

Topic/Unit Focus	1			2			Revision		
POLYMERS	R	A	G	R	A	G	R	A	G
Thermofforming plastics (acrylic, HDPE, PVC etc)									
Thermosetting plastics (Epoxy resin, Urea-formaldehyde etc)									
Bio plastics (corn starch)									
Stock forms									
Environmental impact, cultural and sustainability considerations									
Joining methods									
Workshop tools and machinery for cutting, joining and shaping									
Usage									
INVESTIGATION INTO WORK OF OTHERS	R	A	G	R	A	G	R	A	G
DYSON and ALESSI									
Phillippe Stark, David Adjaye, Marc Breuer									
UNDERSTANDING DESIGN STRATEGIES	R	A	G	R	A	G	R	A	G
Collaboration									
User centred design									
Iterative design									
Design fixation									
Systems approach design									
MATERIAL PROPERTIES	R	A	G	R	A	G	R	A	G
Absorbency (resistance to moisture)									
Density									
Electrical and Thermal conductivity									
Strength, Hardness, Toughness									
Malleability									
Ductility and elasticity									
FORCES AND STRESSES	R	A	G	R	A	G	R	A	G
Tension, Compression,Bending, Torsion, Shear									
Enhancing materials to resist forces and improve functionality									
MECHANICAL DEVICES	R	A	G	R	A	G	R	A	G
Levers (first order, second order and third order levers) + uses									
Linkages (bell cranks, push/pull) +uses									
Rotary systems (CAMs, pulleys and belts, Gear trains) +uses									
Types of movement (Linear, Rotary, reciprocating,oscillating)									
SYSTEMS (ELECTRONIC and MECHANICAL)	R	A	G	R	A	G	R	A	G
Identify electronic components and symbols and their functions									
Input components (Types of sensors and switches)									
Processes (microcontrollers, timers)									
Output components (Buzzers, speakers, lamps)									
The role of programmable components									
Drawing circuit boards. Flow charts,									
Tools and equipment, processes in manufacturing circuit boards									
COMMERCIAL PROCESSES	R	A	G	R	A	G	R	A	G
Metals (milling casting)									
Polymers (Injection Moulding and extrusion)									
Timbers (Routing and turning)									
Paper and boards (Offset lithography, die cutting)									

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ECOLOGICAL AND SOCIAL FOOTPRINT	R	A	G	R	A	G	R	A	G
Deforestation, Mining, drilling, farming (society impact)									
Life cycle analysis of product or material (Carbon footprint)									
Apply the 6Rs (Reduce, reuse, refuse, repair, recycle, rethink)									
Evaluate the impact on others (pollution, habitat, conditions)									
Environmental impact, cultural and sustainability considerations									
Material selection (Finite, non finite and disposal of waste)									
IMPACT OF NEW AND EMERGING TECHNOLOGIES	R	A	G	R	A	G	R	A	G
Industry (Automation and robotics impact on workforce, company)									
Innovation business (crowd funding, fair trade, co-operatives, Virtual marketing and retail)									
Market pull and market push									
Changes in trends (respecting faiths and beliefs)									
Computer aided design (CAD) impact on industry, role									
Computer aided manufacture (CAM) impact on industry future role									
Just in Time (JIT) manufacture, ordering									
Lean manufacturing									
ENERGY GENERATION AND STORAGE	R	A	G	R	A	G	R	A	G
How is energy made from Fossil fuels (for and against arguments)									
What are fossil fuels (coal, Gas, Oil, impact and future concerns)									
How is Nuclear power generated (for and against arguments)									
Renewable Energy (wind, solar, tidal, biomass, hydro-electric)									
How is renewable energy generated (for and against arguments)									
Energy storage (Alkaline, rechargeable batteries)									
SMART AND MODERN MATERIALS	R	A	G	R	A	G	R	A	G
Definition of Modern materials									
Definition of Smart materials									
Named modern materials and their properties and uses									
Named Smart materials and their properties and uses									
Composite materials									

Therapy (Interventions)
Additional Support / Guidance

NON EXAMINED ASSESSMENT (Coursework) SKILLS	1	2	Revision

