

KS4 Curriculum Overview (BTEC Engineering Level 1/2)

BTEC Engineering Yr1

TERM 1 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<p>Unit 1 Manufacturing Engineering Products 1.1.1 Interpreting engineering drawings 1.1.2 Planning operations</p>	<ul style="list-style-type: none"> • interpret standard engineering symbols • isometric views • exploded views • sectional views • orthographic projection • understand sketches, such as: <ul style="list-style-type: none"> • simple sketches giving clarification or information on construction details <ul style="list-style-type: none"> • job sheets • planning tables • prioritise activities • order the stages appropriately 	<p>Architecture Mechanical Engineering Tool manufacturing CAD/CAM Manufacturing</p>
TERM 2 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<p>1.1.3 1.3 Using engineering tools and equipment 1.1.4 1.4 Implementing engineering processes</p>	<ul style="list-style-type: none"> ▪ file ▪ scribe ▪ centre punch ▪ tap and die ▪ lathe tools: <ul style="list-style-type: none"> ▪ knurling tool ▪ assessing potential risks • deciding what control measures are necessary • identifying personal protective equipment (PPE) needed for specific tasks. 	<p>Centre Lathe Operator Metalworking Engineer Mechanical Engineer</p>
TERM 3 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<p>1.4.1 apply a range of engineering processes 1.4.2 work with a range of materials</p>	<ul style="list-style-type: none"> ▪ marking out ▪ drilling ▪ filing ▪ plastics ▪ composites ▪ woods ▪ resins 	<p>Mechanical Engineering Tool manufacturing Component manufacturing</p>
TERM 4 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<p>1.4.3 evaluate the quality of engineered products 1.4.4 evaluate own practices and processes.</p>	<ul style="list-style-type: none"> ▪ inspection techniques ▪ against success criteria ▪ against engineering information ▪ tolerance ▪ quality inspection 	<p>Mechanical Engineering Tool manufacturing Component manufacturing</p>

TERM 5 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
Unit 2 Designing Engineering Products 2.1 Understanding function and meeting requirements 2.2 Proposing design solutions	<ul style="list-style-type: none"> ▪ electrical components ▪ LEDs ▪ fixings (nuts, bolts, washers, etc) ▪ clamping devices ▪ Engineering drawings 	Electrician Electrical Engineer Mechanical Engineer Car Mechanic
TERM 6 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
2.3 Communicating an engineered design solution 2.4 Solving applied engineering problems	<ul style="list-style-type: none"> ▪ aesthetics ▪ ergonomics ▪ anthropometrics 	Engineering Project Manager Engineering Consultant

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Unit 3 3.1 - Understanding the effects of engineering achievements 3.1.1 describing engineering developments 3.1.2 explaining the effects of engineering achievements 3.1.3 explaining how environmental issues affect engineering applications.	<ul style="list-style-type: none"> • structural design • mechanical design • electronic design • materials • smart technologies • electronic and micro-electronic components • materials development • costs • transportation • their use • their disposal • recycling • sustainability. 	Architecture Mechanical Engineering Tool manufacturing CAD/CAM Manufacturing
TERM 2 TOPIC/s		*Career links & BV
3.2 Understanding properties of engineering materials 3.2.1 understanding materials, their properties, and their selections for specific purposes 3.2.2 describing properties required of materials for engineering products 3.2.3 explaining how materials are tested for properties.	<ul style="list-style-type: none"> • tensile strength • compressive strength • hardness • toughness • malleability • ductility • conductivity • corrosive resistance • environmental degradation • elasticity • mobile phones • security alarm found in the home • bicycles • children's play areas. 	Centre Lathe Operator Metalworking Engineer Mechanical Engineer

TERM 3 TOPIC/s		*Career links & BV
<p>3.2 Understanding properties of engineering materials 3.2.3 explaining how materials are tested for properties.</p>	<ul style="list-style-type: none"> • tensile strength • hardness • toughness • malleability • ductility • conductivity • elasticity. 	<p>Mechanical Engineering Tool manufacturing Component manufacturing</p>
TERM 4 TOPIC/s		*Career links & BV
<p>3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.3.1 describing engineering processes 3.3.2 describing applications of engineering processes 3.3.3 safe working practices.</p>	<ul style="list-style-type: none"> • marking out • cutting • finishing • preparing • shaping • drilling • turning • brazing • joining – permanent and temporary fixings • filing • soldering • material removal • shaping and manipulation • joining and assembly • heat and chemical treatment. • carrying out a risk assessment • identifying risks • identifying appropriate control measures. 	<p>Mechanical Engineering Tool manufacturing Component manufacturing</p>
TERM 5 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<p>3.4 Solving engineering problems 3.4.1 using mathematical techniques for solving engineering problems</p>	<ul style="list-style-type: none"> • section views • construction lines • centre lines • hidden details • standard conventions • datums. 	<p>Electrician Electrical Engineer Mechanical Engineer Car Mechanic</p>
TERM 6 TOPIC/s	*Key Skills/Subject Links	*Career links & BV
<p>3.4 Solving engineering problems 3.4.2 understanding and producing engineering drawings.</p>	<ul style="list-style-type: none"> • third-angle orthographic projections • isometric views • sectional views that include technical details such as: • dimension lines • sectional lines. 	<p>Engineering Project Manager Engineering Consultant</p>