📘 Preamble

This comprehensive guide has been developed to support trainees undertaking **Semester 1 of the National Certificate in Wood Technology (NCWT)**, specifically focusing on the **Furniture and Cabinet Making** module. The content aligns closely with the official curriculum and is structured to build foundational knowledge, practical skills, and workshop discipline essential for careers in the furniture and cabinetmaking trade.

The goal of this module is to equip trainees with the **core competencies** required to safely and efficiently work with timber, tools, machines, and construction techniques used in the modern woodworking industry. Students will gain hands-on experience in:

- Reading and interpreting working drawings
- Preparing material cutting lists and cost estimates
- Selecting suitable materials and adhesives
- Identifying and using the correct tools, machines, and processes
- Constructing both furniture and cabinet projects using industry-standard joints
- Practicing safe and organized workshop habits

By the end of this module, students will not only be familiar with various woodworking tools, machines, and materials, but will also demonstrate the ability to plan, execute, and evaluate basic woodworking projects from start to finish. Emphasis is placed on **precision, safety, and quality craftsmanship**, laying the groundwork for future technical advancement in the trade.

These notes serve both as a **study aid** and a **practical reference**, designed to support your learning both in and outside the workshop environment.

MODULE NAME: FURNITURE AND CABINET MAKING

Upon successful completion of this module, the trainee will be able to:

a) Draw and interpret working drawings.
b) Make a cutting list.
c) Select the appropriate materials for furniture and cabinet making.
d) Make cost estimates for materials used in furniture and cabinet making.
e) Identify correct tools, equipment and machine for the project/job
f) Select measure, cut and prepare timber to sizes
g) Make different types of furniture and cabinets.
h) Correctly use woodworking machines.
i) Illustrates the machine shop layout.

📘 1. Workshop Rules and Safety Regulations (2 hrs)

Key Competencies

- Administer basic first aid (minor cuts, electric shock)
- Proper use of PPEs
- Observe workshop rules and signage

✅ 1. Importance of Workshop Safety

In joinery workshop, the use of **sharp tools, rotating machines**, and **heavy materials** poses serious risks if not managed properly. Adherence to safety regulations ensures:

- Protection of life and limbs
- Protection of materials and property
- Smooth, efficient workflow
- Compliance with national safety standards

🦺 2. Personal Protective Equipment (PPE)

Every student or worker must wear and maintain the following:

PPE Item	Purpose
Safety goggles	Protect eyes from wood chips/dust
Ear protection	Reduce noise exposure (machines)
Dust mask/Respirator	Prevent inhalation of fine dust
Safety boots	Protect feet from dropped tools
Apron/Overalls	Shield body from glue/dust
Gloves (if needed)	Grip and splinter protection (not near rotating tools)

Note: Gloves are NOT recommended when using rotating machinery, due to the risk of entanglement.

⚠️ 3. General Workshop Rules

- **No unauthorized entry.** Only trained individuals may use the workshop.
- **No running or horseplay.** Always walk and maintain calm conduct.
- **Always report accidents or near-misses** to the instructor or supervisor immediately.
- **Keep workstations clean.** Tidy up tools and offcuts after use.
- **Use tools only for their intended purpose.**
- **Do not use machines or tools without supervision** if untrained.
- **Tie back long hair** and remove dangling jewelry.
- **Stay alert** and never work when tired or under the influence of alcohol/drugs.

🧰 4. Tool and Equipment Safety

- Inspect tools before use: check for cracks, loose handles, dull blades.
- Store tools in assigned racks or toolboxes—not on benches or floors.
- Always **sharpen blades** carefully using approved methods.
- Never carry sharp tools in your pocket—use a toolbox or tray.
- Use **two hands** when operating large tools or carrying heavy equipment.

⚙️ 5. Machine Safety Rules

- Only use machines you are trained and authorized to operate.
- Always ensure **guards are in place** before starting a machine.
- **Check machine alignment and calibration** before use.

- Keep hands **at least 100 mm (4 inches)** from moving blades.
- Use **push sticks, fences, and jigs** to guide material.
- Never attempt to clean or adjust a machine while it is running.
- Turn off and **wait until machine comes to a complete stop** before leaving.
- Report unusual sounds, vibrations, or overheating.

🆘 6. Emergency Procedures

- Know the location of:
  - Fire extinguishers
  - First aid kits
  - Emergency exits
  - Electrical shut-off switches
- In case of electric shock:
  - **Do not touch the person directly**
  - Disconnect power or use a non-conductive object (wooden stick) to move them
- In case of fire:
  - Raise the alarm
  - Use the appropriate extinguisher (CO_2 or dry powder for electrical fires)
  - Evacuate calmly if fire spreads

🩹 7. First Aid Basics

- **Cuts**: Clean with antiseptic, apply pressure to stop bleeding, bandage
- **Splinters**: Remove with tweezers, clean wound
- **Burns**: Rinse with cool water, cover loosely
- **Eye injuries**: Use eyewash station, do not rub

📋 8. Workshop Signage and Organization

- **Post visual safety signs** near machines and hazardous zones.
- **Label tools and storage areas** clearly.
- Mark walkways and no-go zones with **floor tape or paint**.
- **Pin up first aid instructions** and emergency contacts on notice boards.

🔍 9. Common Hazards in Woodworking Workshops

Hazard	Prevention
Flying chips/dust	Wear goggles, use dust extraction systems
Machine entanglement	Tie back hair, avoid gloves and loose wear
Kickback (e.g. table saw)	Use riving knife, push stick
Fire hazard (finishes, sawdust)	Store solvents safely, clean regularly
Slips and trips	Keep floor dry, free of clutter

📌 10. Housekeeping & Waste Management

- Sweep sawdust regularly—use dust collection or vacuum systems.
- Collect offcuts and dispose in designated bins.
- Store chemicals in labelled, ventilated cabinets.
- Dispose of oily rags in **fireproof bins** to avoid spontaneous combustion.

🎓 Conclusion

A safe workshop is a productive workshop. All carpentry and joinery trainees must internalize and follow workshop safety rules at all times. **Negligence not only endangers you, but also your peers.** Safety is a shared responsibility—observe it always.

🧰 2. Hand Tools and Workshop Equipment

Duration: 8 Hours
Module: Furniture & Cabinet Making – NCWT Semester 1

🎯 Learning Objectives

By the end of this unit, the trainee should be able to:

- Identify, classify, and describe various carpentry and joinery hand tools
- Select and use the right tool for a specific job
- Maintain tools in good working condition
- Handle tools safely and correctly

1️⃣ Classification of Hand Tools

Hand tools are categorized based on their function:

Category	Examples	Purpose
Measuring & Marking	Tape measure, steel rule, try square, bevel gauge, marking gauge	Accurate layout and angles
Cutting	Handsaw, crosscut saw, rip saw, coping saw, tenon saw, chisel	Cutting wood to size and shape
Shaping/Smoothing	Jack plane, smoothing plane, rasp, file	Creating smooth, flat, or curved surfaces
Boring/Drilling	Brace and bit, hand drill	Making holes
Striking	Claw hammer, mallet, pin hammer	Driving nails, tapping joints
Holding & Assembling	Clamps, screwdrivers, pincers	Holding or fastening workpieces

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2️⃣ Common Hand Tools and Their Uses

🔧 Measuring & Marking Tools

- Steel Rule: For linear measurements
- Tape Measure: Flexible for large pieces
- Try Square: Checking and marking 90° angles
- Marking Gauge: Marks lines parallel to the wood edge
- Bevel Gauge: Marks and checks angles other than 90°
- Chalk Line: Marks long straight lines over surfaces

🪚 Cutting Tools

- Rip Saw: Cuts along the grain
- Crosscut Saw: Cuts across the grain
- Tenon Saw: Fine, stiff-backed saw for joints
- Coping Saw: Cuts curves and irregular shapes

- Chisels (Firmer, Bevel Edge): Used with a mallet for precise cuts or cleaning joints

🔨 Striking Tools
- Mallet: Used with chisels; does not damage chisel handle
- Claw Hammer: For driving/removing nails
- Pin Hammer: For small brads or pins in delicate work

📏 Smoothing/Shaping Tools
- Jack Plane: General planing
- Smoothing Plane: Final surface finishing
- Block Plane: Trimming end grain
- Rasp/File: Coarse shaping or smoothing curves

🛠 Boring Tools
- Brace and Bit: Hand-powered drill for larger holes
- Hand Drill: Manual alternative to electric drills

🔩 Holding/Assembly Tools
- G or C-Clamps: Hold pieces together during gluing or fixing
- Bench Vice: Mounted to the bench for secure holding
- Screwdrivers: For installing/removing screws

3️⃣ Proper Handling and Use of Hand Tools

✅ General Guidelines:
- Use each tool only for its intended purpose
- Hold tools with a firm grip, using both hands where necessary
- Cut away from your body
- Use a sharpened tool — dull tools are dangerous
- Always clamp the workpiece when cutting or shaping

4️⃣ Care and Maintenance of Hand Tools

Task	Purpose
Clean tools after use	Prevent rust, ensure accuracy
Store tools properly	Tool racks, toolboxes to avoid damage
Regular sharpening (e.g. chisels, planes)	Maintain performance and safety
Oil metal parts lightly	Prevent rust
Tighten loose handles/screws	Avoid tool breakage during use

Sharpening Tools:
- Chisels & plane irons: Use sharpening stones (oil or water stone), honing guides
- Saws: Use a saw set and triangular file for tooth sharpening

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5️⃣ Workshop Equipment (Non-powered)

Workbench
- The central station for holding and working on timber
- Includes bench hook, vice, tool well

Bench Vice
- Holds workpieces during sawing, chiselling, or planing

Sawing Hook (Bench Hook)
- Supports timber while crosscutting
- Prevents damage to the bench

6️⃣ Safety Tips When Using Hand Tools

- Inspect tools before use (check handles, blades, fasteners)
- Keep fingers behind the cutting edge
- Wear PPE like goggles (especially during chiselling or hammering)
- Don't leave tools lying on benches — store immediately after use
- Use cut-resistant gloves when appropriate (not near rotating machines)

⚙️ 3. Woodworking Machines and Power Tools

Duration: 12 Hours
Module: Furniture & Cabinet Making – NCWT Semester 1

🎯 Learning Objectives

By the end of this unit, the trainee should be able to:

- Identify various woodworking machines and portable power tools
- Understand the functions and operations of these machines/tools
- Observe correct **safety precautions** when operating equipment
- Perform **basic maintenance** and understand the workshop layout
- Use **jigs and templates** to improve accuracy and safety

1️⃣ Introduction to Woodworking Power Tools and Machines

Woodworking machines are **electrically powered tools** used for shaping, cutting, joining, and finishing timber and boards. These include **fixed machines** (e.g. circular saw) and **portable power tools** (e.g. jigsaw).

2️⃣ Classification of Power Tools and Machines

🪚 A. Portable Power Tools

Used on-site or for smaller-scale tasks:

Tool	Use
Portable circular saw	Straight cuts in boards and panels
Jigsaw	Curved and intricate cuts
Electric drill	Boring holes
Router	Edge shaping, grooving
Orbital sander	Smoothing surfaces
Power planer	Trimming and surfacing timber
Cordless screwdriver	Driving and removing screws

🏭 B. Stationary/Floor-Mounted Machines

Larger and more powerful machines used in workshops:

Machine	Function
Circular Saw	Crosscutting and ripping timber
Planer (Surface Thicknesser)	Smoothens and sizes wood to uniform thickness
Band Saw	Cuts curves or thick timber
Spindle Moulder	Shapes edges and profiles
Mortising Machine	Cuts square holes for mortise joints
Wood Lathe	Turns timber to form cylindrical shapes
Disc/Belt Sander	Smoothens flat surfaces or edges

3️⃣ Safety Precautions When Using Machines

General Safety Rules:

- Always wear **PPE**: safety goggles, ear protection, dust mask, safety shoes
- **Read the manual** before using any machine
- **Inspect the machine** before use (loose parts, sharp blades, guards in place)
- **Keep hands away** from blades; use push sticks
- Do not wear loose clothing or jewelry
- Disconnect machine from power before cleaning or adjusting
- Allow machine to come to a **complete stop** before leaving it
- Always **secure the workpiece** using clamps or jigs

4️⃣ Comparison: Power Tools vs Fixed Machines

Feature	Power Tools	Fixed Machines
Portability	High – can be used anywhere	Low – fixed in one place
Power/Capacity	Lower	Higher
Precision	Moderate	High (ideal for repeat tasks)
Setup Time	Quick	Longer (requires calibration)
Cost	Lower	Higher initial cost
Examples	Jigsaw, power drill	Table saw, jointer, lathe

5️⃣ Machine Shop Layout

Good layout design ensures:

- Efficient **workflow** from rough to finished work
- Clear **paths** for timber movement
- Adequate **space** around machines for safe operation
- Strategic placement of **dust collection systems**
- Machine zones organized by function (e.g. cutting, shaping, sanding)

Basic Layout Tips:

- Machines grouped by process flow (sawing → jointing → assembling)
- Place workbenches near the assembly area
- Emergency exits and switches must be visible and accessible

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6️⃣ Machine Operation Principles and Uses

🔪 Circular Saw

- For ripping and crosscutting
- Blade height should be slightly above the timber
- Use rip fence for long cuts and crosscut sled for accurate angles

🪵 Planer (Surface/Thicknesser)

- Used to flatten and thickness boards
- Feed direction must match grain direction to avoid tear-out
- Check depth settings before each pass

🌀 Band Saw

- Ideal for curved cuts and resawing
- Use narrow blade for tighter curves
- Maintain correct blade tension and tracking

🌀 Spindle Moulder (Shaper)

- Shapes timber edges (e.g. mouldings, grooves)

- Use guards and feather boards to protect hands
- Must run in correct rotational direction

🛠 Mortising Machine
- Drills square or rectangular holes for mortise and tenon joints
- Secure workpiece with clamps
- Choose correct chisel size for desired mortise

🪓 Wood Lathe
- Used for turning round or cylindrical shapes
- Mount the wood securely and balance before turning on
- Use gouges and chisels with a steady hand on the tool rest

7️⃣ Jigs and Templates
Purpose:
- Ensure **repeatability**, safety, and precision
- Guide tools/machines during cutting, shaping, and drilling

Examples:
- Dovetail jigs for joint making
- Router templates for edge profiles
- Drill guides for consistent hole spacing

8️⃣ Machine Maintenance
Daily Tasks:
- Clean sawdust and debris from machine parts
- Check for wear and tear on belts and blades
- Ensure guards and safety features are functional

Weekly/Monthly Tasks:
- Lubricate moving parts
- Align and calibrate fences and tables
- Replace worn or damaged components

🌲 4. Timber Technology & Materials
Duration: 50 Hours
Module: Furniture & Cabinet Making – NCWT Semester 1

🎯 Learning Objectives
By the end of this unit, the trainee should be able to:
- Identify timber types, structure, and characteristics
- Understand timber conversion and seasoning processes
- Recognize timber defects, their causes and remedies
- Identify, select and use manufactured boards
- Understand types, uses and application of adhesives and preservatives
- Properly use materials like foam and fixing devices in furniture construction

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1️⃣ Introduction to Timber Technology

Timber is a natural, renewable material obtained from trees. It is the **primary material** in furniture and cabinet making due to its strength, beauty, and workability.

2️⃣ Classification of Trees and Timber

A. Types of Trees

Type	Characteristics	Examples
Hardwood	Broad leaves, slow-growing, dense and durable	Mahogany, Teak, Oak
Softwood	Needle-like leaves, faster growing, less dense	Pine, Cedar, Spruce

B. Structure of Timber

- **Heartwood**: Older, darker, stronger central part
- **Sapwood**: Newer, lighter outer wood
- **Cambium**: Thin growth layer between bark and wood
- **Annual Rings**: Indicate growth per year
- **Medullary Rays**: Radial lines aiding nutrient transport

3️⃣ Timber Conversion

A. Felling

- Manual or mechanical cutting of trees
- Best done in the dry season for quality preservation

B. Conversion Methods

Method	Description	Suitable For
Plain sawing (flat)	Fast, simple, more waste	Construction timber
Quarter sawing	Reduces warping, attractive grain	Furniture timber
Tangential sawing	Slices through growth rings	Flooring, curved work

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4️⃣ Seasoning of Timber

A. Purpose of Seasoning

- Reduces moisture to make wood stable, strong, and durable
- Prevents warping, decay, insect attack

B. Types of Seasoning

Method	Description	Pros & Cons
Air seasoning	Natural drying in stacks	Cheap but slow
Kiln seasoning	Uses controlled heat in chambers	Fast, uniform, more expensive
Solar seasoning	Uses solar-heated chambers	Eco-friendly, slower than kilns

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5️⃣ Timber Defects

A. Natural Defects

- **Knots**: Caused by branches
- **Shakes**: Splits due to growth stress
- **Warping**: Bending or twisting
- **Cupping, Bowing, Twisting, Splits**

B. Artificial Defects

- Caused during felling, sawing, or drying

- **Case hardening, honeycombing, collapse**

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6 Advantages of Timber in Furniture Making

- Renewable and environmentally friendly
- Visually appealing grain
- Easy to work with tools
- Strong and durable
- Accepts finishes well (varnish, polish, paint)

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7 Manufactured Boards

A. Types and Descriptions

Board Type	Description	Common Use
Plywood	Veneers glued in alternate grain direction	Panels, furniture backs
Blockboard	Softwood strips with veneer faces	Doors, large panels
Chipboard	Wood chips and resin compressed	Carcass, budget furniture
MDF	Fine wood fibres and resin, smooth surface	Interior furniture, painted work
Hardboard	Wood fibres under heat and pressure, thin	Drawer bottoms, backing panels
Veneer	Thin decorative wood sheets	Surface finish over cheaper core

B. Properties

- Stable in size
- Can be shaped and surfaced easily
- Lower cost compared to solid wood
- Not suitable for heavy structural loads (except special types)

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8 Adhesives in Woodworking

A. Types of Adhesives

Type	Use
Animal glue	Traditional woodworking
PVA (white glue)	General joinery, easy to apply
Resin glue	Strong, water-resistant (e.g. urea formaldehyde)
Contact cement	Veneering, laminates
Epoxy	Gaps, high-strength joins

B. Application

- Surfaces must be dry and clean
- Apply evenly using brush or spreader
- Clamp joint while glue sets
- Observe safety measures (gloves, ventilation)

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9 Wood Preservatives

A. Purpose

- Protect wood from termites, fungi, insects, and moisture

B. Types

Type	Use
Tar oils (Creosote)	Outdoor timber, fences
Water-borne salts	Safer, indoor use

Organic solvents	Furniture, doors, windows

C. Application Methods
- **Brushing** or **spraying**
- **Dipping** or **soaking**
- **Pressure treatment** (industrial use)

🔟 Foam and Fixing Devices in Furniture
A. Foam
- Used in upholstery for comfort and aesthetics
- Light, flexible, and easily shaped
- Advantages: Easy to apply, sound dampening, less weight

B. Fixing Devices

Device	Use
Screws & nails	General fixing of timber pieces
Rawl plugs	Wall fixtures
Wall brackets	Supporting shelves, cabinets
Drawer runners	Sliding drawers
Hinges & locks	Doors and compartments

🪑 5. Furniture Making (206 hrs)
Duration: 206 Hours
Module: Furniture & Cabinet Making – NCWT Semester 1

🎯 Learning Objectives
By the end of this unit, the trainee should be able to:
- Identify and construct various woodworking joints
- Interpret working drawings and produce cutting lists
- Estimate material quantities and costs
- Select appropriate materials, tools, and machines
- Measure, cut, and prepare timber accurately
- Assemble furniture components using correct methods
- Apply proper finishing techniques to complete furniture pieces
- Produce a variety of **furniture items** to standard

1️⃣ Introduction to Furniture Making
Furniture making involves designing, measuring, cutting, joining, assembling, and finishing wood or wood-based materials to produce functional and aesthetic items such as tables, chairs, beds, and cabinets.

2️⃣ Woodworking Joints
A. Types of Woodworking Joints
Joints are crucial in creating durable and strong connections between wood members.

i. Framing (Angle) Joints

Joint	Application

Mortise & Tenon	Doors, frames, chairs
Bridle	Frames, corners
Halving	Simple frame or cross junctions
Dovetail	Drawers, carcasses

ii. Lengthening Joints

Joint	Application
Scarf joint	Beam extensions
Fished joint	Structural joints with bolts
Half-lapped joint	Panels, table tops

iii. Widening Joints

Joint	Application
Tongue & Groove	Flooring, panelling
Loose tongue joint	Table tops, panels
Rebated/Butt joint	Carcass, back panels
Slot screwed joint	Lightweight case construction

B. Joint Design Techniques

- **Freehand sketches**
- **Exploded isometric and oblique views**
- **Orthographic (2D) projections**
- **Scale drawings** using drawing instruments

3️⃣ Working Drawings and Cutting Lists

A. Working Drawings

- 2D and 3D representations (top view, front, side, and section)
- Include dimensions, scales, materials, and joints
- Used to guide construction from design to finish

B. Cutting List

A detailed itemization of parts to be cut, showing:

Item Length Width Thickness Quantity Material Type

4️⃣ Estimating Material Quantities and Costs

A. Purpose

- Avoid material wastage
- Budget planning
- Accurate procurement

B. Factors in Estimation

- Size and number of components
- Wastage allowance (5–10%)
- Cost of timber, boards, adhesives, and hardware
- Labor and finishing materials

5 Material and Tool Selection

A. Material Selection

- **Solid timber** (based on strength, aesthetics, workability)
- **Manufactured boards** (MDF, plywood, chipboard)
- **Fixing devices** (screws, hinges, bolts, brackets)
- **Foam** for upholstery

B. Tool and Machine Selection

- Based on the task: measuring, cutting, drilling, shaping, joining
- Examples: chisels for joints, circular saw for ripping, planer for sizing

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6 Measurement, Marking & Cutting

A. Measurement and Marking Tools

- Tape measure, steel rule, square, marking gauge, pencil

B. Cutting

- Use rip saw for lengthwise, crosscut saw for cross-grain cuts
- Use power saws for precision and efficiency
- Always double-check measurements before cutting

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7 Furniture Construction Process

A. Basic Sequence

1. Interpret drawings
2. Select materials
3. Prepare cutting list
4. Mark out and cut components
5. Cut joints accurately
6. Dry fit parts for accuracy
7. Apply adhesive and assemble
8. Clamp and allow to dry
9. Sand surfaces smooth
10. Apply finish (polish/paint/varnish)

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8 Types of Furniture

Furniture Type	Examples
Seating	Chairs, benches, pews
Sleeping	Beds, bunk beds, cribs
Tables	Dining tables, coffee tables
Storage	Desks, bookshelves, chests, dressers
Religious	Altars, pulpits, pews
Work Surfaces	Counters, workbenches

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9 Furniture Assembly Techniques

- **Dry-fitting** before glue-up
- Use **clamps** to apply even pressure
- Allow correct **curing time** for adhesives
- Reinforce joints with screws or dowels if required
- **Check for squareness** and alignment during assembly

🔟 Furniture Finishing

A. Purpose of Finishing

- Protect surface
- Enhance appearance
- Improve durability

B. Stages of Finishing

1. **Sanding** – progressively from coarse to fine grit
2. **Sealing** – with wood sealers or thinned varnish
3. **Staining** – for color tone
4. **Finishing coats** – varnish, paint, lacquer, wax, polish
5. **Buffing** – for shine and smoothness

🔁 Common Furniture Making Errors to Avoid

- Inaccurate measurement and marking
- Improper joint fitting
- Poor adhesive application
- Over-sanding or uneven finish
- Weak or unstable structural designs

📝 Summary Review Checklist

Task	Done ✓
Identify and sketch woodworking joints	✓
Interpret drawings and produce a cutting list	✓
Estimate material and cost	✓
Select suitable materials, tools, and machines	✓
Measure, cut, and prepare components	✓
Construct and assemble furniture pieces	✓
Apply finishing techniques to completed furniture	✓

🗄️ 6. Cabinet Making

Duration: 60 Hours
Module: Furniture & Cabinet Making – NCWT Semester 1

🎯 Learning Objectives

By the end of this unit, the trainee should be able to:

- Prepare and interpret cabinet working drawings
- Produce cutting lists and cost estimates
- Select suitable materials, tools, and equipment
- Mark, cut, and prepare materials to size
- Construct joints commonly used in cabinet work
- Assemble cabinet units accurately
- Carry out finishing processes and apply fixing devices

1️⃣ Introduction to Cabinet Making

Cabinet making focuses on the **design, construction, and finishing** of enclosed furniture items like cupboards, drawers, wardrobes, kitchen units, and shelving systems. It involves **precision**, **functionality**, and **aesthetic detailing**.

2️⃣ Types of Cabinets

Cabinet Type	Description	Common Locations
Cupboard	Enclosed vertical storage with doors	Kitchen, office, bedroom
Chest of drawers	Horizontal stacked drawers for storage	Bedroom, office
Wardrobe	Tall cupboard for hanging clothes	Bedroom
Bookshelf	Open or enclosed shelves for books or items	Study, office
Kitchen unit	Modular storage for kitchen utensils/appliances	Kitchen
Counter	Low storage unit often topped with a work surface	Retail, kitchen

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3️⃣ Cabinet Working Drawings

A. Working Drawings Should Include:

- **Front, side, and plan views**
- **Exploded and isometric drawings**
- **Details of joints and fixtures**
- **Clear dimensions and labels**
- **Material specification**

B. Exploded Views

These show the components separately to explain the **assembly order**.

4️⃣ Cutting Lists and Cost Estimation

A. Cutting List Sample Format:

Part Name	Quantity	Length (mm)	Width (mm)	Thickness (mm)	Material
Side Panels	2	1800	450	18	MDF or Plywood
Back Panel	1	1800	900	6	Hardboard

B. Cost Estimation Includes:

- Material cost (timber, boards, fasteners)
- Labour cost (cutting, assembling, finishing)
- Tool/machine usage (wear or rental)
- Finishing and fitting (hinges, handles, paint)

5️⃣ Materials in Cabinet Making

A. Common Materials

- **Manufactured Boards**: MDF, plywood, particle board, blockboard
- **Solid Timber**: Used for framing or visible parts
- **Fixing Devices**: Screws, nails, dowels, hinges, cam locks
- **Hardware**: Drawer runners, handles, catches, knobs

6 Tools and Machines

A. Measuring & Marking Tools

- Tape measure, steel rule, square, marking knife, compass

B. Cutting & Shaping Tools

- Hand saws, chisels, routers, jigsaws, circular saws
- Table saw, panel saw, band saw (for precise sizing)

C. Assembling Tools

- Clamps, screwdrivers, hammers, mallets, glue spreaders

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7 Joints Used in Cabinet Making

Joint Type	Use Case
Dowel joint	Joining side and top panels
Housing (dado)	Fixing shelves inside carcase
Butt joint	Basic corner or edge joins (needs reinforcement)
Mitre joint	Aesthetic corners (e.g., frame fronts)
Dovetail joint	Drawer sides and fronts
Tongue & groove	Back panels, doors, top panels

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8 Construction and Assembly Sequence

1. **Study the drawing** and confirm dimensions
2. **Prepare a cutting list** and cut all parts to size
3. **Mark out and cut joints** using appropriate tools
4. **Dry-fit** all components to check alignment
5. **Glue and clamp** parts in stages (carcase first, then shelves, doors, drawers)
6. Fit **doors, runners, and hardware**
7. **Check squareness**, level and fit before finishing
8. **Apply finish**: sanding, sealing, staining, polishing or painting

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9 Fixing Devices in Cabinet Work

Device	Use
Concealed hinges	Cabinet doors
Drawer runners	Smooth drawer movement
Cam fittings	Knock-down furniture assembly
Angle brackets	Reinforcing right angles
Shelf pins	Adjustable shelf support
Magnetic catches	Keeps cabinet doors closed securely

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10 Finishing Techniques for Cabinets

A. Surface Preparation

- Sand all surfaces using fine-grit sandpaper
- Fill gaps or nail holes using wood filler
- Clean dust thoroughly before finishing

B. Finishing Types

Finish Type	Features
Clear varnish	Durable, highlights wood grain
Paint	Covers surface flaws, allows colour choice
Lacquer	Smooth, hard finish
Melamine coating	Durable, pre-finished manufactured boards

🧠 Common Mistakes to Avoid

- Inaccurate measuring and marking
- Poor joint alignment
- Rushing glue-up without test fitting
- Ignoring grain direction
- Uneven sanding or over-sanding veneered surfaces
- Installing hardware before final adjustments

📝 Summary Review Checklist

Task	Completed ✓
Identify cabinet types and design structures	✓
Produce working drawings and cutting lists	✓
Select proper materials and tools	✓
Cut and prepare components accurately	✓
Make and assemble joints appropriate to cabinet type	✓
Install hardware and fittings properly	✓
Apply suitable surface finishes	✓