Design and Technology GCSE (9–1) Edexcel

Two-year course Planner

The students have 3 lessons per week. The two theory lessons are complemented by focussed projects undertaken during their third lesson.

The NEA is introduced on June 1 of Year 10.

Autumn term – start of Year 10		
Core content		
Week	**Theory 1**	**Theory 2**
2 7/9/20	Introduction to the course	1.3 How energy is generated and stored to choose and use appropriate sources to make products and power systems
3 14/9/20	1.2 How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment	1.2 How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment
4 21/9/20	1.1 The impact of new and emerging technologies	1.1 The impact of new and emerging technologies
5 28/9/20	1.4 Developments in modern and smart materials, composite materials and technical textiles	1.4 Developments in modern and smart materials, composite materials and technical textiles
6 Assessment 5/10/20	Revision	Assessment EMB Aut A
7 Therapy & Challenge 12/10/20	Therapy	Challenge
8 19/10/20	1.5 The functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces	1.5 The functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces
Half term		
9 2/11/20	1.6 How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs	1.7 The use of programmable components to embed functionality into products to enhance and customise their operation
10 9/11/20	1.8 The categorisation of the types, properties and structure of ferrous and non-ferrous metals	1.9 The categorisation of the types, properties and structure of papers and boards
11 16/11/20	1.10 The categorisation of the types, properties and structure of thermoforming and thermosetting polymers	1.11 The categorisation of the types, properties and structure of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles
12 23/11/20	1.12 The categorisation of the types, properties and structure of natural and manufactured timbers	1.13 All design and technological practice takes place within contexts which inform outcomes

13 Assessment 30/11/20	Revision	Assessment EMB Aut B
14 Therapy & Challenge 7/12/20	Therapy	Challenge
15 14/12/20	1.17 Develop, communicate, record and justify design ideas, applying suitable techniques	1.17 Develop, communicate, record and justify design ideas, applying suitable techniques
Christmas Break		
16 4/01/21	1.14 Investigate environmental, social and economic challenges when identifying opportunities and constraints that influence the processes of designing and making	1.15 Investigate and analyse the work of past and present professionals and companies to inform design (1.15.1)
17 11/01/21	1.16 Use different design strategies to generate initial ideas and avoid design fixation	1.17 Develop, communicate, record and justify design ideas, applying suitable techniques
18 18/01/21	1.15 Investigate and analyse the work of past and present professionals and companies to inform design (1.15.2)	1.15 Investigate and analyse the work of past and present professionals and companies to inform design (1.15.2)
19 Assessment 25/01/21	Revision	Assessment Spr A
20 Therapy & Challenge 1/02/21	Therapy	Challenge
21 8/02/21	1.16 Use different design strategies to generate initial ideas and avoid design fixation	1.17 Develop, communicate, record and justify design ideas, applying suitable techniques
Half term		
22 22/02/21	1.16 Use different design strategies to generate initial ideas and avoid design fixation	1.17 Develop, communicate, record and justify design ideas, applying suitable techniques
23 1/03/21	Review Module	Review Module
24 8/03/21	Revision	End of Module Assessment
25 Therapy & Challenge 15/03/21	Therapy	Challenge

Specialist Material Area (Polymers)		
26 22/03/21	**4.2.3 Sources and origins – where oil/polymers are resourced/manufactured and their geographical origin:** a Iraq/Saudi Arabi b Arabia/Iran/Kuwait/UAE c Russia/Kazaakhstan	**4.2.6 Social footprint:** a trend forecasting b impact of extraction and material production on communities and wildlife c ease and difficulty of recycling and disposal.
27 29/03/21		
Easter Break		
28 19/04/21	**4.2.7 Ecological footprint:** a sustainability b extraction and erosion of the landscape c processing d transportation e wastage f pollution.	**4.3.1 Aesthetic factors:** a form b colour c texture. **4.3.2 Environmental factors:** a sustainability b pollution c Biodegradable polymers Biopol^{R}
29 26/04/21	**4.3.3 Availability:** a use of stock materials b use of specialist materials c effect of global oil supply and price **4.3.4 Cost factors:** a quality of material b manufacturing processes c polymer treatments	**4.3.6 Cultural and ethical factors:** a avoiding offence b suitability for intended market c use of colour and language d the consumer society e the effects of mass production f built-in product obsolescence. **4.3.5 Social factors:** a use for different social groups b trends/fashion c popularity.
30 03/05/21	4.2.1 Thermoforming Polymers: a) acrylic (PMMA Polymethylmethacrylate) (in topic 1) b) high impact polystyrene (HIPS) (in topic 1) c) biodegradable polymers – Biopol® (in topic 1) d) polystyrene (HDPS) rigid (high density polystyrene) e) expanded polystyrene f) Styrofoam™ extruded polystyrene	4.2.2 Thermosetting Polymers: a Polyester resin b Urea formaldehyde

	(EPS) g) polyvinyl chloride (PVC) h) acrylonitrile-butadiene-styrene (ABS) i) polyethylene terephthalate (PET) j) urethane/polyurethane fluoroelastomer.	
31 Assessment 10/05/21	Revision	End of Module Assessment
32 Therapy & Challenge 17/05/21	Therapy	Challenge
33 24/05/21	4.2.4 The physical characteristics of each polymer: a density b durability	4.2.5 Working properties – the way in which each material behaves or responds to external sources: a ductility (in topic 1) b malleability (in topic 1) c hardness (in topic 1) d durability e toughness f elasticity g tensile strength h compressive strength.
Half Term		
7/06/21	Contextual challenge – Investigate	4.4.1 Forces and stresses: a compression b tension c shear d flexibility
14/06/21	Contextual challenge – Investigate	4.4.1 Forces and stresses: a compression b tension c shear d flexibility
28/06/21	Contextual challenge – Design Brief	4.4.2 Reinforcement/stiffening techniques: a frame structures b triangulation
5/07/21	Contextual challenge – Investigate	4.5.1 Calculating Quantity Stock forms/types: a bar b sheet c pipe/tube d mouldings e resin f granules/powder

		g film
12/07/21	Contextual challenge – Specification	4.5.2 Sizes: a Cross-sectional area
19/07/21	UHS FEST	
Summer Break		
1		
2 7/9/20	Contextual challenge – Specification	4.6.1 Manufacturing Processes: a blow moulding b press moulding c extrusion d injection moulding e polymer welding f line bending
3 14/9/20		4.6.1 Manufacturing Processes: a blow moulding b press moulding c extrusion d injection moulding e polymer welding f line bending
4 21/9/20		EMB 1
5 28/9/20		4.6.1 Manufacturing Processes: a blow moulding b press moulding c extrusion d injection moulding e polymer welding f line bending
6 5/10/20		2.6.2 Scales of production: a one off b batch c mass production d continuous.
7 12/10/20		EMB2
8 19/10/20		4.6.3 Techniques for quantity production – methods that are employed when making products in quantity: a marking-out methods (use of reference points, lines and surfaces) b jigs c templates d patterns e moulds f computer-aided manufacturing (CAM)

		g quality control h working within tolerance
Half Term		
9 2/11/20		Revision
10 9/11/20		Revision
11 16/11/20		EMB
12 23/11/20		Revision
13 30/11/20	Mocks	Mocks
14 7/12/20	Mocks	Mocks
15 14/12/20		
Christmas Break		

23		
24		4.6.3 Techniques for quantity production – methods that are employed when making products in quantity: a marking-out methods (use of reference points, lines and surfaces) b jigs c templates d patterns e moulds f computer-aided manufacturing (CAM) g quality control h working within tolerance
25		a marking-out methods (use of reference points, lines and surfaces) b jigs c fixtures d patterns e moulds f computer-aided manufacturing (CAM) g quality control h working within tolerance
26	2.7.1 Tools and equipment: a hand tools b machinery c digital design and manufacture.	2.7.2 Shaping: a filing b cutting/shearing c drilling d turning e milling f bending g abrading/grinding h casting i deforming and reforming.
27	2.7.2 Shaping: a filing b cutting/shearing c drilling d turning e milling f bending g abrading/grinding h casting i deforming and reforming.	2.7.2 Shaping: a filing b cutting/shearing c drilling d turning e milling f bending g abrading/grinding h casting i deforming and reforming.
Easter break		
Summer term		
28	2.7.3 Fabricating/constructing: a welding b brazing c soldering d stamping	2.7.3 Fabricating/constructing: a welding b brazing c soldering d stamping

	e punching f riveting snap and pop g sheet metalwork h wastage i addition.	e punching f riveting snap and pop g sheet metalwork h wastage i addition.
29	2.7.4 Assembling: a tapping/threading b fastening – use of nuts, bolts and washers c machine screws d use of adhesives – contact adhesive, epoxy resin.	2.8.1 Surface finishes and treatments: a paint b dip coating c electroplating d anodising e galvanising f powder coating g lacquering h polishing.
30	2.8.1 Surface finishes and treatments: a paint b dip coating c electroplating d anodising e galvanising f powder coating g lacquering h polishing.	End-of-term internal assessment feedback and peer assessment
31	Mini contextual challenge	
Half term		
32	Mini contextual challenge	
33	Mini contextual challenge	
34	Mini contextual challenge	
35	Mini contextual challenge	
36	Mini contextual challenge	
37	Mini contextual challenge	
38	Mini contextual challenge	
Start of summer break, end of Year 10		
39	Contextual challenge – Investigate	
40	Contextual challenge – Investigate	
41	Contextual challenge – Specification	
42	Contextual challenge – Design	
43	Contextual challenge – Design	
44	Contextual challenge – Design	
45	Contextual challenge – Design	
46	Contextual challenge – Design	

Half term	
47	Contextual challenge – Design
48	Contextual challenge – Review
49	Contextual challenge – Develop
50	Contextual challenge – Develop
51	Contextual challenge – Develop
52	Contextual challenge – Develop
53	Contextual challenge – Review
Christmas break	
Spring term	
54	Mock examinations
55	Contextual challenge – Manufacture
56	Contextual challenge – Manufacture
57	Contextual challenge – Manufacture
58	Contextual challenge – Manufacture
59	Contextual challenge – Manufacture
Half term	
60	Contextual challenge – Manufacture
61	Contextual challenge – Manufacture
62	Contextual challenge – Manufacture
63	Contextual challenge – Manufacture
64	Contextual challenge – Testing and Evaluation
65	Contextual challenge – Testing and Evaluation
Easter break	
Summer term	
66	Revision
67	Revision
68	Revision
69	Revision
70	Revision
71	Revision
Half term followed by examinations	