



Year 10 Curriculum intent

Provide students with the opportunity to develop a broad knowledge and understanding of Design and Technology. Students will be able to develop their problem-solving abilities through critical thinking and a variety of approaches to design and making scenarios. They will build resilience when things go wrong and be able to analyse their own work to understand how to develop and improve. Students develop their understanding through the complete study of core theory and a specialism both timbers and polymers. Using their detailed knowledge, students then complete their Non-exam assessment in which they respond to a contextual challenge via research, design, making and evaluating.

Year 10 Curriculum Overview

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6
Material characteristics and properties.	Timbers and their categories.	Polymers and their categories.	Industrial processes	Energy generation and storage	Systems approach and mechanical devices
Key Question					
What are the different times of materials we can use and how do their properties determine what they are used for?	What are the different categories of timbers and how are they shaped and joined.	What are the different categories of polymers and how are they shaped and joined.	How do industrial processes help improve the product?	What are the different ways in which we can store and use energy?	How can more advanced electrical and mechanical systems be powered and used in their products?
Key Vocabulary					
Timbers Metals Polymers Forces Properties	Timbers Softwood Hardwood Man-made board Felling Managed forest Sustainable	Polymer Thermoplastic Thermosetting plastic Crude oil Industrial process Repeat process Sustainability	Repeat process Mass production One off production Batch Production Quality control Jigs Templates	Fossil Fuels Renewable Energy Solar Wind Hydro Geothermal Tidal Biomass	Input Process Output Closed loop Open loop Gears Pulleys Levers Linkages

	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1	- The different categories of materials and their subcategories. - The differences between the different categories and what they do. - The different types of forces and how they act on materials. - The different types of testing that can take place on materials.	- Pupils will answer short questions that covers the information they have learnt. - Pupils will do some testing of materials and grade them. - Pupils will do a practical task to test the strength of materials and structures. - Pupils will complete an expert and powerful knowledge quiz. - Seneca homework tasks.	This unit builds on foundational skills acquired in year 7 regarding working with timbers and in year 9 regarding the work on polymers. This feeds into both design and making ability and links directly to GCSE.
2	- The principles of where timber comes from. - The different categories of timber and what they are used for. - The principles of working safely in a woodwork room. - The principles of using tools and equipment safely. - The different types of wood joints that they can use and why they would use them. - Industrial processes that can be used to produce parts.	- Pupils will apply their knowledge to short recall extended writing questions. - Pupils will use their knowledge of Timbers to create a wooden box with different wood joints. - Pupils will use their knowledge of the refine and test process to review their product against the original specifications. - Pupils will use their knowledge to explain how industrial techniques could be used to create the joints. - Seneca homework tasks.	This unit builds on foundational skills acquired in year 7 regarding working with timbers, year 8 clocks and in year 9 regarding the work on polymers and mechanisms. This feeds into both design and making ability and links directly to GCSE.
3	- The principles of where polymers come from and how they are made. - The different categories of polymers. - Industrial processes used to create plastic products. - The principles of working safely in a woodwork room. - The principles of using tools and equipment safely. - The principles of using CAD CAM to help produce a product and why they would use it.	- Pupils will apply their knowledge to short recall extended writing questions. - Pupils will use their knowledge of polymers and create a mobile phone holder. - Pupils will use their knowledge of the refine and test process to review their product against the original specifications. - Pupils will use their knowledge to create parts by CAD CAM. - Pupils will complete an expert and powerful knowledge quiz. - Seneca homework tasks.	This unit provides the foundational knowledge and skills learnt in Year 7 CAD CAM unit and year 8 mood light, design movements unit and in year 9 looking at polymers. It also prepares the students for GCSE Design and Technology.
4	- Why and how Industrial processes are used to create products. - The different types of industrial processes that can be used for different materials. - The principles of using Jigs and Templates to help speed up and improve the quality of a product.	- Pupils will apply their knowledge to short recall extended writing questions. - Pupils will investigate and complete work sheets on industrial processes. - Pupils will use their knowledge to produce a jig and template to make a coat hook. - Pupils will use their knowledge to create parts by CAM. - Pupils will complete an expert and powerful knowledge quiz. - Seneca homework tasks.	This unit provides the foundational knowledge and skills learnt in Year 7 CAD CAM unit and year 8 mood light, design movements unit and in year 9 looking at polymers. It also prepares the students for GCSE Design and Technology.
5	- The differences between fossil fuels and renewable energy. - The principles for how renewable energy works. - The principles of how renewable energies will help the environment.. - The principles of how and why we store energy.	- Pupils will answer short questions that covers the information they have learnt. - Pupils will do some testing with solar panels. - Use Focus software to research different types pf energy. - Pupils will complete an expert and powerful knowledge quiz. - Seneca homework tasks.	is unit builds on foundational skills acquired in year 7 regarding working with timbers, year 8 clocks and in year 9 regarding the work on polymers. This feeds into both design and making ability and links directly to GCSE.
6	- The principles of mechanisms and why they are used. - The principles for different types of motion, levers and linkages and how they make life easier. - The principles of the difference between gears and pulleys and how they make life easier. - The principles of how electronic systems can be used to operate devices and make the world safer.	- Pupils will answer short questions that covers the information they have learnt. - Pupils will do some testing of gears and pulleys. - Pupils will do a practical tasks using levers and micro bit kits to show open and closed systems. - Pupils will complete an expert and powerful knowledge quiz. - Seneca homework tasks.	is unit builds on foundational skills acquired in year 7 regarding working with electronics, year 8 mood lights and in year 9 regarding the work on mechanisms. This feeds into both design and making ability and links directly to GCSE.