Subject: Art, Design, Technology, Food & Nutrition Year Group: KS4 – Yr 10 & 11 Unit: D&T: GCSE Design Technology	A IN F.
Unit objectives: (NC Statements)	JARRINER SCH
• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	
• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other users	
• Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of	
designers, engineers and technologists	
Context for study:	
Mini focussed practical tasks to build skills ready for the NEA. The FPT's will engage pupils in a variety of materials, tools, equipment, and processes. Pewter casting, clock project, etc. Theory lessons and homework exam knowledge.	ork will build the core
To develop an understanding of	
Pupils should already know from learning about Design Technology at KS3;	
0	
Sequence of learning: Knowledge content - list of statements of what students should know by progressing through this unit (identify key tier 2/3 voc	abulary in <b>bold</b> )
All pupils should know and have an understanding of;	
Know the Robotics, automation and production in industry	
Production techniques and systems – automation	
Enterprise	
Market pull and technology push	
People, society and culture	
Sustainability and the environment	
Critical evaluation of new and emerging technologies – planned obsolescence	
Design for maintenance	
Composite materials	
Technical Textiles	
Renewable and non-renewable resources	
Ethics	
Nuclear energy & Energy storage	
Kinetic pumped storage systems	
Alkaline and rechargeable batteries	
Systems	
Types of motion	
Modern materials	
Smart materials	
Material Properties	
Functionality, Aesthetics	
Environmental factors, Availability, Cost, Social & ethical factors	
Uesigning: Skotching modelling testing	
evaluation of work.	

The six Rs
Ecological issues in design and manufacture
Commercially available types and sizes of materials
Modifying properties for a purpose
Manufacturing specification/working drawings
Tools, equipment and processes
Quality control
How materials are cut shaped and formed to a tolerance
Quality control
The preparation and application of surface treatments and finishes
Types of forces and reinforcing materials
Manipulating materials to resist/work with forces
Investigate, analyse and evaluate the work of past and present designers/companies
Generating imaginative and creative designs
Constraints that are presented to designers
Using primary and secondary data to understand client and/or user needs. Market research, interviews, human factors
How to write a design brief and specification
Isometric and perspective designs, Exploded diagrams, Working drawings, Computer-based tools, Audio and visual recordings, Modelling
Satisfy the requirements of the brief
Functionality, Aesthetics Potentially marketable
Materials are selected based on functionality, cost and availability
Working accurately
Cutting, shaping and forming materials to tolerance
Planning the cutting of materials to minimize waste (linking to tolerance)
Using measuring and marking out to create and accurate and quality prototype
Selection of the correct hand tools and machinery
Safe use of tools
Preparing a material for a surface finish - Applying a surface finish
Selection and use of specialist techniques (used to shape, fabricate, construct)
How materials can be altered to change their properties
Scales of production and Commercial processes
Tier 2

# Tier 2 ... aesthetics – ergonomics – anthropometrics – evaluation – specification – components – vacuum forming – conductor – insulator – high impact polystyrene - thermoplastic – fusible – refactor – mould – former – malleable -

Possible Misconceptions and adaptive responses to these: identified through		Literacy and Oracy development opportunities:	
formative assessment/retrieval practice/diagnostic questioning.		Details of high-quality texts, explicit vocabulary teaching, modelled writing,	
0	Q&A during the lessons	structured talk.	
0	Ability to correctly identify methods of manufacture in order		
0	Short answer questions that demonstrate understanding and AfL	<ul> <li>Written specification</li> </ul>	

Assessment/Final outcomes: How will students apply their deep learning in a	<ul> <li>Written evaluation of the outcome</li> </ul>	
meaningful way that respects the subject's discipline?	<ul> <li>Completed work booklet</li> </ul>	
<ul> <li>Manufacture a working PCB with necessary components correctly in place</li> </ul>	<ul> <li>Various pick 'n' mix homework tasks</li> </ul>	
<ul> <li>Manufacture a vacuum formed blister package to house the circuit board</li> </ul>	<ul> <li>Labelling diagrams</li> </ul>	
<ul> <li>Design and make a graphic outcome that completes the packaging of the</li> </ul>	<ul> <li>Writing a sequential method of production</li> </ul>	
moisture sensor	<ul> <li>Wordsearch starter of technical words</li> </ul>	
<ul> <li>An end of unit test which encompasses the whole learning experience</li> </ul>	<ul> <li>Encourage students to answer in full sentences</li> </ul>	

	Term 1 Sept - December	Term 2 – January - March	Term 3 – April - July
	Art Deco (or other Art Movements) Project 1 – CLOCK Unit	Art Deco (or other Art Movements) Project 2 – Pewter	
		jewellery	
	Pupils will produce a selection of work in response to the	Pupils will complete a series of design and construction	• Working properties of natural and manufactured timbers
	theme of Art Deco, focusing upon construction techniques	tasks. Pupils will look at how designers have used these	<ul> <li>Sources, origins and properties of timber based materials</li> </ul>
	and design and sketchbook presentation skills.	techniques creatively in 3D design.	<ul> <li>Working to a tolerance with timber based materials</li> </ul>
	<ul> <li>How sources relate to historical contexts – 78 Derngate</li> </ul>	<ul> <li>Draw on the work and approaches of artists, craftspeople</li> </ul>	<ul> <li>Ecological issues in the design and manufacture of</li> </ul>
	<ul> <li>How ideas, forms and purposes can generate responses</li> </ul>	and designers from historical contexts – Charles Rennie	products
	that address specific needs	Mackintosh, Georg Jensen, Henning Koppell, etc	<ul> <li>Stock forms of timber based materials</li> </ul>
	<ul> <li>How ideas can be communicated using visual and tactile</li> </ul>	<ul> <li>The way in which meanings, ideas and intentions can be</li> </ul>	<ul> <li>Classification of the types and properties of polymers:</li> </ul>
9 9	elements	communicated through visual and tactile language, using	thermoforming, thermosetting
ed		formal elements	<ul> <li>Working properties of polymers</li> </ul>
N N		<ul> <li>The characteristics, properties and effects of using</li> </ul>	<ul> <li>How to shape and form using cutting, abrasion and</li> </ul>
vu vu vu vu vu vu vu vu vu vu vu vu vu v		different media, materials, techniques and processes and the	addition: polymers, paper and board
$\geq$		ways in which they can be used in relation to their creative	<ul> <li>Stock forms of polymers</li> </ul>
ΨΥ		intentions	<ul> <li>The use of production aids</li> </ul>
			<ul> <li>Tools, equipment and processes</li> </ul>
			• How materials are cut, shaped and formed to a tolerance
			<ul> <li>Explore and develop their own ideas using an iterative</li> </ul>
			process including: sketching, modelling, testing, evaluation
			of their work to improve outcomes
			• Use of computer based tools to develop and communicate
			design ideas

	<ul> <li>Use a variety of secondary sources to gather inspiration</li> </ul>	<ul> <li>Use a variety of primary and secondary sources to gather</li> </ul>	<ul> <li>Measuring and marking out: timber based materials</li> </ul>
	<ul> <li>Record ideas visually and through written annotation</li> </ul>	inspiration	<ul> <li>Making a dowel joint</li> </ul>
	<ul> <li>Use drawing skills appropriate to the context</li> </ul>	<ul> <li>Record ideas visually and through written annotation</li> </ul>	• Cutting
	<ul> <li>Isometric projection</li> </ul>	<ul> <li>Use drawing skills appropriate to the context</li> </ul>	<ul> <li>Joining timber based materials</li> </ul>
	<ul> <li>3rd angle orthographic projection</li> </ul>	<ul> <li>Critically analyse the work of others, considering colour,</li> </ul>	<ul> <li>Filing and sanding timber based materials to achieve a high</li> </ul>
	<ul> <li>Use a variety of primary and secondary sources to gather</li> </ul>	line, form, shape, tone, texture (formal elements)	quality finish
	inspiration	<ul> <li>Develop CAD/CAM skills</li> </ul>	Research skills
	<ul> <li>Record ideas visually and through written annotation</li> </ul>	<ul> <li>Use tools and equipment with accuracy and confidence</li> </ul>	<ul> <li>Measuring and marking out: polymers</li> </ul>
	<ul> <li>Use drawing skills appropriate to the context</li> </ul>	<ul> <li>Experiment with a range of visual and tactile</li> </ul>	<ul> <li>Making an earphone tidy from acrylic</li> </ul>
2	<ul> <li>Research, experiment and refine ideas in response to a</li> </ul>	elements including: - Colour - Line - Form - Tone -	<ul> <li>Making a blister pack from card and vacuum formed PVC</li> </ul>
22	starting point	Texture - Proportion - Decoration - Scale - Shape -	<ul> <li>Cutting          <ul> <li>Joining a polymer to paper and board</li> </ul> </li> </ul>
2	<ul> <li>Experiment with methods &amp; techniques, refining skills</li> </ul>	Pattern	<ul> <li>Filing and polishing polymers to achieve a high quality</li> </ul>
2	<ul> <li>Record progress and developments</li> </ul>	<ul> <li>Experiment with a range of techniques and processes</li> </ul>	finish 2
	<ul> <li>Critically analyse and evaluate own work and the work of</li> </ul>	including: - Surface treatment - Pewter casting - Assembling -	<ul> <li>Design skills</li> </ul>
	others	Modelling	
	<ul> <li>Critical analysis</li> </ul>	To demonstrate critical reflection on personal work	
	<ul> <li>Working with wood and plastic</li> </ul>	and self-evaluation	
	<ul> <li>Develop CAD/CAM skills</li> </ul>		
	<ul> <li>Use tools and equipment with accuracy and confidence</li> </ul>		
	<ul> <li>Understand the assessment objectives</li> </ul>		
	<ul> <li>Experiment with a range of techniques and processes</li> </ul>		
	including: - Constructing - Assembling - Inlay		
	<ul> <li>Past exam papers / questions</li> </ul>	<ul> <li>Past exam papers / questions</li> </ul>	End of year exam
	<ul> <li>Mock assessment – to include theory &amp; practical</li> </ul>	<ul> <li>Revision book – text book</li> </ul>	<ul> <li>Timber based materials: Mobile Phone Stand</li> </ul>
3	<ul> <li>Revision book – text book</li> </ul>	End of unit tests	<ul> <li>Polymers and Papers and Boards: Earphone Tidy</li> </ul>
ע	End of unit tests	<ul> <li>Focussed Practical Tasks</li> </ul>	
	Focussed Practical Tasks	Skills exercises	
	Skills exercises	Theory homework	
ξ	Theory homework	Design work	
	Design work	Research	
	Research		