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Subject Benchmark Statement: Engineering

The Basics

This document is a summary of the Subject Benchmark Statement for Engineering. It is specifically designed to provide a short and accessible overview of the main statement for students, employers and academics. It is not intended to replace or alter the Subject Benchmark Statement, which should be referred to in the design and approval of courses and when any further detail is required.

Subject Benchmark Statements are an established part of the quality assurance arrangements in UK higher education as non-regulatory, sector-owned reference points, developed and written by academic communities on behalf of their subject. Subject Benchmark Statements describe the nature of study and the benchmark academic standards expected of graduates in specific subject areas, and in respect of particular qualifications. They provide a picture of what graduates in a particular subject might reasonably be expected to know, do and understand at the end of their course or programme.

Subject Benchmark Statements are presented in four sections. The first section outlines the contextual information - providing the operational landscape, and boundaries, of the subject discipline. This includes consideration of the ways in which the discipline addresses wider social goals specifically in relation to: equality, diversity and inclusion (EDI); the requirements of disabled students; education for sustainable development (ESD); and, enterprise and entrepreneurship.

Section 2 covers distinctive features of the course, including curriculum design, partnership arrangements, flexibility of delivery, progression and ongoing monitoring processes. The third section explains any features relevant to teaching, learning and assessment activities for the subject. The final section describes the benchmark standards of achievement reached by all graduates with a bachelor's degree with honours in the subject, integrated master's degrees and postgraduate master's degrees.

Why study a degree in Engineering?

Engineers seek to create, develop and apply technology, processes and systems which enhance the lives of people and protect them from harm. The word 'engine' stems from a triad of ingenuity, artfulness and creativity, and the engineers of today require each of these skills alongside scientific and mathematical principles to work as part of a complex techno-socio system of innovation. A core aspect of the engineering mind is the ability and desire to put things together, to design things that work and to design things that work better.

Engineering innovation is central to delivering equitable and sustainable solutions to the most pressing global challenges. Sustainable solutions are not merely about the environment, but also addressing social and economic concerns at all levels in order to create a more robust and resilient world. Particular emphasis has been placed within the Statement on the ways in which engineers can meet the challenges defined in the United Nations' Sustainable Development Goals together with the global challenges of cybersecurity, infrastructure, manufacturing, mobility and energy. Engineers of the future must be adaptable to new and emerging challenges as these arise and, as a consequence, the engineering curriculum continues to evolve.

Engineering degrees are designed to equip graduates with integrated knowledge, skills and judgement which will enable them to begin a professional career in the engineering sector. Engineering degrees usually have some industrial involvement in their design and delivery. Degrees cover mathematical and scientific fundamentals together with the application of these fundamentals through design and/or realisation of products and systems. Graduate engineers possess skills which are attractive to a wide range of employers and, as a result, they are highly sought after.

What are the main teaching and learning approaches in Engineering?

Engineering degree courses are wide ranging and diverse in nature. Engineers are, by their very nature, professional problem-solvers who are able to apply their knowledge and skills to a wide range of applications. Consequently, the content of their courses cannot be easily prescribed. This diversity of practice is a strength of the subject of Engineering.

The aim of all Engineering courses is to prepare the learner with the academic tools, digital and practical skills, necessary mindset and the ethical framework needed to become a practising engineer. The practical component of any Engineering course is of particular significance as this distinguishes it from other applied sciences.

How are students assessed?

The assessment of Engineering courses includes a mix of methods that are accessible to disabled students and students from varying educational and cultural backgrounds within different learning situations. Assessment methods which reflect the practical nature of engineering, the appropriate academic challenge and continued professional development are encouraged. The assessment of practical work is most likely to be through design exercises and laboratory classes. Other assessment approaches typically used include projects (individual and group), essays, examinations and presentations.

Where individual students may be disadvantaged by particular assessment methods, adjustments to those assessments are considered in conjunction with the provider's procedures, while ensuring fairness across the full cohort. The procedures used for assessment cover the subject knowledge (breadth and depth), abilities and skills developed through the degree course, and assessment design is aimed at alignment with teaching and learning approaches and desired learning outcomes.

Benchmark Standards

The minimum threshold, typical and excellent standards that a student will have demonstrated when they are awarded an honours degree, integrated master's degree and postgraduate master's degree in Engineering are outlined on **pages 19 to 22** of the full Subject Benchmark Statement. The vast majority of students will perform significantly better than the minimum threshold standards. Each higher education provider has its own method of determining what appropriate evidence of this achievement will be and should refer to Annex D: Outcome classification descriptions for FHEQ Level 6 and FQHEIS Level 10 degrees. This Annex sets out common descriptions of the four main degree outcome classifications for bachelor's degrees with honours – 1st, 2.1, 2.2 and 3rd.

The full statement was developed by subject experts drawn from across the sector. Details of the Advisory Group can be found on **page 25** of the full Statement.

Read the full Subject Benchmark Statement

The full Subject Benchmark Statement is available on the QAA website.

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Subject Benchmark Statements are published in QAA's capacity as an expert quality body on behalf of the higher education sector.

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