

WHSB DESIGN & TECHNOLOGY LOWER SCHOOL CURRICULUM MAP

KEY STAGE TWO PRIOR LEARNING INFORMS

YEAR 7

1

CONTENT
Graphics - Technical drawing, shading, rendering and presentation techniques
Food - Health & Safety, Food Hygiene, Basic tools and equipment for cutting and preparation
Resistant Materials (Structures project) - Workshop Health & Safety, types of structures and forces, investigating famous structures, designing picture holders



Baseline test in 1st half term
Strand assessment for Investigating and Designing & Food Term 1

2

CONTENT
Resistant Materials (Structure project) - use of hand tools and basic equipment / machinery in the workshop, material properties, sustainability, evaluating
Food - use of the hob and over to cook simple heated dishes (pastas and pizzas), introduction to doughs, pastries and baking (sausage rolls and muffins), sensory evaluation



Strand assessment for Making Evaluating and Food Term 2

3

CONTENT
Engineering (Jitter Bug electronics project)-investigating inputs / outputs, conductors / insulators, basic soldering technique, use of plastic forming and standard components
Food - seasonal and locally sourced foods, sustainable cooking, religious and ethical foods, baking (biscuits and tarts) evaluating using star diagrams



End of Year Examination.
Strand Assessment for Investigating, Designing, Making and Food Term 3

YEAR 8

1

CONTENT Cycle 1
Resistant Materials (Metal casting keyrings) - vectorising and bitmap tracing in 2D Design, properties and uses of metals, 3d drawing techniques, casting pewter, brazing
Health and Safety for metals, evaluating outcomes against key specifications



All four strands (Investigate Design, Make & Evaluate) assessed for Project 1

2

CONTENT Cycle 2
Food (Simple Student Snacks) - taste and texture analysis (cooking scones), investigating flours and doughs / toppings (cooking pizzas), investigating pastries and fillings (cooking sausage rolls), cultural foods (cooking red lentil curry), adapting to dietary requirements (burgers and wedges), sensory evaluation



All four strands (Investigate Design, Make & Evaluate) assessed for Project 2

3

CONTENT Cycle 3
Engineering (CAD/CAM) - introduction to pallet of tools to draw accurately in 2d CAD (2d Design), parametric 3d CAD software modelling (Solidworks), investigating types of CAD software, 3d printing and laser cutting, designing famous landmarks, CFD and FEA simulation



End of Year Examination
All four strands (Investigate, Design, Make & Evaluate) assessed for Project 3

YEAR 9

1

CONTENT
Resistant Materials (Wooden Clocks project)
Investigation design movements, properties and uses of woods, wood joinery techniques and assembly, working with tolerances and allowances, CAD/CAM laser cutting, designing in isometric and orthographic projection, evaluating outcome against range of specification points and user requirements



All four strands (Investigate Design, Make & Evaluate) assessed for Project 1

2

CONTENT
Food (World Cuisine)
Investigating cultural dishes from around the world, Europe - pastas and cheeses (cooking Macaroni cheese, Spaghetti Bolognese, Mince Pies / Jam Tarts), Asia (cooking stir fry), Americas (cooking Fajitas)



All four strands (Investigate Design, Make & Evaluate) assessed for Project 2

3

CONTENT
Engineering (Amplifier Speaker project) - Investigating existing music players, common electronic component uses, history of the transistor to IC, soldering components to PCB, tapping and threading, line bending parts, interpreting engineering drawings, iterative designing, evaluating for improvement and adaptation



End of Year Examination
All four strands (Investigate, Design, Make & Evaluate) assessed for Project 3

WHSB DESIGN & TECHNOLOGY MIDDLE SCHOOL CURRICULUM MAP



LOWER SCHOOL PRIOR LEARNING INFORMS

YEAR 10

1

CONTENT
 Theory Unit 1 – New and Emerging Technologies
 Theory Unit 2 – Energy, materials systems, devices
 Engineering - Metal Race Car – card modelling and adapting, soldering motors / worm gears, folding and pressing sheet metals, punching, drilling, riveting, machine screws sizes, spray painting, CAD/CAM vinyl cutting decals, manufacturing specifications



Unit 1 & 2 Theory Assessment Test and Metal Race Car

2

CONTENT
 Theory Unit 3 – Materials and their properties
 Theory Unit 4 – Common specialist technical principles
 Scale modelling – The Work of Others project – investigating the influence of other designers and manufacturers, 3d design drawing, 3d CAD modelling, workshop scale modelling of concept
 Resistant Materials – Angle poise lamp – investigating influential / iconic products, 3d design drawing, working drawings, wood joinery, soldering, pivot fixings



Unit 3 & 4 Theory Assessment Test and Clocks / Work of Others

3

CONTENT
 Theory Unit 6 – Designing Principles
 Non-Examination Assessment – Investigating – task analysis, client profile, location study, mood boards, existing product analysis, user surveys, ergonomics & anthropometrics, materials study, sustainability study, design brief / specification



Unit 6 Theory Assessment Test and Angle poise Lamp, Begin NEA (to 14 slides by end of term)

YEAR 11

1

CONTENT
 Theory Unit 5a – Timbers
 Theory Unit 7 – Making Principles
 Non-Examination Assessment – busy/ initial ideas, conceptual designs in CAD, initial card / soft modelling, initial stage development



Theory Unit 7 & 5A Assessment Test, Formative, Trial Exams and NEA (20 slides by end of term)

2

CONTENT
 Theory Unit 5b – Metals
 Non-Examination Assessment - detailed and specific development of design, manufacturing of prototype, manufacturing specification



Unit 5B Theory Assessment Test and NEA (35 slides by end of term)

3

CONTENT
 Examination revision
 Non-Examination Assessment – evaluation and submission



NEA final hand (40 slides) and examination revision

GCSE EXAMINATION BOARD:
AQA

LINKS TO A LEVEL STUDY:
 Contextual Non-Examination Assessment provides a scaffolded opportunity to prepare a Design and Manufacture Portfolio
 Units of theory study are formatted and taught in the same pattern and approach as A Level. The content broadly replicates the same topics and areas of study but as an introduction to design and making possibilities

ENRICHMENT OPPORTUNITIES:
 Arkwright Scholarship programme
 Rampaging Chariots with Leonardo
 Lunchtime Technology Club
 Sandy Gunn aerospace careers programme

WHSB DESIGN & TECHNOLOGY SIXTH FORM CURRICULUM MAP



MIDDLE SCHOOL PRIOR LEARNING INFORMS

LOWER SIXTH

1

CONTENT
Theory Unit 1.1 & 1.2 - Materials and their application / performance characteristics of materials
Theory Unit 1.3 & 1.4 - Enhancement of materials / forming, redistribution and addition processes

The Chair Project - investigation into woods and their contextual application in chair design, design movements, 3d design and presentation techniques, 2d CAD working drawings, wood joinery and fixings/ assembly for woods



Theory Unit 1.1/1.2 and 1.3/1.4 combined assessment tests
The chair project

2

CONTENT
Theory Unit 1.5 & 1.6 - The use of finishes / modern industrial and commercial practice
Theory Unit 1.7 & 1.8 - Digital design and manufacture / product design and development
Theory Unit 1.9 & 1.10 - Health and Safety / Protecting designs and intellectual property

The Mini Golf Club - investigation into metals and their contextual application in design, metal working processes - center lathe, thread cutting, aluminum sand casting, milling, plastic dip coating, polishing, vacuum forming



Theory Unit 1.5/1.6 and 1.7/1.8 combined assessment test.
The mini golf club and architectural modelling project

3

CONTENT
Theory Unit 1.11 & 1.12 - Design for manufacture, repair, maintenance, disposal / Feasibility studies
Theory Unit 1.13 & 1.14 - Enterprise and marketing / Design communication

The Architectural Pavilion project - location studies, architectural influences, 3d CAD modelling augmented reality (Sketch Up), scale modelling using papers and boards

Non-Examination Assessment - All investigating tasks, design brief and specification



Theory unit 1.9 - 1.12 combined assessment test.
EOY Examination. Begin NEA

UPPER SIXTH

1

CONTENT
Theory Unit 2.1 & 2.2 - Design methods and processes / Design theory
Theory Unit 2.3 & 2.4 - Technology and culture / Design processes
Theory Unit 2.5 & 2.6 - Critical analysis and evaluation / selecting appropriate tools, equipment and processes

Non-Examination Assessment - busy / initial ideas, conceptual designs in CAD, initial card / soft modelling, initial stage development



Combined Theory Units for 2.1 to 2.8 at regular intervals. NEA at 25 slides by end of term

2

CONTENT
Theory Unit 2.7 & 2.8 - Accuracy in design and manufacture / Responsible design
Theory Unit 2.9 & 2.10 - Design and manufacture and project management / National and international standards

Non-Examination Assessment - detailed and specific development of design, manufacturing of prototype, manufacturing specification



Trial Examination - full specimen paper. NEA at 35 - 40 slides by end of term

3

CONTENT
Examination revision

Non-Examination Assessment - evaluation and submission



NEA final hand (40 - 45 slides) and examination revision

A LEVEL EXAMINATION BOARD:

AQA

PREPARATION FOR UNIVERSITY AND DESTINATIONS:

Non-Examination Assessment project briefs are specifically targeted around career pathways (Engineers will choose a project which tests and deepens learning of this field)

Ex-students are invited back to talk about their experiences at university and provide guidance on choices

Interview preparation for those applying for Oxbridge

Engineering Education Scheme residential to Cambridge University, Department of Engineering

ENRICHMENT OPPORTUNITIES:

Engineering Education Scheme
Subject Prefect responsibilities
Lunchtime Club representative
iMechE seminars

Sandy Gunn Aerospace careers program
Food and Cooking Society