

Programme Specification

MSc Civil Engineering with Integrated Qualifying Year (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	2
Accreditation details	None
Final award	Master of Science (MSc)
Name of award	MSc Civil Engineering with Integrated Qualifying Year
Interim Exit awards	
FHEQ level of final award	Level 7
UCAS code	N/A
Programme code	8277
QAA Subject Benchmark or other external reference	Engineering 2015
Programme Lead	Sheida Afshan

Programme Overview

Brief outline of the programme

The programme is a two-year integrated master for converting STEM graduates into Civil Engineering:

- 1st year: Qualifying year (120 credits), in which students take modules from the 2nd and 3rd year of the undergraduate degree (BEng and MEng) in Civil Engineering
- 2nd year – MSc in Civil Engineering (180 credits)

This 24 month MSc Civil Engineering with Integrated Qualifying Year programme is aimed at converting graduates in STEM subjects into Civil Engineering, so that they can further their careers. The first year of the programme covers some of the fundamental engineering science basis of the core civil engineering disciplines. Upon successful completion of the qualifying year a student will progress to the second year. The programme will be submitted for accreditation by: Institution of Civil Engineers, Institution of Structural Engineers, Chartered Institution of Highways and Transportation, Institute of Highway Engineers. Currently (July 2018), the second year of the programme, the MSc in Civil Engineering, is accredited by the Institution of Civil Engineers and meets the further learning requirements to become a Chartered Civil Engineer.

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 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 and group projects.

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.

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, for Part I:

1. Induction week activities at the start of the first year, including a series of lectures, seminars or workshops introducing civil engineering and key concepts.
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. Skills development is important throughout the degree course. Students will have opportunities to develop a range of skills. For example, as part of the module CENV2008 Hydraulics, students use the pipe network software EPANET. As part of the module CENV3060 Highway and Traffic Engineering, students use junction design software, such as ARCADY and/or LINSIG.

For Part II:

1. Induction week activities, including a group outdoor activity aimed at promoting interaction between the students on the MSc in Civil Engineering with Integrated Qualifying Year and 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 very wide range of optional modules available to students in their second year 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 professional training in the 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 programme aims 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 Faculty, 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:

Knowledge and Understanding

On successful completion of this programme you will have knowledge and understanding of:

- A1. Mathematics and science that are relevant to Civil Engineering.
- A2. The fundamental concepts, principles and theories of Civil Engineering.
- A3. Detailed knowledge and understanding of the essential facts, concepts and principles relevant to the practice of Civil Engineering.
- A4. The principles of engineering design and construction and their application to conceptual and detailed design.
- A5. Information and communication technology relevant to the practice of Civil Engineering.
- A6. Management practices and health and safety issues, risk assessment and regulatory frameworks
- A7. The role and professional responsibilities of engineers in society and the constraints within which their engineering judgement will be exercised.
- A8. Environmental issues and the importance of Civil Engineering to the quality of the environment.

Teaching and Learning Methods

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 Methods

Testing of the knowledge base 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 and group projects.

Subject Specific Intellectual and Research Skills

On successful completion of this programme you will be able to:

- B1. Plan, conduct and report on an individual research programme.
- B2. Analyse and solve engineering problems, using appropriate mathematical methods as necessary.
- B3. Be creative in the solution of problems and in design development.
- B4. Design engineering elements and systems to meet a need, evaluate critically and make improvements.
- B5. Integrate and evaluate information and data from a variety of sources.
- B6. Take a holistic approach to solving problems and designing systems, applying professional judgement to balance risks, cost, benefits, safety, reliability, aesthetics and environmental impact.

Teaching and Learning Methods

- Intellectual skills are developed through the teaching and learning activities.
- Analysis and problem solving skills are further developed through regular problem sheets issued by module lecturers and through small group teaching.
- Experimental, research and design skills are further developed through coursework exercises, laboratory, and design and research projects.
- Individual feedback is provided on all work submitted.

Assessment Methods

- Analysis and problem-solving skills are assessed through unseen written examinations and problem based exercises.
- Experimental, research and design skills are assessed through laboratory reports, coursework exercises, project reports and oral presentations.

Transferable and Generic Skills

On successful completion of this programme you will be able to:

- C1. Communicate effectively – in writing, verbally and through drawings.
- C2. Apply mathematical skills – algebra, geometry, modelling and analysis.
- C3. Learn independently in familiar and unfamiliar situations with open-mindedness and in a spirit of critical enquiry.
- C4. Work constructively as a member of a team.
- C5. Manage time and resources.
- C6. Use Information and Communications Technology.
- C7. Use the library, internet and other sources effectively.
- C8. Manage tasks and solve problems, transfer techniques and solutions from one area to another, apply critical analysis and judgement.
- C9. Learn effectively for the purpose of continuing professional development and in a wider context throughout their career.

Teaching and Learning Methods

The development of transferable skills is embedded in all modules of the programme. Typically, this takes the form of project-based work and problem-based learning.

Assessment Methods

Skills are formatively assessed through written reports and oral presentations, practical and laboratory reports. Summative assessment is through unseen examinations, extended essays and completion of a research project, including an interim progress report.

Subject Specific Practical Skills

On successful completion of this programme you will be able to:

- D1. Carry out safely a series of planned experiments.
- D2. Use laboratory equipment to generate data.
- D3. Analyse experimental results and assess their validity
- D4. Prepare technical drawings including the use of CAD and freehand sketching.
- D5. Prepare technical reports.
- D6. Give technical presentations using a variety of media.
- D7. Use computer packages in the context of civil engineering.
- D8. Make effective use of scientific literature from various sources.

Teaching and Learning Methods

Practical skills are developed in experimental laboratories, computer laboratories, design exercises and research-based investigations.

Assessment Methods

Practical skills are assessed through laboratory experiment reports, coursework exercises, project reports and presentations.

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.

Part I - Integrated Qualifying Year

Part I Compulsory modules

Modules at level 5 totalling 37.5 ECTS/75 CATS credits and modules at level 6 totalling 22.5 ECTS (45 CATS), with an overall total of 60 ECTS (120 CATS); all modules compulsory.

The pre-requisites listed for the modules are waived.

Code	Module Title	ECTS	Type
CENV2035	City Infrastructure Design Project	7.5	Compulsory
CENV3060	Highway and Traffic Engineering	7.5	Compulsory
CENV2008	Hydraulics	7.5	Compulsory
CENV3065	Railway Engineering and Operations	7.5	Compulsory
CENV2006	Soil Mechanics	7.5	Compulsory
CENV2031	Structural Analysis	7.5	Compulsory
CENV2024	Structural Design and Materials	7.5	Compulsory
CENV3059	Urban Water and Wastewater Engineering	7.5	Compulsory

Part II

The taught component of Part II 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. A total of 60 ECTS/120 CATS across two semesters.

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

Modules at level 6 and 7 totalling 180 credits. No more than 15 ECTS/30 CATS may be taken at level 6. 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 II Compulsory modules

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

Part II Core modules

Code	Module Title	ECTS	Type
FEEG6012	MSc Research Project	30	Core

Part II 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
CENV3063	Applied Hydraulics	7.5	Optional
CENV6123	Coastal Flood Defence and Management	7.5	Optional
CENV6134	Earthquake Engineering and Seismic Design of Steel Buildings	7.5	Optional
CENV6148	Energy Performance Assessment of Buildings	7.5	Optional
CENV3020	Geotechnical Engineering	7.5	Optional
CENV6154	Groundwater Hydrology and Contamination	7.5	Optional
CENV6152	Project Economics and Management	7.5	Optional
CENV6164	River Engineering	7.5	Optional

CENV3056	Structural Engineering	7.5	Optional
CENV6168	Transport Management and Safety	7.5	Optional
CENV6153	Transport Modelling	7.5	Optional
CENV6085	Waste Resource Management	7.5	Optional
CENV6158	Wastewater Process Engineering	7.5	Optional
CENV6162	Water Resources Planning and 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 systems for the support of student learning in the Faculty as well as available from central University facilities.

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. 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 foyer.
- 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 Faculty and your Discipline you will be able to access:

- Coursebooks for each year of the programme.
- Introductory sessions for all years of the programme.
- Library information retrieval seminar.
- Workshop training.
- Small group tutorials in part of the programme.
- Engineering Development and Manufacturing Centre (EDMC) equipped with a range of workshop equipment, CAD/CAM.
- Engineering and specific software.
- Personal 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.
- 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.
- Faculty 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
Other	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. Costs that students registered for this programme typically also have to pay for are included in Appendix 2. In some cases, coursework and/or projects may be submitted electronically. Where it is not possible to submit electronically students will be liable for printing costs, which are detailed in the individual Module Profile and can be found in Appendix 2.

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.