

Yr10 (KS4) Engineering	Topic Area	Knowledge/Skills that are taught	Knowledge/Skills revisited	What does good look like?	Resources/support at home
Autumn 1	<p>AO1 Section A Identify, investigate & outline design possibilities</p> <p>AO1 Section B Producing a design brief specification</p> <p>AO2 Section E Design and make a prototype that is fit for purpose-Realising design ideas.</p> <p>AO3 Section F Analysing and evaluating</p> <p>Garden Trowel Project</p>	<p>1 Engineering materials</p> <p>1.1 Material properties</p> <p>1.2 Metals and alloys</p> <p>1.3 Polymers</p> <p>1.4 Composites, ceramics and timber</p> <p>1.5 Material costs and supply</p> <p>shaping metal</p> <p>using tools safely</p> <p>setting rivets</p> <p>using machinery safely - bending machine</p>	<p>This project revisits the designing, making, evaluation skills and technical knowledge covered at KS3 in the Bottle opener project. For this project, the emphasis is on making skills and technical knowledge.</p> <p>Teaching of units in Section 1 of the subject specification builds on learning from KS3.</p>	<p>Knowledge / understanding</p> <p>Comprehensive notes taken from theory lessons, questions answered in lesson, over 60% in module test</p> <p>Skills</p> <p>Ability to produce drawings to engineering standards (orthographic, isometric, etc)</p> <p>Ability to use tools safely and effectively unsupervised</p> <p>High quality/accurate practical outcome</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>
Autumn 2	<p>AO1 Section A Identify, investigate & outline design possibilities</p> <p>AO1 Section B Producing a design brief specification</p> <p>AO2 Section E Design and make a prototype that is fit for purpose-Realising design ideas.</p> <p>AO3 Section F Analysing and evaluating</p> <p>Litter Picker Project</p>	<p>1.6 Energy production methods</p> <p>1.7 Factors influencing design of solutions</p> <p>2 Engineering manufacturing processes</p> <p>2.1 Additive manufacturing</p> <p>2.2 Material removal: cutting and drilling</p> <p>2.3 Material removal: turning, milling and etching</p>	<p>This project revisits the designing, making, evaluation skills and technical knowledge covered in the Autumn 1 project. For this project, the emphasis is on making skills and technical knowledge.</p> <p>Teaching of units in Section 1 & 2 of the subject specification builds on learning from KS3.</p>	<p>Knowledge / understanding</p> <p>Comprehensive notes taken from theory lessons, questions answered in lesson, over 60% in module test</p> <p>Skills</p> <p>Ability to use tools safely and effectively unsupervised</p> <p>High quality/accurate practical outcome</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>
Spring 1	<p>AO1 Section A Identify, investigate & outline design possibilities</p> <p>AO1 Section B Producing a design brief specification</p>	<p>2.4 & 2.5 Shaping ,forming Casting and moulding</p> <p>2.6 Joining and assembly</p> <p>2.7 Heat and chemical treatment</p> <p>2.8 Surface finishing</p>	<p>This project revisits the designing, making, evaluation skills and technical knowledge covered in the Autumn 1 & 2 projects. For this project, the emphasis is on making skills and technical knowledge.</p> <p>Teaching of units in Section 2 of the subject specification builds on learning from KS3.</p>	<p>Knowledge / understanding</p> <p>Comprehensive notes taken from theory lessons</p> <p>Questions answered in lesson</p> <p>Over 60% in module test</p> <p>Skills</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>

	<p>AO2 Section E Design and make a prototype that is fit for purpose-Realising design ideas. AO3 Section F Analysing and evaluating</p> <p>Double Coat Hook</p>			<p>Ability to use tools safely and effectively unsupervised High quality/accurate practical outcome</p>	
Spring 2	<p>AO1 Section A Identify, investigate & outline design possibilities</p> <p>AO1 Section B Producing a design brief specification</p> <p>AO2 Section E Design and make a prototype that is fit for purpose-Realising design ideas.</p> <p>AO3 Section F Analysing and evaluating</p> <p>Desk Tidy (Laser Cut) Project</p>	<p>3 Systems 3.1 Describing systems 3.2 Mechanical systems</p>	<p>This project revisits the designing, making, evaluation skills and technical knowledge covered in the Autumn 1 & 2 and Spring 1 projects. For this project, the emphasis is on making skills and technical knowledge. Teaching of units in Section 3 of the subject specification builds on learning from KS3 - Year 9 Energy, systems & devices.</p>	<p>Knowledge / understanding Comprehensive notes taken from theory lessons Questions answered in lesson Over 60% in module test</p> <p>Skills Able to produce drawings on 2d design (CAD) Able to use laser cutter (CAM) Ability to use tools safely and effectively unsupervised High quality/accurate practical outcome</p>	<p>Quizlet Revision guides Dynamic learning resources</p>
Summer 1	<p>3.3 Electrical systems 3.4 Electronic S 1: inputs & processes 3.5 Electronic S 2: programmable devices 3.6 Electronic S 3: output & passive com</p>	<p>3.3 Electrical systems 3.4 Electronic S 1: inputs & processes 3.5 Electronic S 2: programmable devices 3.6 Electronic S 3: output & passive com</p>	<p>This project revisits the designing, making, evaluation skills and technical knowledge covered in Year 9 Energy, systems & devices. For this project, the emphasis is on making skills and technical knowledge. Teaching of units in Section 3 of the subject specification builds on learning from KS3 - Year 9 Energy, systems & devices.</p>	<p>Knowledge / understanding Comprehensive notes taken from theory lessons Questions answered in lesson Over 60% in module test</p>	<p>Quizlet Revision guides Dynamic learning resources</p>
Summer 2	<p>AO1 Section A Identify, investigate & outline design possibilities</p>	<p>Mock Exam 3.7 Structural systems 3.8 Pneumatic systems</p> <p>Brainstorm of Contextual challenge – group activity</p>	<p>Pupils revisit learning from Year 10 prior to their mock exam.</p>	<p>Knowledge / understanding Investigated design concept in depth Synthesis of ideas and viable blue sky ideas explored</p>	<p>Quizlet Revision guides Dynamic learning resources</p>

		<p>Detailed brainstorm analysis of chosen context – including reference to economic and social effects</p> <p>Rationale for Context (include supporting material e.g. Newspaper article)</p> <p>Client / consumer / user - profile(s), interview and photograph</p> <p>Questionnaire (Survey monkey)</p> <p>Situation photo / plan</p> <p>Client specification (What do they want)</p> <p>Analysis of existing product</p> <p>Design possibilities – mood board and blue sky ideas</p>			
Yr11 (KS4) Engineering	Topic Area	Knowledge/Skills that are taught	Knowledge/Skills revisited	What does good look like?	Resources/support at home
Autumn 1	<p>AO1 Section B Producing a design brief specification</p> <p>AO2 Section C Design & make prototypes that are fit for purpose – Generating Design ideas</p>	<p>4 Testing and investigation</p> <p>4.1 Using calculations</p> <p>4.2 Modelling and calculating</p> <p>4.3 Testing</p> <p>4.4 Aerodynamics</p> <p>Exam practice</p>	<p>Sketching, Rendering in Isometric Projection</p> <p>Engineering Drawing using drawing board and instrument</p> <p>Context, Analysis, Brief & Spec Investigation, Ideas Development</p> <p>Final Solution, Cutting List</p> <p>Practical Task</p> <p>Practical Task, Evaluation</p>	<p>Knowledge / understanding</p> <p>Students know key words and terms for each unit.</p> <p>Students are able to complete short-answer and extended response past paper questions for the unit covered.</p> <p>Skills</p> <p>Development of skills relevant to the specification, leading to successful independent completion of practical examinations, completed on Making Day.</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>
Autumn 2	<p>AO2 Section D Design & make prototypes that are fit for purpose – Developing design ideas</p>	<p>5 The impact of modern technologies</p> <p>5.1 The use of new and emerging technologies</p> <p>5.2 The impact of engineering industries</p> <p>6 Practical engineering skills</p> <p>6.1 Problem solving</p> <p>6.2 Engineering drawing and schematics</p>	<p>Context, Analysis, Brief+ Spec Investigation, Ideas Development</p> <p>Final Solution, Cutting List</p> <p>Practical Task</p> <p>Practical Task, Evaluation</p> <p>shaping metal using tools safely</p> <p>setting rivets</p> <p>using machinery safely - bending machine</p>	<p>Knowledge / understanding</p> <p>Students know key words and terms for each unit.</p> <p>Students are able to complete short-answer and extended response past paper questions for the unit covered.</p> <p>Skills</p> <p>Development of skills relevant to the specification, leading to successful independent completion of practical examinations, completed on Making Day.</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>
Spring 1	<p>AO2 Section E Design & make prototypes that are fit for purpose – Realising design ideas</p>	<p>6.3 CAD, CAM and CNC</p> <p>6.4 Testing materials</p> <p>6.5 Production plans</p> <p>6.6 Predict performance using calculations and modelling</p>	<p>Context, Analysis, Brief & Spec Investigation, Ideas Development</p> <p>Final Solution, Cutting List</p> <p>Practical Task</p> <p>Practical Task, Evaluation</p> <p>shaping metal</p>	<p>Knowledge / understanding</p> <p>Students know key words and terms for each unit.</p> <p>Students are able to complete short-answer and extended response past paper questions for the unit covered.</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>

		<p>6.7 Select & use materials, components, tools and equipment</p> <p>6.8 Select & use appropriate processes</p>	<p>using tools safely</p> <p>setting rivets</p> <p>using machinery safely - bending machine</p>	<p>Skills</p> <p>Development of skills relevant to the specification, leading to successful independent completion of practical examinations, completed on Making Day.</p>	
Spring 2	AO3 Section F Analyse & Evaluate	<p>6.9 Apply quality-control methods</p> <p>6.10 Design tests to assess fitness for purpose</p> <p>Exam practice</p>	<p>Context, Analysis, Brief & Spec</p> <p>Investigation, Ideas Development</p> <p>Final Solution, Cutting List</p> <p>Practical Task</p> <p>Practical Task, Evaluation</p> <p>CAD/CAM</p> <p>using the laser cutter</p>	<p>Knowledge / understanding</p> <p>Students know key words and terms for each unit.</p> <p>Students are able to complete short-answer and extended response past paper questions for the unit covered.</p> <p>Skills</p> <p>Development of skills relevant to the specification, leading to successful independent completion of practical examinations, completed on Making Day.</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>
Summer 1	Revision & Exam practice	Revision & Exam practice	Revision & Exam practice	<p>Knowledge / understanding</p> <p>Students know key words and terms for each unit.</p> <p>Students are able to complete short-answer and extended response past paper questions for the unit covered.</p>	<p>Quizlet</p> <p>Revision guides</p> <p>Dynamic learning resources</p>
Summer 2					