

RMGS CURRICULUM MAP DESIGN AND TECHNOLOGY DEPARTMENT

Design and Technology prepares students to participate confidently and successfully in an increasingly technological world. Students gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental, and economic factors. Students can work creatively when designing and making and apply technical and practical expertise.

Students learn how to communicate their ideas visually using 2D and 3D sketching and rendering techniques as well as using key terminology to explain and justify their design decisions. Through practical tasks, they will understand the working properties of materials and learn techniques and processes to manipulate and form materials.

The Design and Technology curriculum at RMGS is modelled on the progression framework produced by the Design and Technology Association in response to the NC2014. The design of our curriculum also incorporates the research and recommendations of Barlex and Steeg (re-building DT V2 paper 2017). To reinforce Design and Technology's Place in the school Curriculum we have ensured both the Ideas **about** design and technology (Ideas that describe Design and Technology's fundamental nature) and Ideas **of** design and technology (ideas that form the conceptual knowledge underpinning the subject) are addressed through the units of work undertaken at KS3,4 and 5.

As the NC2014 is designed to lead to the assessment objectives of the new 9-1 Design and Technology specification and the New A level we have tried as far as possible to design the DT curriculum as a cohesive 7-year curriculum with themes and experiences that build and extend on prior learning. The constant evaluation, modification and improvement of our provision mirrors the design and manufacturing Kaizen philosophy.

We have identified the following key areas of skills and knowledge that lead to successful and valuable experiences across KS3-5.

DESIGNING

- a) Understanding contexts, users, and purposes.
- b) Generating, developing, modelling, and communicating ideas.

MAKING

- a) Planning and preparing technical documentation (Technical Drawings, schedules, costings, LCA analysis etc) ,
- b) Practical Skills and techniques

EVALUATING

- a) Their own ideas and products (using testing and objective analysis to test and refine all aspects of their work)
- b) Existing Products (disassembly, impact analysis, Life cycle analysis, economic/society impact)
- c) Key events and individuals (a range of designers, engineers, technologists, and manufacturers)

KNOWLEDGE

- a) Making products work (materials properties, system design, imbedding intelligence, using Science and maths to help design functional products and systems)

Each unit of work is assessed across these areas ([DMEK assessment](#))

Curriculum Overview							
Year Group	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
7	The Design and technology Dept works on a carousel system therefore while students will all cover the same topics and units of work the order varies between groups. Groups at year 7 stay with a single teacher for the whole year						
	Blockbot An introduction to timbers and workshop practise Homework DMEK (Design, Make, Evaluate, Know) assessment	Sleep Mask Design and manufacture a textiles sleep mask based on the work of a famous designer Homework DMEK assessment	Modelling skills Working with different modelling materials practice and demonstrate simple construction techniques Homework DMEK assessment	CADCAM Introduction to 3D CAD programs and to the emerging technologies of rapid prototyping Homework DMEK assessment	Graphics Skills Introduction to design sketching, 2D sketching and 3D sketching Homework DMEK assessment	Mechanical systems Introduction to simple mechanical systems Homework DMEK assessment	Acrylic Light Design and manufacture an acrylic light using CADCAM processes Homework DMEK assessment
8	At year 8 and 9 students spend 4 terms studying Design and Technology and 2 terms following the Food preparation and nutrition curriculum. To ensure specialist teacher support students will rotate to a new teacher every 2 terms.						
	Phone Stand Manufacture a phone charging stand from technical drawings focussing on accuracy Homework DMEK assessment	Casting Design and manufacture an item of cast pewter jewellery based on retro robots Homework DMEK assessment	Graphics Skills Intermediate design sketching skills Homework DMEK assessment	CADCAM Intermediate CAD design skills Homework DMEK assessment	System Design Introduction to programmable components. Design and prototype an automated system using inputs and outputs Homework DMEK assessment	Design Challenge Investigate and identify a problem in a context and develop and prototype a solution Homework DMEK assessment	FOOD PREP and NUTRITION Eatwell plate, nutrition, and food waste Practical assessment End of Unit test
9	V&A Innovate A live national design competition to work as team to design an innovative solution to a real problem Homework DMEK assessment V&A museum judging criteria	Aluminium Animal Design and manufacture a 3D animal character from sheet metal Homework DMEK assessment	Graphics skills advanced design sketching skills Homework DMEK assessment	CADCAM Introduction to Fusion 360 CAD and 3D printing Homework DMEK assessment	Modelling Skills Using modelling foam to prototype simple models Homework DMEK assessment	Food Preparation and Nutrition Factors affecting food choice Practical cooking skills Consequences of a poor diet Homework Practical assessment End of Unit test	
	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	
10	Practical Design and Make practise Traditional wooden box in hardwood Practical assessment Design Communication skills	Practical Design and Make practise Traditional wooden box in hardwood Practical assessment Design Communication skills	Practical Design and Make practise Flat pack polypropylene promotional light Practical assessment	Practical Design and Make practise Flat pack polypropylene promotional light Practical assessment	MOCK NEA Contextual project Practical assessment Theory of Design and Technology Forces and stresses	Launch Assessed NEA Theory of Design and Technology Energy Generation Energy storage	

	<p>Dieter Rams project, focussing on design sketching skills Practical assessment</p> <p>Theory of Design and technology Investigation, primary and secondary data. The work of Others Design strategies Communication of design idea Homework End of Unit Test</p>	<p>3D sketching and rendering skills Practical assessment</p> <p>Theory of Design and Technology Sources and origins and working properties of Papers and boards Timbers Metals and Alloys Polymers Textiles Homework End of Unit Test</p>	<p>MOCK NEA Contextual project Practical assessment</p> <p>Theory of Design and Technology Selection of materials Tolerances Material management Tools equipment and processes Surface treatment and finishes Homework End of Unit Test</p>	<p>MOCK NEA Contextual project Practical assessment</p> <p>Theory of Design and Technology Specialist material knowledge Sources and origins Working with Timbers Commercial manufacturing Homework End of Unit Test</p>	<p>Improving functionality Ecological and social footprint The Six R's Scales of production Homework End of Unit Test</p>	<p>Modern Materials Smart Materials Homework</p>	
11	<p>NEA Sections A&B</p> <p>Theory of Design and Technology Composites and technical textiles Systems approach to design Electronics systems Mechanical devices Homework End of Unit Test</p>	<p>NEA Sections C&D</p> <p>Theory of Design and Technology Industry and enterprise Sustainability and environment People culture and society Production systems Informing design decisions Homework End of Unit Test</p>	<p>NEA Sections E &F</p> <p>Theory of Design and Technology Revision</p>	<p>Theory of Design and Technology Revision</p>			
12	<p>Practical Design and Make practise Modelling, sketching and CAD project</p> <p>Design Methods Homework End of Unit Test</p>	<p>Practical Design and Make practise Bluetooth speaker project Design and manufacture a Bluetooth speaker system</p> <p>Design processes Homework End of Unit Test</p>	<p>Practical Design and Make practise Bluetooth speaker project Design and manufacture a Bluetooth speaker system</p> <p>Responsible design Homework End of Unit Test</p>	<p>Practical Design and Make practise Bluetooth speaker project Design and manufacture a Bluetooth speaker system</p> <p>Pallet Furniture A project in collaboration with Tywdall primary school t</p> <p>Product design considerations Homework End of Unit Test</p>	<p>NEA Launch</p> <p>Modern industrial and commercial considerations Homework End of Unit Test</p>	<p>NEA</p> <p>Composite smart and modern materials Homework End of Unit Test</p>	

13	NEA Performance characteristics of materials Homework End of Unit Test	NEA Processing and working with Materials Homework End of Unit Test	NEA Theory of Design and Technology Revision	Theory of Design and Technology Revision		
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