PROGRAMME SPECIFICATION **(for an Undergraduate programme with Careers Service Placement Year)**	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MEng (Hons)
4	**Programme Title**	MEng (Hons) Engineering MEng (Hons) Engineering with specialism in Civil Engineering. MEng (Hons) Engineering with specialism in Civil Engineering with Placement Year. MEng (Hons) Engineering with specialism in Electrical and Electronic Engineering MEng (Hons) Engineering with specialism in Electrical and Electronic Engineering with Placement Year MEng (Hons) Engineering with specialism in Mechanical Engineering. MEng (Hons) Engineering with specialism in Mechanical Engineering with Placement Year. BEng (Hons) Engineering (exit award)
5	**UCAS/Programme Code**	H104 1559U 1560U 1561U 1562U 1563U 1564U 1565U
6	**Programme Accreditation**	CEng accreditation with the Engineering Accreditation Board (EAB) will be sought following the first full graduating cohort
7	**QAA Subject Benchmark(s)**	Engineering
8	**FHEQ Level**	6 (exit award only) and 7
9	**Last updated**	May 2023

10 Programme Aims
In delivery of the programme, the aims are to enable suitably qualified students from a range of school, Further and Higher Education backgrounds to: 1. Provide the engineering industry and profession, in the UK and elsewhere, with employable and enterprising graduates prepared for the assumption of technical, managerial and financial responsibilities. 2. Develop students' knowledge, skills (including transferable skills) and understanding, as well as awareness and "know how", in the fields of civil, electrical and mechanical engineering so that as graduates they will be equipped to enter employment as professional engineers (progressing on to chartered engineer or equivalent status) or a wide range of other professional careers. After the first two broadly-based years, depth of learning is provided in the final two years to Honours Level 6 and 7 through one of three optional routes: - Engineering with a specialism in Civil Engineering - Engineering with a specialism in Electrical and Electronic Engineering - Engineering with a specialism in Mechanical Engineering

3. Prepare students to engage in life-long learning (e.g. professional CPD or further Higher Education) and critical enquiry with skills in research and knowledge acquisition and an appreciation of the value of education to the wider community.
4. Achieve the above in the contexts of the School, SAgE Faculty and University business plans, following the University's policies and procedures and conforming to the relevant sections of the QAA Code of Practice.

For students on the Careers Placement Year programme:

5. To provide students with the experience of seeking and securing a position with an employer through exercises in CV writing, interview preparation, industrial interaction throughout the programme and the opportunity to undertake a Careers Service Placement year.
6. Provide the option of a period of practical work experience via the Careers Service that will benefit current academic study and longer term career plans.
7. Enable students to ethically apply their knowledge and skills in the work place via the optional placement year, reflect upon their development and effectively evidence and articulate their learning in relevant future settings.

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. The programme outcomes have references to the benchmark statements for Engineering. (UK SPEC).

Knowledge and Understanding

On completing the programme students should:

A1 Knowledge and understanding of scientific principles and methodology necessary to underpin their education in engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies in engineering.

A2 Knowledge and understanding of mathematical principles necessary to underpin their education within the engineering disciplines.

A3 The ability to understand and apply engineering principles to analyse key processes.

A4 Knowledge and understanding of commercial and economic contexts of engineering processes.

A5 Knowledge of management techniques which may be used to achieve engineering objectives within the context of engineering processes.

A6 An understanding of the requirement for engineering activities to promote sustainable development.

A7 Knowledge of characteristics of particular engineering equipment, processes or products.

A8 Apply personal and professional development strategies to prioritise, plan, and manage their own skills development and learning.

For students on the Careers Placement Year programme:

A9 Research, select and apply relevant knowledge aimed at enhancing their own skills and effectiveness in specific duties at their placement.

A10 Demonstrate an understanding of a work environment, how it functions and their contribution to it.

A11 Relate their work based learning to other areas of personal development, including academic performance.

Intellectual Skills

On completing the programme students should have:

B1 Knowledge and understanding of scientific principles and methodology necessary to underpin their education in engineering disciplines, to enable appreciation of the scientific and engineering context and to support understanding of future developments and technologies.

B2 The ability to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.

B3 The ability to apply and integrate knowledge and understanding of engineering disciplines to support the study of civil, electrical and mechanical engineering

disciplines.

B4 The ability to identify, classify and describe the performance of systems and engineering components through the use of analytical methods and modelling techniques.

B5 An understanding of and ability to apply a systems approach to engineering problems.

B6 The ability to investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues.

B7 An understanding of customer and user needs and the importance of considerations such as aesthetics.

B8 The ability to ensure fitness for purpose for all aspects of civil, electrical and mechanical engineering problems including production, operation, maintenance and disposal.

B9 The ability to manage the engineering design process and evaluate outcomes.

B10 An awareness of management and business practices, and how these may be applied appropriately to strategic and tactical issues in mechanical engineering and manufacturing.

B11 An understanding of contexts in which mechanical engineering knowledge can be applied (i.e. operations and management, technology and product development).

Practical Skills

On completing the programme students should have:

C1 The ability to apply quantitative methods and computer software relevant for engineering disciplines in order to solve engineering problems.

C2 The ability to identify and manage cost drivers in engineering.

C3 An awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.

C4 An awareness of the nature of intellectual property and contractual issues.

C5 An understanding of appropriate codes of practice and industry standards.

C6 An awareness of quality issues.

C7 The ability to work with technical uncertainty.

Transferable/Key Skills

With the exception of foreign language skills, on completing the programme students should have covered the Newcastle Graduate Skills Framework and, in addition have:

D1 An understanding of customer and user needs and the importance of considerations such as aesthetics in Civil, Electrical and Mechanical engineering.

D2 The ability to use creativity to establish innovation in the engineering disciplines.

D3 An understanding of the need for a high level of professional and ethical conduct in engineering.

D4 Relevant engineering workshop and laboratory skills.

D5 An understanding of the use of technical literature and other information sources.

For students on the Careers Placement Year programme:

D6 Reflect on and manage own learning and development within the workplace.

D7 Use existing and new knowledge to enhance personal performance in a workplace environment, evaluate the impact and communicate this process.

D8 Use graduate skills in a professional manner in a workplace environment, evaluate the impact and communicate the personal development that has taken place.

Teaching and Learning Methods

Key elements of professional graduate employability are that employers need to be sure that graduates are able to take individual responsibility for their own work without supervision, that they are capable of assimilating and organising complex information quickly and effectively, and that they are self-learners, capable of keeping abreast of new developments without organisational support. Our approach to teaching and learning is designed to produce graduates who meet these criteria. From the outset, students will be expected to meet the basic professional requirement of taking responsibility for their own learning. With engineering degrees lectures are extensively used to provide structure for each subject, to help to direct students' further reading and self-study, to convey how the underlying engineering science is applied to discipline specific problems, and to demonstrate approaches to problem-solving. Typically student self-study after lectures is supported by

tutorial and/or problem classes, where support is available for students who have issues arising from their application or understanding of the lecture material. Other types of classes include longer “hands-on” practical laboratory/workshop sessions, seminar/presentation activities, design project work and CAD/computer sessions where teamwork often features.

Over the common core course at Stages 1-2, there will be an average of around 20 contact hours per week, about half of which will be lectures, about a quarter tutorials supporting those lectures and about a quarter practical activities.

At Stages 3 and 4 there is a greater expectation that students will manage their own learning, with seminar classes in which students present material they have researched themselves and independent work on assignments more prevalent. This includes a team design project carried out with reference to industry and industrial drivers. At Stage 3 students undertake a major inter-disciplinary project with group and individual elements; Accrediting Institutions place high importance on such project work, which must be passed to get an Honours Degree. Students who do not achieve the required standard of 50% at the end of Stage 3 will exit with a BEng in Engineering.

At Stage 4 there is a 60 credit multi-disciplinary team project in which the teams also have to demonstrate their project management skills.

Assessment Strategy

Professional practice in industry and expectations of accreditors demands the ability to bring methods and data together, apply problem-solving skills and demonstrate understanding under time constraints. To reflect this, the major end-of-course examination remains a valid assessment tool and forms an important element in our assessment strategy. However, there are equally significant disciplines and skills where written examination of this sort is restrictive or inappropriate and engineering degrees are noted for the breadth of assessment tools that are used to obtain a balanced measure of the student. Assessment approaches such as spot or phase tests (including MCA) and short assignments help students structure their study and revision towards the synoptic end-of-course examinations, especially during the early transition to University-style learning and assessment. Laboratory/workshop, design and computing work are best assessed through realistic assignments, including group assignments, with formats including oral and poster presentation, as well as written reporting elements, highlighting the importance of effective technical communication. Application of software, and proficiency assessment features in the later stages within relevant technical areas.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

There is a Faculty Foundation Year (120 credit Stage 0) for students not adequately qualified in the prerequisite mathematics and/or science. For non-native speakers of English not meeting our English language entry requirement (IELTS 6.0 or equivalent), the University supports the INTO Foundation Programme. We guarantee first year entry offers to INTO FY students who achieve the required progression standard.

At Stage 1, it is aimed to provide all students with a firm foundation on which to build their future studies. A substantial mathematical base is provided, enhanced by mathematical techniques and practice introduced in other modules. Knowledge and understanding of fundamental engineering principles are provided through technical modules which also serve to broaden and enhance intellectual abilities. Practical laboratory work emphasises a project based approach; this, together with computing classes, develops a range of practical and transferable skills relevant to employability. Upon the successful completion of the flexible Stage 1, transfer at Stage 2 from the MEng or BEng programme on which students initially registered to another MEng or BEng programmes sharing the same flexible Stage 1, may be permitted based on academic performance and at the discretion of the UG Degree Programme Directors.

Stage 2 builds on the work of Stage 1 continuing the development of an understanding of mathematical methods at the point of application. Knowledge and understanding is increased through all modules. Project work again forms a major part of the practical work of the stage. During Stage 2 of the MEng Engineering programme, students will choose a specialism (from Electrical & Electronic Engineering, Civil Engineering and Mechanical Engineering), with the

final selection based on academic performance and at the discretion of the UG Degree Programme Directors.

At Stage 3, students continue to follow their chosen specialism. All students undertake a 40 credit inter-disciplinary project. To obtain an Honours degree it is necessary to pass this project. Students who do not achieve the required standard of 55% at the end of Stage 3 will normally graduate with an appropriate exit award (BEng or HE Diploma).

At Stage 4, all students undertake a 60 credit multi-disciplinary team project in which they have to demonstrate both technical and project management skills. To be awarded an MEng degree it is necessary to pass this project.

Students on the Careers Placement Year programme will take their placement in the penultimate year of studies.

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

The normal Undergraduate academic year is approximately 31 weeks full time from September to June, divided into two semesters, with vacation breaks at Christmas/New Year and Easter. Engineering Honours students study 120 credits (1 credit = 10 study hours, including timetabled contact hours and private study) in each Stage or academic year. Students must complete one Stage before proceeding to the next. Currently the only part-time study available is limited provision for the repetition of failed modules (only two attempts are permitted for any module under the University General Regulations).

The key feature of the programme is that students can defer their choice of specialism until the end of Stage 1 or Stage 2, allowing them time to explore the different subjects before deciding on their specialisation of Civil, Electrical or Mechanical Engineering, either within the Engineering programme, or by transfer to a single discipline programme.

Programme regulations (link to on-line version)

H104-1565U: -RH104-1565U

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

Accreditation reports

It is policy that our Undergraduate degrees are externally CEng accredited by relevant accreditation bodies. Back-dated accreditation should take place following the successful graduation of the first cohort of students.

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.