

Weeks 1–2: Design Strategies & Iterative Design

Week 1 – Design Strategies

Specification focus (1.1)

- Linear design
- Iterative design
- Inclusive design
- User-centred design
- Sustainable design
- Ergonomic design

Textbook focus (ISBN 9781398352476):

- Overview of design strategies
- Advantages vs disadvantages
- Real-world product examples

Activities

- Create a **comparison table** of all 6 strategies
- Match products to the most appropriate strategy

Exam practice

- *“Recommend a design strategy for a product and justify your choice.”*

Week 2 – Iterative Design: Design Stage

Specification focus (1.2.1 – Design)

- Design brief analysis
- Primary vs secondary research
- Market research
- Anthropometric data
- ACCESS FM
- Product disassembly

- Design specification

Textbook focus

- Writing strong design briefs
- ACCESS FM explained with examples
- Primary vs secondary research strengths/weaknesses

Activities

- Analyse an everyday product using **ACCESS FM**
- Write a **simple engineering design specification**

Exam practice

- Short answer: *"Explain one advantage of primary research."*

Weeks 3–4: Making, Modelling & Evaluation

Week 3 – Iterative Design: Make & Evaluate

Specification focus (1.2.2)

- Purpose of modelling
- Virtual modelling
- Physical modelling
- Prototyping
- Testing against specification

Textbook focus

- Types of models
- When to use virtual vs physical models

Activities

- Identify modelling methods for different products
- Evaluate a prototype against a specification

Exam practice

- *"Explain why modelling is used during the design process."*

Week 4 – Design Specifications & Manufacturing

Specification focus (2.1 & 2.2)

- Needs vs wants
- Quantitative vs qualitative data
- Scale of manufacture
- Manufacturing processes
- Production costs

Textbook focus

- Manufacturing scales explained
- Processes: wasting, shaping, forming, joining

Activities

- Sort products into **one-off / batch / mass**
- Create a **manufacturing flow diagram**

Exam practice

- *"Describe how scale of manufacture affects design."*

Weeks 5–6: Influences on Design

Week 5 – Influences on Engineering Design

Specification focus (2.3)

- Market pull vs technology push
- British Standards (BS)
- UKCA
- Legislation

Textbook focus

- Regulation and safety in engineering
- Why standards matter

Activities

- Case study: identify **design influences** on a product
- Define key terms

Exam practice

- *"Explain one influence of legislation on product design."*

Week 6 – Sustainability & Circular Economy

Specification focus (2.3)

- 6Rs
- Planned obsolescence
- Circular economy

Textbook focus

- Sustainable design principles
- Environmental impact of products

Activities

- Redesign a product using the **6Rs**
- Evaluate sustainability improvements

Exam practice

- *"Evaluate how a product could be made more sustainable."*

Weeks 7–9: Communicating Design Outcomes

Week 7 – Engineering Drawing Types

Specification focus (3.1)

- Freehand sketches
- Isometric & oblique
- Orthographic
- Exploded & assembly drawings
- Diagrams

Textbook focus

- Drawing purposes and conventions

Activities

- Match drawing types to uses
- Identify drawings in exam questions

Exam practice

- *"State one advantage of isometric drawings."*

Week 8 – Working Drawings & Standards

Specification focus (3.2)

- Third angle projection
- Line types
- Dimensions
- Tolerances
- BS 8888

Textbook focus

- Reading and interpreting working drawings

Activities

- Annotate a working drawing
- Identify line types and symbols

Exam practice

- Labelling and interpretation questions

Week 9 – CAD in Engineering

Specification focus (3.3)

- Advantages of CAD
- Limitations of CAD

Textbook focus

- CAD vs manual drawing

Activities

- Compare CAD and manual methods
- Evaluate when CAD is most appropriate

Exam practice

- *“Compare CAD with manual drawing techniques.”*

Weeks 10–11: Evaluation & Modelling

Week 10 – Evaluating Design Ideas

Specification focus (4.1)

- Qualitative comparison
- Ranking matrices
- QFD

Textbook focus

- Decision-making tools in design

Activities

- Use a **ranking matrix** to choose a design
- Evaluate strengths and weaknesses

Exam practice

- *"Explain how a ranking matrix supports design decisions."*

Week 11 – Modelling & Testing Outcomes

Specification focus (4.2 & 4.3)

- Virtual, card, block, 3D printing
- Measuring performance
- User testing
- Design improvements

Textbook focus

- Testing and refinement

Activities

- Compare modelling methods
- Suggest justified improvements

Exam practice

- *"Evaluate a design outcome against its specification."*

Week 12: Final Consolidation & Exam Preparation

Week 12 – Exam Skills & Synoptic Revision

Focus

- Full coverage of Topics 1–4
- Command words
- Extended response practice

Activities

- Full **mock Section B question**
- Timed exam practice
- Knowledge retrieval quizzes

Exam practice

- 6–9 mark evaluation question
- Strategy justification question