PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	BEng (Hons)
4	**Programme Title**	Bachelor of Engineering with Honours in Mechanical Engineering.
5	**UCAS/Programme Code**	H300 BEng with Honours in Mechanical Engineering 1170U BEng with Honours in Mechanical Engineering with Placement Year 1643U BEng with Honours in Mechanical Engineering Science 1846U BEng with Honours in Mechanical Engineering with International Study Year
6	**Programme Accreditation**	IMechE (2025)
7	**QAA Subject Benchmark(s)**	Subject Benchmark Statement - Engineering (qaa.ac.uk)
8	**FHEQ Level**	6
9	**Last updated**	May 2025

10 Programme Aims

The programme aims 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 field of mechanical engineering and its related disciplines (electrical and materials engineering, manufacturing, bioengineering and transport technology) 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 year to Honours Level 6 through either exploring mechanical and manufacturing engineering technologies or developing a multi-disciplinary approach with electronic and software engineering.

3. Prepare students to engage in life-long learning (eg 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. Provide students with the experience of seeking and securing a position with an

employer.

6. Facilitate independent self-management and proactive interaction in a non-university setting.

7. Provide a period of practical work experience that will benefit current academic study and longer term career plans.

8. Enable students to ethically apply their knowledge and skills in the work place, reflect upon their development and effectively evidence and articulate their learning in relevant future settings.

For students on the International Study Year Programme:

9. Offer students the opportunity to develop graduate attributes which increase employability, particularly communication and (where applicable) language skills, intercultural competencies, adaptability, resilience and global awareness.

10. Gain insight into international Higher Education and experience differences in academic approach and learning environment.

11. Provide the opportunity to experience new areas of study outside of their usual programme of study at Newcastle University.

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 and to UK Spec Learning Outcomes as specified by degree programme accreditors IMechE.

Knowledge and Understanding

On completing the programme students should have:

A1 Knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies in mechanical engineering and manufacturing
A2 Knowledge and understanding of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines.
A3 The ability to understand and apply Engineering principles to analyse key processes in manufacturing and mechanical and related engineering.
A4 Knowledge and understanding of commercial and economic contexts of mechanical and manufacturing engineering processes.
A5 Knowledge of management techniques which may be used to achieve engineering and manufacturing objectives within the context of mechanical engineering processes.
A6 An understanding of the requirement for mechanical and manufacturing engineering activities to promote sustainable development.
A7 Knowledge of characteristics of particular mechanical and related engineering equipment, processes or products.

For students on the Careers Placement Year Programme, students should:

A8 Apply personal and professional development strategies to prioritise, plan, and manage their own skills development and learning.
A9 Research, select and apply relevant knowledge aimed at enhancing their own skills and effectiveness in specific duties at their placements.

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.

For students on the International Study Year programme:

A12 Demonstrate the ability to adapt to different learning environments.

Intellectual Skills

On completing the programme students should have:

B1 Knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and related 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 mechanical and manufacturing engineering problems.
B3 The ability to apply and integrate knowledge and understanding of other engineering disciplines to support the study of mechanical and related engineering disciplines.
B4 The ability to identify, classify and describe the performance of systems and mechanical components through the use of analytical methods and modelling techniques.
B5 An understanding of and ability to apply a systems approach to mechanical and manufacturing 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 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, product development).

Practical Skills

On completing the programme students should have:

C1 The ability to apply quantitative methods and computer software relevant for mechanical and related engineering disciplines, to solve engineering problems.
C2 The ability to identify and manage cost drivers in mechanical engineering and manufacturing.
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 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 mechanical and manufacturing engineering.
D2 The ability to use creativity to establish innovation in manufacturing and mechanical and

related engineering disciplines.

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

D4 Relevant Mechanical and manufacturing 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.

For students on the International Study Year programme:

D9 Adapt and operate in a different cultural environment

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 or problem classes, where advice is given on request to 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. During the course of Stage 1, to support the transition to University training, students must attend a regular small group tutorial with their allocated Tutor. Stage 2 features industrial contact in design and manufacturing and input from industry on CVs and interviews for a professional career in engineering.

At Stage 3 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. At Stage 3 students undertake a major 30 credit individual project. The Accrediting Institutions place a high importance on this project which must be passed to get an Honours Degree.

Assessment Strategy

Professional practice in industry 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 many disciplines and skills where it 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. Spot or phase tests (including MCA) and short assignments feature in the early stages to help students structure their study and revision towards the synoptic end-of-course examinations. Laboratory/workshop,

design and computing work are all best assessed through realistic assignments, with many of these being team assignments and involving oral or poster, as well as written reporting. In later stages application of major engineering software features in most main technical subject areas.

At Stage 1 the balance of assessment between end-of-course examination and various forms of in-course assessment is about 50:50, changing to about 70:30 in Stage 2, as students develop. However, at Stage 3 the greater importance of self-study and of major project work shifts the overall balance back again (depending on the specialisation stream followed).

Assessment of major project work at Stage 3 is done with a challenging assessment more in line with the needs of industry and professional engineering, incorporating the maintaining of a contemporaneous logbook, a report typical of business reports or technical journal papers, and an oral presentation with questions and answers to assess 'understanding and achievement.

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 Mathematics and/or science. For non-native speakers of English who do not meet our basic English language test requirement (IELTS 6.0 or equivalent), the University supports the INTO Foundation Programme and guarantees first year entry offers to students on this who achieve the required progression standard.

Stages 1, 2 and 3 are a broadly-based course common to all BEng and MEng Honours streams with all modules compulsory. Students will study a broad range of applied mathematics, engineering sciences, design and manufacturing and management as well as IT skills. BEng students who achieve a 60% average at Stage 2 may transfer to an MEng degree if they wish.

At Stage 3 all students have a 30 credit significant individual project. To obtain an Honours degree it is necessary to pass this project.

Students on the Careers Placement Year/International Study Year programmes 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 – 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. Normally, students must complete one Stage before proceeding to the next. Part-time study is not generally available.

BEng students conclude after Stage 3 (normally 360 credits). BEng students who pass all modules with an overall average of 60% at Stage 2 may transfer to MEng Stage 3 if they wish.

Programme regulations (link to on-line version)

H300-1170U

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 Mechanical Engineering degrees are externally CEng accredited by the Institution of Mechanical Engineers.

Re-accreditation was given by IMechE in 2021. Accreditation is for 5 years and the next re-accreditation visit is due in 2026.

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: https://www.ncl.ac.uk/undergraduate/degrees/#subject
Degree Programme and University Regulations: https://www.ncl.ac.uk/regulations/

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.