SAMPLE COURSE OUTLINE

MATERIALS DESIGN AND TECHNOLOGY
PRELIMINARY UNIT 3 AND UNIT 4
Sample course outline  
Materials Design and Technology – Preliminary  
Unit 3 and Unit 4  

Unit 3 (notional timeframe only – may take up to whole year)  

<table>
<thead>
<tr>
<th>Week</th>
<th>Key teaching points</th>
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| 1    | Introduction to design fundamentals, materials and workshop/studio | Materials – Nature and properties of materials  
Identify by appearance and name materials within the chosen context:  
• metals – types of steel, aluminium, brass, copper, tin, stainless steel  
• textiles – cotton, denim, linen, wool, silk, synthetics  
• wood – softwoods, hardwoods, different types of manufactured boards  
Identify basic aesthetic properties or characteristics, such as:  
• colour – bright, dull  
• appearance – patterned, plain  
• texture – soft, hard, smooth, rough  
• density – heavy, light  
Materials in context  
Identify basic uses for materials within the chosen context:  
• metals – kitchen utensils, workshop tools  
• textiles – clothing, household items  
• wood – furniture  
Design fundamentals and skills  
Discuss:  
• needs and wants  
• existing products  
• design fundamentals  
  ▪ aesthetics, function, safety, cost  
• factors affecting design  
  ▪ aesthetics, function  
  ▪ social requirements, environmental requirements |
| 2–3  | Task 1: Introduction to design fundamentals  
Introduction and application of design fundamentals and factors affecting design through selected products and materials  
Comparing products, their uses, and understanding the nature and properties of materials of different products  
Task 1 due Week 2  
Task 2: Material properties for different product uses  
Identifying the different properties or characteristics of materials, and explore why these materials are chosen for each product’s function  
Task 2 due Week 3 | |
| 4–7  | Use of technology: practical skills and techniques within the design process  
Task 3: Developing and communicating design ideas  
Using simple drawing and annotation techniques, develop a product, while making changes through design choices  
Task 3 due Week 7 | Design fundamentals and skills  
Devise:  
• using communication techniques  
  ▪ sketching, annotating  
• sketches of personal product ideas, with development of images to a final solution  
• presentation of design choices and final design  
Use guided and/or highly scaffolded design plans as the idea/plan for an eventual product  
Evaluate when discussing and devising design ideas |
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|      | **Skills and techniques**  
Develop basic graphic skills with simple annotation chosen from, but not limited to, the following:  
- coloured images cut and pasted  
- 2D pencil sketches  
- pictorial drawings  
- colour or rendered drawings  
- desktop publishing or ICT drawing  
Use appropriate terminology and conventions  
Name and use basic equipment, as appropriate to context | **Content** |
| 8–15 | Use of technology: safety, production skills and techniques  
**Task 4: Manufacture the product**  
Practical skills and techniques are used in the manipulation of materials to produce the product, as applicable to context  
Safety: students’ correct use of personal protective equipment (PPE) where applicable  
Production management as directed by the teacher  
**Task 4 due Week 15** | Use appropriate terminology and conventions  
Name and use basic equipment, as appropriate to context  
Manipulate materials  
- mark out parts/shapes  
- cut out and/or shape parts/shapes  
- join or assemble  
- finish product  
**Safety**  
Correct use of personal protective equipment (PPE) where applicable  
**Production management**  
Use teacher-directed design, production plans and processes  
With supervision, use tools and machines safely  
Communicate and describe the production process in simple terms  
Manage processes to finish a product  
Demonstrate workshop clean-up procedures |
| 16   | **Design fundamentals and skills**  
**Evaluation of products**  
**Task 5: Presentation of completed product**  
**Task 5 due Week 16** | **Design fundamentals and skills**  
Evaluate finished product against initial design |
Unit 4 (notional timeframe only – may take up to whole year)

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| 1    | Re-introduction to design fundamentals, materials and workshop/studio | **Nature and properties of materials**  
Identify, by appearance and name, within the chosen context:  
- metals – ferrous, non-ferrous  
- textiles – natural fibres, manufactured fibres  
- wood – softwoods, hardwoods, and different manufactured boards  
Identify basic aesthetic properties or characteristics, such as:  
- colour  
- appearance – patterned, plain  
- texture – soft, hard, smooth, rough  
- density – heavy, light  
**Materials in context**  
Identify, within a chosen context, common materials and describe their uses  
Name some products or objects made from common materials  
**Design fundamentals and skills**  
Discuss:  
- design needs and wants  
- existing products  
- design fundamentals  
- factors affecting design |
| 2–3  | Task 6: **Nature and properties of materials**  
Identify and name the materials by their appearance  
Look at a range of different common materials and identify some of the differences of the materials’ properties  
**Task 6 due Week 2**  
**Task 7: Design fundamentals and skills**  
Explore existing products, within context based on needs and wants  
Personal likes and preferences based on design fundamentals and factors affecting design  
**Task 7 due Week 3** | **Task 6 due Week 2**  
**Task 7 due Week 3** |
| 4–7  | **Use of technology – Practical skills and techniques**  
**Task 8: Methods of communicating design ideas**  
Students use a variety of drawing methods and annotation techniques to develop a product, making changes by design choices within the design process, to develop an individual design solution  
**Task 8 due Week 7** | **Design fundamentals and skills**  
Devise:  
- using communication techniques  
- sketches of personal product ideas with development of images to a final solution  
- design choices based on design fundamentals  
- presentation of final design  
Use guided and/or highly scaffolded design plans as the idea/choice/plan for an eventual product  
Evaluate when discussing and devising design ideas  
**Use of technology – skills and techniques**  
Use a guided design method to develop own solution  
Develop graphic skills, such as desktop publishing and/or hand sketching with simple annotation |
| 8–15 | **Use of technology: safety, production skills and techniques**  
**Task 9: Manufacture a product**  
Manipulation of materials to produce the product, as applicable to context  
Safety: correct use of personal protective equipment (PPE) where applicable  
Production management as directed by teacher | **Use of technology – skills and techniques**  
Use tools and basic machinery  
Manipulate materials by cutting, shaping, joining and finishing  
Use appropriate correct basic terminology and conventions  
**Safety**  
Correct use of personal protective equipment (PPE) where applicable |
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|      | Task 9 due Week 15  | Production management  
Use simple tools and machines  
Use teacher-directed design, production plans and processes  
Communicate and describe the production process |
| 16   | Task 10: Presentation of completed product  
Design fundamentals and skills  
Evaluation of products  
Task 10 due Week 16 | Design fundamentals and skills  
Evaluate finished product against initial design |