

Holy Family Catholic School – Faculty of Mathematics
Autumn Half-Term 1

Year 10

Subject –Design and Technology

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge question	Red Zone
Week 1 1 - Understanding the course expectations	Expectations, NEA	Course expectations	Expectations, Components,	I can understand the content and expectations of the course. I can understand NEA component 1 and NEA component 2.	NA	Complete the worksheet on using computers for coursework
2 – Industry and enterprise	Emerging, computers, automation, innovation	New and emerging technologies	Emerging, computers, automation, innovation	I can identify new technologies I can describe the impact of automation on the workplace I can explain how innovation can drive product development	A company has developed a new reusable water bottle and wants to increase its profits. Which action is most closely linked to enterprise rather than manufacturing industry? A. Installing automated production machines to make bottles faster. B. Identifying a gap in the market and creating a unique branding strategy. C. Buying raw materials in larger quantities to reduce costs.	Complete the worksheet on industry and enterprise

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3 – Practical learning Wood-based materials	Rulers Try squares Marking gauges Metric accuracy	Applying material knowledge and techniques	Rulers Try squares Marking gauges Metric accuracy	I can use rulers, try squares and marking gauges I can describe common errors when using marking tools	NA NA	Complete the practical tasks using the correct tools and equipment to accurately mark your work
Week 2 4 - Sustainability and the environment	Sustainable Resources Environment Disposal emissions	New and emerging technologies	Sustainable Resources Environment Disposal emissions	I can describe the impact of resource consumption I can identify problems of waste disposal I can explain the impact of products on the environment	A company has developed a new reusable water bottle and wants to increase its profits. Which action is most closely linked to enterprise rather than manufacturing industry? A. Installing automated production machines to make bottles faster. B. Identifying a gap in the market and creating a unique branding strategy. C. Buying raw materials in larger quantities to reduce costs.	Complete the worksheet on sustainability and the environment
5 – Practical learning Wood-based materials	Tenon saw Coping saw Files Rasps	Applying material knowledge	Tenon saw Coping saw Files Rasps	I can use tools such as tenon saws, coping saws, files and rasps to shape and cut wood		Complete the practical tasks using the correct tools and equipment to accurately shape and cut your work

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	Technique	and techniques	Technique	I can demonstrate correct techniques when using cutting tools		
Week 3 6- People, culture and society	Technology push Market pull Fashion trends Societal impact	New and emerging technologies	Technology push Market pull Fashion trends Societal impact	I can identify technology pull and push I can describe changes in fashion and trends I can explain the impact of products on society	When designing a new product, why is it important to consider people, culture and society? A. To ensure the product meets the needs, values and expectations of different user groups. B. To make the product as expensive as possible. C. To reduce the amount of testing needed before launch.	Complete the worksheet on people, culture and society
7- Practical learning Wood based materials	PPE Safety Workshop Machinery Behaviour	Applying material knowledge and techniques	PPE Safety Workshop Machinery Behaviour	I can select appropriate PPE I can use machinery in a safe manner I can show appropriate behaviour and attitudes in the workshop	NA	Complete the practical tasks using the correct tools and equipment to accurately shape and cut your work while showing awareness of safety in the workshop

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8 – Production techniques and systems	Automation CAD/CAM FMS JIT	New and emerging technologies	CAD/CAM Automation Products	I can identify uses of automation I can describe the impact of FMS on production I can explain the JIT system	Question: A manufacturer wants to produce 100,000 identical plastic components efficiently. Which production system would be most appropriate? A. One-off production, where each item is made individually. B. Batch production, where small groups of products are made at a time. C. Mass production, using automated systems to make large quantities of identical products.	Complete the worksheet on production techniques and systems
Week 4 9- Informing design decisions	Planned obsolescence The 6 R's Ethical Environmental Sustainability Disposal	New and emerging technologies	Planned obsolescence The 6 R's Ethical Environmental Sustainability Disposal	I can identify features of planned obsolescence I can explain ethical design concerns I can describe the design of recyclable products	A designer is creating a new lunchbox for secondary school students. Which source of information would be most useful for informing design decisions?	Complete the worksheet on design decisions

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					A. Asking the target users about their needs, preferences and problems with existing lunchboxes. B. Choosing materials based only on what is available in the workshop. C. Copying the appearance of the most expensive lunchbox on the market.	
10 – Practical learning Wood based materials	Joining Screws Nails Adhesives Joints Tools	Applying material knowledge and techniques	Joining Screws Nails Adhesives Joints Tools	I can use screws, nails, adhesives I am able to describe other joining techniques I can select tools appropriately	NA	Complete the practical tasks using the correct tools and equipment to accurately join your workpieces together
Week 5 11- Energy generation	Power Fossil fuels Renewable energy Finite energy	Energy, systems, materials and devices	Power Fossil fuels Renewable energy Finite energy	I can describe how power is generated I can explain renewable energy I am aware of arguments for and against renewable energy	A designer is creating a new lunchbox for secondary school students. Which source of information would be most useful for informing design decisions?	Complete the worksheet on energy generation

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					A. Asking the target users about their needs, preferences and problems with existing lunchboxes. B. Choosing materials based only on what is available in the workshop. C. Copying the appearance of the most expensive lunchbox on the market.	
12 – Practical learning Wood based materials	Safety Machinery Planning Modification PPE	Applying material knowledge and techniques	Safety Machinery Planning Modification PPE	I can select appropriate PPE I can use machinery in a safe manner I am able to demonstrate appropriate behaviour and attitudes in the workshop	NA	Complete the practical learning lesson demonstrating safety awareness and utilising appropriate techniques to complete the task
13 – Energy storage	Mechanical power Pneumatics Kinetic Alkaline rechargeable	Energy, systems, materials and devices	Mechanical power Pneumatics Kinetic Alkaline rechargeable	I can describe how mechanical power is stored I can describe pneumatics and hydraulics I can explain the function of alkaline and rechargeable batteries	A designer is creating a new lunchbox for secondary school students. Which source of information would be most useful for informing design decisions? A. Asking the target users about their	Complete the worksheet on energy storage

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					needs, preferences and problems with existing lunchboxes. B. Choosing materials based only on what is available in the workshop. C. Copying the appearance of the most expensive lunchbox on the market.	
Week 6 14 – Practical learning Wood based materials	Safety Machinery Planning Modification PPE	Applying material knowledge and techniques	Safety Machinery Planning Modification PPE	I can select appropriate finishes such as paint, varnish and stain I can select finishes appropriate to specific materials	NA	Complete the practical learning lesson demonstrating safety awareness and utilising appropriate finishing techniques to complete the task
15 – Modern materials	Modern materials Polymers Functionality Development	Energy, systems, materials and devices	Modern materials Polymers Functionality Development	I can recognise a range of modern materials I can describe developments in modern materials I can explain the functionality of modern materials	Why might a designer choose a modern material such as carbon fibre for a product? A. Because it can offer improved properties, such as high strength and low weight. B. Because modern materials are always cheaper than traditional materials.	Complete the worksheet on modern materials

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					C. Because modern materials can be used without considering the product's function.	
Week 7 16 - Smart materials	Reaction Stimuli Functional Properties	Energy, systems, materials and devices	Reaction Stimuli Functional Properties	I can recognise a range of smart materials I can describe developments in smart materials I can explain the functionality of smart materials	Why might a designer choose a modern material such as carbon fibre for a product? A. Because it can offer improved properties, such as high strength and low weight. B. Because modern materials are always cheaper than traditional materials. C. Because modern materials can be used without considering the product's function.	Complete the worksheet on smart materials
17 – Composite materials and technical textiles	Combining Composite Technical Textiles Encapsulation	Energy, systems, materials and devices	Combining Composite Technical Textiles Encapsulation	I can recognise a range of composite materials I can describe developments in composite materials I can explain the functionality of composite materials and technical textiles	Why might a designer choose a modern material such as carbon fibre for a product? A. Because it can offer improved properties,	Complete the worksheet on composite materials and technical textiles

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					such as high strength and low weight. B. Because modern materials are always cheaper than traditional materials. C. Because modern materials can be used without considering the product's function.	
18 – Practical learning Wood based materials - continued	Finish Stain Protection Enhancement Specific	Applying material knowledge and techniques	Finish Stain Protection Enhancement Specific	I can select appropriate finishes such as paint, varnish and stain I can select finishes appropriate to specific materials	NA	Complete the practical learning lesson demonstrating safety awareness and utilising appropriate finishing techniques to complete the task
Week 8 19 – Systems and designing	Electronic systems Diagrams Flowcharts Systems Sub systems	Energy, systems, materials and devices	Electronic systems Diagrams Flowcharts Systems Sub systems	I can explain the principles of electronic systems I can describe systems diagrams I can identify common components	Why might a designer choose a modern material such as carbon fibre for a product? A. Because it can offer improved properties, such as high strength and low weight. B. Because modern materials are always cheaper than traditional materials.	Complete the worksheet on systems and designing

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					C. Because modern materials can be used without considering the product's function.	
20 – Practical learning final lesson	Finish Stain Protection Modifications Conclusions	Applying material knowledge and techniques	Finish Stain Protection Modification s Conclusions	I can select appropriate finishes such as paint, varnish and stain I can select finishes appropriate to specific materials	NA	Complete the practical learning lesson demonstrating safety awareness and utilising appropriate finishing techniques to complete the task