

Programme Specification

MSc Civil Engineering with Industrial Placement 2018/19

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	1 year
Accreditation details	Institution of Civil Engineers, Institution of Structural Engineers, Chartered Institution of Highways and Transportation, Institute of Highway Engineers
Final award	Master of Science
Name of award	Civil Engineering with Industrial Placement
Interim Exit awards	Postgraduate Certificate Postgraduate Diploma
FHEQ level of final award	7
UCAS code	N/A
QAA Subject Benchmark or other external reference	Engineering, Engineering Council UK-SPEC, Joint Board of Moderators
Programme Coordinator	Dr Mehdi Kashani
Date specification was written	31 st March 2013
Date programme was validated	July 2014
Date specification last updated	August 2016

Programme Overview

Our MSc Civil Engineering with an Industrial Placement provides you with the opportunity to study at Masters level, whilst gaining valuable work experience and a small income to help cover your costs.

The 20 month programme includes two semesters of taught classes and project work followed by an 11-month industrial placement.

Learning and teaching

The different subject matter of the modules lends itself to different teaching and learning techniques but these include lectures, small group teaching, laboratory classes, coursework and projects. Throughout the programme you are encouraged to refer to the recommended reading material to broaden your understanding of the relevant subjects. All postgraduate civil engineering students have access to a video library, an extensive library of reference material, including dissertations by former students, help with careers destinations and a computer suite, including a comprehensive selection of software such as AutoCAD.

Assessment

Testing of the knowledge base is through a combination of Coursework, examination, individual research project, industrial placement and reflective coursework.

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.

Educational Aims of the Programme

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

The programme provides opportunities for you to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have been developed with reference to the Accrediting Institution guidelines and the UK-SPEC Degree Output Standards General and Specific Learning Outcomes.

Knowledge and Understanding

Having successfully completed this programme you will be able to demonstrate 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 and business practices that are relevant to the Civil Engineering industry.
- A7. Health and safety issues, risk assessment and regulatory frameworks.
- A8. The social and professional responsibilities of civil engineers.
- A9. Environmental issues and the importance of Civil Engineering to the quality of the environment.
- A10. The role of the engineers in society and the constraints within which their engineering judgement will be exercised.

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

Having successfully completed 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

Having successfully completed 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.
- C10. Communicate in a foreign language when you select a language option or study abroad.

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

Having successfully completed 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 and write computer programs.
- 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 University uses the European Credit Transfer Scheme (ECTS) to indicate the approximate amount of time a typical student can expect to spend in order to complete successfully a given module or programme, where 1 ECTS indicates around 20 nominal hours of study. Previously, Credit Accumulation and Transfer Scheme (CATS) points were used for this purpose where 1 CATS credit was 10 nominal hours of study. The University credit accumulation and transfer scheme is detailed at <http://www.calendar.soton.ac.uk/sectionIV/cats.html>.

The teaching is structured on a semester pattern. You study modules comprising 90 ECTS/180 CATS The course is only available full-time.

In addition to the final award, there are the following exit points:

- Postgraduate Certificate of Higher education, following successful completion of 30 ECTS/60 CATS.
- Postgraduate Diploma of Higher education, following successful completion of 60 ECTS/120 CATS.

Each module is a self-contained part of the programme of study and carries a credit rating.

Progression Requirements

The programme follows the University's regulations for Progression, Determination and Classification of Results: Standalone Masters Programmes as set out in the University Calendar (<http://www.calendar.soton.ac.uk/sectionIV/sectIV-index.html>) and in particular at <http://www.calendar.soton.ac.uk/sectionIV/progression-regs-standalonemasters.html> and <http://www.calendar.soton.ac.uk/sectionIV/credit-bearing-progs.html>

Faculty specific regulations for Standalone Masters can be found here <http://www.calendar.soton.ac.uk/sectionVIII/fee-sam.html>

The Programme Structure is outlined in Appendix 1.

Typical course content

In addition to the research project you will select 8 taught modules from the MSc Civil Engineering programme.

The modules fall into five categories: coastal engineering, environmental engineering, infrastructure engineering, engineering management and transport engineering. In total you must choose 8 modules in addition to either the research project or industrial placement.

Special Features of the programme

The MSc Civil Engineering has two pathways: (i) a conventional Masters programme for students with a first degree in civil engineering and (ii) a conversion pathway aimed at numerate non-civil engineering graduates. The conversion pathway includes a compulsory 15 ECTS/30 CATS module In Semester 1, CENV6127 Understanding Civil Engineering, which covers the core subject areas of civil engineering, encompassing materials in construction, structural mechanics and the design of steel and concrete structures, geotechnics, engineering surveying, hydraulics, construction management and health and safety.

Programme details

The programme follows university guidelines for inclusivity and flexibility and provides an array of teaching and learning approaches that will enable any student who meets the entry requirements to access the curriculum and demonstrate achievement of all the intended learning outcomes

Refer to Appendix 1 for credit structure.

Additional Costs

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.

Programme outcomes for different exit points

Level 7	Much of the study undertaken at Masters level reflects research at the forefront of Civil Engineering. You will have shown originality in the application of knowledge, and you will understand how the boundaries of knowledge are advanced through research. You will be able to deal with complex issues both systematically and creatively, and show originality in tackling and solving problems individually and as part of a team. You will have the qualities needed for employment in circumstances requiring sound judgement, personal responsibility and initiative, in complex and unpredictable professional environments.
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Support for Student Learning

There are systems for the support of student learning in the Faculty as well as available from central University facilities.

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 programmes.
- Engineering Development and Manufacturing Centre (EDMC) equipped with a range of workshop equipment, CAD/CAM.
- Engineering and specific software available on all computers.
- 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.

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 Student Services Centre
- 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 Destinations, 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.

Methods for Evaluating the Quality of Teaching and Learning

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

- Anonymous evaluation questionnaires for each module of the programme.
- Acting as or represented by Student Representatives on the staff-student liaison committee. You are also represented on the Faculty Programmes Committee
- Meetings, individually or as group, with programme external examiner.

It should be noted that meetings with personal tutor can also be used to comment on quality related issues.

The ways in which the quality of your programme is checked, both inside and outside the University, are:

- Evaluation for each module of the programme based on your feedback from evaluation questionnaires and carried out by lecturer(s) involved in the module and a colleague acting as advisor.
- Subject oriented Teaching Panels, convening at the end of each academic year, which consider the outcomes of each module's evaluation.
- Moderation of examination papers, coursework and projects, both internally and externally.
- Comments by external examiners, who produce an annual report.
- Peer observation of teaching for each member of staff contributing to learning and teaching, once per academic year.
- Annual examiners' meetings and examiners' boards.
- Annual programme and module reviews considering your feedback from all sources, feedback from teaching panels, external examiners and other bodies and student performance.
- Periodic meetings of the Faculty Industrial Advisory Board.
- Response to results from the National Student Survey
- Accreditation by professional institutions.
- Periodic Programme Review by the University.

Note that quality assurance of part of the programme taken abroad, where applicable, is subject to the quality procedures of the relevant institutions. These procedures are subject to periodic monitoring by members of staff of the Faculty of Engineering and Physical Sciences.

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 Examiners(s) for the programme

Name Professor Marios Soutsos
Institution. 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 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 s/he takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook at <http://www.southampton.ac.uk/studentservices/academic-life/faculty-handbooks.page> and at http://www.southampton.ac.uk/engineering/postgraduate/taught_courses/engineering.page

Revision History

1. March 2013 (A Bloodworth/M P Byfield)
2. September 2013 (A Bloodworth, for new Calendar regulations and revised options)
3. February 2014 (A Bloodworth/ J A Smethurst, revised options)
4. June 2014 (A Bloodworth, codes revised for Faculty modules, additional sections added, for programme validation)
5. February 2015 (L Myers/J A Smethurst, revised options)
6. Update to Programme Overview (CMA Changes) – September 2015
7. CQA textual updates August 2016, May 2017
8. Updated to reflect 201819 version and removal of Admissions Criteria – CQA March 2018
9. Updated Faculty name to Faculty of Engineering and Physical Sciences July 2018

MSc Civil Engineering with Industrial Placement

Appendix 1

The information within this Appendix is liable to change in minor ways from year to year. It is accurate at the time of writing for 2018-19

The taught component of the MSc contains a compulsory module in Statistical Modelling for Civil and Environmental Engineering 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 of 30 ECTS/60 CATs which is a research dissertation.

Modules at level 6 and 7 totalling 90 ECTS/180 CATS credits. No more than 15 ECTS/30 CATS credits may be taken at level 6. CENV6129 Industrial Based Learning is Core.

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

Students without an Undergraduate Degree in Civil Engineering must select CENV6127 and are not permitted to select CENV3020, CENV3056, CENV3063.

Students with an Undergraduate Degree in Civil Engineering are not permitted to select CENV6127.

Module Code	Module Name	Semester	ECTS/C ATS Credit Points
CENV6129	Industrial Based Learning	Non-standard	30/60
FEEG6025	Data Analysis and Experimental Methods for Civil and Environmental Engineering	1	7.5/15
	Plus 105 credits from:		
CENV3020	Geotechnical Engineering	1	7.5/15
CENV3056	Structural Engineering	1	7.5/15
CENV3063	Applied Hydraulics	1	7.5/15
CENV6127	Understanding Civil Engineering	1 & 2	15/30
CENV6084	Coastal & Maritime Engineering and Energy	1	7.5/15
CENV6085	Waste Resource Management	2	7.5/15
CENV6086	Advanced Structural Engineering	2	7.5/15
CENV6168	Transport Management and Safety	2	7.5/15
CENV6122	Advanced Foundation Engineering	2	7.5/15
CENV6123	Coastal Flood Defence and Management	2	7.5/15
CENV6134	Earthquake Engineering	1	7.5/15
CENV6148	Energy Performance Assessment of Buildings	2	7.5/15
CENV6152	Project Economics and Management	1	7.5/15
CENV6154	Groundwater Hydrology and Contamination	1	7.5/15
CENV6158	Water and Wastewater Engineering 2	2	7.5/15
CENV6162	Water Resources Planning and Management	1	7.5/15
CENV6164	River Engineering	2	7.5/15
FEEG6010	Advanced Finite Element Analysis	2	7.5/15
CENV6171	Highway And Traffic Engineering	1	7.5/15

Module Code	Module Title	Knowledge and Understanding										Subject Specific Intellectual Skills						Transferable/Key Skills										Subject specific practical skills							
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2	D3	D4	D5	D6	D7	D8
CENV 6129	Industrial Based Learning			x	x		x	x	x			x	x	x		x	x	x	x	x	x	x	x	x					x	x		x			
FEEG 6025	Data Analysis & Experimental Methods for Civil and Environmental Engineering	x	x	x								x	x					x											x			x			
CENV 3020	Geotechnical Engineering	x	x	x	x	x							x	x	x	x		x	x	x	x	x	x					x		x	x				
CENV 3056	Structural Engineering		x	x	x	x		x	x				x	x	x	x		x	x	x	x	x									x				
CENV 3063	Applied Hydraulics	x	x	x	x	x							x	x	x	x		x	x	x	x							x		x	x				
CENV 6127	Understanding Civil Engineering	x	x	x	x	x	x	x	x	x	x		x	x		x		x	x	x	x						x	x	x		x				
CENV 6084	Coastal & Maritime Engineering and Energy	x	x	x	x						x		x	x	x	x		x	x	x								x		x					
CENV 6085	Waste Resource Management	x	x	x	x		x	x		x			x		x	x		x					x					x		x					
CENV 6086	Advanced Structural Engineering		x	x	x								x		x	x		x	x	x															
CENV 6168	Transport Management and Safety			x	x	x	x	x			x			x	x	x		x	x	x	x	x						x				x			
CENV 6122	Advanced Foundation Engineering	x	x	x	x	x		x					x	x	x	x		x	x	x	x	x						x		x	x				
CENV 6123	Coastal Flood Defence and		x	x	x	x	x	x		x	x		x	x	x	x		x	x	x	x							x		x	x				

Appendix 2:

Additional Costs

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 typically also have to pay for the items listed in the table below.

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.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
Approved Calculators		Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. The University approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source and no longer need to carry the University logo.
Stationery		You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.
Textbooks		Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source. Some modules suggest reading texts as optional background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module. <u>CENV3020</u> Students may wish to purchase a copy of the Powrie textbook, cost circa £40. https://www.southampton.ac.uk/courses/modules/cenv3020.page
Equipment and	Design equipment and materials:	Standard construction/modelling materials will be provided where appropriate, unless otherwise specified in a module profile.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
Materials		For customisation of designs/models calling for material other than standard construction/ modelling materials, students will bear the costs of such alternatives.
	Field Equipment and Materials:	
Clothing	Lab Coats	
	Protective Clothing: Hard hat; safety boots; hi-viz vest/jackets;	
	Fieldcourse clothing:	You will need to wear suitable clothing when attending fieldcourses, e.g. waterproofs, walking boots. You can purchase these from any source.
Printing and Photocopying Costs		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. <u>CENV6129</u> Students are expected to cover the costs associated with the printing and binding of reports, including any drawings and graphic presentations. Two copies will need to be submitted. Depending on the quality of printing and binding chosen students can expect to pay approximately £25-30 per copy, totalling approximately £50-60 for both copies. <u>https://www.southampton.ac.uk/courses/modules/cenv6129.page</u>
Optional Visits (e.g. museums, galleries)		Some modules may include additional optional visits. You will normally be expected to cover the cost of travel and admission, unless otherwise specified in the module profile.