



Purpose statement for 14-16 Engineering

28th November 2011

Engineering today

The UK is in the business of high added-value, high-technology, sustainable engineering and manufacturing. In addition it needs to maintain capability in civil engineering, engineering construction, electricity production and distribution, gas, water and sanitation, transportation, process manufacture, nuclear, electronics, food manufacture, fuels, high-value materials, consumer products, IT, software and healthcare services. All depend on engineering knowledge and skills and all are signalling increasing demand and experiencing a scarcity of supply of suitably qualified young people.

What is engineering for 14- to 16-year-olds?

Engineering is one of the STEM (science, technology, engineering, mathematics) subjects prioritised by Government and employers in the UK and in every successful nation. It is readily associated with progression through sixth forms and apprenticeships, further and higher education and towards rewarding employment in sectors of the global economy that are vital to sustainable growth.

What is the relevance of engineering to 14- to 16-year-olds?

Engineering provides a creative and practical curriculum vehicle, enabling the application of mathematics and science to realistic problems that involve purposeful design, innovation, technology, computing, the realisation of functional artefacts and commercial enterprise. It directs pupils to see how they can use what they have learned to solve problems and improve lives.

14-16 engineering curricula promote successful progression to a wide range of next steps in education and training. Building on a strong foundation in science, technology and mathematics in Key Stages 1-3, engineering curricula provide an inspirational context for STEM and an opportunity for pupils to explore their identity as an engineer or technician through the solution of realistic technical problems.

Respected¹ engineering qualifications for 14- to 16-year-olds, such as the Principal Learning in the 14-19 Diploma in Engineering provide the STEM learning outcomes required for progression to STEM apprenticeship, further education or university along with significant opportunities to design, create, and test engineered products. These engineering qualifications at Key Stage 4 are entirely relevant to pupils on academic pathways.

¹ A list of qualifications at Level 1 and 2 can be found in 'Respected', Technical Qualifications for use in University Technical Colleges. Baker-Dearing Education Trust / Edge Foundation / Royal Academy of Engineering, 2011.

What is the purpose of engineering for 14- to 16-year-olds?

- To link theory and practice in STEM, engaging with employers and industries to provide a creative engineering environment in schools through authentic, directly relevant applied learning
- To provide a worthwhile addition to the education of a broad range of pupils
- To foster an interest in and understanding of engineering approaches to problem solving
- To appreciate engineering as an economic and social benefit
- To maintain UK engineering leadership in the world by inspiring the next generation of engineers and technicians
- To help pupils understand the personal value of careers in engineering
- To increase the numbers of young people, female and male, who want to go on to be engineers and technicians

What is the content of engineering for 14- to 16-year-olds?

14- to 16-year-olds should learn about: engineering enterprise and the diverse career opportunities available; engineering design and development; sustainability; computerised manufacturing and process control; planning and producing engineered solutions; electronics and electrical principles; modern production processes; engineering maintenance.

ENDS

This statement of purpose was drafted through the cooperation of the National Committee for 14-19 Engineering Education and the Royal Academy of Engineering.

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The National Committee for 14-19 Engineering Education

The Committee is convened by The Royal Academy of Engineering and has 65 members drawn from 51 organisations. These include engineering employers, universities, FE Colleges and training providers, sector skills councils, professional engineering institutions, learned mathematical societies and organisations that promote STEM subjects in schools. It operates entirely on voluntary effort and engineering employers have chosen to invest time and effort in it. It is fully independent of any single organisation.

The Royal Academy of Engineering

Founded in 1976, The Royal Academy of Engineering promotes the engineering and technological welfare of the country. Our fellowship – comprising the UK's most eminent engineers – provides the leadership and expertise for our activities, which focus on the relationships between engineering, technology, and the quality of life. As a national academy, we provide independent and impartial advice to Government; work to secure the next generation of engineers; and provide a voice for Britain's engineering community.

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