**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 materialsComparing 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 productEvaluate 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 conventionsName 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 contextSafety: students’ correct use of personal protective equipment (PPE) where applicableProduction management as directed by the teacher**Task 4 due Week 15** | Use appropriate terminology and conventionsName and use basic equipment, as appropriate to contextManipulate 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 processesWith supervision, use tools and machines safelyCommunicate and describe the production process in simple termsManage processes to finish a productDemonstrate workshop clean-up procedures |
| 16 | Design fundamentals and skillsEvaluation 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 appearanceLook 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 wantsPersonal 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 productEvaluate when discussing and devising design ideas**Use of technology – skills and techniques**Use a guided design method to develop own solutionDevelop 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 contextSafety: correct use of personal protective equipment (PPE) where applicableProduction management as directed by teacher | **Use of technology – skills and techniques**Use tools and basic machineryManipulate 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 machinesUse teacher-directed design, production plans and processesCommunicate and describe the production process |
| 16 | **Task 10: Presentation of completed product**Design fundamentals and skillsEvaluation of products**Task 10 due Week 16** | **Design fundamentals and skills**Evaluate finished product against initial design |