



WJEC Engineering
Course Outline

| Year 10&11 | | | | | |
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| Winter Term | Spring Term | Summer Term | Winter Term | Spring Term | Summer Term |
| Now I Know | Mock Unit 3 – Bicycle Investigation Mock Unit 2 – CAD Development Skills | Unit 1 | Unit 2 | Unit 3 – Max the Xam | Unit 3 – Max the Xam |
| Knowledge: Engineering Drawing Material Suitability Material Stock Equipment Tools Machining Requirements Safe Working Practice Health and Safety | Knowledge: SWOT Analysis Functional Properties Design Sketches Design Development Materials Sizes Tolerances Cost Calculation Operational Parameters CAD/CAM | Knowledge: Engineering Drawing Time Management Materials Manufacturing | Knowledge: CAD Engineering Drawing Sketching Material Manufacturing Processes | Knowledge: Gears Levers Pulleys Mechanical advantage Linear Dimensions Datum Points Ohm’s Law Current Resistance Voltage | Knowledge: Material Developments Engineering Design Smart Materials Electronics Impact of Tech on Society Risk Assessment Math’s in Engineering |
| Key Concepts: Introduction to Engineering Manufacture (WIND VANE) – Skills building for engineering workshop processes and interpretation of engineering information. Understanding how Engineering Drawings are used in manufacturing. Presenting Key information tasks. Planning manufacturing | Key Concepts: Mock Examination focusing on BS8888 Engineering Drawing. Unit 3 focused investigation – Structural Design (Bicycles) . Testing – Learners gain familiarity with simple testing techniques. Unit 2 mock design task (Speaker Project) – Focus on designing Engineered Solutions for addressing the | Key Concepts: Complete Unit 1 manufacturing task Review functional characteristics of Unit 1 design. Unit 3 Focus – Materials and properties of materials in products (mobile phones, security alarms, bicycles & children’s play areas). Focus on calculations and mathematical techniques as detailed in course specification. | Key Concepts: Complete Unit 2 Design task. | Key Concepts: Unit 3 focused investigation – Mechanical design (theme parks) & Electronic Design (Mobile phone & Smart technology) . Focused Unit 1 Mock Task – Learners manufacture an outcome from a given set of engineering drawings and technical data. Focus on extracting | Key Concepts: Focus on Unit 3 examination preparation Material developments including Smart materials and their application in Engineering Design. The impact of the development in electronics and how they have impacted on engineered products. Learners undertake small workshop tasks to |



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| stages. Engineering drawings to BS8888. | Unit 2 Brief. Focus on: Sketching, iterative process, manufacturing specifications and CAD/traditional Engineering drawing skills | Introduction to Unit 2 task. | | engineering information, planning, manufacturing, and safety. Evaluation techniques to review manufactured outcomes. Learners undertake Unit 1 Task (Analysis & Planning) | enforce understanding of manufacturing processes. Understanding and applying risk assessment. Understanding common engineering drawing standards. |
| Key Vocabulary: | Key Vocabulary: | Key Vocabulary: | Key Vocabulary: | Key Vocabulary: | Key Vocabulary: |
| Data Sheets Detail Views Engineering Drawing Isometric Drawing Job Sheets Manufacturing Specification Material Stock Sizes Orthographic Projection Planning Documentation Risk Assessment Sectional View Third Angle Projection Title Block Tolerance | Anthropometrics BS8888 Conventions CAD Visuals Datum Points Engineering Drawing Ergonomics Isometric View Manufacturing Specification Orthographic View Testing | Anthropometrics BS8888 Conventions CAD Visuals Datum Points Engineering Drawing Ergonomics Isometric View Manufacturing Specification Orthographic View Testing | Data Sheets Detail Views Engineering Drawing Isometric Drawing Job Sheets Manufacturing Specification Material Stock Sizes Orthographic Projection Planning Documentation Risk Assessment Sectional View Third Angle Projection Title Block Tolerance | Anthropometrics BS8888 Conventions CAD Visuals Datum Points Engineering Drawing Ergonomics Isometric View Manufacturing Specification Orthographic View Testing | Destructive and non destructive testing Electronic Design Engineering Design Isometric Views Mechanical Advantage Mechanical Design Ohms Law Orthographic View Smart Technologies Structural Design Sustainable Materials Velocity Ratio |
| Assessment: Practical Assessments Class Quizzes Questions on Materials and process. | Assessment: Class Quizzes Theory Mock Exam Questions on engineering Drawings | Assessment: Mock UNIT 2 Internal Assessment Mock Exam – Unit 3 | Assessment: Internal Assessment 40% Sub May/June Mock Exam – Unit 3 | Assessment: Internal Assessment 20% Sub May/June | Assessment: Mock Exam Class Quizzes 40% External Exam May/June |

