



## Programme Specification

A statement of the knowledge, understanding and skills that underpin a taught programme of study leading to an award from  
The University of Sheffield

1	<b>Programme Title</b>	Civil Engineering
2	<b>Programme Code</b>	CIVT107
3	<b>JACS Code</b>	H200
4	<b>Level of Study</b>	Postgraduate
5a	<b>Final Qualification</b>	Master of Science (MSc)
5b	<b>QAA FHEQ Level</b>	Masters
6	<b>Intermediate Qualification(s)</b>	Postgraduate Certificate (PG Cert), Postgraduate Diploma (PG Dip)
7	<b>Teaching Institution (if not Sheffield)</b>	Not applicable
8	<b>Faculty</b>	Engineering
9	<b>Department</b>	Civil and Structural Engineering
10	<b>Other Departments involved in teaching the programme</b>	None
11	<b>Modes of Attendance</b>	Full-time
12	<b>Duration of the Programme</b>	12 months
13	<b>Accrediting Professional or Statutory Body</b>	Joint Board of Moderators (JBM) of the Institution of Civil Engineers (ICE), Institution of Structural Engineers (IStructE), Chartered Institution of Highways & Transportation (CIHT) and Institute of Highway Engineers (IHE), Permanent Way Institution (PWI) <a href="http://www.jbm.org.uk/">http://www.jbm.org.uk/</a>
14	<b>Date of production/revision</b>	January 2015, March 2018, November 2023

### 15. Background to the programme and subject area

The undergraduate curriculum for Civil Engineering at Sheffield focuses on three primary strands: Geotechnics, Structures and Water. The intention behind this programme is to expose students from beyond Sheffield to the full spectrum of our curriculum at an advanced, Masters' level.

Civil engineering requires an integrated understanding of these three areas. Innovative construction is predicated upon foundations that must be designed by considering the geotechnical properties of soil and rock. As a consequence, understanding the flow of water through a soil is of vital importance. In addition, solutions to environmental issues that are likely to become of increasing significance in the next century (coastal flooding due to sea rise, groundwater pollution) may involve structural engineering solutions (coastal defences) or a detailed knowledge of hydraulics or hydrogeology to design remediation strategies. This course covers the fundamental principles as well as highly relevant practical aspects. In addition, it provides the research skills necessary to formulate, study and solve civil engineering problems independently. Thus, it is anticipated that graduates from this course will be highly sought after internationally, given the global shortage of professionals with a broad range of salient skills.

The modules include lectures, seminars, project classes, and tutorials. Students will gain understanding, knowledge and skills at the forefront of rapidly developing research fields and will be able to interact with leading academics in the area, as well as a diverse student cohort who bring a rich variety of skills and perspectives to the course.

## 16. Programme aims

The aims of the programme are to:

1. Provide access to Masters' level degree programmes to graduates or professionals seeking a higher level engagement with the civil engineering discipline.
2. Help students fulfil their potential and help them engender a commitment to self-improvement and development of personal transferable skills.
3. Provides themed options around Geotechnical, Structural and Water Engineering, including analysis and design elements.
4. Develop an understanding of the interconnections between different areas of civil engineering.
5. Develop a higher level, critical approach to civil engineering subject matter and the associated academic literature.
6. Deliver Masters' level training in various technical methods that assist in the study of civil engineering phenomena.
7. Train or re-train individuals in the field to meet the current and future demand for qualified professionals.
8. Provide research training in fundamental or applied fields to the highest international standards.

## 17. Programme learning outcomes

**Knowledge and understanding:** On successful completion of the programme, MSc and Diploma students will have knowledge and understanding of:

<b>K1</b>	The principles and theoretical ideas underpinning civil engineering analysis in Structural and Geotechnical Engineering.
<b>K2</b>	The principles of civil engineering design, as they exist in both Structural and Geotechnical Engineering.
<b>K3</b>	Water movement on the surface and through the subsurface.
<b>K4</b>	The complexity of interactions between structures and infrastructure, soils and water.
<b>K5</b>	The academic civil engineering research literature.

In addition to K1-K5, on successful completion of the programme, MSc students will have knowledge and understanding of:

<b>K6</b>	The formulation and successful completion of a piece of independent research.
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**Skills and other attributes:** On successful completion of the programme, MSc and Diploma students will be able to:

<b>S1</b>	Undertake data collection and apply analytical techniques.
<b>S2</b>	Critically review information and learn independently.
<b>S3</b>	Exercise independent thought and judgement.
<b>S4</b>	Work independently and collaboratively.
<b>S5</b>	Formulate and solve problems.

In addition to S1-S5, on successful completion of the programme, MSc students will be able to:

<b>S6</b>	Perform technical investigations and demonstrate the ability to carry out, present and defend an extended item of original technical work.
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Students awarded a Postgraduate Certificate will have achieved many of the learning outcomes K1-K5 and S1-S5 but not all, depending on the modules in which they have been awarded credits.

## 18. Teaching, learning and assessment

**Development of the learning outcomes is promoted through the following teaching and learning methods:**

**Lectures** - used to transmit information, explain theories and concepts, and illustrate methods of analysis or design.

**Seminars** - interactive learning, frequently employing case studies and presentations from industrial experts.

**Tutorials / example classes** - structured sessions for the application of theories and concepts. A tutor is available to resolve specific problems.

**Problem solving / design projects** - directed activities for the practical application of learning, often requiring students to seek additional information and develop group and independently working skills. These projects develop a wide range of skills, including team-working and communication skills.

**Laboratory / fieldwork** - structured sessions for the physical demonstration of concepts and the development of practical understanding.

**Computer aided learning** - directed independent study to develop the full range of knowledge and skills of the programme.

**Research project** - a major investigative study carried out over the duration of the programme, encompassing research and independent learning. Projects may be linked to real industry problems, with both academic and industrial supervision. The project allows the student scope to display initiative, originality and creativity, while working closely with an academic.

**Opportunities to demonstrate achievement of the learning outcomes are provided through the following assessment methods:**

**Written examinations** – typically of 2-3hour duration.

**Class tests** - tests conducted in a lecture theatre or workroom during the main teaching periods to assess progress, as an alternative to more formal assessment methods. They are mainly used to assess knowledge gain through CAL and private study.

**Course work submissions** - these include design studies, computational assignments and research reports.

**Oral presentations and interviews** – students take a compulsory module designed to increase professional and personal skills. The audience includes academic staff and fellow students. An individual interview with two academic staff is held as part of the assessment of the Dissertation.

**Individual project reports** - these include the Dissertation and reports written for projects set during certain other modules.

The main teaching, learning and assessment methods adopted for each learning outcome are shown below. In most cases a combination of methods is used.

LEARNING OUTCOME (abbreviated - see Section 17 for full text)	TEACHING / LEARNING							ASSESSMENT				
	Lectures	Seminars	Tutorials / example classes	Problem solving / design projects	Laboratory / fieldwork	Computer Aided Learning (CAL)	Dissertation	Written examinations	Class tests	Course work submissions	Oral presentations and interviews	Individual project reports
K1 Civil Engineering Analysis	•	•	•	•		•	•	•	•	•	•	•
K2 Civil Engineering Design	•	•	•	•			•		•	•		•
K3 Water Motion	•	•	•	•		•	•			•		•
K4 Interactions	•		•	•			•		•	•		•

K5 Academic Literature	•	•					•				•		•
K6 Research methods	•			•			•					•	•
	•												
S1 Analytical techniques	•	•	•	•	•		•			•	•		•
S2 Independent learning	•	•					•		•	•			•
S3 Independent thought			•	•		•	•		•	•		•	•
S4 Working methods				•	•	•	•				•		•
S5 Problem solving			•	•			•				•	•	•
S6 Technical Investigation							•					•	•

## 19. Reference points

**The learning outcomes have been developed to reflect the following points of reference:**

Subject Benchmark Statements

<https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements/subject-benchmark-statement-engineering>

Framework for Higher Education Qualifications (2014)

[www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf](http://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf)

University Vision and Strategic Plan

<https://www.sheffield.ac.uk/vision>

Education Strategy (2020-27)

<https://www.sheffield.ac.uk/vision/our-pillars/education>

The University Mission Statement.

Master's degree characteristics, Quality Assurance Agency for Higher Education, 2010.

Guidelines for an MSc Programme, Joint Board of Moderators of the Institution of Civil Engineers (ICE), Institution of Structural Engineers (IStructE), Chartered Institution of Highways & Transportation (CIHT), Institute of Highway Engineers (IHE) and Permanent Way Institution (PWI).

Formal consultation and reporting from Dept Industrial Liaison Committee responsible as advisory board for teaching provision in the Dept of Civil & Structural Engineering.

House of Commons Select Committee Report on Science and Technology, 2005.

## 20. Programme structure and regulations

The programme structure is modular and runs full-time for 12 months. Students will study taught modules worth 120 credits in total and, for the MSc qualification, will prepare a dissertation worth a further 60 credits. The taught modules are each worth 15 credits. Six core modules are defined and must be completed by all MSc and Diploma students. MSc students choose a dissertation topic at the start of the programme and plan and prepare for their dissertation work throughout the autumn and spring semesters. Over the summer MSc students work on their specified topic and prepare a dissertation for submission in early September.

Detailed information about the structure of programmes, regulations concerning assessment and progression and descriptions of individual modules are published in the University Calendar available on-line at <http://www.sheffield.ac.uk/calendar/regs>.

## 21. Student development over the course of study

The structure of the programme, and the sequence of the modules, is designed to develop knowledge and skills progressively. Topics in Water, Geotechnical and Structural Engineering are taught in the first semester. These modules aim to develop an advanced understanding of engineering analysis and design.

The first semester also provides an introduction to research skills in preparation for the independent research project undertaken at the end of the course. Thus, it is clear to the students that independent research is an over-arching principle for the course and that this implies a difference in outlook to a more passive form of learning that may have existed in their undergraduate level work.

In subsequent modules in the second semester, students have the opportunity to develop specialist knowledge and skills in optional modules that cover topics relating to Geotechnical, Structural and Water Engineering. This

means that the student can tailor their module selection towards the area of the course that they find the most engaging.

The research project provides an opportunity to work closely with an academic on a theme selected by the student. Students make this choice early so that thinking and reflection on their project is an over-arching aspect of the course. Research skills training in the first semester culminate with a project proposal that the student may iterate with their supervisor over the next semester until it meets the minimum standard needed to provide an effective springboard for undertaking the relevant data collection/analysis.

Most students enrol on the MSc programme. However, students not wishing to commit themselves to an MSc or interested in selected specialist modules may enrol for a Certificate or Diploma, with the option of upgrading to the MSc programme (subject to satisfactory performance).

## **22. Criteria for admission to the programme**

Detailed information regarding admission to the programme is available at <http://www.shef.ac.uk/civil/pg>

## **23. Additional information**

This MSc programme will provide real employment opportunities for graduates wishing to develop careers in civil engineering as it addresses the pressing national and international needs of employers for specific skills and knowledge to tackle issues pertaining to sustainable infrastructure and climate change. The programme combines the research and engineering expertise of the full spectrum of the research groups working in the Civil and Structural Engineering department.

This specification represents a concise statement about the main features of the programme and should be considered alongside other sources of information provided by the teaching department(s) and the University. In addition to programme specific information, further information about studying at The University of Sheffield can be accessed via our Student Services web site at <http://www.shef.ac.uk/ssid>.