The University Of Sheffield.

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	**Programme Title**	General Engineering with an Industrial Placement Year (recruit to) Exit awards: General Engineering (Energy & Sustainability) with an Industrial Placement Year General Engineering (Aerospace) with an Industrial Placement Year General Engineering (Medical Technologies) with an Industrial Placement Year General Engineering (Chemical) with an Industrial Placement Year General Engineering (Civil) with an Industrial Placement Year General Engineering (Electrical) with an Industrial Placement Year General Engineering (Materials) with an Industrial Placement Year General Engineering (Mechanical) with an Industrial Placement Year General Engineering (Software Engineering) with an Industrial Placement Year General Engineering (Systems & Control) with an Industrial Placement Year
2	**Programme Code**	GEEU02 General Engineering with an Industrial Placement Year (recruit to) Exit awards: GEEU05 General Engineering (Energy & Sustainability) with an Industrial Placement Year GEEU07 General Engineering (Aerospace) with an Industrial Placement Year GEEU09 General Engineering (Medical Technologies) with an Industrial Placement Year GEEU11 General Engineering (Chemical) with an Industrial Placement Year GEEU13 General Engineering (Civil) with an Industrial Placement Year GEEU15 General Engineering (Electrical) with an Industrial Placement Year GEEU17 General Engineering (Materials) with an Industrial Placement Year GEEU19 General Engineering (Mechanical) with an Industrial Placement Year GEEU21 General Engineering (Software Engineering) with an Industrial Placement Year GEEU23 General Engineering (Systems & Control) with an Industrial Placement Year
3	**JACS Code**	Engineering (H100) Energy & Sustainability (H221) Aerospace (H400) Medical Technologies (H900) Chemical (H800) Civil (H200) Electrical (H620) Materials (J500) Mechanical (H300)

		Software Engineering (I300) Systems & Control (H660)
4	**Level of Study**	Undergraduate
5a	**Final Qualification**	Master of Engineering (MEng)
5b	**QAA FHEQ Level**	Masters, FHEQ 7
6a	**Intermediate Qualification(s)**	GEEU03 Bachelors of Engineering (BEng) Engineering (accredited for partial CEng) for students not meeting the progression threshold at the end of Year 2 for the MEng or those graduating at the end of Year 3 of the MEng Engineering.
6b	**QAA FHEQ Level**	Bachelor's, FHEQ 6
7	**Teaching Institution** (if not Sheffield)	Not applicable
8	**Faculty**	Faculty of Engineering
9	**Department**	Interdisciplinary Engineering
10	**Other Departments involved in teaching the programme**	Automatic Control and Systems Engineering Chemical and Biological Engineering Civil and Structural Engineering Computer Science Electronic and Electrical Engineering Materials Science and Engineering Mechanical Engineering School of Mathematics and Statistics
11	**Mode(s) of Attendance**	Full-time
12	**Duration of the Programme**	5 years
13	**Accrediting Professional or Statutory Body**	It is intended that the exit awards of the MEng Engineering programme will be accredited by the appropriate professional bodies through the Engineering Council. Accreditation will be sought upon the completion of the first cohort in 2021.
14	**Date of production/revision**	January 2022, March 2023

15. Background to the programme and subject area

At the inaugural *Global Grand Challenges Summit* in 2013, organised by the Royal Academy of Engineering in partnership with the national engineering academies of the US and China, a keynote address on Engineering Education highlighted that big engineering challenges are no longer solved by individuals, rather they are solved by collaboration and team working. Hence, "Modern engineering education needs to be about problem-solving, being collegiate and global and it needs to be inspiring"[1]. A recent review by senior members from across the engineering community noted that "Engineering is increasingly interdisciplinary, and traditional definitions and boundaries within engineering have become much less relevant" and "more could be done to improve the multidisciplinarity of engineering courses". The report[2] highlighted (i) "the extraordinary breadth of engineering; from nano-structures to mega-structures; from advances in nanotechnology to major tunnelling projects; and in applications as diverse as cancer fighting drug delivery systems and the next generation of smartphone technology" and (ii) the "importance of university education in delivering the core skills required by the main engineering disciplines while enabling students to succeed in the increasing interdisciplinarity of the real world and meeting the needs of a diverse range of employers".

Engineering education should be problem and project based, creative, collaborative and interdisciplinary, global in outlook and inspiring. Although science and maths are the underlying disciplines for engineering, design is at the centre. The MEng General Engineering with Year in Industry programme has a broad first two years covering topics relevant to the full range of engineering disciplines – from nanotechnology to civil engineering infrastructure. Students are taught as a separate cohort in the first two years (but join other engineering students for some classes) and cover the fundamental principles underpinning all engineering disciplines. The early years of the programme introduce students to the breadth of engineering and the range of specialisms available for further study. Towards the end of Year 2 students will decide which area they wish to pursue in Years 3 and 5: Aerospace Engineering, Medical Technologies, Chemical Engineering, Civil Engineering, Electrical Engineering, Materials Science & Engineering, Mechanical Engineering, Software Engineering, and Systems & Control Engineering. Students graduate with a MEng in General Engineering Year in Industry with the chosen specialism shown in parentheses. In addition, students will have the opportunity to remain on the

interdisciplinary MEng General Engineering with Year in Industry or choose an interdisciplinary specialism focussed on Energy and Sustainability. Students will spend Year 4 on an industrial placement where they will have the opportunity to apply and develop their knowledge, understanding and skills in a real world environment.

The structure of this programme ensures that, irrespective of the specialism a student decides to pursue in the final years of the degree, they will possess an appreciation and understanding of the breadth of engineering and be well equipped to tackle the interdisciplinary nature of real world challenges.

1. Global Grand Challenges. A report on the London 2013 Summit. Royal Academy of Engineering. Published by the Institution of Engineering and Technology.
2. The Universe of Engineering – A Call to Action. Royal Academy of Engineering. October 2014.

16. Programme aims

The programmes are designed to fulfil the University's mission to provide students from diverse backgrounds with the highest quality education in a research-led environment, maximising employability, innovation and globally-recognised graduate skills, putting graduates at the cutting edge of their discipline and equipping them for their future. The programmes are also designed to fulfil the educational requirements of the Engineering Council for Chartered Engineer status.

The aim of the MEng General Engineering programme is to create graduates who will become the future leaders and innovators in the engineering economy by:

1. providing teaching that is informed and invigorated by the research and scholarship of its staff and alert to the benefits of student-centred learning;
2. providing a comprehensive knowledge and understanding of engineering, together with a more detailed and critical understanding in selected areas of study drawn from departments across the Faculty;
3. developing a systematic and creative approach to solving complex problems including deciding on and evaluating appropriate methodologies and taking account of a wide range factors and uncertainty;
4. developing in students initiative, independence of thought, critical thinking, intellectual curiosity, ethical awareness and the business and wider skills necessary for a professional in engineering or a related field;
5. developing in students a diverse range of subject-specific and generic skills appropriate to graduate employment both within and outside engineering, including personal responsibility;
6. enabling students to maximise their potential and imparting in them a commitment to lifelong learning and continuing professional development;
8. satisfying the academic and practical requirements for the award of Chartered Engineer status by meeting the requirements of the Engineering Council Accreditation of Higher Education Programmes (AHEP 3) in line with the UK Standard for Professional Engineering Competence;
9. provide students with direct experience of working in an engineering company and applying their engineering knowledge and skills within a real working environment.

17. Programme learning outcomes

Knowledge and Understanding:

Upon successful completion of the programme, students will be able to demonstrate knowledge and understanding of (link to the Engineering Council AHEP3 Learning Outcomes indicated in the final column):

K1	Scientific principles and methodologies that underpin engineering and related disciplines;	SM1m
K2	Mathematical, computational and statistical methods and models relevant to engineering and an appreciation of their limitations;	SM2m, SM5m
K3	Design processes and methodologies used in engineering;	D5, D7m
K4	Business, customer and user needs, including considerations such as the wider commercial, economic and social context of engineering processes and the requirement for engineering to promote sustainable development;	D1, D5, EL2, EL4, P1
K5	The need for a high level of professional and ethical conduct in engineering, professional codes of conduct and how ethical dilemmas can arise;	EL1m

K6	Management techniques, including project and change management, their limitations and how they may be applied appropriately in engineering; different roles within an engineering team;	EL3m, P11m
K7	Risk issues, including health & safety, environmental and commercial risk, and risk assessment and management techniques;	EL6m
K8	Relevant legal requirements governing engineering activities, including personnel, health and safety, contracts, intellectual property rights, product safety and liability issues and an awareness that these may differ internationally;	EL5m, P5
K9	Key drivers for business success, including innovation, calculated commercial risks and customer satisfaction;	EL7m
K10	Characteristics of particular equipment, processes, or products and a wide range of engineering materials and components;	P2m
K11	Technical literature and other information sources;	P4m
K12	Current practice, its limitations and likely new developments, appropriate codes of practice, industry standards and awareness of quality issues and their application to continuous improvement;	SM4m, P6, P7, P9m
K13	How a company operates in detail and experience of working as a professional engineer in an industrial environment.	EA1m, D1, EL1m, EL5m, EL7m

Skills and Other Attributes:		
Upon successful completion of the programme, students will be able to demonstrate the ability to (link to the Engineering Council AHEP3 Learning Outcomes indicated in the final column):		
S1	Apply and integrate knowledge and understanding across a range of engineering and non-engineering disciplines and the ability to evaluate them critically and apply them effectively in engineering projects including investigating new and emerging technologies;	SM3m, SM6m, EA1m, EA5m, P1
S2	Apply engineering principles, analytical methods and modelling tools to undertake critical analysis of key engineering processes including identifying, classifying and describing the performance of systems and components;	EA2
S3	Apply quantitative and computational methods, including understanding their limitations, in order to solve engineering problems;	EA3m, G1
S4	Apply an integrated or systems approach to solving complex engineering problems;	EA4m, G1
S5	Extract and evaluate pertinent data, to apply engineering analysis techniques to the solution of unfamiliar problems, to work with information that may be incomplete or uncertain and understand how to mitigate against this;	EA6m, D3m, P8m
S6	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health and safety, security and risk issues; intellectual property; codes of practice and standards;	D2
S7	Apply advanced problem-solving skills, technical knowledge and understanding to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal;	D4, G1
S8	Apply and adapt design processes and methodologies to generate innovative designs for products, systems, components or processes to fulfil new needs and in unfamiliar situations; plan and manage the design process, including cost drivers; evaluate outcomes and commercial risk;	D5, D7m, D8m
S9	Communicate their work to technical and non-technical audiences;	D6, G1
S10	Apply relevant practical and laboratory skills;	P3
S11	Apply engineering techniques taking account of a range of commercial and industrial constraints;	P10m

S12	Exercise initiative and personal responsibility as a team member or leader including monitoring and adjusting a personal programme of work; plan self-learning and improve performance;	G2, G3m, G4, P11m
S13	Appreciate how an engineering company operates, work effectively as part of a team within a company and apply engineering knowledge and understanding to address real world problems.	D6, G1, G2, G3m, G4

18. Teaching, learning and assessment

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

Lectures and Seminars are presentations to a class of students by a lecturer. The purpose of a lecture is to motivate interest in a subject, to convey the core concepts and information content succinctly and to point students towards further sources of information. Lectures are interactive and students are encouraged to ask questions at suitable points. Students are expected to take notes during lectures, adding detail to published course materials (which should be printed and brought to the lecture, when provided in advance on electronic media).

The transition to self-motivated learning is encouraged through specialist teaching materials such as lecture handouts or copies of lecture slides, supplied via MOLE. Set course texts and background materials are available through the University libraries, at bookshops and also via the Internet. Active learning is fostered and promoted through engagement in practical work, such as exercises, assignments and projects.

Practical/Laboratory Classes introduce experimental methods and provide opportunity for developing team-working and communication skills. Students gain essential practical skills in the use of equipment, design and conduct of experiments, and use of appropriate analysis tools. Includes computer laboratories where students learn to work with computers, programming, software engineering or use of software tools. Laboratories also reinforce lecture material and demonstrate theoretical concepts in a practical context and subject to limitations and uncertainty.

Tutorials and Problem-Solving Classes are sessions conducted by a lecturer with a class of students, in which exercises are completed interactively and solutions are provided within the period. The purpose of such a class is to help students engage with, and assimilate the material presented in lectures, start to apply this knowledge and develop problem solving skills. These classes also provide students with the opportunity to resolve issues with their understanding of the lecture material.

Coursework Assignments can be individual or connected exercises in which the student is tasked with conducting a study, the design and implementation of a software system to perform a given task or the researching of a body of information. The results of this work are evaluated by the student and a report submitted of the work carried out.

Design Classes enable students to work on ‘open-ended’ and often loosely-defined problems related to real engineering situations. They also provide good opportunities for developing team-working and communication skills as well as individual skills.

Group Design Project offers the opportunity for students, working in groups, to apply their detailed engineering knowledge and understanding to a complex, open-ended, interdisciplinary design problem. Students will be expected to take account of a wide range of factors, including social, economic, sustainability and ethical, and use their initiative, creativity, critical thinking to apply appropriate design and technical skills and methodologies. Students will develop and apply an integrated and systems engineering approach together with appropriate project management tools, time management, team working and communication skills.

Individual Investigative Project is an individual research and/or industrial project at the frontiers of engineering. It is completed under the supervision of a member of academic staff and provides an excellent opportunity for a student to pull together every aspect of their development during the degree. Students will be expected to demonstrate initiative, creativity and a wide range of technical knowledge and understanding and skills appropriate to the project.

Industrial Placement will provide students the opportunity to develop their technical knowledge and understanding and wider skills in an industrial setting. Students will learn from a professional mentor and other employees.

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

Written Examinations are used in many modules as the major assessment method and assess students' knowledge and understanding and problem solving skills.

Laboratory Exercises are assessed in some modules (or may be assessed via associated coursework assignments – see below). These are used to assess the development of skills, appropriate use of laboratory equipment and experimental design. These can be formative, summative or pass/fail.

Coursework Assignments are widely used in design studies, computational exercises, laboratory reports, essays or other work designed to assess the understanding of the module. Assignments are mainly undertaken on an individual basis but are sometimes carried out in small groups. Some modules use coursework assignments as the only or main method of assessment whilst others have this as a minor part with a written examination forming the major part of the overall assessment.

Oral and Poster Presentations are used in some coursework assignments and projects in order to assess the development of presentation and communication skills. These can be conducted by individuals or groups.

In-Class/Online Tests are small tests conducted either during the main teaching periods or in students' own time to assess progress and understanding; they supplement more formal examinations. These can be formative or summative.

Group Design Project provides an opportunity to develop the skills required for professional working and will include assessment of technical and wider knowledge and understanding, professional skills, project management and group work. Specific assessment will include reports, oral and poster presentations and typically some form of peer assessment.

Individual Investigative Project is assessed on the student's commitment and progress throughout the project, technical knowledge and understanding, professional and wider skills including critical analysis, independence and initiative. Specific assessment will include reports and presentations.

Self/Peer assessment is used in some modules to assess individual contributions during group work. Students peer assess each other using well defined methodologies, e.g. WebPA. The lecturer will oversee this process and moderate peer assessment as appropriate.

Placement journal and report will be used to assess the performance of the student on the Year in Industry placement. These will assess the student's reflection on their work experience, understanding of the company and their contributions during the placement.

LEARNING OUTCOME (abbreviated - see Section 17 for full text)	TEACHING / LEARNING									ASSESSMENT							
	Lectures	Practical/laboratory classes	Tutorials /examples classes	Coursework assignments	Design classes	Group design project	Individual project	Industrial placement	Written examinations	Laboratory exercises	Coursework assignments	Oral and poster presentations	Class tests	Group design project	Individual proejct	Self/peer assessment	Placement journal and report
K1 Fundamental principles	●	●	●	●	●	●	●	●	●	●	●		●	●	●		
K2 Mathematics	●	●	●	●	●	●	●	●	●	●	●		●	●	●		
K3 Design processes	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●
K4 Business, customer and user needs	●			●		●	●	●	●		●	●		●	●		●
K5 Professional conduct	●	●		●	●	●	●	●		●	●	●		●	●	●	●
K6 Management	●			●	●	●	●	●			●	●		●	●	●	●
K7 Risk	●	●		●	●	●		●		●	●	●		●	●		●
K8 Legal requirements	●	●		●		●		●	●	●	●	●		●	●		●

K9 Business success	●			●		●		●			●	●		●	●		●
K10 Characteristics of equipment		●		●	●	●	●	●		●	●			●	●		
K11 Technical literature		●		●	●	●	●	●		●	●	●		●	●		
K12 Current practices	●	●		●	●	●	●	●		●	●	●		●	●		●
K13 Company operations								●									●
S1 Apply and integrate knowledge	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●
S2 Apply engineering principles	●	●	●	●	●	●	●	●	●	●	●		●	●	●		●
S3 Quantitative methods	●	●	●	●	●	●	●	●	●	●	●		●	●	●		
S4 Systems approach	●			●	●	●	●	●	●		●	●		●	●		●
S5 Extract and evaluate data	●	●		●	●	●	●	●	●	●	●			●	●		
S6 Problem solving	●	●		●	●	●	●	●	●	●	●	●		●	●		●
S7 Creative solutions		●		●	●	●	●	●		●	●	●		●	●		●
S8 Design processes				●	●	●	●	●			●	●		●	●		●
S9 Communication				●	●	●	●	●			●	●		●	●		●
S10 Practical skills		●			●	●	●	●		●				●	●		●
S11 Industrial context				●		●	●	●			●	●		●	●		●
S12 Personal responsibility					●	●	●	●						●	●	●	●
S13 Application to industry placement								●									●

19. Reference points

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

Subject Benchmark Statements
https://www.qaa.ac.uk/quality-code/subject-benchmark-statements

Framework for Higher Education Qualifications (2014)
https://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf

UK Quality Code for Higher Education (the Quality Code)
http://www.qaa.ac.uk/assuring-standards-and-quality

University Vision
https://www.sheffield.ac.uk/vision

Learning and Teaching Strategy (2016-21)
https://www.sheffield.ac.uk/polopoly_fs/1.661828!/file/FinalStrategy.pdf

The Accreditation of Higher Education Programmes: UK Standard for Professional Engineering Competence, Engineering Council
http://www.engc.org.uk/standards-guidance/standards/accreditation-of-higher-education-programmes-ahep/

In assessing the learning outcomes, the level of performance, e.g. the extent of knowledge and depth of understanding, will be compliant with guidance given in the above references.

The research interests and research strategy of the contributing departments.

Contributions from the Industrial Steering Committee.

20. Programme structure and regulations

The degree structure is modular. At each level students study modules totalling 120 credits. All modules in Years 1 and 2 are 15 credits. In Years 3 and 4 the modules vary in size but are typically 10, 15 or 20 credits with the exception of the 30 credit group project in Year 3 and 45 credit individual project in Year 4.

During the first two years, the syllabus is unique to this programme although some modules may also be taken with engineering students on other programmes in the Faculty of Engineering. The focus of Years 1 and 2 is to give students a broad background in all aspects of fundamental science and engineering that underpin the full range of engineering disciplines. By the end of Year 2 students will be well equipped to specialise in Years 3 and 4. A particular feature of this degree programme is the Interdisciplinary Engineering Design modules undertaken in Years 1 and 2. These will provide students a unique perspective on interdisciplinary engineering, draw analogies between engineering disciplines and develop a systems approach to engineering.

In Year 1 all modules are core (compulsory). Modules will provide the core foundations of engineering and fundamental skills to succeed in the rest of the degree programme. A coherent strand of laboratories will be provided across the modules that develop appropriate skills, reinforce lecture content and demonstrate interdisciplinary links between modules. Students undertake 'Engineering Applications' which covers basic manufacturing processes and workshop tools, and is a requirement for accreditation, as well as a short course in engineering drawing and computer-aided design. Students also participate in a compulsory week-long 'Global Engineering Challenge'. Based on the Engineers without Borders Challenge (a national competition for engineering undergraduates), this gives all first-year engineering students at the University the opportunity to work together in teams to tackle a real-world problem with a global perspective. Formal credits are not awarded for participation in the Challenge Week; however, it is vital for developing the technical competence, understanding of global context and the professional skills that are the hallmark of an excellent engineer.

In Year 2 all modules are core and will build on the modules in Year 1 by further developing students' knowledge, understanding and skills. A coherent strand of laboratories will be provided across the modules that develop appropriate skills, reinforce lecture content and demonstrate interdisciplinary links between modules. Students also take part in a compulsory week-long project called 'Engineering – You're Hired'. Working again with students from other engineering disciplines, this project enables them to put their skills in collaborative working into practice to solve a technical case-study. Formal credits are not awarded for participation in the project week; however, it enables students to develop and demonstrate many of the key general skills required by employers, including entrepreneurial problem solving, accomplished communication, and cultural agility.

Provided students meet the progression threshold (54.5 % in Year 2) at the end of Year 2 students will have the option to specialise and will transfer to one of the following degrees:

GEEU07 MEng General Engineering (Aerospace) with an Industrial Placement Year – students specialising in Aerospace will undertake a flight test course during Year 3 or 5.

GEEU09 MEng General Engineering (Medical Technologies) with an Industrial Placement Year.

GEEU11 MEng General Engineering (Chemical) with an Industrial Placement Year.

GEEU13 MEng General Engineering (Civil) with an Industrial Placement Year– students specialising in Civil Engineering will undertake a surveying course during year 3.

GEEU15 MEng General Engineering (Electrical) with an Industrial Placement Year.

GEEU17 MEng General Engineering (Materials) with an Industrial Placement Year.

GEEU19 MEng General Engineering (Mechanical) with an Industrial Placement Year.

GEEU21 MEng General Engineering (Software Engineering) with an Industrial Placement Year.

GEEU23 MEng General Engineering (Systems & Control) with an Industrial Placement Year.

In addition students will have the opportunity to remain on a "general" interdisciplinary engineering Year 3 and 4. These students will graduate with:

GEEU02 MEng General Engineering with an Industrial Placement Year.

or to choose an interdisciplinary specialism focussed on energy and sustainability.

GEEU05 MEng General Engineering (Energy & Sustainability) with an Industrial Placement Year.

Students will take modules in Years 3 and 5 relevant to their chosen specialisation alongside students in the appropriate departments, developing advanced knowledge and understanding. Depending on their chosen specialisation some flexibility of choice of modules will be available to students.

In Year 3 students who do not secure an industrial placement may transfer to the four-year MEng in General Engineering (Specialism).

In Year 3 all students will undertake an interdisciplinary group project (30 credits). A number of projects will be offered covering key interdisciplinary areas and that ensure accreditation requirements are met by the relevant accrediting bodies. The projects will be overseen by academic members of staff and may include industrial involvement.

In Year 4 students will undertake a minimum 38 week industrial placement. Students will receive support in securing the placement. Students will maintain a skills-based journal whilst on placement and will submit a short report at the end of the placement. The placement year is assessed as pass or fail. If a student fails this year they will transfer to the MEng in General Engineering (Specialism).

In Year 5 all students will undertake an individual investigative project motivated by industry or research

interests. This project will be supervised by a member of academic staff and will allow students to specialise in an area of their choice.

The weightings of each year towards the overall classification of the degree are:

Year 1	0
Year 2	20%
Year 3	40%
Year 4	0
Year 5	40%

Students who do not meet the progression requirement of 54.5 at the end of Year 2 will be transferred to the BEng General Engineering and will undertake a general Year 3 and a 30 credit individual project.

Students who graduate after Year 3 of the MEng General Engineering with Year in Industry will receive the BEng General Engineering.

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

Year 1: Students will consolidate their mathematical and scientific knowledge and be introduced to the fundamentals of engineering. They will undertake laboratory work and will learn to evaluate and interpret data, and present the results in a clear and reliable manner. They will also undertake design and problem-solving activities, both individually and in small groups, which require conceptual thinking, simple analysis, logical thought, judgment and the clear presentation of their ideas, and which will develop their awareness of the global dimension to many real-life engineering problems. They will develop their independent learning and team-working skills. Students will gain laboratory experience across a range of disciplines in the use of a wide variety of equipment. A short course in engineering drawing and computer-aided design will enable them to present and understand engineering manuals and computer generated drawings prepared to industry standard conventions. Through Personal Tutorials students will develop professional skills, including professional conduct, the avoidance of unfair means, and how to prepare and deliver oral and written presentations.

Year 2: Students will continue the core studies introduced in Year 1 and will develop a more extensive knowledge and understanding of the broad subject areas of engineering and also in the appropriate areas of mathematics. They will be applying these to more advanced laboratory work and to design activities. They will continue to develop their independent learning and communication skills and their ability to work in teams. Towards the end of Year 2 students will decide which specialist area of engineering they wish to pursue in Years 3 and 4.

Years 3 and 5: Students begin to study, in depth, their chosen area of specialisation. By this stage students are expected to be self-motivated, efficient and organised independent learners. They will undertake a group design project that enables them to demonstrate their engineering knowledge, design abilities and also their project management, inter-personal and communication skills. Each student undertakes an individual investigative project through which they demonstrate the full range of personal, communication and academic skills they have developed during the degree. The taught modules continue to be appropriate to the student's chosen specialism by taking modules that are at the cutting edge of their discipline.

Year 4: Students will spend a minimum of 38 weeks in an engineering company. They will develop a range of engineering and professional skills in a real company and apply their knowledge and understanding to solving real engineering problems. They will further develop their specialist knowledge and understanding in both technical and wider disciplines appropriate to the company. Students will develop self-reflection, independence, initiative and team working skills in an industrial environment. They will also further develop their communication skills.

On successful completion of the programme: Students have obtained the necessary academic qualification and practical engineering applications experience to become a Chartered Engineer. Full Chartered Engineer status requires appropriate experience working as a graduate engineer. Students will be well prepared for a career in their chosen field of engineering, or other engineering sectors, as well as a wide range of other graduate careers.

22. Criteria for admission to the programme

Detailed information regarding admission to programmes is available from the University's On-Line Prospectus at:

MEng Engineering with Year in Industry - https://www.shef.ac.uk/prospectus/courseDetails.do?id=H1042016

23. Additional information

MEng General Engineering at Sheffield has an academic Director of Undergraduate Studies, who is responsible for overseeing the degree, and an administrative team who deal with its day-to-day running. They are all available to provide general help and advice on all aspects of the degree and university life. Every student has a Personal Tutor who is an academic member of the staff in one of the engineering departments participating in the degree, and who acts as a professional mentor to guide, help and support the student. This includes advising on module choices, career decisions and providing references. Students see their Personal Tutor at least once fortnightly in the first year, at least three times a semester in Year 2 and at least once per semester in Years 3 and 4.

Students gain part of their practical experience through: (1) practical hands-on workshop practice experience – this is a requirement for accreditation; (2) a short course in engineering drawing and computer-aided design.

The University and the Faculty of Engineering place strong emphasis on ensuring graduates have all the attributes necessary for success in their chosen career. Students are assisted in their self-development and continuing professional development through activities embedded throughout the entire degree, including Personal Tutorials, the 'Global Engineering Challenge' and the 'Engineering – You're Hired' project, and via various taught modules. Students benefit from wide ranging individual support and guidance to assist them in securing industrial placements and jobs. This includes Careers events for final and penultimate year, which provide career inspiration and guidance, and enable our students to meet potential employers and to refine their CVs and understanding of how to succeed in the application process. This reinforces the careers support available throughout the degree from the University's Careers Service (http://www.shef.ac.uk/careers/students). This support continues after students have graduated. We maintain strong links with our graduates who provide input into our courses and provide practical help to students in preparing for employment.

Students are expected to find their own placement (either in the UK or abroad), although we are able to assist through the many contacts University staff have with industry. We regularly update students on companies with suitable placements. The IPO has a Student Placement Officer and the Faculty of Engineering has a Placements Team who support students in Years 2 and 3 on CV writing, strategies for securing a placement, and the practicalities of placement work. It is expected that students receive a salary for their work. The Year in Industry Tutor and the administrative staff maintain regular contact with the student and the placement provider throughout the year to check that the placement is going well. For all UK- and EU-based placements, a member of academic staff also visits the company.

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.