KS4 Engineering Curriculum map 2024-2025

Ormiston Sudbury Academy

	Year 10	Year 11
Autumn 1	Aluminium Pen Holder – this project enables students to learn hand tools use and machinery skills. Students also learn how to use 2D CAD. This project is a manufacturing focus task based in the workshop and introduces students to the box folder, centre lathe and milling machine; it continues to build on students' safety knowledge, bench work skills and use of the pillar drill. Students will learn how to: bend sheet materials, face off, drill to accurate depths using a vernier gauge, mill angles, create finished patterns to complete a product's appearance; assemble parts using appropriate screw types and complete a detailed Production Plan.	Final Project. Engineering Theory and Exam Questioning
Autumn 2	Aluminium Pen Holder cont'd, including further 2D CAD skills. Spade Project - this project enables students to develop their skills using hand tools and learn how to heat and shape metal on the brazing hearth. This project is a manufacturing focus task based in the workshop and introduces students to pop riveting, further sheet metal work, assembling of parts and engineering drawing understanding.	Final Project. Engineering Theory and Exam Questioning
Spring 1	Nippy Vice - this project enables students to further develop their machinery skills. Students also continue to learn how to use 2D CAD. This project is a manufacturing focus task based in the workshop and builds on students' use of the centre lathe, milling machine; it continues to build on students' safety, bench work skills and use of the pillar drill. Students will learn how to hard solder (brazing). This project further develops students' assembling of parts skills and engineering drawing understanding.	Final Project. Engineering Theory and Exam Questioning
Spring 2	Nippy Vice cont'd, including further 2D CAD skills.	Final Project. Engineering Theory and Exam Questioning
Summer 1	Pulse Generator – this project introduces students to the manufacture of electronic circuits using workshop-based technologies. Students will learn how to soft solder electronic components safely and skilfully in order to create a working flashing light circuit. Students will develop an understanding of electronic components including LEDs, capacitors, resistors and transistors. This project further develops students' assembling of parts skills and engineering drawing understanding. Students continue to develop their 2D CAD skills.	Final Project. Engineering Theory and Exam Questioning
Summer 2	Final Project. The final project counts towards 60% of students' final grade and is prescribed by the exam board. Students will be expected to work independently on their own project under specific time constraints using their acquired workshop, planning and 2D CAD skills.	Final Project. Engineering Theory and Exam Questioning