

Programme Specification

MSc Civil Engineering (2020-21)

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

| | |
|---|---|
| Awarding Institution | University of Southampton |
| Teaching Institution | University of Southampton |
| Mode of Study | Full-time |
| Duration in years | 1 |
| Accreditation details | Chartered Institute of Highways & Transportation (CIHT) Institute of Highway Engineers (IHE) Institution of Civil Engineers (ICE) Institution of Structural Engineers (IStructE) |
| Final award | Master of Science (MSc) |
| Name of award | MSc Civil Engineering |
| Interim Exit awards | Postgraduate Certificate Postgraduate Diploma |
| FHEQ level of final award | Level 7 |
| UCAS code | N/A |
| Programme code | 3942 |
| QAA Subject Benchmark or other external reference | Engineering 2015 |
| Programme Lead | Sheida Afshan |

Programme Overview

Brief outline of the programme

This intensive 12 month MSc Civil Engineering programme is aimed at improving the knowledge of graduate Civil Engineers so that they can further their careers. This degree is accredited as meeting the requirements for Further Learning for a Chartered Engineer (CEng) for candidates who have already acquired a partial CEng accredited undergraduate first degree. See www.jbm.org.uk for further information.

Please note: As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration; however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our [Disclaimer](#) to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's programme validation process which is described in the University's [Quality handbook](#).

Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles.

Learning and teaching

Acquisition of core knowledge and understanding is through lectures, seminars, tutorials, field and laboratory classes, workshops, and independent study and research. You are encouraged from an early stage to supplement and consolidate your understanding and knowledge by independent study.

Assessment

Testing of the knowledge base and development of skills is through a combination of unseen written examinations and assessed coursework in the form of problem solving exercises, laboratory reports, design exercises, essays and individual projects.

Special Features of the programme

There are a number of special features to the programme aimed at building a cohort identity, supporting students, particularly international, and improving the student experience and learning opportunity. These include:

1. Induction week activities, including a group outdoor activity aimed at promoting interaction between the students on the MSc in Civil Engineering.
2. During the first weeks of each semester a series of seminars are organised providing a number of sessions on the development of study skills, language support, careers and employability, overview of dissertation topics. These seminars also provide opportunities to create a cohort identity and are shared with the MSc in Civil Engineering.
3. There is a wide range of optional modules available to students covering the range of advanced topics in the mainstream civil engineering disciplines of structural, geotechnical and hydraulic engineering, but also linking to the research interests of the department in water and environmental engineering, coastal engineering, transportation and energy.
4. Skills development is important throughout the degree course. Depending on their module choice, students will have different opportunities to develop different skills. For example, as part of the module CENV3056 Structural Engineering and CENV6122, students receive training in industry standard finite element analysis softwares, which they may then apply extensively in the design of structures and foundations in other modules.

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Educational Aims of the Programme

The aims of the programme are to: The aims of the programme are to:

- Provide you with a sound understanding of the fundamental principles, methods, analysis and synthesis in engineering design and applications appropriate to the Civil Engineering discipline.
- Provide you with a range of specialist modules integrated within the structured learning environment, reflecting the internationally-renowned research expertise within the Department, in order to broaden and deepen your educational experience.
- Enable your career pathway towards chartered engineer status.
- Offer you a degree structure that is relevant to industry and responsive to changes in technology and the needs of the community.
- Provide you with a supportive and intellectually stimulating environment that encourages an attitude of independent learning and enquiry, and fosters an ethos of lifetime learning and professional development.
- Offer you a choice of research projects which are supported by the research activities within the Faculty and stimulate individual innovation, self-assessment and teamwork skills required in engineering.
- Afford you the opportunity of applying theoretical knowledge gained on the programme through a substantial piece of research (dissertation).

Programme Learning Outcomes

Having successfully completed this programme you will be able to demonstrate knowledge and understanding of:

Science and Mathematics

Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). On graduation you will have achieved:

- SM1. Comprehensive understanding of the relevant scientific principles of civil engineering
- SM2. Knowledge and understanding of mathematical and statistical methods necessary to underpin your education in civil engineering and to enable you to apply a range of mathematical and statistical methods, tools and notations proficiently and critically in the analysis and solution of engineering problems
- SM4. Critical awareness of current problems and/or new insights most of which is at, or informed by, the forefront of civil engineering
- SM6. Understanding of concepts relevant to civil engineering, some from outside engineering, and the ability to evaluate them critically and to apply them effectively, including in engineering projects

Engineering analysis

Engineering analysis involves the application of engineering concepts and tools to the solution of Acoustical Engineering problems. On graduation you will have achieved:

- EA3. Ability both to apply appropriate engineering analysis methods for solving complex problems in engineering and to assess their limitations
- EA5. ability to use fundamental knowledge to investigate new and emerging technologies

- EA6. ability to collect and analyse research data and to use appropriate engineering analysis tools in tackling unfamiliar problems, such as those with uncertain or incomplete data or specifications, by the appropriate innovation, use or adaptation of engineering analytical methods

Design

Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real and complex problems. On graduation you will have the knowledge, understanding and skills to:

- D3. demonstrate knowledge, understanding and skills to 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
- D6. communicate your design work to technical and non-technical audiences
- D7. demonstrate knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations
- D8. ability to generate an innovative design for products, systems, components or processes to fulfil new needs

Economic, legal, social, ethical and environmental context

Engineering activity can have impacts on the environment, on commerce, on society and on individuals. Graduates therefore need the skills to manage their activities and to be aware of the various legal and ethical constraints under which they are expected to operate, including:

- EL1. awareness of the need for a high level of professional and ethical conduct in engineering
- EL2. Awareness that engineers need to take account of the commercial and social contexts in which they operate
- EL3. knowledge and understanding of management and business practices, their limitations, and how these may be applied in the context of civil engineering
- EL4. awareness that engineering activities should promote sustainable development and ability to apply quantitative techniques where appropriate
- EL5. awareness of relevant regulatory requirements governing engineering activities in the context of civil engineering
- EL6. awareness of and ability to make general evaluations of risk issues in the context of civil engineering, including health & safety, environmental and commercial risk

Engineering practice

This is the practical application of engineering skills, combining theory and experience, and use of other relevant knowledge and skills. On graduation you will have achieved:

- P2. advanced level knowledge and understanding of a wide range of engineering materials and components
- P4. understanding of the use of technical literature and other information sources
- P8. work with technical uncertainty
- P9. a thorough understanding of current civil engineering practice and its limitations, and some appreciation of likely new developments
- P10. apply engineering techniques taking account of a range of commercial and industrial constraints
- P11. 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

Additional general skills

On graduation you will have developed transferable skills, additional to those set out in the other learning outcomes, that will be of value in a wide range of situations, including the ability to:

- G1. apply your skills in problem solving, communication, working with others, information retrieval, and the effective use of general IT facilities
- G2. plan self-learning and improve your performance, as the foundation for lifelong learning/CPD
- G3. monitor and adjust a personal programme of work on an on-going basis
- G4. exercise initiative and personal responsibility, as a team member or leader

Programme Structure

The programme structure table is below:

Information about pre and co-requisites is included in individual module profiles.

Where optional modules have been specified, the following is an indicative list of available optional modules, which are subject to change each academic year. Please note in some instances modules have limited spaces available.

Part I

The information within this Appendix is liable to change in minor ways from year to year. It is accurate at the time of writing.

The taught component of the programme contains a compulsory module in Data Analysis & Experimental Methods for Civil and Environmental Engineering (FEEG6025) together with options across a wide range of civil engineering and related disciplines. Modules at level 6 and 7 totalling 120 credits. No more than 15 ECTS/30 CATS may be taken at level 6.

The research component of the MSc consists of a Core module (FEEG6012) of 30 ECTS/60 CATS which is a research dissertation.

Students must select modules from at least three of the following subject areas: Coastal, Environmental, Infrastructure, Management or Transport.

The pre-requisites listed for the modules are waived; students are encouraged to discuss their background and their module choices with the programme coordinator and the module leads.

The split of modules between semesters should be even in terms of CATS.

Part I Compulsory modules

| Code | Module Title | ECTS | Type |
|----------|--|------|------------|
| FEEG6025 | Data Analysis & Experimental Methods for Civil and Environmental Engineering | 7.5 | Compulsory |

Part I Core modules

| Code | Module Title | ECTS | Type |
|----------|----------------------|------|------|
| FEEG6012 | MSc Research Project | 30 | Core |

Part I Optional modules

Plus 105 credits from:

| Code | Module Title | ECTS | Type |
|----------|--|------|----------|
| FEEG6010 | Advanced Finite Element Analysis | 7.5 | Optional |
| CENV6122 | Advanced Geotechnical Engineering | 7.5 | Optional |
| CENV6086 | Advanced Structural Engineering | 7.5 | Optional |
| CENV6141 | Bioenergy | 7.5 | Optional |
| CENV6175 | Coastal Engineering and Maritime Engineering | 7.5 | Optional |
| CENV6134 | Earthquake Engineering and Seismic Design of Steel Buildings | 7.5 | Optional |
| CENV6148 | Energy Performance Assessment of Buildings | 7.5 | Optional |
| CENV6090 | Energy Resources and Engineering | 7.5 | Optional |
| CENV6174 | Flood Modelling and Mitigation | 7.5 | Optional |
| CENV3020 | Geotechnical Engineering | 7.5 | Optional |
| CENV3060 | Highway and Traffic Engineering | 7.5 | Optional |
| CENV6152 | Project Economics and Management | 7.5 | Optional |
| CENV3065 | Railway Engineering and Operations | 7.5 | Optional |
| CENV3056 | Structural Engineering | 7.5 | Optional |
| CENV6168 | Transport Management and Safety | 7.5 | Optional |
| CENV6153 | Transport Modelling | 7.5 | Optional |
| CENV6112 | Transport, Energy and the Environment | 7.5 | Optional |
| CENV6085 | Waste Resource Management | 7.5 | Optional |

Progression Requirements

The programme follows the University's regulations for [Progression, Determination and Classification of Results : Undergraduate and Integrated Masters Programmes](#) and [Progression, Determination and Classification of Results: Postgraduate Master's Programmes](#). Any exemptions or variations to the University regulations, approved by AQSC are located in [section VI of the University Calendar](#).

Support for student learning

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.
- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library.
- Enabling Services offering support services and resources via a triage model to access crisis management, mental health support and counselling. Support includes daily Drop In at Highfield campus at 13.00 – 15.00 (Monday, Wednesday and Friday out of term-time) or via on-line chat on weekdays from 14.00 – 16.00. Arrangements can also be made for meetings via Skype.
- assessment and support (including specialist IT support) facilities if you have a disability, long term health problem or Specific Learning Difficulty (e.g. dyslexia).
- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- Career and Employability services, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV
- Other support that includes health services (GPs), chaplaincy (for all faiths) and 'out of hours' support for students in Halls and in the local community, (18.00-08.00)
- A Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- Library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources. There is a wide range of online training and workshops available to support writing, study skills, IT and maths. The Academic skills hub holds several workshops every week day to support students.
- High speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations. Students can also access SVE (Southampton Virtual Environment), a virtual Windows University of Southampton desktop that can be accessed from personal devices such as PCs, Macs, tablets and smartphones from any location.
- Computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources).
- Standard ICT tools such as Email, secure filestore and calendars.
- Access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- Central IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library.
- Enabling Services offering assessment and support (including specialist IT support) facilities if you have

a disability, dyslexia, mental health issue or specific learning difficulties.

- The Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards.
- Career and Employability services, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV.
- A range of personal support services: mentoring, counselling, residence support service, chaplaincy, health service.
- A Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- An academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- Opportunities for extracurricular activities and volunteering.
- An Advice Centre offering free and confidential advice including support if you need to make an academic appeal.
- Support for student peer-to-peer groups, such as Nightline.

In the School of Engineering and your Discipline you will be able to access:

- Student handbook for Civil Engineering students.
- Introductory sessions for all years of the programme.
- Library information retrieval seminar.
- Workshop training.
- Small group tutorials in part I of the programme.
- Engineering Development and Manufacturing Centre (EDMC) equipped with a range of workshop equipment, CAD/CAM.
- Engineering specific software.
- Personal academic tutors to assist you with personal problems and to advise on academic issues (contact maintained during periods of studying abroad). A Senior Tutor is also available should you need additional support.
- Access to academic staff through an open door policy as well as timetabled tutor meetings, appointment system and e-mail.
- Research seminars and invited lectures.
- School Student Office for the administration of your programme.

Methods for evaluating the quality of teaching and learning

You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student evaluation questionnaires for each module of the programme.
- Acting as a student representative on various committees, e.g. Staff/Student Liaison Committees, School Programmes Committee OR providing comments to your student representative to feedback on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation.
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group.

Further details on the University's quality assurance processes are given in the [Quality Handbook](#).

Career Opportunities

Student graduating from our MSc degrees obtain employment as graduate engineers with many leading employers in the civil engineering industry, both consultants and contractors and also regulatory authorities and local authorities. Support is available to develop their CVs and interview skills. In addition to careers in civil engineering, the transferrable skills that our students obtain make them attractive to a wide range of graduate recruiters, from financial services through to IT and management consultancy.

External Examiner(s) for the programme

Name: Professor Marios Soutsos - Queen's University Belfast

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.

External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their Personal Academic Tutor in the first instance.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook.

Appendix 1:

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme also have to pay for:

Additional Costs

| Type | Details |
|------|---------|
|------|---------|

In some cases you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at www.calendar.soton.ac.uk.