Belfairs Academy

OCR Design Engineering Fundamentals Map

Year 9 OCR Cambridge Nationals Level 2

Knowledge	Skills
Engineering sectors and products	To be able to identify different types of engineering sectors.
	To be able to identify products manufactured by different engineering sectors
Understanding the design process	To be able to identify design phases associated with different engineering processes.
	To be able to highlight the applications, characteristics, advantages and disadvantages for the design processes
Scales of production	To be able to identify and explain different scales of production.
	To be able to highlight the advantages and disadvantages of different scale of production
Modern production methods	To be able to explain the application of different types of modern production methods.
	To be able to highlight the advantages and disadvantage of modern production methods
Modern and smart materials in engineering	To be able to explain the applications of different type of modern and smart materials in engineering
	To be able to identify the properties and characteristics of different type of modern and smart materials
	To know the advantages and disadvantages of different types of modern and smart material in engineering
Understanding user needs in design engineering	To be able to recognise needs of different target groups in order to identify and solve real life problems. To explain the process of gaining valuable information to inform user appropriate design solutions

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Understanding legal symbols to support design ideas	To be able to explain the difference between a range of regulatory laws linked with designs in the engineering sector
Stock forms and manufacturing	To be able to identify a range of components used in common engineered products and determine their characteristic and usability in a range of design situations To be able to determine correct processes for manufacturing in different environments and the suitability of standard components for a range of design proposals
Environmental impact	To be able to determine the environmental impact of a range of engineering products and processes.
Product analysis and disassembly evaluation	To determine a range of inspirational features across different design proposals and make judgements on developmental solutions. To be able to disassemble products to determine an in depth analysis of both common and complex features
Design development and CAD	To be able to communicate ideas through a range of 2D and 3D sketching, technical drawing and CAD. To determine feedback protocol for development of ideas in order to improve design solutions.
Prototype manufacture	To ensure essential planning is carried out to create and test a prototype from a design solution. To be aware of and implement safety procedures in a variety of manufacturing and modelling processes.

	To evaluate the results from prototype testing, including user input and review from developments and continued research.