

Design and Technology Year 10 Curriculum Overview 202223

OCR Engineering Design Curriculum Overview- Year 10 2022/2023

Year 10 Overview	<p>This qualification is aimed at students who wish to study the processes involved in designing new engineered products and the requirements of a design specification. Students will develop knowledge, understanding and practical skills that would be used in the engineering design and development sector. Students will study the key aspects of engineering design, and have the opportunity to apply what they learn through a number of practical experiences.</p> <p>Students will be assessed on three units over the two years:</p> <p><u>Unit R038: Principles of engineering design - written exam</u></p> <ul style="list-style-type: none">• Topic Area 1: Designing processes• Topic Area 2: Design requirements• Topic Area 3: Communicating design outcomes• Topic Area 4: Evaluating design ideas <p><u>Unit R039: Communicating designs</u></p> <ul style="list-style-type: none">• Topic Area 1: Manual production of freehand sketches• Topic Area 2: Manual production of engineering drawings• Topic Area 3: Use of computer aided design (CAD) <p><u>Unit R040: Design, evaluation and modelling</u></p> <ul style="list-style-type: none">• Topic Area 1: Product evaluation• Topic Area 2: Modelling design ideas <p><u>Students will be assessed by final exam plus portfolios of written work, engineering drawings and practical element of manufacture</u></p> <p>Students in year 10 will start on Unit R038, this will run across the two years, and complete Unit R040.</p>
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Week Number	Themes/ Topics	Key Knowledge & Skills	Key Assessments
<p>1-6 (Autumn 1)</p>	<p>R038 Topic Area 1- design processes</p> <p>R040 Task 1: Product Analysis</p>	<ul style="list-style-type: none"> • Design Strategies • Stages of the design process • Methods of research • Design briefs and specifications • ACCESS FM analysis of product (set by the exam board) • Primary and Secondary Research • Ranking Matrix • Questionnaires/ Surveys 	<ul style="list-style-type: none"> • R040 – Task 1 • Portfolio of Task 1 coursework module • Homeworks - exam questions
<p>7-13 (Autumn 2)</p>	<p>R038 Topic Area 1- design processes</p> <p>R040 Task 2: Disassembly</p>	<ul style="list-style-type: none"> • Analysing product through disassembly • Modelling design ideas • Modelling • Specification • ACCESS FM • Product disassembly • Risk Assessment • Disassembly Analysis 	<ul style="list-style-type: none"> • R040- Task 2 • Homeworks – exam questions • Portfolio of Task 2 coursework module • Keyword and terminology assessment
<p>14-18 (Spring 1)</p>	<p>R038 Topic Area 3- Communicating design outcomes Topic Area 4- Evaluating design ideas</p> <p>R040 Task 3: Visual CAD 3D</p>	<ul style="list-style-type: none"> • Production methods • Production processes • Standards 	<ul style="list-style-type: none"> • Homework - exam questions and CAD practice • Portfolio of Task 1 coursework module, CAD drawings of prototype • R040- Task 3 • R040- Task 4

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	Task 4: Physical Modelling- production planning	<ul style="list-style-type: none"> • CAD Drawings • Rendering • Replicating the product from production drawings (set by exam board) • Production plan • Risk Assessment • Safety when using tools and equipment 	
19-24 (Spring 2)	R040 Task 4: Physical Modelling- production planning Task 5: Physical Modelling- Prototype production	<ul style="list-style-type: none"> • Gantt Chart • Manufacture of a prototype • Safe working in the workshop • Safe use of tools and equipment during manufacture • Risk Assessment and PPE 	<ul style="list-style-type: none"> • R040 – Task 4 • R040- Task 5 • Homework – exam questions • Portfolio of Task 4 and 5 coursework module • Physical prototype model produced
25-30 (Summer 1)	R040 Task 5: Physical Modelling- prototype production Task 6: Physical modelling- evaluation of a prototype	<ul style="list-style-type: none"> • Manufacture of a prototype • Safe working in the workshop • Safe use of tools and equipment during manufacture • Risk Assessment and PPE • Evaluation against the design specification • How the product can be improved 	<ul style="list-style-type: none"> • R040- Task 5 • R040- Task 6 • Homework – exam questions • Portfolio of Task 5 and 6 coursework module • Physical prototype model produced
31-38 (Summer 2)	R038 Topic Area 4- Evaluating design ideas	<ul style="list-style-type: none"> • Working drawings • CAD drawing • Evaluation • Types of modelling • User testing 	<ul style="list-style-type: none"> • R038 - Mock exam • Homework – exam questions

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