the chance to study in greater depth particular aspects and applications of a broader civil engineering in which graduates hold an honours degree at Bachelor's level in Civil Engineering. The Masters programme provides an opportunity to integrate both technical and non-technical aspects of civil engineering and to develop a commitment to professional bodies, social responsibilities and ethical codes. The weighting given to the six broad areas (Science and Mathematics, Engineering Analysis, Design, Economic, legal, social, ethical and environmental context, Engineering practice, and Additional general skills) as identified from the Engineering Council's Accreditation of Higher Education Programmes-UK Standard for Professional Engineering Competence (Third Edition) for Masters Degrees as accredited as Further Learning to Masters level, fully meeting the educational requirements for CEng are well embedded into all modules for the programme structure.

From the Joint Board of Moderators 2017 Guidelines for Developing Degree Programmes the MSc programme adheres to the JBM core list of modules/subjects from List A (structures, materials and geotechnics) as well as includes both compulsory and optional modules from List B (Environmental Engineering, public health, transport infrastructure engineering and construction management). Additionally, the programme includes the AHEP learning outcomes (Awareness, Knowledge, Understanding, Know-how, Skills and Complex-engineering problems) which are met in all modules.

The Civil and Environmental Engineering cluster maintains a strong, visible and viable link with the civil engineering profession through an active Industrial Advisory Board (IAB). The IAB is chaired by Clive Onions who is a senior engineering consultant with wide ranging industrial expertise. Members of the IAB come from

different industrial disciplines that include Local Authority, Environment agency, Water company, structural engineering firm and the Institution of Civil Engineers. The IAB members have been involved in the design process stages of the MSc programme and strongly support it.

References

Engineering Council (EC) Accreditation of Higher Education Programmes UK Standard for Professional Engineering Competence, Third Edition.

Joint Board of Moderators (JBM) (2017) Guidelines for Developing Degree Programmes January 2018 (Version1-Revision 2).

The Quality Assurance Agency for Higher Education (QAA). (2014) UK Quality Code for Higher Education Part A: Setting and Maintaining Academic Standards, The Framework for Higher Education Qualifications for UK Degree-Awarding Bodies, October 2014.

The Quality Assurance Agency for Higher Education (QAA). (2015) QAA Subject Benchmark Statement Engineering (February 2015).

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.