

GCSE ENGINEERING – LAMP PROJECT GREEN SHEET

Overview – Completion Date:

You Will:

- • Develop skills in accurate measurement and marking out using timber.
- • Understand differences between hardwoods, softwoods, and manufactured boards, and how their properties influence material selection.
- • Safely use a range of workshop tools and machinery including router tables, drills, and soldering equipment.
- • Learn the importance of tolerances, jigs, fixtures, and production efficiency.
- • Construct a working lamp with a functional electrical circuit using traditional and modern processes.

Lesson Overview

- • Technical drawing, Orthographic Projection, Isometric Drawing, 2 point perspective.
- • Timber: properties, types, and selection
- • Mortice and tenon Joints
- • Use of router tables and jigs/fixtures
- • Life Cycle Assessment
- • Soldering process and circuit symbols
- • Thermo and thermoset plastics.
- • Surface finishing and quality control
- • Evaluation of outcomes and commercial viability

Key Words

Hardwood, Softwood, Manufactured Board, Tolerance, Accuracy, Jig, Fixture, Router, Orthographic, Mortise and Tenon, Soldering, Flux, LED, Life Cycle Assessment (LCA), Commercial Viability

Cross Curricular Links

Science: Understanding how timber properties relate to structure and function.

Physics: Electrical circuits and component functions.

Maths: Measurement, geometry in working drawings, angles in joints.

SMSC: Product safety and consumer responsibility; environmental impact via LCA.

Literacy: Use of technical vocabulary in written and verbal evaluation.

Focus Practical

This project is aimed at helping you produce a commercially viable product.

You will learn how to:

- • Work safely and accurately in the workshop
- • Use jigs and fixtures to improve quality and speed
- • Finish your product to a high standard
- • Apply critical thinking to evaluate function, aesthetics, and sustainability