Subject	BTEC Engineering
Head of Department	Mrs Ramage
Teaching staff	Mrs Blowman Mr Oliver
Department Vision	Students prepare themselves to be well-rounded professionals, responsible leaders, and lifelong learners through a rigorous engineering education enhanced by interdisciplinary connections in arts, humanities, and science
How students can 'ASPIRE to excellence' in this field	Good practical skills, including drawing and presenting ideas. Interest in mathematics and science. Ability to work to strict deadlines, Awareness of Health and Safety issues.
Rationale behind the curriculum chosen	The UK is regarded as a world leader in engineering, which covers a wide range of exciting and rapidly developing areas such as renewable energy, space, low carbon, aerospace, automotive, agri-food and bioscience. People with engineering skills are always in demand. Between 2010 and 2020, engineering companies are projected to have 2.74 million job openings. North East Lincolnshire have an abundance of opportunities for young people in engineering and manufacturing. Engineering is a huge part of the economy and there are numerous opportunities to study and work in engineering related fields.
Possible Careers	Studying engineering can lead to careers in the Mechanical, Automotive, Aeronautical, Chemical, Electrical, Manufacturing, Marine and Civil Engineering sectors. Fabricator, mechanic, CAD Engineer, Engineering technicians, theses careers are just some of the many 1000's that are part of Engineering.

Key stage 3

Year Group	Topics covered	Dates of assessments	Link to Knowledge Organiser
Year 7	**Knowledge and understanding of Material areas particularly wood:** Creating a birdhouse (linked to the woodland trust) • Arithmetic and numerical computation • SPAG, oracy and literacy • Handling data, Analysis and presentation of performance data – Graphs • Measurement and marking out, creating tessellated patterns • Visualise and represent 2D and 3D forms including two dimensional representations of 3D objects • Quantities, units and symbols/ weights and measures • 6 'r's • Production techniques and systems, domestic an industrial • Contemporary and future scenarios from different perspectives • Morals & ethics	w/c 1st February 2021 w/c 24th May 2021	

Year 8	**Knowledge and understanding of material areas – skills based year** • Computer aided design and manufacturing different products. • Technical drawing. • Functions of mechanical devices, • Different sorts of movement • Types and properties of the following materials: ✓ *Papers and boards* ✓ *natural and manufactured timber* ✓ *ferrous and non-ferrous metals* ✓ *thermoforming and thermosetting polymers* ✓ *natural, synthetic, blended, and mixed fibre*	w/c 1st February 2021 w/c 24th May 2021	
Year 9	G STEM Geography/ science/ technology, engineering & math's **Identify and solve their own and other clients design problems and understand how to reformulate problems into solutions.** • Application of primary and secondary data. • Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations. • Communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical	w/c 30th November 2020 w/c 19th April 2021	

	modelling, oral and digital presentations, and computer-based tools • Sustainability across all disciplines. • Environmental, moral, and ethical impact of waste • Rethinking of design processes – to be environmentally safe. • Ecosystem of design. • How outside influences inform choices & design decisions, considering contemporary and potential future scenarios from different perspectives, such as ethics, moral, budgets and the environment. • Identify SMSC opportunities and constraints that influence the processes of designing and making.		

Key Stage 4

Course Titles (as per specification)	**Component 1: Exploring engineering sectors and design applications.** (Internally assessed) Learners will explore the links between the various engineering sectors and the role of design in the production of engineered products. **Component 2: Investigating an engineering project.** (Internally assessed) Learners will investigate the selection of materials, proprietary components, making processes and disassembly of a given engineered product. They will plan, reproduce, inspect and test a single given component. **Component 3: Responding to an engineering brief.** (Externally assessed in February and May of Year 11) Learners will investigate and create solutions to problems in response to given engineering briefs.		
Year Group	Topics covered	Dates of assessments	Link to Knowledge Organiser

Year 10	Unit 1 Learning Aim: B Design solutions Unit 2 Learning Aim: C Plan and manufacture a product Unit 1 Learning Aim: A Engineering sectors		
Year 11	Unit 2 Learning Aim: B Product disassemble Exam preparation Unit 2 Learning Aim: A Materials, components & processes. Exam preparation		

Enrichment and Useful Websites

Extracurricular opportunities offered (clubs, trips etc)	Chance to attend HETA to complete the practical element of Unit 2 Learning Aim C.
Links to useful website of interest for your subject Area.	https://technologystudent.com http://www.mr-dt.com https://www.bbc.com/bitesize/subjects https://www.howstuffworks.com http://www.tomorrowsengineers.org.uk/

	https://nationalcareersservice.direct.gov.uk/job-profiles/manufacturing-and-engineering