

PROGRAMME SPECIFICATION



1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	BEng (Hons)
4	Programme Title	Civil Engineering with International Year One
5	UCAS/Programme Code	1825U
6	Programme Accreditation	N/A
7	QAA Subject Benchmark(s)	Engineering
8	FHEQ Level	6
9	Last updated	May 2025

10 Programme Aims

1. To provide distinctive and exciting opportunities for students with high academic ability to be inspired and motivated by a unique integrated multi-theme based education in civil engineering;
2. To provide students with a sound grasp of the major challenges of climate change and sustainability, informed by the excellence of the research carried out in the School, and integrated with technical knowledge and skills in the development of integrated design solutions within DSES modules;
3. To provide opportunities for students to acquire appropriate knowledge and understanding, and a range of skills within a set of core themes, together with a sound grasp of engineering design, and a recognition of the importance of health and safety and the need to manage risk;
4. To provide opportunities for students to integrate their knowledge and understanding of mathematics, science, computer-based methods, design, the economic, social and environmental context, and engineering practice to solve a range of complex engineering problems, principally through involvement in group design and individual projects;
5. To produce graduates who are aware and inspired by their responsibilities to society and to the environment and are equipped to enter employment in industry, the professions or public service or to follow a postgraduate route into research, industry or academia, or to apply their skills in areas outside of engineering;

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas.

Knowledge and Understanding

On completing the programmes students should have gained knowledge and understanding of:

- A1 The essential facts, concepts, theories and principles of civil engineering
- A2 The wider multidisciplinary engineering context and its underlying principles
- A3 Mathematical principles necessary to underpin their education in civil engineering and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems
- A4 Client and user needs and the importance of aesthetics
- A5 The commercial and economic context within which engineering is practised
- A6 The management techniques that may be used to achieve engineering objectives
- A7 The requirement for engineering activities to promote sustainable development

- A8 The need for a high level of professional and ethical conduct in engineering and an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues
- A9 The characteristics of particular materials, equipment, processes and products typically used in civil engineering
- A10 The range of functions civil engineers in the principal areas where they are employed, the latest operating practices and the limitations of existing approaches
- A11 Appropriate codes of practice and industry standards
- A12 Contractual and quality issues
- A13. Have developed the necessary practical skills to enable specified laboratory or field experiments to be carried out effectively and safely.
- A14. Be able to apply appropriate quantitative methods to experimental data and to interpret experimental results.
- A15. Have an appreciation of the culture of UK higher education and its expectations of students.
- A16. Have increased knowledge and understanding of English grammar and vocabulary, including the conventions of academic English.
- A17. Understand the basic requirements for writing a competent essay/case study report or laboratory report.

Teaching and Learning Methods

Knowledge and understanding is mainly imparted through lectures, which for some outcomes (parts of A8 and A10), are given by external speakers with particular specialisms. Tutorials are typically used where students need to practise methods and techniques (A1 and A3) and laboratories and field classes help to reinforce messages that have been initially conveyed in lectures. The integrated design modules in stages 1 and 2 help students to see the wider picture (A2) and also expose them to a range of other concerns (A4, A5, A7), while site visits aid their appreciation of some of the roles engineers fulfil (A10).

Assessment Strategy

The primary means of assessment of knowledge and understanding is by unseen written examinations. These are supplemented by assessed coursework, consisting mainly of project reports and laboratory / field class reports.

Intellectual Skills

On completing the programme students should be able to:

- B1 Apply appropriate quantitative science and engineering principles and tools to the analysis of problems
- B2 Demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs, especially within Design for Sustainable Engineering Systems theme
- B3 Comprehend the broad picture and thus work with an appropriate level of detail
- B4 Plan, conduct and report a major programme of investigative work
- B5 Analyse experimental or computational results and determine their strength and validity
- B6 Identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques
- B7 Investigate and define a problem and identify constraints including environmental and sustainability limitations, social matters, health and safety and risk assessment issues
- B8 Manage the design process and evaluate outcomes
- B9. Read academic texts and other sources of information with some degree of analytical skill
- B10. Discuss and evaluate the results of experiments or other forms of research either orally or in writing

Teaching and Learning Methods

Intellectual skills are acquired through the teaching and learning programme outlined in section 12. In particular, analysis and problem solving skills (B1, B6) are developed through example classes, tutorials and coursework, and design skills are developed through coursework activities and design projects (B2, B8). These include the Design for Sustainable Engineering Systems modules that require students to recognise constraints and to understand the skills needed for both preliminary and detailed design experimental results are

generated in laboratory and field work and students are expected to analyse and make sense of their data (B5). All students undertake a major individual project in their final year that will require them to scope a particular project that is associated within a wider theme based subject areas and produce a detailed report (B4).

Assessment Strategy

Written coursework assignments, which include group project reports, laboratory reports and a report on a substantial individual project, are the principal means of assessment for these skills, although some may also be assessed by examinations, which in some circumstances are open book exams.

Practical Skills

On completing the programme students should be able to:

- C1 Carry out experiments safely
- C2 Use laboratory and field equipment to generate data
- C3 Prepare technical drawings
- C4 Apply quantitative methods and computer-based models relevant to civil engineering to solve engineering problems, and with an awareness of the limitations of such models
- C5 Develop and apply safe systems of work
- C6 Identify and manage cost drivers
- C7 Ensure fitness for purpose for all aspects of a project including design, construction, operation, maintenance and decommissioning
- C8 Produce design solutions for civil engineering projects
- C9. Present scientific data and ideas in clear and logical form, either tabulated, graphically or in written or oral English
- C10. Develop strategies for effective note taking in lectures and seminars
- C11. Read and take notes from an academic text or other sources of information
- C12. Take part in a discussion in a seminar or tutorial context
- C13. Write an essay or laboratory report in an academic context in understandable English following the appropriate conventions
- C14. Apply proper referencing and other aspects of good academic practice

Teaching and Learning Methods

Students have numerous opportunities to carry out experiments in the School's laboratories, and must attend induction programmes to reinforce the need to conduct themselves safely before beginning work (C1, C2, C5). Specific design skills are developed in a range of disciplines and the Design for Sustainable Engineering Systems modules bring these together, requiring a holistic view of the selected project that includes an awareness of costs and the complete project cycle (C5, C6, C7, C8). Technical drawings are produced as an essential part of these design exercises and students are introduced to computer software to enable them to produce professional output (C3). Particular industry-standard software is introduced in the relevant modules, some of which students will have a chance to use themselves (C4).

Assessment Strategy

The ability to use practical skills is mainly assessed by means of written assignments, including drawings, design calculations, laboratory and field class reports, project reports and the report from a substantial individual project.

Transferable/Key Skills

On completing the programme students should be able to:

- D1 Communicate effectively in writing, verbally and through drawings and presentations
- D2 Gather and use information using Information and Communications Technology
- D3 Work with incomplete information and technical uncertainty
- D4 Search for and use the scientific literature effectively
- D5 Take notes effectively
- D6 Work on projects, both individually and as a member of a team
- D7 Plan self-learning and improving performance as the foundation for life-long learning
- D10 Record and reflect on technical and transferable graduate skills towards professional qualification
- D11. Work as a member of a team with colleagues from other cultures and backgrounds.
- D12. Make oral presentations using appropriate scientific language and terminology.
- D13. Use IT skills effectively.
- D14. Manage their time effectively.

D15. Express ideas and facts in an acceptable format in understandable English.
D16. Understand and communicate effectively with native speakers of English.
D17. Analyse their own strengths and weaknesses and take action accordingly.
D18. Demonstrate good levels of numeracy.

Teaching and Learning Methods

Many of the transferable skills are practised in the numerous coursework exercises students must undertake and advice on specific aspects will be given in particular modules (D1, D5). The individual and group projects require students to gather information, search literature and recognise and develop areas where their knowledge may be deficient (D1, D2, D3, D4, D6, D7). Design for Sustainable Engineering Systems coursework is a good example of the above, which is carried out in groups and forces the teams to not only use information they have been given, but also to search out and understand aspects of their designs on which they have received no instruction.

Assessment Strategy

Most pieces of coursework will include an element to cover transferable skills and a number of modules require students to make oral presentations to an audience, which will also contribute to the assessment for the particular modules. Many of these skills are also assessed in the major individual project that all students undertake. Students are required to keep log books and write reflective reports on the progressive development of their professional skills (e.g. ICE CEng attributes), through the Design of Sustainable Engineering Systems teams project modules in particular.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

The normal Undergraduate year is approximately 31 weeks, arranged in three terms and currently divided into two semesters. The MEng programmes normally last four years, and the BEng programmes three years, although for the programmes with Year in Industry the duration will be 9-12 months longer. The only part-time study is limited provision for the repetition of failed modules and under exceptional circumstances.

Every Honours student studies 120 credits in each Stage (year). There are 3 stages to the programme.

All modules at Stage 1 and 2 are compulsory on all six programmes.

At Stage 3, all modules are compulsory.

At Stage 4, students take three common compulsory modules (60 credits) and select a further 20 credits from a choice of three common optional modules.

Key features of the programme (including what makes the programme distinctive)

The Civil Engineering, programmes are systems-based integrated programmes with sustainable development at their heart, engaging with the environmental, social and economic dimensions of this unifying concept in the design, implementation, and rehabilitation of all civil engineering interventions within the Earth system. This challenges students to think not only about the technically demanding subjects but also about the future challenges of climate change, sustainable development, democracy, equity, poverty alleviation, and the lifelines of energy, food and water.

Design of Sustainable Engineering Systems (DSES) is central to the Programmes, which challenge the students to integrate all of the knowledge gained in the taught modules within a holistic sustainable development framework that focuses on the delivery of sustainable solutions at a range of scales, from individual structures to whole cities.

Within the themes at Stages 1 to 2, the programmes provide a basis in each of the disciplinary pillars on which the training of all civil engineers must be founded, the most significant of which is the structures discipline. At Stage 3, students on the CSE programmes begin to specialise in this area, while students on the CE programme continue with a more diverse curriculum. Students on the BEng programmes have the opportunity to specialise in the individual project.

In designing and delivering the programme, strong links with industry are crucial to ensure that our programme is aligned with industry trends and that graduates emerge with the skill sets

that industry needs and the capacity to tackle the challenge of sustainable development in the 21st century. Our Industrial Advisory Panel strongly influence our curriculum and DSES modules in particular. Members of the panel, along with many other industrial collaborators, provide guest speakers, site visits, project support and industrial placements.

Programme regulations (link to on-line version)

13 Support for Student Learning

Generic information regarding University provision is available at the following link.

[Generic Information](#)

14 Methods for evaluating and improving the quality and standards of teaching and learning

Generic information regarding University provision is available at the following link. [Generic Information](#)

Additional mechanisms

15 Regulation of assessment

Generic information regarding University provision is available at the following link.

[Generic Information](#)

In addition, information relating to the programme is provided in:

The University Prospectus: <http://www.ncl.ac.uk/undergraduate/degrees/#subject>

Degree Programme and University Regulations: <http://www.ncl.ac.uk/regulations/docs/>

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