CURRICULUM SUBJECT: Cambridge National Engineering Design
SUBJECT CONTACT: M ZULKARNAIN

"Enjoy failure and learn from it. You can never learn from success."– James Dyson

CURRICULUM INTENT

Why is it important that pupils at Vale of York study Engineering Design?
Our Cambridge National in Engineering Design will encourage students to understand and apply the fundamental principles and concepts of Engineering Design, including the design process, types of drawings, influences on design, and the use of Computer Aided Design (CAD). Students will develop learning and practical skills that can be applied to real-life contexts and work situations. *Students will develop independence and confidence in using skills that would be relevant to the Engineering design and development sector and more widely. In Engineering design students will learn a lot of transferable skills from analytical skills, research skills to team working skills. Due to the versatility of Technology, students will find career paths within their community or further afield.* *York is very fortunate to be a leading city in the UK for STEM, being home to York Science Park, Science City York , the National STEM Centre, and the National Science Learning Centre. This provides an abundance of additional opportunities for pupils with an active interest in this area of the curriculum.*

CURRICULUM STATEMENT

Cambridge National Engineering Design deepens critical thinking and passion to design and make in a real life context. It is an inspiring, rigorous and practical subject which prepares all young people to live and work in the designed and made world.

CURRICULUM OPPORTUNITIES

Within the formal curriculum	Cambridge National in Engineering Design will improve student's learning in other subjects with the aim of enhancing their employability when they leave education, contributing to both their personal development and future economic well-being. Cambridge National inEngineering Design will equip students with sound specialist knowledge and skills for everyday use. It will also challenge all learners, encouraging independence and creativity.
Links to other curriculum areas	Measuring and orthographic drawing is taught in Technology and Mathematics. Technology uses the same methods and language as Mathematics to ensure students are able to see the link between the two areas. Sustainability is a key topic within Technology that is also covered in Geography
Preparation for adult life	Industrial processes are always referenced and pupils are shown how everyday products are manufactured in different scales of production and by different industrial processes. Sustainability and the role of a designer is also stressed as environmental issues are a hot topic. Students design and make products that can be put to practical use. Students are reminded, constantly, of the need to produce sustainable products and what the role of a designer is in our battle to reduce the carbon emissions that are contributing to global warming. Students have got a wealth of courses in post16. Apprenticeships in construction are currently delivered through Yok College. Other course in post 16 range from A-level Graphics, Design Technology to Electronics to name a few

CURRICULUM SEQUENCE

Key Stage 4:

	Year 10	Year 11
Curriculum time	*5 hours over two weeks*	*5 hours over two weeks*
Curriculum framework	*OCR- Cambridge National* *Two NEA- one of which is a mandatory unit, that are 60% of the overall grade* *Exam 1h15 40% of overall grade* ***Cambridge National in Design Engineering*** ***RO38 Principles of engineering*** *This unit covers the different design strategies and where they are used, as well as the stages that are involved in iterative design.* *OCR set and marked 70 marks (40%) 1h15min written exam* ***RO39 Communicating designs*** *This unit covers techniques in sketching and students gain industrial skill in engineering drawing* *NEA- centre assessed 60 marks (30%)* ***RO40 Design, evaluation and modelling*** *This unit covers how designers can quickly create and test models to develop a prototype of a design.* *NEA- centre assessed 60 marks (30%)*	
Core knowledge & understanding covered	*Improve precision when working with tools and equipment* *June- start NEA*	*Complete first NEA and start second NEA* *exam*
Subject specific skills	*Working safely with specific tools and equipment* *Research skills*	

	Analytical skills *Project management* *Time management*
Personal attributes evolved that support learning	*Independent study through homework and project work* *Resilience - Try, try and try again attitude* *Team work -sharing resources and helping each other* *Decision Making - judging information and ideas from the world around you* *Confidence - it's okay to get it wrong attitude*

Course specification:

Cambridge Nationals Engineering Design
Cambridge Nationals Engineering Manufacture

CURRICULUM IMPLEMENTATION

As an Academy we have a range of clear standards and expectations of our pupils however each subject area has its own individual practices and habits that ensure that it can function to its optimum.

Curriculum delivery:

Cambridge National Engineering builds upon learnt knowledge in KS3 and will further deepen their understanding and application of Technology in a wider world context. Cambridge National Engineering Design is assessed through portfolio work and exam testing.

Homework:

10	*weekly*	*Up to 60 min*	*Homework is based around exam questions, revision techniques or manufacturing diary.*	*Use the e-learning book* *Use the revision book that is available through parentpay* *Ask the teacher or P6*
11	*weekly*	*Up to 60 min*	*Ongoing revision*	

SUPPORTING YOUR CHILD

	Resources to support your child	Relevance - How it helps
Engineering Design	*DT- measuring exercises, free hand sketching, modelling on card, repairing items rather than throwing away.*	*To improve technical skills for practical lessons.*
Exam courses	*Engineering- Revision guide, Focus-e-learning app* *https://www.focuseducational.com/login-to-focus-elearning/*	*To help with ongoing revision*

Link above
https://www.focuseducational.com/login-to-focus-elearning/

WIDER INTEREST

CAD program for designing if you would like to design create like a professional
https://www.onshape.com/en/
https://www.sketchup.com/

Website for York Society of Engineering
https://www.yorksocietyofengineers.org/