



# Technology

## Learning Journey

Intent • Implementation • Impact



# Curriculum Intent

The technology curriculum at Parkside is contemporary and varied and develops learning which results in the acquisition of knowledge and practical skills over their 5 years here. When we think about what we want students to know and be able to do by the time that they leave school, technology is a subject which allows students to develop what they are able to do; for example, practical wood working and operation of computer aided machinery as well as developing knowledge; for example, pupils will develop their understanding of material properties and the principles of design.

The design of the technology curriculum, ensures that cross curricular links are central, using math skills in a practical context, applying learning in science to the materials and manufacturing methods gives real life understanding to our students. Students develop their literacy skills, learning to use technical terminology to describe products and processes.

It is crucial for students to understand the role that technology has played in the development of our world, from the food that we eat, the clothes we wear, the homes we live in and our methods of transport, and that they have been created and designed by innovators, pupils should develop an understanding for the objects around them and the design of products to make aesthetically pleasing, well-engineered and high functioning items which we use every day.

Technology is a subject where students can develop their autonomy and are encouraged to think independently to be innovative in their designs and creation of original practical outcomes. The technology curriculum is structured to support the physical development and technical understanding of pupils, and prepares them for the opportunities, responsibilities and experiences in later life. The curriculum is designed in such a way, to reflect Parkside Community School's local context and the range of qualifications and vocations our students will progress onto after life at Parkside. We will prepare students to take part in the development of tomorrow's rapidly changing world.

Creative thinking encourages students to make positive changes to their quality of life and the life of others within our local community in Chesterfield and beyond. The subject will stimulate young people to become creative problem-solvers, both as individuals and as part of a team. It enables students to identify needs and opportunities and to respond by developing ideas and making products through a variety of techniques, materials and processes.

Our curriculum is committed to extending our pupils' learning by offering a wide range of extracurricular opportunities which include technology competitions and work with our local industries as these opportunities help to put Technology into a real word and local setting context. We run a variety of extra-curricular clubs each term which are an opportunity for pupils to experience technology beyond the learning journey.

We are committed to developing students' skills to live independent lives when they have completed their learning journey. They will understand nutrition and how to live a healthy lifestyle, along with being able to cook for themselves and their family. Students will develop skills of problem solving and creativity which they will be able to apply to a range of situations along with an understanding of how to shape and manipulate materials to make products

**G.Wharton**

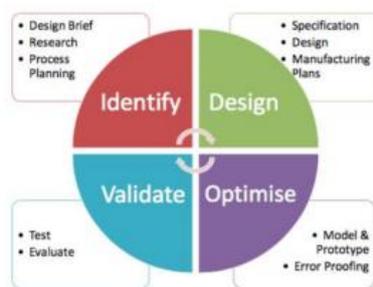




# Curriculum Implementation

The five-year learning journey in Technology; which includes Design, Catering, Textiles and Engineering, equips students with a range of practical skills and knowledge of the real world and industry for a time when they leave Parkside. Pupils will learn a systematic set of processes which are used to design, develop, make and tests products which they will use through out every year of their learning in Technology

Concepts are studied and skills are practiced to build knowledge and then revisited in various contexts, creating links across topics and projects. Students will learn that in every product that they create, they will follow the same process of the design cycle.



In Technology Pupils will naturally draw upon their knowledge and understanding of Mathematics, Science, Computing, Art and Design. Our Technology curriculum is delivered through a progression of skills that start in year 7 and are built on throughout each year group. Pupils at Parkside learn how to develop, plan and communicate their ideas, following the design cycle. They investigate how to work with tools, equipment, materials and components to make quality products.

Students are encouraged to become creative problem solvers, both independently and as part of a team. Responsive Sequencing and Interleaved curriculum implementation are used to support student's development of knowledge. We understand that pupils have a higher rate of knowledge retention if they are given the opportunity to recall past learning and apply this learning in future lessons. As a result, each topic uses the design cycle consistently and within each lessons Memory platform activities are used to interleave knowledge and give students the opportunity to recall learning.

Disciplinary literacy and the knowledge of specialised vocabulary which are used in technology is essential to supporting students' academic and theoretical knowledge of Technology. The development of subject specific literacy will also support pupils' ability to express their opinions of design and knowledge of engineering mechanisms or nutrition of a dish for example in an examination style question. We know that without competent and confident literacy skills, our pupils cannot flourish in the world; it is therefore our duty to prioritise the vital acquisition of high-quality communication skills within the Technology Curriculum and within our whole school planning.

We have a wide range of links with industry with a lot of providers within Chesterfield. We work closely with companies United Cast Bar, Kier, and North star who offer a range of external visits and activities to engage students in the world of work. We use these links to ensure that our curriculum is relevant to our local context and enthuses our pupils. We lead a range of STEM focused events including National Women in engineering day, Science and Technology week and the Engineering





extravaganza at Sheffield University. We are part of a STEM enthuse partnership which is planned to run until 2024. The objective of the Enthuse partnership is to inspire and support pupils into perusing STEM related university pathways. There units dedicated to industry where students must learn about industrial processes and techniques, along with environmental considerations of industrial processes. We have developed topics this year in KS3 where students are given the opportunity to develop their understanding of local innovators, creatives and designers.

The 5 year learning journey leads to the final two years at Parkside where students in KS4 study 4 units of work in Engineering, design briefs design specifications and user requirements, product analysis and research, developing and presenting engineering designs and 3D realization. Three of the units are coursework based, with a mixture of development of theory knowledge, practical skills and computer design. One of the units is assessed through a practical examination which the students at Parkside sit in the January of Year 11. The knowledge gained through the study of these units is interweaved with synoptic links to support students in making relevant connections in their learning and broader understanding of Engineering.

The technology curriculum is fully inclusive, every child is valued and respected. We are committed to the inclusion, progress and independence of all our students, including those with SEND. The Technology teachers, technicians and support staff work to support our students to make progress in their learning, their emotional and social development and their independence. As Technology teaches many life skills; it is paramount within the implementation of the technology curriculum to support the learning and needs of all members of our community.





# Curriculum Impact

The impact of our Technology Curriculum Learning Journey is defined through the accessibility pupils have to developing knowledge and the application of skills. This is determined through a number of measures:

- ✓ **Formative Reporting of Pupil Progress** will take place through assessments that take place each lesson and include pupil questioning, discussion, the completion of examination style questions and the completion of homework.
- ✓ **Summative Reporting of Pupil Progress** will take place through examination paper assessments and assessment of student's practical outcomes at the end of each topic. Parents/Carers receive a report following each mid and end point assessment to understand their child's current depth of knowledge and the support they need to further develop this knowledge both inside and outside of school.
- ✓ **In-lesson learning, participation and belonging** is measured by continually monitoring pupil punctuality to lessons, rewards and sanctions, behaviour referrals, pupil voice and work-scrutiny. Our hope is that by continued positivity in these areas, our Technology Curriculum Learning Journeys are accessible and will, therefore, positively impact knowledge growth and skill application.
- ✓ **Knowledge and understanding of the key concepts and skills.** Pupils will be able to speak with confidence about design and explain how products are made. Pupils will know how to live a healthy lifestyle and will have life skills to use tools to manipulate food and materials to make products to make their life more comfortable. All pupils will understand the vocation opportunities available to them in the field of technology.
- ✓ **KS4 Engineering outcomes** demonstrate the overall impact of our pupils' Technology Curriculum Learning Journey. KS4 Engineering outcomes contribute to the Open element of the school's Progress 8 score.

	School	English	Maths	Ebacc	Open
School 2019	0.48 (0.19 to 0.78)	-0.09 (-0.45 to 0.28)	0.99 (0.67 to 1.32)	0.23 (-0.13 to 0.58)	0.87 (0.52 to 1.22)
National	-0.02	-0.04	-0.02	-0.03	-0.04





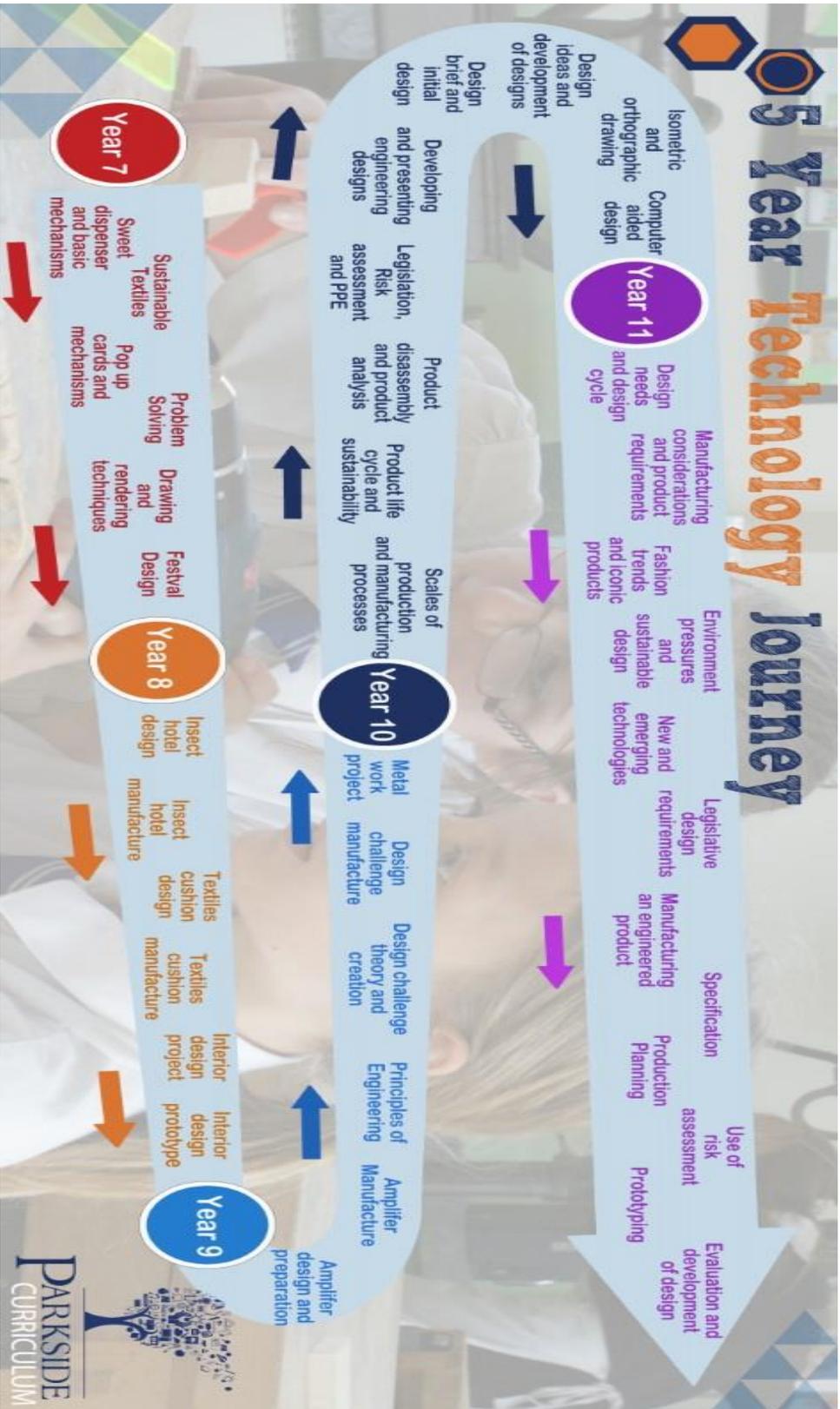
GPA	2019-20			2018-19			2017-18		
	GPA	KS2 PA	P	GPA	KS2 PA	P	GPA	KS2 PA	P
Catering Vocational Award	3.65	4.71	-1.06						
BTEC Construction	5.03	4.47	+0.56	6.68	4.09	+2.59	5.01	3.88	+1.13

- ✓ **Post-16 Progression has demonstrated** extremely strong with many of our pupils moving on to pursue Technology after life at Parkside. Our students follow a range of paths including the study of Design Technology at Sixth forms and colleges. Construction, Engineering and Catering qualifications at College along with a number of our students furthering their study of technology through a range of apprenticeships.





# Learning Journey overview



## Technology Curriculum Learning Journey





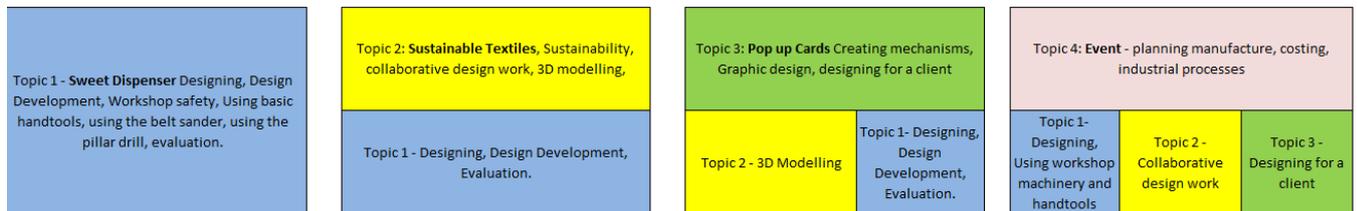
Annex 1: Learning Journey

# Learning Journey overview



## Year 7: Topic summary

How we interleave topics to enable pupils to build and recall knowledge.



## A2: Topic Descriptors

### Topic 1 – Sweet Dispenser

**Key Skills/ Themes:** - Designing, Design Development, Workshop safety, using basic hand tools, using the belt sander, using the pillar drill, evaluation.

Introduction into Design and Technology, allowing students to build confidence as they take their first steps into the design world and technology learning. The focus of this term is to develop designing skills whilst analysing existing products to identify key specification and design areas. Students will develop basic knowledge of the workshop using simple hand tools and some workshop machinery with supervision.





**Topic 2: Sustainable Textiles,**

**Key Skills/ Themes: - Sustainability, collaborative design work, 3D modelling**

Students will develop their knowledge of designing and design development around the ever evolving and pivotal theme of sustainability in design. Students will develop collaborative working skills which would be key if they were to pursue a career in the design industry. Pupils will learn how to develop their designs into 3D models which will be a key skill that they develop on throughout KS3 in preparation for KS4.

**Topic 3: Pop up mechanisms**

**Key Skills/ Themes: - Creating mechanisms, Graphic design, designing for a client**

Pupils will develop their graphic design skills and learn how to design a product for a client. Students will learn about target markets and how designers adapt and tailor their products to meet the needs of their user. Pupils will build on the 3D modelling skills gained in topic 3. Students will use these skills to create a final outcome of a pop-up card or pop-up book.

**Topic 4: Event**

**Key Skills/ Themes: - planning manufacture, costing, industrial processes.**

Students will work on a final rotation of all the creative subjects, students will draw on all of their developed skills and knowledge from the previous topics to plan and deliver a professional event. In the Design and Technology rotations students will design and make small items which can be manufactured using the laser cutter and they will market at their event at the end of the year.

**Y7 Catering Long-term Sequence Plan**

Term 1	Term 2	Term 3	
<b>Topic 1/ Unit 1</b> Food Hygiene and safety Basic skills Designing	<b>Topic 2/Unit 2</b> Eatwell Guide Evaluating	<b>Topic 3/Unit 3</b> Macro and Micro Nutrients	
	<b>Topic 1/ Unit 1</b> Food Hygiene and safety Basic skills Designing	<b>Topic 1/ Unit 1</b> Food Hygiene and safety Basic skills Designing	<b>Topic 2/Unit 2</b> Eatwell Guide Evaluating

**Topic Descriptors**

**Topic 1**

Students will learn how to prepare food safety, cooking predominantly savoury dishes and exploring the use of different ingredients. They will learn basic practical skills and be introduced to foods and recipes to enable them to feed themselves an affordable and healthy diet.

Students will learn about the principles of cleaning, preventing cross-contamination, chilling and cooking food thoroughly

Students will learn about the design and planning process through design work, including modifying recipes and presentation skills.





## Topic 2

Students will learn about the importance of different food groups of the Eatwell guide and be able to prepare a range of dishes which will include the ingredients from each section. They will learn about the importance of a balanced diet.

Students will be encouraged to evaluate their own and existing food products, consider how recipes can be adapted and improved. They will learn to use star diagrams and sensory words to evaluate their work.

## Topic 3

Students will learn about macro nutrients, their main functions and sources. They will have an introduction to micro nutrients, in particular, calcium and iron.

## Year 8: Topic summary

**How we interleave topics to enable pupils to build and recall knowledge.**

<p>Topic 1 - Insect House Design and Preparation Designing, Design Development, Workshop safety, Using basic handtools, using machinery, writing a specification, Product analysis.</p>	<p>Topic 2: Insect House Manufacture, Wood joints, finishing techniques, using the laser cutter, quality control and accuracy, evaluation.</p>	<p>Topic 3: Day of the Dead Cushion Design and Preparation - Designing to a theme, Stitch types, use of fabric pens and dye.</p>	<p>Topic 4: Day of the Dead Cushion Manufacture - Use of the Sewing machine, applique, embroidery</p>
<p>Topic 1 -Workshop safety, Using basic handtools, using machinery</p>	<p>Topic 2 - quality control and accuracy.</p>	<p>Topic 1- Designing, Design Development</p>	<p>Topic 1- Workshop safety - hot glue</p>
			<p>Topic 2 - quality control and accuracy, evaluation.</p>
			<p>Topic 3 - Stitch types, use of fabric pens and dye.</p>

## A2: Topic Descriptors

### Topic 1 – Insect House Design and Preparation

**Key Skills/ Themes: - Designing, Design Development, Workshop safety, using basic hand tools, using machinery, writing a specification, Product analysis.**

The focus of this term is to develop designing skills further from year 7 work. Pupils will develop their analysis skills and be able to use a specification structure to analyse existing products. Students will develop their knowledge of the workshop using hand tools and some workshop machinery.

### Topic 2: Insect House Manufacture

**Key Skills/ Themes: - Wood joints, finishing techniques, using the laser cutter, quality control and accuracy, evaluation.**

Pupils will work with Jigs to produce accurate wood joints. Students will develop skills to correct errors and will develop skills with a range of wood working tools. Students develop independence in using a coping saw, tenon saw, bench hook, vice and belt sander. Pupils will learn about a range of finishing techniques, waxing, lime finish, dye and paint, students will select an appropriate finish for their product.

### Topic 3: Day of the Dead Cushion Design and Preparation

**Key Skills/ Themes: - Designing to a theme, Stitch types, use of fabric pens and dye.**

Pupils will develop more complex design skills and will learn to design to a set theme, considering a range of influences. Students will develop their research skills as part of this topic. Pupils will develop effective design ideas to the set theme and work on the development of their design ideas.





Students will explore a range of stitch types which can be used as decoration and embellishment. Students will create a range of samples and evaluate the aesthetics of these effects for use on their final design.

#### Topic 4: Day of the Dead Cushion Manufacture

**Key Skills/ Themes:** - Use of the Sewing machine, applique, embroidery

Pupils will learn to safely use a sewing machine to construct their cushion cover. Students will apply the skills of embroidery and applique along with other finishing techniques to decorate their cushion cover. Pupils will evaluate the work of others along with their own and identify and work upon areas for improvement.

#### Y8 Catering Long-term Sequence Plan

Term 1	Term 2	Term 3	
<b>Topic 1/ Unit 1</b> Food hygiene and safety Developing practical skills Use of electrical kitchen equipment	<b>Topic 2/Unit 2</b> Meat Fruit and veg Food provenance	<b>Topic 3/Unit 3</b> Diet- risks to health Designing	
	<b>Topic 1/ Unit 1</b> Food hygiene and safety Developing practical skills Use of electrical kitchen equipment	<b>Topic 1/ Unit 1</b> Food hygiene and safety Developing practical skills Use of electrical kitchen equipment	<b>Topic 2/Unit 2</b> Meat Fruit and veg Food provenance

#### Topic Descriptors

##### Topic 1

Building on previous learning in year 7 students will continue to build their confidence in preparing food safety, cooking predominantly savoury dishes and exploring the use of different ingredients. They will continue to learn key practical skills and be introduced to foods and recipes to enable them to feed themselves an affordable and healthy diet.

Students will continue to learn about the principles of cleaning, preventing cross-contamination, chilling and cooking food thoroughly.

Students will learn about the functions of different pieces of electrical kitchen equipment and consider their effectiveness.

##### Topic 2

Students will learn how and why we need to handle meat products carefully to ensure they are safe to eat and how they can be safely reheated.

Students will continue to learn about the importance of the different food groups of the Eatwell guide and be able to prepare a range of dishes which will include the ingredients from each section. In particular they will learn about the importance of eating a range of fruit and vegetables and the value of meat in the diet.

They will find out about food provenance, including work on seasonality and Fair Trade.

##### Topic 3





Students will learn about the importance of energy balance and the risks to health of a poor diet by investigating the effects of too much sugar and too much fat.

Students will learn about the design and planning process through design work and produce their own plan for making, looking at developing and modifying recipes to make them healthier.

## Year 9: Topic summary

**How we interleave topics to enable pupils to build and recall knowledge.**

Topic 1 - Design Challenge - Designing, Design Development, Workshop safety, Using basic handtools, using machinery, writing a specification, Product analysis	Topic 2: Design Challenge Manufacture, Wood joints, finishing techniques, using the laser cutter, 3D modelling quality control and accuracy, evaluation.	Topic 3: Amplifier Design and Preparation - Electronic components, resistor calculation, use of 2D design, use of Google Sketch UP		Topic 4: Amplifier Manufacture - Soldering, case assembly, testing circuits.		
	Topic 1 - Workshop safety, Using basic handtools, using machinery	Topic 2 - using the laser cutter, 3D modelling.	Topic 1 - Designing, Design Development	Topic 1 - Workshop safety	Topic 2 - quality control and accuracy, evaluation, using the laser cutter	Topic 3 - Electronic components, resistor calculation

### Topic 1 – Design Challenge

**Key Skills/ Themes:** - Designing, Design Development, Workshop safety, using basic hand tools, using machinery, writing a specification, Product analysis.

The focus of this term is to develop designing skills in depth for preparation for KS4. Pupils will develop their analysis skills and be able to use a specification structure to analyse existing products. Students will develop design development skills and learn to annotate design ideas in depth, knowing how to add details of material choices, manufacture suggestions and design justification.

### Topic 2: Design Challenge Manufacture

**Key Skills/ Themes:** - Wood joints, finishing techniques, using the laser cutter, 3D modelling quality control and accuracy, evaluation.

Students will develop design ideas further by transferring design ideas into 3D modelling. Students will work with a range of modelling materials to create a visual and tactile representation of their design ideas. This project is designed to build key skills required for KS4. Students will work with new controlled independence and autonomy in topic 2, they will have the ability to select the product they produce from their design ideas along with selecting appropriate materials and ways of manufacture drawing on knowledge from the accumulated learning across KS3.

### Topic 3: Amplifier Design and Preparation

**Key Skills/ Themes:** - Electronic components, resistor calculation, use of 2D design, use of Google Sketch UP

Pupils will gain an understanding of electronic components, learn their function within an electronic product. In this topic students will learn to use computer aided design to develop design drawings for the casing of their amplifier and prepare for using the laser cutter for the manufacture of the amplifier case.

### Topic 4: Amplifier Manufacture

**Key Skills/ Themes:** - Soldering, case assembly, testing circuits.



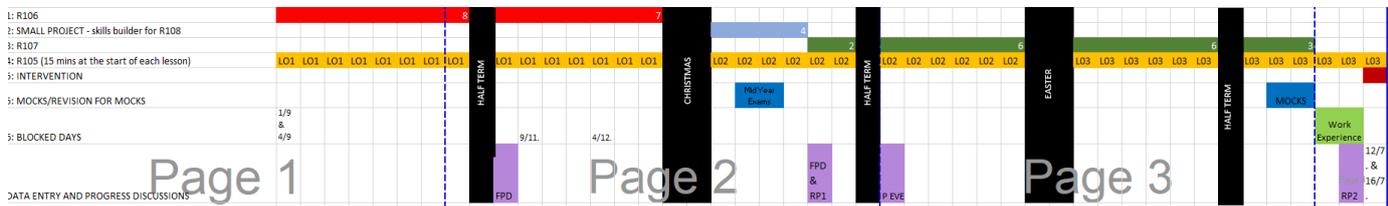


Pupils will learn to safely use a soldering iron and how to place electrical components into printed circuit boards by reading the circuit diagram and using electrical component knowledge from topic 3. Students will use the laser cutter to manufacture and assemble a case for their amplifier. Pupils will evaluate the work of others along with their own and identify and work upon areas for improvement.

## OCR Cambridge National Engineering Design

How we interleave topics to enable pupils to build and recall knowledge.

### Year 10



#### UNIT R106

#### PRODUCT ANALYSIS AND RESEARCH

Guided learning hours: 30

#### PURPOSE OF THE UNIT

This unit will enable learners to perform effective product analysis. They will research existing solutions and assess the development of engineered products. Learners will develop dextrous skills and gain practical experience of product assembly and disassembly to appreciate manufacturing processes, design features and materials used. This unit develops learner's creativity and critical analysis through an understanding of the principles behind good design. What makes a good product sell is considered by analysing existing solutions. On completion of this unit, learners will understand how to perform effective product analysis and evaluation through research and product assembly and disassembly procedures to appreciate product design features. Learners studying for the Certificate will be able to apply knowledge and understanding gained in this unit to help develop their skills further during the completion of units R107 and R108.





## UNIT R107

### DEVELOPING AND PRESENTING ENGINEERING DESIGNS

Guided learning hours: 30

#### PURPOSE OF THE UNIT

This unit develops techniques in generation, concept development and the communication of design ideas using hand rendering and computer-based presentation techniques including computer aided design software. Learners will generate design ideas using a mixture of detailed hand rendering and computer-based presentation techniques including computer aided design in 2 and 3 dimensions. Learners' will gain skills in annotation and labelling techniques, such as showing key features, functions, dimensions, materials, construction/manufacture methods. On completion of this unit, learners will have developed knowledge and understanding of how to communicate design ideas through hand rendering and computer-based techniques.

## UNIT R105

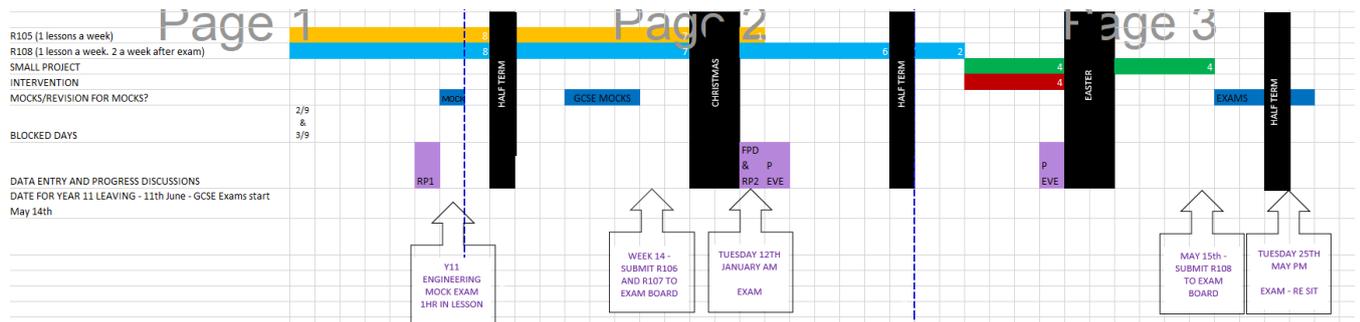
### DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS

Guided learning hours: 30 (Across Y10 &11)

#### PURPOSE OF THE UNIT

This unit provides the opportunity for learners to develop their understanding of the requirements of design briefs and design specifications for the development of new products. Through research and practical activities, learners will understand how consumer requirements and market opportunities inform design briefs. Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution. On completion of this unit, learners will understand the design cycle, the requirements for a design brief and design specification for the development of a new product and how effective research data is necessary to inform the development of a design solution. Learners studying for the Certificate will be able to apply knowledge and understanding gained in this unit to help develop their skills further during the completion of units R107 and R108.





### UNIT R108

#### 3D DESIGN REALISATION

Guided learning hours: 30

#### PURPOSE OF THE UNIT

This unit requires learners to apply practical skills to produce a prototype product or model using craft-based modelling materials alongside computer-controlled or rapid-prototyping processes. Learners will produce a prototype product in the form of a model and test design ideas in a practical context, to inform further development utilising more complex production processes. Learners will evaluate the prototype making a comparison of the outcome against the product specification and evaluate potential improvements in design such as features, function, materials, aesthetics and ergonomics and make suggestions on improvements to the final product. On completion of this unit, learners will be able to use knowledge gained to apply practical skills in the use of tools and equipment to produce a prototype.

### UNIT R105

#### DESIGN BRIEFS, DESIGN SPECIFICATIONS AND USER REQUIREMENTS

Guided learning hours: 30 (Across Y10 &11)

#### PURPOSE OF THE UNIT

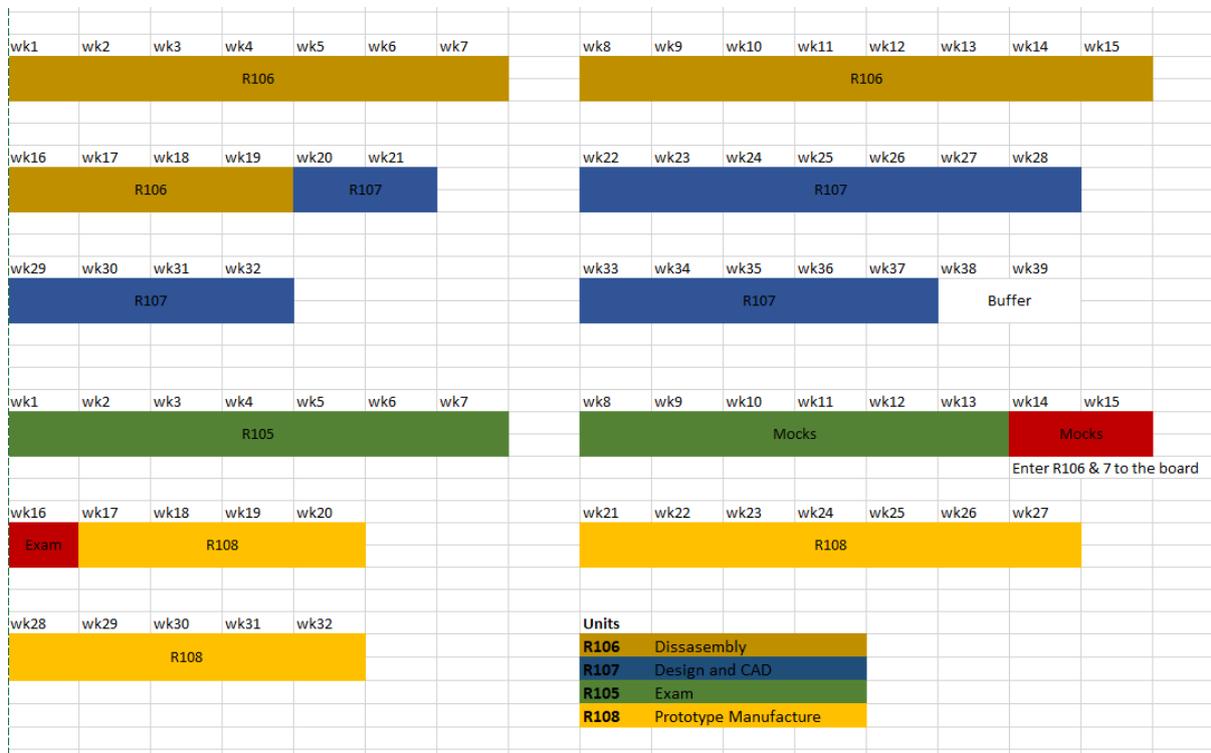
This unit provides the opportunity for learners to develop their understanding of the requirements of design briefs and design specifications for the development of new products. Through research and practical activities, learners will understand how consumer requirements and market opportunities inform design briefs. Learners will understand the overall design process through





study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution. On completion of this unit, learners will understand the design cycle, the requirements for a design brief and design specification for the development of a new product and how effective research data is necessary to inform the development of a design solution. Learners studying for the Certificate will be able to apply knowledge and understanding gained in this unit to help develop their skills further during the completion of units R107 and R108.

## KS4 Overview



## Core Knowledge Concepts

Technology Curriculum implementation  
 Knowledge concepts used to form Schemes of Learning

### Year 7 Core Knowledge Concepts

Topic	Foundation learning concepts / pupil outcomes
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## Sweet Dispenser

- Understand the importance of annotation to explain design thinking
- Understand how to use a range of presentation techniques to present the final idea effectively
- Explore the importance of isometric drawing to show different views of an idea
- Be able to use effective drawing techniques to create a presentation drawing of the final idea
- Be able to use annotation and colour to enhance the design
- Use a range of decoration techniques to make a product aesthetically pleasing
- Use hand tools independently
- Use machinery with supervision
- Understand the importance of reflecting on the project
- Understand how to use evaluation tools such as star diagrams to peer assess work and make suggestions for improvement

## Sustainable Textiles

- Be able to identify some of the key sustainable problems around the world
- Through research be able come up with key statistics worldwide based on sustainability issues
- I can justify the need for change through creating a mini campaign aid for change
- Be able to analyse existing products
- Be able to use effective drawing techniques to create a presentation drawing of the final idea
- Be able to use annotation and colour to enhance the design
- Understand the importance of creating a range of annotated, innovative design ideas.
- Develop rendering technique to enhance the design ideas
- Use technical vocabulary when annotating designs.
- Be able to create a range of design ideas, considering learning from research
- Be able to create design ideas that reflect the specification





<p><b>Pop up mechanisms</b></p>	<ul style="list-style-type: none"> <li>• Understand the importance of annotation to explain design thinking</li> <li>• Understand how to use a range of presentation techniques to present the final idea effectively</li> <li>• Explore the importance of isometric drawing to show different views of an idea</li> <li>• Be able to use effective drawing techniques to create a presentation drawing of the final idea.</li> <li>• Be able to use annotation and colour to enhance the design</li> <li>• Understand the importance of reflecting on the project</li> <li>• Understand how to use evaluation tools such as star diagrams to peer assess work and make suggestions for improvement</li> <li>• Use a variety of techniques, including self-assessment and peer assessment to reflect on the successes of the project</li> <li>• Make suggestions on how improvements can be made to build on the success of the product.</li> </ul>
<p><b>Event</b></p>	<ul style="list-style-type: none"> <li>• Understand how to create time plans</li> <li>• Develop skills in designing using CAD CAM, understand how this links to industrial processes.</li> <li>• Produce costing spreadsheets</li> <li>• Design and manufacture products with an industrial mindset of what makes products saleable.</li> </ul>

**Y7 Catering Learning Outcomes**

**Topic 1**

- Understand and use good food safety practices.
- Know how to use equipment safely, being aware of yours and others' safety. This includes:
  - Ability to use the grill, hob and oven
  - Ability to use the cooker with guidance
- Know how to use a broad range of basic preparation techniques and methods when cooking, including:
  - Knife Skills
  - Weighing and measuring
  - Preparation of ingredients (peel, wash, grate and dry where appropriate)
- Know how to modify recipes and cook predominantly savoury dishes that are based on current healthy eating messages.
- Know develop and communicate design ideas using annotated sketches and detailed plans

**Topic 2**





- Be able to use current healthy eating advice to choose a varied balanced diet.
- Know about techniques for evaluating food products, use evaluations as a way to improve and develop work

### Topic 3

- Know the 3 macro nutrients, their functions and sources
- Know about some of the functions of vitamins and minerals
- Know that food and drinks provide energy and nutrients in different amounts; that they have important functions in the body
- Know that the body contains water and that you need fluid from food and drinks to keep your body working properly.

## Year 8 Core Knowledge Concepts

Topic	Pupil outcomes
<b>Insect House Design and Preparation</b>	<ul style="list-style-type: none"> <li>- Know what product analysis is.</li> <li>- Be able to investigate existing products, identify their strengths and weaknesses and use the information when designing your own products.</li> <li>- Understand the importance of completing thorough product analysis.</li> <li>- Know what a specification is.</li> <li>- Be able to justify specification points.</li> <li>- Understand the importance of creating a specification.</li> <li>- Be able to create a range of design ideas.</li> <li>- Understand the importance of creating a range of annotated, innovative design ideas.</li> <li>- Be able to use 2D Design to generate designs for the sides of the insect hotel</li> <li>- Understand the basic 2D Design tools</li> <li>- Gain an understanding of how the laser cutter works.</li> <li>- Be able to use effective drawing techniques to create a presentation drawing of the final idea.</li> <li>- Understand the importance of annotation to explain design thinking.</li> </ul>
<b>Insect House Manufacture</b>	<ul style="list-style-type: none"> <li>- Know the different tools and processes used when working with sheet materials.</li> <li>- Be able to select and use suitable tools accurately and safely to create 3D products.</li> <li>- Understand the importance of selecting the most suitable method of manufacture for creating your product.</li> </ul>





	<ul style="list-style-type: none"> <li>- Understand how to mark out and cut finger joints</li> <li>- Know the different tools and processes used when working with sheet materials.</li> <li>- Be able to select and use suitable tools accurately and safely to create 3D products.</li> <li>- Understand how to use the pillar drill</li> <li>- Be able to apply a surface finish such as paint or varnish to enhance the design</li> <li>- Understand how fixtures and fittings can be used to attach the insect hotel to a surface</li> <li>- Understand how to use a variety of evaluative tools to assess performance</li> <li>- Use peer assessment to gather feedback from others</li> <li>- Be able to make suggestions for modified products</li> </ul>
<p><b>Day of the Dead Cushion Design and Preparation</b></p>	<ul style="list-style-type: none"> <li>• Understand the Mexican Holiday of ‘the Day of the Dead</li> <li>• Create an inspiration board of sketches and images to support your future design ideas.</li> <li>• Create a mind map using “thought stems”.</li> <li>• Add diagrams/ sketches/ colour to emphasis your ideas</li> <li>• Create development designs for your cushion using templates or your initial sketches.</li> <li>• Use prior knowledge of designing techniques</li> <li>• Take inspiration from development designs feedback and create a final design.</li> <li>• Trace out a section of your final design onto tracing paper using a felt tip.</li> <li>• Transfer your design onto the calico provided.</li> <li>• Experiment by adding colour</li> </ul>
<p><b>Day of the Dead Cushion Manufacture</b></p>	<ul style="list-style-type: none"> <li>• Using the enlarging technique, transfer your final design onto your cushion fabric.</li> </ul>





	<ul style="list-style-type: none"> <li>• Add colour and texture using techniques experimented with e.g. fabric pens &amp; running stitch.</li> <li>• Add decoration through a range of techniques</li> <li>• Can set up the sewing machine</li> <li>• Can re-thread a sewing machine.</li> <li>• Hand stitch to close cushion tight using a running stitch.</li> <li>• Understand how to use a variety of evaluative tools to assess performance</li> <li>• Use peer assessment to gather feedback from others</li> <li>• Be able to make suggestions for modified products</li> </ul>
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## **Y8 Catering Learning Outcomes**

### **Topic 1**

- Understand and use good food safety practices. Including:
  - Principles of cleaning, preventing cross-contamination, chilling, cooking food thoroughly and reheating food until it is steaming hot.
  - Planning and carrying out food storage, preparation and cooking safely and hygienically.
  - Using date-mark and storage instructions when storing and using food and drinks.
  - .
- Know how to use equipment safely, being aware of yours and others' safety. This includes:
  - Ability to use the hob and oven
  - Ability to use the food processor, electric whisk and hand blender
- Know how to use a broad range of basic preparation techniques and methods when cooking, including:
  - Knife Skills
  - Weighing and measuring
  - Preparation of ingredients (peel, wash, grate and dry where appropriate)

### **Topic 2**

- Know how to store, prepare, cook and reheat meat safely
- Understand that some foods have a higher risk of food poisoning than others, e.g. raw chicken
- Continue to learn about the uses of commodities, in particular meat and vegetables
- Know that food is produced, processed and sold in different ways, e.g. conventional and organic farming, fair trade.
- Know about the different stages in food production and processing.
- Understand how geography, weather and climate influence the availability of food and drink.

### **Topic 3**

- Understand the importance of energy balance and the implications of dietary excess or deficiency, e.g. malnutrition, maintenance of a healthy weight.
- Be able to use current healthy eating advice to choose a varied balanced diet.





- Know that food and drinks provide energy and nutrients in different amounts; that they have important functions in the body
- Be able to use nutrition and allergy information on food labels to help make informed food and drink choices.
- Know develop and communicate design ideas using annotated sketches and detailed plans, Students will learn about the design and planning process through design work, including modifying recipes and presentation skills.
- Know how to modify recipes and cook dishes that are based on current healthy eating messages.

## Year 9 Core Knowledge Concepts

Topic	Learning outcomes
<b>Design Challenge</b>	<ul style="list-style-type: none"> <li>• Know what product analysis is.</li> <li>• Be able to investigate existing products, identify their strengths and weaknesses and use the information when designing your own products.</li> <li>• Understand the importance of completing thorough product analysis.</li> <li>• Gain an understanding of KS4 Design Technology</li> <li>• Ability to interpret a design brief</li> <li>• Develop knowledge of technical terminology</li> <li>• Be able to understand the needs of a client</li> <li>• Be able to apply knowledge from product analysis and apply to a design brief</li> <li>• Know what a specification is.</li> <li>• Be able to justify specification points.</li> <li>• Understand the importance of creating a specification.</li> <li>• Develop an understanding of the design process</li> <li>• Use a range of sketching techniques to present ideas that are different and original</li> <li>• Be able to create ideas that meet a design brief</li> </ul>





	<ul style="list-style-type: none"> <li>• Develop rendering and presentation techniques to present ideas effectively</li> <li>• Use annotation and key words to explain design thinking</li> <li>• Understand why modelling is important prior to manufacture</li> <li>• Develop confidence using a range of workshop tools to generate a prototype</li> <li>• Be able to reflect on the design and make amendments before manufacture</li> </ul>
<p><b>Design Challenge Manufacture</b></p>	<ul style="list-style-type: none"> <li>• Understand the importance of developing initial design ideas.</li> <li>• Be able to use peer assessment to create more effective designs</li> <li>• Understand the importance of designing with the specification in mind.</li> <li>• Understand why planning is important prior to manufacture</li> <li>• Understand health and safety requirements in a workshop setting</li> <li>• Be able to suggests quality control checks throughout manufacture</li> <li>• Be able to comment on performance during manufacture and suggest amendments accordingly.</li> <li>• Understand how materials are ordered</li> <li>• Understanding of a range of materials and their properties</li> <li>• Develop numeracy skills to generate accurate measurements</li> <li>• Understand how materials are ordered</li> <li>• Understanding of a range of materials and their properties</li> <li>• Develop numeracy skills to generate accurate measurements</li> <li>• Develop understanding of the key features of 2D design</li> <li>• Understand how to change line colours in 2D design to show cut or engrave lines</li> <li>• Understand how to mark out and cut half lap joints</li> <li>• Develop confidence using workshop tools</li> <li>• Be able to apply knowledge of numeracy to mark out accurately.</li> <li>• Understand the properties of materials</li> <li>• Know the different tools and processes used when working with sheet materials.</li> </ul>





	<ul style="list-style-type: none"> <li>• Be able to select and use suitable tools accurately and safely to create 3D products.</li> <li>• Be able to use coping saws and tenon saws safely to accurately cut shapes in material</li> <li>• Be able to use a range of filing techniques to create a smooth finish on the material</li> <li>• Apply Health and Safety knowledge to ensure safe working practice</li> </ul>
<p><b>Amplifier Design and Preparation</b></p>	<ul style="list-style-type: none"> <li>• Pupils will gain an awareness of health and safety in the Electronics workshop.</li> <li>• Pupils will be introduced to tools and equipment in Electronics.</li> <li>• Pupils will learn the function of a variety of electrical components.</li> <li>• Pupils will understand the principles of sound amplification.</li> <li>• Understand function and form analysis of existing similar products.</li> <li>• Introduction to the design brief and task analysis. Producing preliminary ideas of how these analysis points can be implemented into the design ideas for the product.</li> <li>• Initial design ideas, produced with descriptive annotation, justifying design choices.</li> <li>• Evaluate initial ideas against the specification criteria use this knowledge to implement into a final design which will fully meet the design brief.</li> <li>• Gain understanding of safety when working in the electronics workshop, introduction to basic electrical components.</li> <li>• Develop understanding of electrical components, gain knowledge of their function and operation and how they are used in electrical products.</li> </ul>
<p><b>Amplifier Manufacture</b></p>	<ul style="list-style-type: none"> <li>• Soldering, techniques practice and safety, teacher demonstration.</li> <li>• Continuation of soldering, learn how to identify dry joints and bridges on circuit boards and understand how to rectify these errors.</li> <li>• Resistor analysis and learn how to calculate resistor value.</li> <li>• Be able to work independently to solder in all resistors into the correct place in the circuit board.</li> </ul>





- Use a multi meter to test the electrical connections, connect up with power and the download cable to test for final function with music. Correct any errors in soldering to ensure functioning circuit boards.
- Written evaluation of practical soldering and photography circuit board.
- use 2D design to convert final design into a template net plan and vector logo design.
- Develop skills in 2d design, ensure template sizing are correct and complete logo creation.
- Pupils will be encouraged to evaluate their work throughout and to peer assess also.

## Engineering Design (Year 10) Core Knowledge Concepts

	<b><u>R106: Coursework: Disassembly</u></b>
<b>Lo1</b>	<b>I can identify how commercial production methods; end of life considerations and legislation have influenced products</b>
<b>Lo2</b>	<b>I can research existing products including strengths and weaknesses</b>
<b>Lo3</b>	<b>I can disassemble products with reference to H&amp;S and manufacturers guidance</b>
<b>Lo4</b>	<b>I can carry out detailed analysis of existing products</b>

**LO1, LO2, LO3** – Learning Outcomes 1, 2, and 3 are assessed through a set assignment provided by OCR and internally assessed by the centre. Centres wishing to choose their own products must ensure they are comparable to examples in the set assignments issued by OCR for this unit. Further guidance is available in the Permitted changes section of the Set Assignments for this unit.

**LO3** – Learners will disassemble a product/s in a workshop setting using hand tools, conduct an analysis of key features and functions, and record/present their findings. It is important to select a





product(s) to study that is relevant. This could be carried out by an individual learner or as a team/ small group exercise.

What do learners need to produce (evidence)	Examples of format of evidence (this list is not exhaustive)
Learners will need to produce a summary of research for strengths and weaknesses identified in existing products and show how component shaping and assembly methods impact on product design.	Learners will record findings of design impacts, product strength and weakness analysis of disassembled product/s through notes, photographs annotated drawings in a portfolio. Group/team work could be evidenced through a short video presentation describing team members' roles, the disassembly process, and findings of analysis. Teachers will observe appropriate use of tools and PPE and safe working practices. LO3 may be supported by witness testimony.

<b>R107: Coursework: Designing</b>	
<b>Lo1</b>	<b>I can demonstrate design ideas using sketches in 2D &amp; 3D and label</b>
<b>Lo2</b>	<b>I can use IT software to produce, modify and enrich design proposals</b>
<b>Lo3</b>	<b>I can create engineering drawing techniques in 2d and 3d</b>
<b>Lo4</b>	<b>I can use CAD drawing techniques and modelling, presenting design proposals using CAD software</b>

**LO1** – Learners will demonstrate their design ideas using sketches in 2D, 3D with shade, tone and texture and include annotation and labelling. Hand drawn sketches are progressed using IT software to produce, modify and enrich design proposals with appropriate detail and rendering techniques.

**LO2** – Learners progress their ideas from LO1 to develop and present designs using engineering drawing techniques. Learners must use a minimum of two 3D techniques and two 2D techniques.

**LO3** – Using a minimum of two CAD drawing techniques, learners will demonstrate skills in presenting design proposals using CAD software.

What do learners need to produce (evidence)	Examples of format of evidence (this list is not exhaustive)
Responding to a design specification: <ul style="list-style-type: none"> <li>• Produce a range of initial design ideas and solutions and progress these through stages from sketches, through to CAD.</li> <li>• Demonstrate the use of a range of design ideas and modelling using freehand sketches, hand rendering and the use of IT to produce technical drawings, 2D &amp; 3D drawings.</li> </ul>	Learners' work should be presented as either a paper-based portfolio folder or through the use of PowerPoint, or a combination of both. The use of IT should be evident when using paper-based folders. LO1 and LO3 may be supported by witness testimony





- Present design ideas using engineering drawing techniques to conform to industry standards.
- Present fully annotated final design ideas with details of manufacturing materials and methods.

## Engineering Design (Year 11) Core Knowledge Concepts

	<b>R105: Exam</b>
<b>Lo1</b>	<b>I can identify the phases of the design cycle</b>
<b>Lo1</b>	<b>I can explain how to identify design needs</b>
<b>Lo2</b>	<b>I can explain the relationship between brief and specification</b>
<b>Lo2</b>	<b>I can identify the requirements of a design specification</b>
<b>Lo3</b>	<b>I can identify wider influences on new products</b>

Written paper OCR set and marked 1 hour – 60 marks (60 UMS)

**Learning Outcome 1:** Understand the design cycle and the relationship between design briefs and design specifications

**Learning Outcome 2:** Understand the requirements of design specifications for the development of a new product

**Learning Outcome 3:** Know about the wider influences on the design of new products

Learning Outcomes 1, 2, and 3 are assessed through an externally set written examination paper, worth a maximum of 60 marks and 1 hour in duration.

	<b>R108: Coursework Prototype:</b>
<b>Lo1</b>	<b>I can interpret a product specification</b>
<b>Lo2</b>	<b>I can describe each stage of the planning phase for making a prototype</b>
<b>Lo3</b>	<b>I can identify safe practices, machine use and PPE when prototyping</b>
<b>Lo4</b>	<b>I can manufacture a prototype, recording the stages I took.</b>
<b>Lo5</b>	<b>I can evaluate my planning, prototype and performance, making improvement suggestions</b>





**LO1** – Learners will use their designs to produce a plan of production for the model in the form of charts, tables, identifying stages of making and resources required.

**LO2** – Learners will demonstrate their knowledge and understanding of using tools, equipment and materials safely, assessing hazards and taking precautions when using tools and machines. Through observation in a workshop setting and through recording risks in the production process as part of the plan of making/production, learners will demonstrate safe working practices during the making of a prototype.

**LO3** – Learners will apply their design to produce a quality model outcome demonstrating thorough design, planning and making, using resources effectively and efficiently.

**LO4** – Learners will evaluate and identify how well their design and subsequent model outcome meets the specification, identify and recommend improvements. Learners will record these in a portfolio/ folder or PowerPoint presentation.

What do learners need to produce (evidence)	Examples of format of evidence (this list is not exhaustive)
<p>Learners will produce a 3D prototype/model product using materials such as wood, card, foam, metals, and plastics.</p> <p>Prototypes will be supported by charts/tables which identify stages of making and resources required.</p> <p>The product will be based on products / themes, from the learners’ own design ideas. Using tools, equipment and materials safely, assessing hazards and taking precautions when using tools and machines should be evidenced by annotated photos and assessment records.</p> <p>Evaluation of own performance identifying strengths and weaknesses in realising the design.</p>	<p>Learners will produce a 3D prototype/model. Learners will produce a detailed portfolio/folder or PowerPoint presentation to show the planning of making and record their evaluation. LO2 and LO3 may be supported by witness testimony.</p>



# DESIGN TECHNOLOGY

*"Every great design begins with an even better story."*

Lorinda Mamo - designer

