

Engineering Y10 Term 1 Learning Journey

Term 1



Accuracy & Tolerances

Understand the importance of manufacturing products accurately and within tolerance



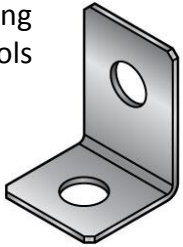
Engineering Drawings

Start to understand the main features and british standards



Marking Out Tools

Name and know the correct use of marking out and accuracy tools



→ **Practical knowledge & skills** →



What is an Engineer

What skills are needed and where can engineering take you



Accuracy Test & QC

Can you beat quality control and create 6 equal sides of a cube to a tolerance of 0.5mm?



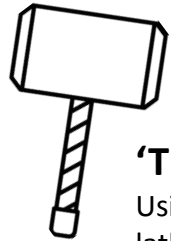
Interpret Drawings

Start to understand how to interpret an engineering drawing to manufacturer a product from



'BRACKET'

Using hand tools, sheet metal guillotine, pillar drill, sheet metal bender



'THOR HAMMER'

Using hand tools, centre lathe, pillar drill, tap and die



Tools & Equipment

Name and know the correct use of tools used to make the hammer



Interpret Drawings

Develop your skills in interpreting engineering drawings

← **Practical knowledge & skills** ←



Assess

Self assess your practical skills

Evaluate & Assess

Evaluate your final Hammer and assess your practical skills



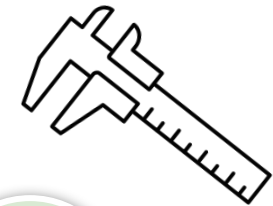
Applying Threads

Practise skills in applying internal & external threads.



Centre Lathe

Name and know the parts of the lathe, what it can do and the safety measures to be used



Milling Machine

Name and know it's different parts, what it can do and the safety measures to be used



Evaluate & Assess

Evaluate your final Robot and assess your practical skills

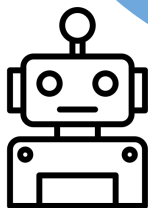


Production Plan

Develop your skills in planning for production

→ **Practical knowledge & skills** →

Test



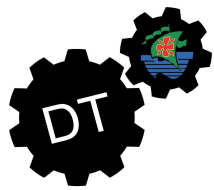
'ROBOT'

Further develop your practical skills and practise using the milling machine



Develop Design

How can the robot's design be improved?



Engineering Y10 Term 2 Learning Journey

Unit 1 'Producing Engineered Products'
This unit is worth **40%** of your final grade

Term 2

Production Plan
Including detailed steps, realistic timings, contingency plans, tools & equipment & safety measures

→ **Unit 1 Controlled Assessment** →

Interpret Engineering Drawings set by WJEC
Analyse and annotate drawings, suggest material choices and give reasons, present technical information

Controlled Assessment
'Coursework' is to be completed under **exam style conditions**, under the supervision of your teacher

'THE PRODUCT'

Make a product following the drawings and your plan

← **Unit 1 Controlled Assessment** ←

Production Diary

Keep a production diary of evidence of your practical work

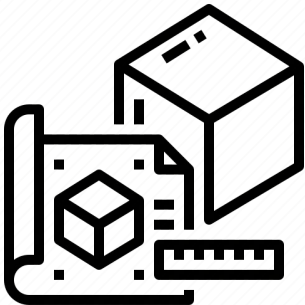
No Teacher feedback
No teacher feedback can be given during controlled assessment

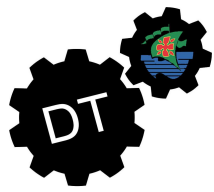
Evaluation Report

Evaluate the completed parts/product against the drawings; based on accuracy and quality of finish

→ **Unit 1 Controlled Assessment** →

Exam board assessed

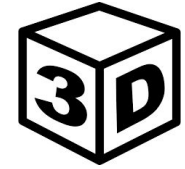




Engineering Y10 Learning Journey



3D CAD Drawing
Further develop skills in using 3D CAD



Term 3



2D Orthographic Projection
Further develop 2D drawing skills using the technique 'Orthographic Projection'



Convert Drawings
Understand how to convert between 2D and 3D drawings



3D Isometric
Further develop 3D drawing skills using the technique 'Isometric'



2D CAD Drawings
Know how to create an orthographic projection from a 3D CAD model



Material Properties
Understand how to describe a property of a material



Material Testing
Understand how materials are tested before being selected for a purpose



Metals
Further your understanding of the different categories, types and properties of metals



Trial Exam

Design knowledge & skills



Plastics
Further your understanding of the different categories, types and properties of plastics



SMART Materials
Know what SMART materials are and name some common examples



Composite Materials
Know what composite materials are and name some common examples

Analyse the Design Brief set by WJEC
This will be related to your Unit 1 product

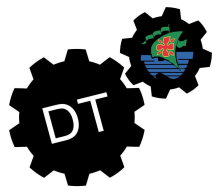
Product Analysis
State the function of the parts. Suggest 2 products which could be developed into your designs.

Unit 2 'Designing Engineered Products'
This unit is worth 20% of your final grade

Controlled Assessment
'Coursework' is to be completed under **exam style conditions**, under the supervision of your teacher

Unit 2 Controlled Assessment

Design Ideas
Hand drawn or CAD with clear communication annotation



Engineering Y11 Term 1 Learning Journey

Interpret Engineering Drawings set by WJEC
Analyse drawings and annotate engineering drawings

Unit 2 'Producing Engineered products'
This unit is worth **40%** of your final grade

Term 1

→ **Unit 2 Controlled Assessment** →

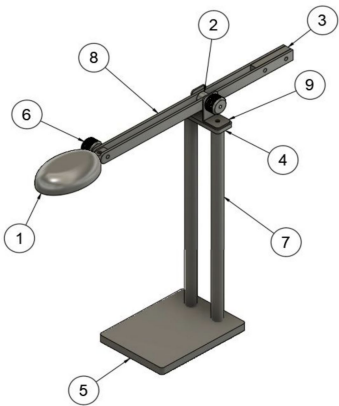
Controlled Assessment
'Coursework' is to be completed under **exam style conditions**, under the supervision of your teacher

Production Plan
Including detailed steps, realistic timings, contingency plans, materials, tools/equipment and safety measures

'DESK LAMP'
Make a product following the drawings and your plan

← **Unit 2 Controlled Assessment** ←

No Teacher feedback
No teacher feedback can be given during controlled assessment

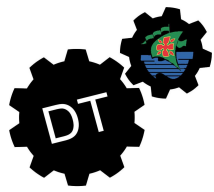


Production Diary
Keep a production diary of evidence of your practical work

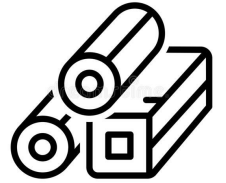
→ **Unit 2 Controlled Assessment** →

Exam board assessed

Evaluation Report
Evaluate the completed parts/product against the drawings; based on accuracy and quality of finish



Engineering Y11 Learning Journey



Term
2 - 3



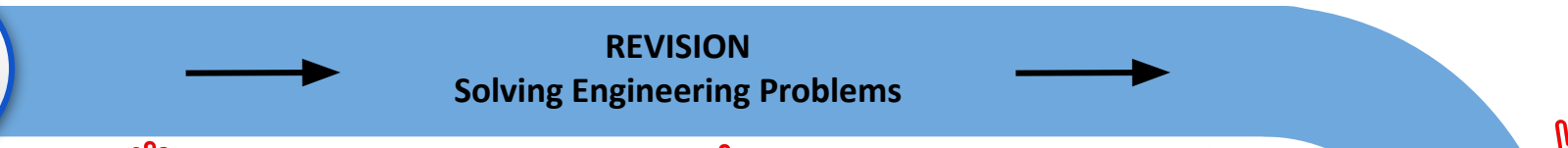
Material Properties
Recap how to describe a property of a material



Metals / Plastics
Recap the different categories, types and properties of metals / plastics



Composite / SMART
Recap composite and SMART materials and name examples



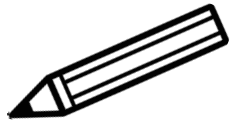
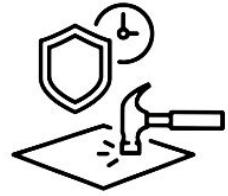
Material Testing
Understand how materials are tested before being selected for a purpose



'FERROUS HOUND'
Using steel, hand tools, welding and finishes create a model hound



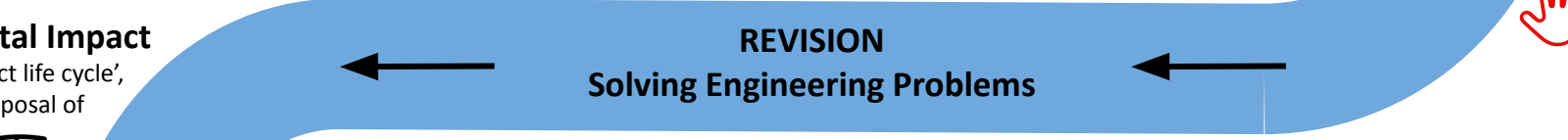
3D Isometric
Further practise 3D drawing skills 'Isometric'



Engineering Developments
Recap new technologies and materials



Convert Drawings
Understand how to convert between 2D and 3D drawings



Environmental Impact
Recap the 'product life cycle', the '6 R's' and disposal of products



REVISION

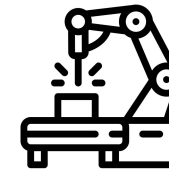
Solving Engineering Problems



2D Orthographic
Practise drawing skills 'Orthographic Projection'



Manufacturing Processes
Recap workshop and industry processes, CAD & CAM, tools & equipment & safety control measures



Soldering
Recap soldering electronic components for a lamp circuit



Personalised Revision
Selected revision tasks based on your own needs

FINAL EXAM
The final written exam is worth 20% of your final grade



Electronic circuits
Recap basic electronic circuits



Maths Skills
Practice maths skills: area, volume, units of measurement & scale



REVISION
Solving Engineering Problems



Exam Preparation
Exam style questions, command words and tips

FINAL EXAM