

NCFE Technical Award in Engineering

Year 10 1 2 3 4 5 6 7 8 9 10 11 12

Term 1											
Unit 1	Disciplines Explore the different types of sectors that make up the engineering industry.			Mechanical Engineering Engage in activities exploring how hydraulics, gears and pulleys work. Understand how they are used in industry.			Materials Learn about the main engineering materials used in industry and their applications. This core unit is revisited often and works towards a materials test at the end of each term.		Material Properties Understand how materials behave when exposed to forces, heat, light, electricity and other external influences.		
Unit 2	Intro - Brief An introduction to the course and start of the synoptic project in Year 10.	Analysis and Breakdown Examine the practical challenge set by the exam board and make decisions on how we will manufacture the specified product.		3D CAD Skills Develop skills with 3D CAD using Autodesk Inventor. Learn how to create parts to scale.		3D CAD Parts Begin to create 3D parts of our specified product using CAD.		Material Selection Make informed decisions about the most appropriate materials we will use to manufacture our product.		Manufacturing Understand how to mark, measure remove material with precision and accuracy. Using workshop tools and machinery.	3D CAD Parts Continue to create 3D parts of our specified product using CAD.

Term 2												
Unit 1	Health & Safety Learn about the regulations in the engineering industry and what engineers needs to be aware of to stay safe.			BS8888 Understand what is BS8888 and how engineers use it in engineering drawings.			SI Units Learn about the SI units used in engineering and how this benefits industry and the manufacturing process.		Forces A focus look on the different forces that can be applied to materials and products.		Equations Understanding how Maths and Science are applied to the development of engineering projects.	Drawing Styles Learn about the various drawing styles that are used in engineering and when each one should be selected.
Unit 2	Risk Assessment Create a full risk assessment of all the manufacturing activities undertaken in the workshop.		Control Measures Explain all control measures in place in our workshop and the precautions we take to minimise risk.		2D CAD Parts Prepare 2D CAD drawings to be used for laser cut acrylic parts.		3D CAD Assembly Create an assembly using the parts created in Autodesk Inventor.		Sketching Techniques Practice hand draw sketching techniques and produce a set of hand drawn orthographic views.		CAD Technical drawings Learn how to create engineering drawing using CAD and produce a full set based on our specified product.	

Term 3													
Unit 1	Manufacturing Processes Develop knowledge of the tools, equipment and manufacturing processes in school and those in industry.		Tools and Equipment Develop knowledge of specific hand tools and specialised task through mini projects and practical challenges.				CAD/CAM Understand how CAD/CAM is used in industry and know about its advantages and disadvantages.						
Unit 2	Tools and Equipment Explain what tools and processes are available in school and what situations that would be used in.			Production Plan Make informed decisions on the most suitable tools and equipment you will use to complete the synoptic project.		Using CAD/CAM Explain what forms of CAD and CAM you have used and explain why you have chosen this method.		CAD/CAM practical Use the 3D printers and Laser cutters in school to fabricate any outstanding CAD/CAM parts for your specified product.		Practical Develop skills while working towards precision and accuracy. Using workshop tools and machinery. Growing independence in workshop practice.		Assembly Final assembly of product quality check for dimensional accuracy.	Inspection Report Complete a full inspection report and evaluation of the product. Outline areas of improvement suggesting how to do this. Reflect back on the overall manufacturing process and highlight successes and modifications we made to our processes.

Year 11 1 2 3 4 5 6 7 8 9 10 11 12

Term 1														
Unit 1	Past paper mock exam Mock exam paper in exam conditions. We will discuss errors, misconceptions and highlighted weak points become revision focus for homework.		Highlighted unit focus Errors and misconceptions highlighted from previous weeks mock paper will be used to select a unit of work to go over again.		Past paper mock exam Mock exam paper in exam conditions. We will discuss errors, misconceptions and highlighted weak points become revision focus for homework.		Highlighted unit focus Errors and misconceptions highlighted from previous weeks mock paper will be used to select a unit of work to go over again.		Past paper mock exam Mock exam paper in exam conditions. We will discuss errors, misconceptions and highlighted weak points become revision focus for homework.		Highlighted unit focus Errors and misconceptions highlighted from previous weeks mock paper will be used to select a unit of work to go over again.		Unit 1 exam window Unit 1 exam will be at some point during November of Year 11. We will go over previous units and routinely check knowledge and practice exam questions leading up to the exam.	
Unit 2	Synoptic Project preparation Unit 2 synoptic project brief is release in the first couple of weeks of December. In preparation we go over the layout and presentation styles of portfolios. We will start some materials testing and research in the workshop to gather data that can be used to make informed decisions.													

Term 2																				
Unit 1	Over term 2 of Y11 lessons throughout the week will be mixed between ICT time completing synoptic project powerpoint slides and workshop time completing practical work. Final deadline of all Unit 2 work is Easter.																			
Unit 2	Material Selection Make informed decisions about the most appropriate materials we will use to manufacture our product.		Tools and Equipment Explain what tools and processes are available in school and what situations that would be used in.		Sketching Techniques Creation of hand draw sketching techniques and produce a set of hand drawn orthographic views.		3D CAD Parts Continue to create 3D parts of our specified product using CAD.		3D CAD Assembly Create an assembly using the parts created in Autodesk Inventor.		Risk Assessment Create a full risk assessment of all the manufacturing activities undertaken in the workshop.		Control Measures Explain all control measures in place in our workshop and the precautions we take to minimise risk.		Production Plan Make informed decisions on the most suitable tools and equipment you will use to complete the synoptic project.		Practical Demonstrate skills while working towards precision and accuracy. Using workshop tools and machinery. Completing hand made parts while finishing off any 2D or 3D CAM pieces.		Inspection Report Complete a full inspection report and evaluation of the product. Outline areas of improvement suggesting how to do this. Reflect back on the overall manufacturing process and highlight successes and modifications we made to our processes.	