**Sample Course Outline**

Materials Design and Technology

Preliminary Unit 3 and Unit 4

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# Sample course outline

# Materials Design and Technology – Preliminary

## Unit 3 and Unit 4

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

| **Week** | **Key teaching points** | **Content** |
| --- | --- | --- |
| 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 |
|  |  | **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 |
| 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)

| **Week** | **Key teaching points** | **Content** |
| --- | --- | --- |
| 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** |
| 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 |
|  | **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 |