

SIL – Year 12 into 13 - DESIGN & TECHNOLOGY

There are 2 parts to your SIL:

- 1. Exploring the key terms below (see below) this should be completed in conjunction with your NEA and you should incorporate as many terms as possible.
- 2. Completing your 10 design ideas (see https://thomascrosland.wixsite.com/ncb-de/copy-of-11-12-sil)

1) Looking at the 9 sections we have covered this year, you need to ensure you are knowledgeable and skilled enough to succeed in your NEA <u>and</u> in your exams. To review the 9 topics you need to look through the table below and complete a paragraph of knowledge in each area. Those areas that you are unable to or struggle to make comment on are the areas you need to study further. The areas you are knowledgeable on should be linked to your NEA and the examples you use can be used for including in you annotations.

Ensure each of the areas are **explained**, with examples demonstrating your depth of knowledge (not those out of the textbook – use your own linked to your NEA if you can). Make links to other areas/ topics within the course. See the example below. Remember, you will be assessed on your knowledge of depth and understanding – WHY, not WHAT?

You will see this is quite a comprehensive list but it covers the entire subject content. Some of these areas you WILL include in the execution of your NEA - make note of areas you have already referred to, but also areas that you have missed – these are the areas you will need to include.

Topic area	Explanation of topic area with examples	Links to other topics
User requirements	During the research, design and development of a product, it is key to	Ergonomics/ anthropometrics.
	consider the requirements of the user to ensure the outcome suits them.	User needs.
	Their requirements are a combination of their needs and wants and can	User wants.
	include things such as affordability, sizing, usability or aesthetics.	'Good design'
User needs		
User wants		

Economic considerations	
Market considerations	
Primary research	
Secondary research	
Stakeholders	
Qualitative observation	
Quantitative observation	
User centred design	
(UCD)	
Usability	
Iterative design	
SWOT analysis	
Focus groups	
Participatory design	
Feasibility analysis	
Trend forecasting	
Crowdfunding	
Venture capitalists	
Innovation	
Ergonomics	
Anthropometrics	
Percentiles	
Aesthetics	
Throwaway society	
User interface	
Software interface	
Inclusive design	
Exclusive design	
Initial concept	
Product lifecycle	
Lifecycle assessment	
Planned obsolescence	

Material properties	
Standardised	
components Printed circuit board	
One off production	
Batch Production	
Mass Production	
Continuous Production	
J-I-T production	
Lean manufacturing	
Product disassembly	
Environmental	
considerations	
Social considerations	
Moral issues	
Cultural issues	
Design styles	
Marketing	
Branding	
Marketing Mix (4Ps)	
SAVE marketing approach	
Inbound marketing	
Outbound marketing	
Standardised	
components	
Product evolution	
Artificial intelligence	
Adaptative manufacture	
Subtractive manufacture	
James Watt	
Isambard Kingdom	
Brunell	

James Dyson	
Product lifecycle stages	
Unique selling point	
(USP)	
Social Media Marketing	
eWOM	
Blue sky thinking	
Incremental innovation	
Social footprint	
Ecological footprint	
Natural materials	
Synthetic materials	
Metals (ferrous, non-	
ferrous and alloy)	
Timbers (hardwood and	
softwood)	
Manufactured boards	
Polymers (thermo and	
thermo setting)	
Biopolymers	
Smart materials (think	
xxxxxx chromic)	
Modern materials	
Composite materials	
Papers and boards	
Fabrics/ textiles	
Energy sources	
Circular economy	
Linear economy	
Internet of things (IoT)	
The EU Renewable	
Energy Directive	

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CAD CAD	System diagram	
	Tolerance	
CAM	CAD	
	CAM	

CAE	
Project management	
Gantt Chart	
Critical path analysis	
Functional performance	
Costs	
Cost vs performance Material characteristics	
vs material properties The 6 R's	
Standardised tests	
Geotextiles	
Force extension graph	
Super alloys	
High performance alloys	
Nano materials	
Shape memory alloys	
Shape memory polymers	
Density	
Tensile strength	
Strength-to-weight	
Hardness	
Durability	
Thermal conductivity	
Electrical conductivity	
Corrosion resistance	
Stiffness	
Elasticity	
Plasticity	
Impact resistance	
(toughness)	
Brittleness	

Malleability	
Ductility	
Machinability	
Compressive strength	
Tensile strength	
Structural integrity	
Sacrificial parts	
Triangulation	
Material protection	
Shape shifting materials	
Viscosity	
Magnetorheological fluid	
Microcontroller	
Actuator	
Digital signal	
Analogue signal	
Input device	
Output device	
Basic Machine Principal	
Motion types	
Levers	
Compound levers	
Linkages	
Gears	
Compound gears	
Chain and sprocket	
Belt and pulley	
Cams	
Screw threads	
Bearings	
Efficiency	
Mass	

Weight	
Static forces	
Dynamic forces	
Youngs Modulus	
Resistors	
Inputs	
Battery capacity	
Sensors	
Outputs	
MOSFETs	
Open electronic systems	
Closed electronic systems	
Pneumatics	
Rapid prototyping	
Wastage/ subtractive	
manufacture	
Jig	
Template	
Additive manufacture	
Knock down fittings	
Metal Casting methods	
Sheet metal processes	
Metal joining	
Timber joining	
Polymer joining	
Tolerance	
CNC production	
Measuring instruments	
Polymer forming	
methods	
Design for Manufacture	
and Assembly (DFMA)	

Quick response	
manufacturing (QRM)	
Lead time	
Fully automated	
manufacture	
Direct digital	
manufacturing (DDM)	
Computerised stock	
control	
Repetitive flow	
production	
Total quality	
management (TQM)	
Quality Control	
Quality Assurance	
British Standards (BSI)	
European Standards (CE)	
Commercial viability	
Design fixation	
Destructive testing	
Non-destructive testing	
COSHH (2002)	
PPE	
Risk Assessment	
Health and Safety at	
Work act (1974)	
Consumer Rights Act	
(2015)	
Trade Descriptions Act	
(1968)	
Consumer Protection Act	
(1978)	