Year 10 Engineering | Term 1

Key Question: What are the key skills needed to manufacture remarkable engineered products?'

Topic overview: During the first half term, students will develop a range of key practical skills needed for the course. The key question for this topic is **'What are the key skills needed to manufacture remarkable engineered products?'** This will dovetail theory and practical skills and knowledge.

Students will work with two engineering materials: polymers and metals. They will also experience working with woods. Using these skills they will start to develop and manufacture engineered products.

Skills Development
Knowledge
Mock Assignment
Controlled Assessment
Assessment for Data Drop
Try Now - Assessment Feedback
Skills Development

	Lesson Exploration	Lesson Experience(s)	Knowledge & Skills	Key Words
Week 1: Lesson 1	How do we illuminate an area?	Students will: - create a series and a parallel circuit - use a soldering iron to connect a circuit - create circuit diagrams and be able to solve problems within the diagram		circuit voltage current soldering conductive
Week 1: Lesson 2	What is the best metal to use for……..?	Students will: - identify the different groups of metals - explain the process of metal extraction - suggest appropriate metals for products		extractions iron ore conductive magnetize malleable ductile burr
Week 2: Lesson	How do we cut and shape metals?	Students will:		

1		- develop cutting skills with the use of a: abra saw and hacksaw		risk Assessment waste area ferrous non-ferrous alloy
Week 2: Lesson 2	How do we cut and shape metals?	Students will: - develop shaping skills with the use of different files - develop finishing skills in the use of wet and dry paper		
Week 3: Lesson 1	How do we form metals?	Students will: - explain different metal forming processes - make a mould - cast metal using pewter casting		
Week 3: Lesson 2	What is the polymer to use for……?	Students will: - explain the molecular structure of the different polymer groups - suggest appropriate polymers for a given product based on characteristics		molecules cross links thermoforming thermosetting bite mark risk assessment cutting shaping finishing crude oil extraction fractional distillation
Week 4: Lesson 1	How do you cut and shape polymers?	Students will: - develop skills in using a junior hacksaw and abra saw to cut acrylic - select appropriate files to shape the acrylic - use wet and dry paper to finish the acrylic		
Week 4: Lesson 2	How are polymers moulded?	Students will: - explain the following plastic manufacturing processes: 1. Injection Moulding 2. Blow Moulding 3. Vacuum Forming 4. Extrusion		

		- suggest appropriate manufacturing processes for a given product		
Week 5: Lesson 1	Which wood should you use?	Students will: - describe the characteristics of different groups of woods - explain the process of seasoning		hardwood softwood manufactured board grains seasoning warping sustainable
Week 5: Lesson 2	Assessment	Assessment		
Week 6: Lesson 1	Try Now	Try Now		
Week 6: Lesson 2	How do you cut and shape wood?	Students will: - develop skills in using a coping saw and tenon saw to cut wood - develop skills in using files to shape wood - develop skills in using sand to finish wood		bite mark waste area