

What your child will learn each half term:

This overview shows the key topics, skills, and knowledge your child will be learning in **Engineering and Manufacturing in Year 10**. It helps families understand what's being taught, how it builds on previous learning, and how you can support your child at home.

- **What we are learning:** The topic or focus for the half term.
- **Key knowledge & skills:** What students should understand and be able to do.
- **How we assess learning:** knowledge checks, practical tasks, written responses and formal assessments.
- **Key words to know:** Vocabulary students will learn and use.

	What we are learning	Key skills	How we will assess learning in this unit	Homework	Key vocabulary for this unit
HT 1	<p>Course introduction</p> <p>Types of manufacturing processes (exam unit)</p> <p>Planning the production of a one off product - Interpret an engineering drawing. (NEA unit)</p> <p>Prepare a plan to manufacture a one-off product. (NEA unit)</p>	<p>Introduction to Engineering</p> <p>Interpret drawing</p> <p>Sawing</p> <p>Shearing</p> <p>Prepare the production plan</p> <p>Drilling</p> <p>Sequence of operations</p> <p>Filing</p> <p>Health and safety</p> <p>Threading</p> <p>Quality control / Quality assurance</p> <p>Routing</p>	<p>Lesson low stakes quiz</p> <p>End of half term assessment (exam unit)</p> <p>NEA task 1</p>	<p>Homework is set weekly as a recap of the lesson theme for the week.</p> <p>Students are expected to complete this sheet and hand into the teacher on the given day.</p> <p>Each week students will complete a low stake quiz which will assess their understanding of the week's topic.</p>	<p>Wasting, Shaping, forming, Additive processes, Joining, Finishing</p> <p>Threads</p> <p>Chamfers,</p> <p>Countersinks</p> <p>Knurls,</p> <p>Radius,</p> <p>Linear</p> <p>Diameter, Tolerances,</p> <p>Surface finish</p> <p>Quality control</p>
HT2	<p>Types of manufacturing processes (exam unit)</p> <p>Risk Assessments (NEA unit)</p> <p>Measuring and marking out. (NEA unit)</p>	<p>Turning</p> <p>Identify hazards</p> <p>Assess risks</p> <p>Milling</p> <p>Identify control measures</p> <p>Sand casting</p> <p>Die casting</p> <p>Measuring and marking</p> <p>Injection moulding</p> <p>Marking out techniques</p> <p>Powder Metallurgy for ceramic</p> <p>Selecting and using measuring instruments</p>	<p>Lesson low stakes quiz</p> <p>End of half term assessment (exam unit)</p> <p>NEA task 2</p>	<p>Homework is set weekly as a recap of the lesson theme for the week.</p> <p>Students are expected to complete this sheet and hand into the teacher on the given day.</p> <p>Each week students will complete a low stake quiz which will assess their understanding of the week's topic.</p>	<p>Hazard</p> <p>Risk</p> <p>Risk Assessment</p> <p>Rules</p> <p>Dividers</p> <p>Scribers</p> <p>Scribing blocks</p> <p>Surface plates</p> <p>Punches</p> <p>Squares</p> <p>Protractors</p> <p>Angle plates</p> <p>Datum</p> <p>Centre lines</p> <p>Profiles</p> <p>Digital Vernier callipers</p> <p>Micrometres</p> <p>Height gauge</p>

					Dial test indicator
HT3	<p>Types of manufacturing processes (exam unit)</p> <p>Measuring and marking out – Practical. (NEA unit)</p> <p>Safely use processes, tools and equipment to make a product – Manually controlled machining operations. (Drilling, Turning and Milling). (NEA unit)</p>	<p>Measure and mark out materials/work practical</p> <p>Forging</p> <p>Press forming</p> <p>Strip heating of a polymer</p> <p>Drilling</p> <p>Vacuum Forming</p> <p>Turning</p> <p>Milling</p> <p>Moulding of composite</p>	<p>Lesson low stakes quiz</p> <p>End of half term assessment (exam unit)</p> <p>NEA task 3</p> <p>NEA task 4</p>	<p>Homework is set weekly as a recap of the lesson theme for the week.</p> <p>Students are expected to complete this sheet and hand into the teacher on the given day.</p> <p>Each week students will complete a low stake quiz which will assess their understanding of the week's topic.</p>	<p>Drilling</p> <p>Turning</p> <p>Milling</p>
HT4	<p>Types of manufacturing processes (exam unit)</p> <p>Safely use processes, tools and equipment to make a product –Tools and equipment – Saws, Guillotine, Files, Tap and Die and Press (sheet bending). (NEA unit).</p> <p>Joining Techniques – Brazing, Pop-Rivets, Mechanical fastenings (Nuts and bolts, Self-tapping screws). (NEA unit).</p>	<p>Tools and equipment</p> <p>3d printing</p> <p>Guillotine and files</p> <p>Brazing</p> <p>Tap and die thread cutting Press (sheet) bending</p> <p>MIG / MAG welding</p> <p>Joining techniques</p> <p>Riveting</p> <p>Practical parts produce by hand tools and equipment.</p> <p>Practical parts produce by hand tools and equipment</p> <p>Mechanical Fastening</p>	<p>Lesson low stakes quiz</p> <p>End of half term assessment (exam unit)</p> <p>NEA task 5</p>	<p>Homework is set weekly as a recap of the lesson theme for the week.</p> <p>Students are expected to complete this sheet and hand into the teacher on the given day.</p> <p>Each week students will complete a low stake quiz which will assess their understanding of the week's topic.</p>	<p>Saws</p> <p>Hacksaw</p> <p>Junior hacksaw</p> <p>Guillotine</p> <p>Files,</p> <p>Tap</p> <p>Die</p> <p>Press (sheet bending)</p>
HT5	<p>Types of manufacturing processes (exam unit)</p> <p>Types of Engineering materials (Exam unit)</p>	<p>Manufacture in quantity</p> <p>Manufacture and use of production aids</p> <p>Painting</p> <p>Jigs, templates and gauges</p> <p>Powder Coating</p> <p>Engineering materials</p> <p>Sequence of Operation (SOP)</p> <p>Elasticity</p>	<p>Lesson low stakes quiz</p> <p>End of half term assessment (exam unit)</p>	<p>Homework is set weekly as a recap of the lesson theme for the week.</p> <p>Students are expected to complete this sheet and hand into the teacher on the given day.</p> <p>Each week students will complete a low stake quiz which</p>	<p>Mechanical fastening</p> <p>Painting</p> <p>Powder coating</p> <p>Strength</p> <p>Elasticity</p> <p>Jigs</p> <p>Templates</p> <p>Gauges,</p>

	<p>Manufacture in Quantity – Preparing for manufacture.</p> <p>Manufacture and production aids, Sequence of operations, Operations parameters, Standard operating procedures.</p>	<p>Operating parameters Setting up the Laser cutter Ductility Step by step -how to use the CNC</p>		will assess their understanding of the week's topic.	<p>CAD CAM CNC</p>
HT6	<p>Types of Engineering materials (Exam unit)</p> <p>Manufacture in Quantity –Develop programmes to operate CNC equipment.</p> <p>Use CAD software</p> <p>Programme CNC machine operations.</p>	<p>Hardness Use of CAD (2d design or Solidworks) Malleability Complete a tutorial with images and screen shots Machinability Produce an on-screen simulation Converting from CAD to CAM Programme CNC machine operations Sustainability</p>	<p>Lesson low stakes quiz End of half term assessment (exam unit)</p> <p>NEA 2 task 1</p>	<p>Homework is set weekly as a recap of the lesson theme for the week. Students are expected to complete this sheet and hand into the teacher on the given day. Each week students will complete a low stake quiz which will assess their understanding of the week's topic.</p>	<p>Ductile, Hardness, Malleability, Machinability, Cost, Sustainability, CAD CAM CNC Datum points Tool offsets Tool change over, Co-ordinates Simulation. Exporting</p>