SYLLABUS · TECHNICAL & TRADE · WASSCE 2026

Welding and Fabrication syllabus

Every examinable topic area in WAEC Welding and Fabrication, in one place — with how the papers are structured and answers to common questions. Compiled by waeccbt.com; not an official WAEC document.

How the papers work: Three papers, all compulsory; Papers 1 and 2 form a composite paper taken at one sitting. Paper 1: 40 multiple-choice objective questions, 1 hour, 40 marks. Paper 2: five questions of which candidates answer any four, 1½ hours, 60 marks. Paper 3: a 3 hour 10 minute practical test of one compulsory question, 100 marks; the materials list reaches schools at least two weeks before the paper. Alternative to Practical: if materials cannot be obtained, one written question answered in 3 hours for 100 marks. This bank practises Paper 1 and the knowledge that Papers 2 and 3 depend on.

1. Workshop and standard workshop practices

- Introduction to fabrication and welding practice
- Types and causes of accidents: fire, explosion, sharp objects, hazardous gases; accident prevention
- Environmental pollution: types, causes and prevention
- Safety facilities and protective wear
- Workshop layout for fabrication and welding
- Standard welding codes and symbols
- First-aid administration in the workshop

2. Properties of metals and selection

- Ferrous and non-ferrous metals: steel, aluminium, cast iron, copper, zinc, tin, alloy steel
- Properties: ductility, hardness, toughness, malleability, fusibility, tenacity, brittleness, elasticity, plasticity
- Sheet metal: concept and gauges (aluminium, mild steel, brass)
- Selection of suitable metals for specific jobs
- Heat treatment: hardening, annealing, normalising, tempering, case-hardening

3. Tools and equipment

- Identification of fabrication and welding tools and equipment
- Equipment set-up for gas welding, arc welding and fabrication
- Job-holding devices
- Measuring instruments, marking-out and cutting tools
- Parts and accessories of gas and arc welding plant
- Maintenance of arc and oxy-acetylene equipment
- Preparation of acetylene gas from calcium carbide
- Electrodes: types, composition, gauges, selection for a job
- Fault-detection and trouble-shooting equipment

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4. Operations and techniques

- Gas and arc welding: principles and differences
- A typical fabrication process
- Types of joints, joint methods and their application
- Marking-out techniques; templates for fabricated and welded assemblies
- Welding techniques: leftward and rightward methods
- Fabrication techniques: folding and wired-edge work; cutting techniques

5. Fasteners

- Permanent fasteners: rivets
- Temporary fasteners: bolts and nuts, screws
- Types, classes and uses of rivets; riveted joints
- Description and uses of bolts and nuts; classes of screws

6. Forging process

- Definition of forging
- Forging tools and equipment: furnace/hearth, anvil, swages, fullers, flatters, tongs
- Operations: upsetting, drawing down, twisting, bending, forging an eye

7. Preparation of welding surfaces and environment

- Cleaning with wire brush, emery cloth, files, scrapers, grinding machine
- Edge preparation: single V, double V, fillet
- Post-weld cleaning and oiling against corrosion
- Weld defects: causes and remedies
- Welding environment: awkward, unventilated, flammable, slippery
- Surface finishing: painting, metal spraying, galvanising, oiling

8. Practical work and projects

- Marking, cutting and bending triangles, squares and rectangles
- Soldering of sheet metal
- Arc welding and gas welding of steel
- Fabrication of ferrous and non-ferrous metals into shapes
- Suggested projects: name plate, trinket box, funnel, kitchen stool, car stopper, metal rake, scoop, hinges, charcoal stove

9. Business and entrepreneurship

- Entrepreneurship, employer and employee
- Small, medium and large scale enterprises
- Factors for siting a workshop: cost, site, weather, materials, manpower, market, power, transport

Frequently asked questions

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How is WAEC Welding and Fabrication Engineering Craft Practice examined?

Three compulsory papers. Paper 1 is 40 objective questions in 1 hour (40 marks); Paper 2 is five questions of which you answer four in 1½ hours (60 marks); Paper 3 is a 3 hour 10 minute practical with one compulsory question worth 100 marks.

What happens if my school cannot get the practical materials?

The Council may set an Alternative to Practical paper: one written question answered in 3 hours for 100 marks, testing the same practical skills theoretically. The materials list is sent to schools at least two weeks before the practical.

Which welding methods must I know?

Gas (oxy-acetylene) welding and electric arc welding, including their principles and differences, equipment set-up, electrodes, leftward and rightward techniques, edge preparation (single V, double V, fillet) and common weld defects with their causes and remedies.

Do I need to know heat treatment?

Yes. Hardening, annealing, normalising, tempering and case-hardening appear under properties of metals, and students are expected to have carried out annealing, hardening and normalising practically.

What fabrication skills are tested?

Marking out (including templates), cutting, folding and wired-edge work, riveting, bolting, soldering of sheet metal, and forging operations such as upsetting, drawing down, twisting, bending and forging an eye.

Which projects does the syllabus suggest?

Name plate, trinket box, funnel, kitchen stool, car stopper, metal rake, scoop, hinges and a charcoal stove. These show the kind of test piece that can be set in Paper 3.

Is business studied in this subject?

Yes, a short entrepreneurship section covers the meaning of entrepreneur, employer and employee, small/medium/large scale enterprises and the factors for siting a workshop (cost, site, weather, materials, manpower, market, power and transport).

Practise this syllabus free — timed CBT papers with instant marking: waeccbt.com/practice.html?subject=welding