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MINISTRY OF SKILL DEVELOPMENT
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Facilitator Guide

Sector
Interiors, Furniture and Fixtures

Sub-Sector
Furniture Business Development, Installation & After Sales

Occupation
Furniture Installation & After Sales

Reference ID: **FFS/Q2201, Version: 3.0, NSQF Level: 4**

Assistant Carpenter

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> Skilling is building a better India. If we have to move India towards development then Skill Development should be our mission.

Shri Narendra Modi
Prime Minister of India

Acknowledgements

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The preparation of this Facilitator Guide would not have been possible without the Furniture and Fittings industry's support. Industry feedback has been extremely encouraging, from inception to conclusion, and it is with their input that we have tried to bridge the skill gaps existing today in the industry.

This Facilitator Guide is dedicated to the aspiring youth, who desire to achieve special skills, which would serve as lifelong assets for their future endeavours.

About This Guide

The Assistant Carpenter guide is designed to enable training for the specific Qualification Pack (QP). Each National Occupational Standard (NOS) is addressed through dedicated Unit(s). Key Learning Objectives for the relevant NOS are presented at the beginning of each Unit to guide the learner's progress.

The Assistant Carpenter plays the primary role of assisting in the preparation of the worksite, fabrication, assembly, finishing, and installation of the products on the worksite. The person is responsible for loading, unloading, moving, and storing required materials, tools, and equipment. The individual will also perform additional tasks as delegated by the senior carpenters in construction, maintenance, repairing, and remodeling at the worksite.

The individual must have physical strength, good stamina, problem-solving and analytical skills, with a willingness to learn and perform. The individual must be a team player capable of multitasking, and a good listener with skills to comprehend and communicate. The individual should be honest, trustworthy, and reliable.

Symbols Used

Ask


Explain


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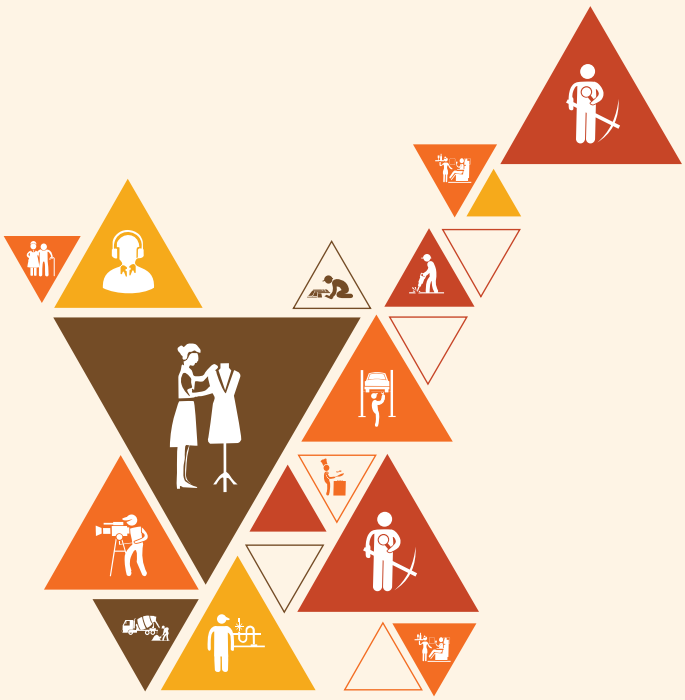
1. Overview of the Furniture and Allied Industries & Assistant Carpenter Role

Unit 1.1: Introduction to the Furniture Industry and Its Scope
Unit 1.2: Allied Industries and Their Role in Furniture Manufacturing
Unit 1.3: Interior Design and Furniture Integration
Unit 1.4: Occupational Map of the Furniture Industry
Unit 1.5: Role and Responsibilities of an Assistant Carpenter
Unit 1.6: Career Growth and Work Expectations
Unit 1.7: Regulatory, Trade, and Taxation Awareness



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Describe in detail the scope, size, and economic contribution of the furniture industry in India and abroad, explaining how the sector fits within the larger interior and construction industries.
2. Explain how furniture plays a vital role in enhancing functionality, improving ergonomics, and elevating aesthetic appeal within residential, commercial, and institutional interior spaces.
3. Identify major production trends in furniture design and manufacturing, such as modular furniture, sustainable materials, and smart storage, and explain how consumer preferences are shaping the future of the industry.
4. List the key enabling and support industries that directly contribute to furniture manufacturing, including adhesives, plywood, laminates, foams, screws, hinges, and finishing materials.
5. Describe the specific function of each allied industry in the value chain, such as how adhesives are used for panel bonding, or how laminate sheets are applied for surface finishing in modular furniture.
6. Explain the relationship between the core carpentry unit and the allied sectors by highlighting the interdependency in terms of material sourcing, production timelines, and installation efficiency.
7. Describe how furniture planning is integrated with interior design objectives, and explain the process of matching furniture styles with the overall spatial theme, user needs, and room functionality.
8. Identify the distinctions between loose furniture, modular systems, and built-in units, and describe the role of carpenters in executing these elements on-site or in workshops.
9. List and describe various job roles found across the furniture manufacturing and installation sector, including roles in design, fabrication, finishing, logistics, and customer support.
10. Explain how the occupational structure in the furniture industry allows vertical movement (from assistant to senior roles) and horizontal mobility (shifting between fabrication, finishing, or installation tasks), based on skills and experience.
11. Define the job title, scope of work, and functional responsibilities of an Assistant Carpenter, especially in workshop and on-site environments.
12. List the tools, basic equipment, soft skills, and behavioural traits expected from an Assistant Carpenter in day-to-day operations.
13. Describe what kinds of activities must be done under supervision, and which responsibilities require reporting or escalation to a supervisor or senior technician.
14. Explain workplace expectations such as timely attendance, precision in work, following instructions, maintaining cleanliness, and cooperating with team members and other trades at the worksite.
15. Describe how punctuality, coordination, and professional communication positively influence the working environment and productivity of a carpentry team.
16. Discuss how career growth can be achieved within the furniture industry by pursuing higher-level skill training, developing specialization, or gaining multi-domain exposure across fabrication, assembly, and finishing.
17. Identify relevant codes and standards related to building safety and design that influence the carpentry and interior installation process.

18. Describe the basic procedures and practices for procurement, inventory tracking, and material quality checks that a carpenter must be aware of while working on site or in a workshop.
19. Explain the relevance of trade regulations, such as material import/export restrictions, and how these affect timelines, costs, and material choices in carpentry projects.
20. Describe the essential components of taxation and billing applicable to a furniture job, such as understanding GST, itemized invoices, and labour charges.

Unit 1.1: Introduction to the Furniture Industry and Its Scope

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe the national and global scope of the furniture industry and its contribution to economy and employment.
2. Explain how furniture enhances utility, comfort, and design in various interior spaces like homes, offices, and hospitality areas.
3. Identify recent industry trends, including modular systems, ergonomic innovations, and material sustainability.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the furniture industry, its importance in the national and global economy, and how it supports employment. We will also explore how furniture adds comfort, function, and beauty to different spaces like homes, offices, and hotels. Lastly, we will look at new trends in furniture design, such as modular furniture, ergonomic features, and eco-friendly materials.

Ask

Ask the participants the following questions:

- What is furniture used for in homes and offices?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Introduction to the Furniture Industry and Its Scope

The furniture industry is a dynamic and multifaceted sector that combines traditional craftsmanship with modern technology and design. It plays a crucial role in enhancing the quality of life by providing essential products that support everyday activities and improve living and working environments. From small carpentry workshops to large-scale industrial units, the sector contributes significantly to economic development, innovation, and employment. As lifestyle preferences evolve and sustainability becomes a key concern, the furniture industry is adapting by introducing modular designs, ergonomic solutions, and environmentally friendly materials. This unit explores the scope of the industry, its significance in interior spaces, and the trends that are shaping its future.

1. **Economic and Employment Contribution – National and Global Scope**

   The furniture industry contributes significantly to the national and global economy. In India, it is one of the fastest-growing sectors, offering vast opportunities for employment across various stages such as raw material processing, design, production, assembly, marketing, and retail. Traditional artisans, MSMEs (Micro, Small, and Medium Enterprises), and large manufacturers coexist in this sector, creating a diverse ecosystem that sustains both rural livelihoods and urban enterprises. Globally, the industry is dominated by major producers like China, Germany, Italy, and the USA, who export large volumes of furniture worldwide. India is also emerging as a strong player in the export market, particularly for wooden and handcrafted furniture. The rise in housing projects, hospitality ventures, co-working spaces, and e-commerce platforms has further accelerated growth and widened the industry's scope.

2. **Functional and Aesthetic Importance of Furniture in Interior Spaces**

   Furniture plays a central role in shaping the functionality, comfort, and visual appeal of interior spaces. In homes, it supports daily activities like sleeping, dining, and relaxing, while in offices, it enhances productivity by offering comfortable and ergonomic workstations. In commercial and hospitality environments, such as hotels, restaurants, and retail stores, furniture defines the user experience by combining utility with a strong sense of design. Well-designed furniture not only improves the usability of a space but also reflects the personality, culture, and purpose of the environment. Interior designers and architects carefully select furniture to match themes, enhance spatial efficiency, and ensure harmony with lighting, textures, and colors. Therefore, furniture is not just about physical utility but also about creating meaningful and comfortable living and working experiences.

3. **Emerging Trends: Modular Design, Ergonomics, and Sustainability**

   The furniture industry is rapidly evolving in response to changing lifestyles, health awareness, and environmental concerns. Modular furniture has gained popularity, especially in urban homes and offices, due to its flexibility, space-saving features, and ease of installation and relocation. These systems allow users to customize layouts according to their needs, making them highly suitable for modern living. Ergonomic innovations are another key trend, especially in the wake of remote work culture. Chairs with lumbar support, adjustable desks, and posture-friendly designs are now in high demand, as they help prevent physical strain during long working hours. At the same time, there is a strong movement towards sustainable practices in furniture production. Manufacturers are using eco-friendly materials like bamboo, reclaimed wood, and recycled metals, while also adopting low-impact production techniques. Consumers are increasingly making conscious choices, looking for furniture that not only looks good but also supports environmental well-being. These trends are shaping a future where design, comfort, and responsibility go hand in hand.

Say

Let us participate in an activity to explore the unit a little more.

Activity

- Arrange the class in a semi-circle/circle.
- Each of us will tell the class their name, hometown, hobbies and special quality about themselves, starting with the 1st letter of their name. I will start with mine.
- Say your name aloud and start playing the game with your name.
- Say, “Now, each of one you shall continue with the game with your names till the last person in the circle/ semi-circle participates”.
- Listen to and watch the trainees while they play the game.
- Ask questions and clarify if you are unable to understand or hear a trainee.Remember to:

Activity	Duration	Resources used
Ice Braker	60 minutes	Pen, Notebook etc.

- Discourage any queries related to one’s financial status, gender orientation or religious bias during the game
- Try recognising each trainee by their name because it is not recommended for a trainer to ask the name of a trainee during every interaction

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage Participants to observe real furniture around them.
- Answer all the queries/doubts raised by the trainees in the class.
- Encourage other trainees to answer problems and boost peer learning in the class.

Unit 1.2: Allied Industries and Their Role in Furniture Manufacturing

Unit Objectives

At the end of this unit, participants will be able to:

1. List key allied industries such as laminates, plywood, adhesives, foams, and describe their integration into carpentry workflows.
2. Explain how interdependencies with these sectors impact material sourcing, production planning, and final installation.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the role of key allied industries such as plywood, laminates, adhesives, foam, and hardware in the furniture manufacturing process. Participants will learn how these industries support carpentry by supplying essential materials and components, and how close coordination with them affects sourcing, production planning, and final installation. The unit highlights the importance of material quality, availability, and timely integration in delivering finished furniture.

Ask

Ask the participants the following questions:

- Can you name any two materials or products that are commonly used in making furniture?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Allied Industries and Their Role in Furniture Manufacturing

The furniture industry is supported by several allied industries that supply vital materials and components essential for producing high-quality furniture. These industries provide the building blocks that shape the durability, comfort, and visual appeal of furniture pieces. The close collaboration between furniture manufacturers and these allied sectors ensures that raw materials and accessories are available on time, meet required standards, and integrate smoothly into the manufacturing process. Understanding the role of allied industries highlights how interlinked processes and materials come together to deliver functional, comfortable, and attractive furniture.

1. **Key Allied Industries and Their Integration into Carpentry Workflows**

   The furniture industry does not function in isolation. It relies on various supporting industries, also called allied industries, which supply essential materials that are integrated at different stages of the carpentry workflow. These components influence the design, strength, functionality, and comfort of the final product.

   Plywood and Laminates

   - Plywood is a widely used structural material made from thin layers of wood veneer glued together. It provides high strength, stability, and resistance to warping, making it ideal for creating cabinets, wardrobes, tables, and internal furniture frames.
   - Laminates are decorative surface layers used to enhance the appearance and durability of furniture. They offer design flexibility with a wide range of colors, textures, and finishes, while also providing resistance to scratches, moisture, and stains.
   - Together, plywood and laminates form the base and finish of most modern furniture, offering a combination of strength and visual appeal.

   Adhesives and Fasteners

   - Adhesives play a critical role in assembling furniture parts. They are used to bond wood joints, attach veneers, fix foam padding, and ensure smooth finishes without visible mechanical joints. High-quality adhesives ensure long-term strength and neat workmanship.
   - Fasteners include screws, nails, bolts, and other hardware used to fix furniture parts firmly. They provide mechanical strength, ease of disassembly for modular furniture, and help align moving parts like doors and drawers accurately.
   - These materials are essential for both internal structure and surface components, ensuring reliability and safety of the final product.

   Foams and Upholstery Materials

   - Foams are used as cushioning material in upholstered furniture like sofas, chairs, and beds. The density and quality of foam determine comfort, support, and durability.
   - Upholstery fabrics or covers, such as cloth, leather, or synthetic materials, provide the outer finish and style of furniture. They influence not only aesthetics but also user comfort and cleaning ease.
   - This segment of allied industries is vital for creating furniture that serves comfort-focused functions, especially in homes, offices, and hospitality spaces.

Hardware and Fittings

- Hardware items such as hinges, handles, locks, drawer slides, and connectors allow furniture parts to open, close, rotate, or slide smoothly.
- High-quality fittings are essential in modular furniture systems, where ease of movement, precision alignment, and customer experience are priorities.
- These components are installed at the final stages of assembly but are planned from the beginning of the design process, making them key to furniture usability.

Integrated Workflows

- All these materials plywood, laminates, adhesives, foams, and hardware—are integrated into carpentry workflows from start to finish.
- Proper sequencing of material usage ensures that the furniture is assembled smoothly, remains durable over time, and meets both functional and aesthetic expectations.

2. Interdependencies and Their Impact on Material Sourcing, Production, and Installation

The relationship between carpenters and allied industries is not one-sided; it's an active interdependency. The availability, quality, and delivery of materials from allied industries directly influence each stage of the furniture-making process.

Material Sourcing

- Carpentry projects begin with the selection and procurement of raw materials. If plywood, laminates, adhesives, or foam are not available in time or are of poor quality, the project timeline suffers.
- Delays in supply from these allied sectors can lead to idle labor, missed deadlines, and financial loss. Therefore, sourcing must be carefully planned, and relationships with suppliers must be strong and reliable.

Production Planning

- Allied industries must supply materials in the correct quantity, size, finish, and timing so that production can proceed without interruption.
- For example, if laminates are delivered in the wrong shade or foam in the wrong thickness, carpenters may need to pause production or rework existing designs, leading to wasted time and materials.
- Efficient coordination ensures minimal downtime, reduced wastage, and optimized resource utilization in the workshop or factory.

Final Installation

- During installation, all components fittings, adhesives, laminates, and foams—must work together seamlessly. Any mismatch in quality, measurement, or finish can result in gaps, misaligned joints, or defective movement.
- In modular furniture, precision is critical, and even a small defect in a hinge or drawer runner can ruin the entire setup.
- Ensuring smooth installation and customer satisfaction depends on maintaining high standards across all allied materials used.

Need for Coordination and Awareness

- Carpenters and furniture makers must have a working knowledge of how each allied industry operates, what materials are available, and how to communicate design and quality requirements effectively.
- Building strong coordination practices helps ensure quality, avoids rework, and supports timely delivery to customers.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Managing Workflow Challenges in Furniture Manufacturing

Group Size: 4–6 participants

Materials

- Chart paper or whiteboard
- Markers
- Sticky notes,
- Scenario cards

Activity Duration: 60 minutes

Instructions

1. **Form Groups and Set the Context**

   Introduce the role of allied industries in carpentry—plywood, laminates, adhesives, foams, etc. Emphasize how dependencies with these sectors influence project timelines and product quality.

2. **Distribute Scenario Cards**

   Each card describes a challenge involving a delay, shortage, or quality issue from an allied industry.

3. **Group Planning and Discussion**

   Each group discusses their scenario and uses these prompts:

   - Which stage of furniture manufacturing is impacted?
   - What allied industry is involved?
   - How can you reschedule or substitute while maintaining product standards?
   - What are the communication steps with vendors and clients?

4. **Group Presentations**

   Each group presents their scenario, response plan, and justification. Encourage peer questions and cross-group insights.

5. **Debrief and Takeaways**

   Conclude with a class discussion on:

   - How allied industries influence carpentry timelines.
   - The importance of proactive planning and communication.
   - Lessons learned on managing real-world production challenges.

Examples of Scenario Cards

Scenario 1
The laminate supplier informs you of a two-day delay in delivery. Your team is mid-way through a modular kitchen project. How do you adjust your workflow?

Scenario 2
A batch of adhesives fails quality checks on the day of major assembly work. What immediate steps will your team take to minimize downtime?

Scenario 3
Your foam supplier has sent a different density than requested, affecting cushion quality. How do you manage communication with the supplier and your client?

Activity	Duration	Resources used
Managing Workflow Challenges in Furniture Manufacturing	60 minutes	Chart paper or whiteboard, Markers, Sticky notes, Scenario cards etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Guide Participants to focus on real-life decision-making.
- Ensure each group identifies the correct stage of impact.
- Encourage teamwork and practical thinking over technical detail.

Unit 1.3: Interior Design and Furniture Integration

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the importance of aligning furniture design with interior layout, space utilization, and client preference.
2. Identify how styles such as minimalist, traditional, or industrial influence furniture form, colour, and finish.
3. Distinguish between built-in, modular, and loose furniture and their role in different settings.
4. Describe how carpenters collaborate with interior designers during project execution

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how furniture design integrates with interior spaces to create functional and beautiful environments. We will explore the importance of matching furniture with interior layouts, different design styles, and the roles of built-in, modular, and loose furniture. The unit also covers how carpenters and interior designers work together to bring design concepts to life.

Ask

Ask the participants the following questions:

- What are the three main types of furniture based on how they are installed or used in a space?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Interior Design and Furniture Integration

Furniture plays a vital role in shaping the look, feel, and function of interior spaces. It is not just about placing pieces in a room but integrating furniture design with the overall interior plan to create spaces that are comfortable, efficient, and visually appealing. This integration considers the client's preferences and how different furniture styles and types can complement various interior designs.

1. **Furniture and Interior Layout Alignment**

   The design and placement of furniture must be aligned with the interior layout to optimize space utilization. Proper alignment ensures smooth movement within the room and balances aesthetics with functionality. For example, in smaller spaces, furniture should be scaled appropriately and arranged to avoid clutter, while in larger rooms, pieces may be grouped to create distinct zones. Understanding the client's daily needs and preferences helps in choosing furniture that enhances both comfort and usability.

2. **Influence of Interior Styles on Furniture**

   Interior design styles strongly influence the form, color, and finish of furniture. Minimalist interiors favor clean lines, neutral tones, and simple shapes that promote calm and uncluttered spaces. Traditional styles often include richly carved wood, ornate detailing, and warm colors that evoke a classic feel. Industrial design uses raw materials like metal and unfinished wood, with furniture that is sturdy and functional. These style choices ensure that the furniture supports the overall mood and theme of the interior.

3. **Types of Furniture and Their Roles**

   Furniture can be categorized as built-in, modular, or loose, each serving different purposes. Built-in furniture, such as wall-mounted cabinets or fixed wardrobes, is designed to fit the space perfectly and maximize utility. Modular furniture offers flexibility, allowing pieces to be rearranged or customized based on changing needs, ideal for dynamic spaces like offices or small apartments. Loose furniture includes standalone items like chairs, tables, and sofas that can be moved or replaced easily, adding versatility to the interior.

4. **Collaboration Between Carpenters and Interior Designers**

   Successful interior projects depend on the close collaboration between carpenters and interior designers. Designers develop the creative vision and select materials, while carpenters contribute their technical skills to translate designs into practical furniture. Regular communication ensures that measurements, materials, and finishes meet design specifications and functional requirements. This teamwork guarantees that the final furniture pieces fit perfectly within the interior and meet client expectations for both beauty and durability.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Planning Furniture for Different Interior Styles

Group Size: 4–6 participants

Materials

- Flipchart or whiteboard
- Markers
- Sample images of interior styles (minimalist, traditional, industrial)
- Paper
- Pens

Activity Duration: 60 minutes

Instructions

1. Divide participants into small groups.
2. Assign each group a specific interior design style (e.g., minimalist, traditional, or industrial).
3. Each group will
   - Discuss key characteristics of their assigned style.
   - Select and describe appropriate furniture types (built-in, modular, loose) that fit the style.
   - Plan a simple furniture layout for a given room type (living room or office), considering space utilization and client preferences.
4. Groups will present their furniture style choices, layout plans, and reasoning to the class.

Activity	Duration	Resources used
Planning Furniture for Different Interior Styles	60 minutes	Flipchart or whiteboard, Markers, Sample images of interior styles (minimalist, traditional, industrial), Paper, Pens etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage groups to focus on how furniture design complements the interior style and space.
- Guide participants to consider client needs and practicality in their layout.
- Support clear communication during presentations by prompting questions on design choices and collaboration between designers and carpenters.

Unit 1.4: Occupational Map of the Furniture Industry

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe job roles across functions like cutting, shaping, assembly, finishing, logistics, and after-sales installation.
2. Explain how a carpenter can grow vertically to supervisory roles or horizontally across fabrication, finishing, or installation.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the various job roles within the furniture manufacturing industry, covering every stage from cutting and assembly to finishing, logistics, and on-site installation. We will also explore how carpenters can grow professionally—either by taking up leadership roles or by expanding into related specializations—giving a complete view of the career pathways available in this sector.

Ask

Ask the participants the following questions:

- Can you name any three types of work involved in making and installing a piece of furniture?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Occupational Map of the Furniture Industry

The furniture industry is composed of a wide range of job roles that together manage the entire process—from raw materials to finished furniture placed in homes or offices. Understanding these roles helps individuals see the opportunities available and the career growth pathways they can follow.

1. **Diverse Roles Across the Production Chain**

   Cutting and Shaping

   Professionals in this role are responsible for converting raw materials like solid wood, plywood, MDF, or particle boards into specific furniture components. They use both manual tools and automated machines such as panel saws, CNC routers, or circular saws. This task demands a clear understanding of technical drawings, measurements, and how different materials react during cutting and shaping processes.

   Assembly Work

   Assemblers take the prepared components and join them using joinery techniques such as dowels, screws, nails, or adhesives. They ensure proper alignment, durability, and strength in the structure. This role requires good hand-eye coordination, familiarity with hardware fittings, and the ability to follow detailed assembly instructions.

   Finishing Department

   Finishers add the final visual and protective layer to furniture. Their tasks include sanding surfaces for smoothness, applying stains or paint, polishing, and sometimes laminating or veneering. Good finishing not only improves appearance but also increases the furniture's lifespan. Precision, a keen eye for detail, and knowledge of finishing materials are essential in this role.

   Logistics and Handling

   Logistics staff ensure the finished products are properly packed to avoid scratches or damage during transport. They manage storage areas, track inventory, and coordinate with transportation teams for timely delivery. This stage is crucial for maintaining product quality and meeting customer deadlines.

   After-Sales and Installation

   Installation technicians travel to the customer site to assemble or fit the furniture in its final location. They read layout plans, ensure correct placement, and address any fitting challenges. These professionals must also maintain cleanliness, safety, and professionalism during client visits.

2. **Customer-Facing and Support Roles**

   On-Site Technicians and Installers

   These professionals are responsible for executing on-site installations of furniture systems such as wardrobes, modular kitchens, or office cabins. They interpret technical drawings or layout plans, handle measurements, and work efficiently in real environments. This role demands adaptability, as each site may have unique challenges.

   Soft Skills in Practice

   Customer-facing staff must communicate clearly, answer queries politely, and stay calm under pressure. Their approach can impact a customer's overall satisfaction with the service. Having interpersonal skills such as patience, clarity, and a willingness to resolve minor on-site issues is essential.

After-Sales Support

Some roles go beyond installation, involving follow-up visits, minor repairs, or collecting feedback. These tasks help ensure long-term customer satisfaction and build loyalty toward the brand. Workers in this function act as the final touchpoint for quality assurance.

3. **Growth Opportunities for Carpenters**

Vertical Growth (Career Advancement)

A skilled carpenter with strong performance and leadership qualities can progress to supervisory roles. As a team leader or production in-charge, they oversee work schedules, manage team output, check for quality compliance, and guide junior carpenters. These roles combine technical skill with leadership and planning responsibilities.

Horizontal Growth (Skill Diversification)

Carpenters can choose to diversify their skills by learning advanced machine operations (e.g., CNC routers), professional finishing techniques (like PU or melamine polishing), or specialize in modular or on-site installations. This lateral movement allows them to explore different roles and increases their value in the workplace.

Flexible Career Path

The furniture industry offers multiple entry and exit points across functions, enabling carpenters to build careers based on interest and skill development. This flexibility empowers them to shift between hands-on work, supervisory duties, or technical specialization over time, making the industry inclusive and growth oriented.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Mapping Career Pathways in the Furniture Industry

Objective: To help participants understand the different job roles in the furniture industry and explore possible career growth paths for carpenters.

Group Size: 4–6 participants

Materials

- Chart paper or whiteboard
- Sketch pens or markers
- Role cards (optional)

Activity Duration: 45–60 minutes

Instructions

1. **Role Brainstorm**

   Each group lists and categorizes job roles in the furniture industry under production, finishing, logistics, and customer service (e.g., cutting, assembly, polishing, installation, after-sales).

2. **Career Path Mapping**

   Using arrows and flowcharts, groups create a career map showing how a carpenter can grow vertically (e.g., supervisor, quality in-charge) or horizontally (e.g., switch to finishing, machine handling, or installation).

3. **Presentation**

   Each group presents their map, explaining the flow of roles and growth options. Others may ask questions or suggest additional paths.

Activity	Duration	Resources used
Mapping Career Pathways in the Furniture Industry	45-60 minutes	Chart paper or whiteboard, Sketch pens or markers, Role cards (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage each group to include both technical and soft-skill-based roles.
- Remind participants to think practically—based on actual work environments (workshop, site, factory).
- Offer prompts if needed (e.g., “Where would a person with strong finishing skills go next?”).

Unit 1.5: Role and Responsibilities of an Assistant Carpenter

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe the typical day-to-day duties of an Assistant Carpenter in a workshop and on-site.
2. Identify essential tools, materials, and PPE used in entry-level carpentry tasks.
3. Recognize the importance of discipline, teamwork, and communication for effective task completion.
4. Understand what tasks must be supervised and which require escalation to a senior.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the daily tasks and key responsibilities of an Assistant Carpenter, both in workshop settings and at installation sites. Participants will explore the tools and materials commonly used in carpentry, the importance of teamwork and discipline, and understand which tasks must be supervised or reported. This unit prepares Participants for safe, effective participation in real-world carpentry projects.

Ask

Ask the participants the following questions:

- What are some basic tools that an assistant carpenter uses every day?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Role and Responsibilities of an Assistant Carpenter

Assistant carpenters play a vital supporting role in both workshop and on-site carpentry tasks. Though they are at an entry level, their responsibilities are essential for maintaining workflow, safety, and overall productivity. By assisting skilled carpenters and adhering to instructions, they gradually build practical knowledge and confidence in the trade.

1. **Supporting Daily Operations in the Workshop and On-Site**
    - Assistant carpenters assist in a range of activities such as measuring, marking, cutting support, and holding components in place.
    - In workshops, they help organize tools, transport raw materials, clean work areas, and prepare surfaces for finishing.
    - On-site, they aid in carrying, fitting, and positioning furniture elements during installation under supervision.

2. **Using Basic Tools, Materials, and Safety Equipment**
    - They operate basic tools like screwdrivers, hand saws, hammers, and measuring tapes with care and accuracy.
    - They handle materials such as plywood, MDF, adhesives, screws, hinges, and lamination sheets.
    - Assistant carpenters are required to wear personal protective equipment (PPE) such as gloves, helmets, safety shoes, and dust masks to minimize the risk of injury during handling or cutting.

3. **Practicing Discipline, Teamwork, and Effective Communication**
    - Punctuality, cleanliness, and respect for team protocols are vital aspects of their professional behaviour
    - They collaborate closely with senior carpenters and follow verbal or written instructions without delay or misinterpretation.
    - Clear communication helps avoid errors in measurements or assembly, and contributes to safe and productive teamwork.

4. **Knowing What Requires Supervision or Escalation**
    - Assistant carpenters must avoid using heavy machinery or power tools unless specifically trained and supervised.
    - If they encounter issues such as incorrect materials, unclear designs, or unsafe working conditions, they are expected to inform a senior immediately.
    - Their ability to recognize task limits and escalate problems responsibly ensures safety and efficiency.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: A Day in the Life of an Assistant Carpenter

Objective: To help participants understand the practical responsibilities, tools, and teamwork involved in the role of an Assistant Carpenter through collaborative role play.
Group Size: 4–6 participants

Materials

- Role cards (Assistant Carpenter, Senior Carpenter, Installer, Supervisor)
- Sample task list (e.g., measure and cut, tool prep, cleanup, report issue)
- Paper and markers for planning

Activity Duration: 60 minutes

Instructions

1. **Scenario Setup**

   Each group receives a scenario card describing a basic carpentry task (e.g., assembling a table, installing a cabinet, preparing materials in a workshop).

2. **Role Assignment and Planning**

   Participants assign roles within the team and list tasks typically performed by an assistant carpenter. They discuss what support is required, what tools are needed, and which tasks require supervision.

3. **Role Play and Presentation**

   Groups enact their planned task, demonstrating the assistant carpenter's role, teamwork, use of tools, and safety practices. Each group presents what they learned about effective assistant behaviour.

Activity	Duration	Resources used
A Day in the Life of an Assistant Carpenter	60 minutes	Role cards (Assistant Carpenter, Senior Carpenter, Installer, Supervisor), Sample task list (e.g., measure and cut, tool prep, cleanup, report issue), Paper and markers for planning etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage groups to focus on realistic and safe assistant-level tasks.
- Remind Participants to include use of basic tools and mention PPE.
- After presentations, lead a discussion on how assistants contribute to project efficiency and what should be escalated to seniors.

Unit 1.6: Career Growth and Work Expectations

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the working conditions, schedules, and workplace behaviour expected from a carpentry professional.
2. Discuss how continuous learning, certification, and task ownership can open opportunities for role enhancement.
3. Identify ways to improve work output through time management, safety adherence, and quality focus.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the important work expectations and career growth opportunities for carpentry professionals. You will learn about the typical work environment, the behaviour expected on the job, and how continuous learning and skill development can help advance your career. The unit also covers ways to improve productivity by focusing on time management, safety, and quality workmanship.

Ask

Ask the participants the following questions:

- What are some important qualities a carpenter should have to succeed at work?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Career Growth and Work Expectations

The furniture industry offers a dynamic career path for carpentry professionals, where technical skills, attitude, and continuous learning play a vital role. Understanding the nature of the work environment, meeting professional expectations, and committing to personal development can open doors to advancement. Equally important is maintaining safety and quality standards to build a strong reputation and contribute to project success.

1. **Work Environment and Professional Behaviour**

   Carpenters typically work in diverse environments, including workshops, construction sites, and clients' premises. These settings often demand physical strength, endurance, and the ability to adapt to changing conditions such as weather or workspace constraints. Being punctual and reliable shows respect for the team and the project timeline. Professional behaviour includes communicating clearly with supervisors and colleagues, respecting workplace rules, and maintaining cleanliness and safety standards. Such conduct fosters a positive atmosphere that supports teamwork and efficient task completion.

2. **Continuous Learning and Career Advancement**

   The furniture industry values workers who continually improve their skills. Learning new carpentry methods, understanding the use of modern tools, and earning certifications can help individuals progress in their careers. Carpenters who take ownership of their tasks, demonstrate problem-solving skills, and actively seek feedback are more likely to be considered for promotions or specialized roles such as team leads or machine operators. Keeping up-to-date with industry trends and technologies not only enhances one's expertise but also ensures long-term employability and opens pathways to supervisory or managerial positions.

3. **Enhancing Productivity with Safety and Quality Focus**

   To maximize work output, carpenters need to manage their time effectively by organizing tasks logically and minimizing downtime. Following safety protocols, such as wearing personal protective equipment and handling tools properly, is critical to avoid injuries and maintain smooth workflow. Additionally, focusing on quality workmanship by measuring accurately, assembling parts precisely, and finishing surfaces carefully results in durable and aesthetically pleasing furniture. Delivering high-quality products consistently helps build customer trust and enhances the carpenter's professional reputation.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Planning a Career Path in Carpentry

Group Size: 4–6 participants

Materials

- Flipchart or whiteboard
- Markers
- Sticky notes

Activity Duration: 60 minutes

Instructions

1. Divide participants into small groups.
2. Ask each group to create a simple career path map for a carpenter, starting from an entry-level role to advanced positions.
3. Groups should identify key skills, certifications, behaviours, and work expectations required at each stage of career growth.
4. Encourage groups to discuss how time management, safety practices, and continuous learning influence career advancement.
5. Each group presents their career path and explains the steps and qualities needed for growth.

Activity	Duration	Resources used
Planning a Career Path in Carpentry	60 minutes	Flipchart or whiteboard, Markers, Sticky notes etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage participants to think about both vertical growth (promotions) and horizontal growth (skill diversification).
- Guide discussions to highlight the importance of safety, discipline, and quality in each career stage.
- Summarize key learning points after presentations, emphasizing proactive learning and professional conduct.

Unit 1.7: Regulatory, Trade, and Taxation Awareness

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify key regulations such as fire safety, load-bearing rules, and finishing material norms that affect carpentry work.
2. Explain basic concepts of taxation (GST), import/export restrictions, and invoice generation in a small furniture project.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the key regulations and trade practices that impact furniture manufacturing, such as fire safety rules, load-bearing standards, and finishing material norms. We will also explore basic taxation concepts like GST, and understand how invoices are generated and how trade restrictions affect material sourcing. This awareness is essential for ensuring legal compliance, maintaining quality, and managing business processes effectively.

Ask

Ask the participants the following questions:

- What is GST and why is it important for carpenters to know about it?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Regulatory, Trade, and Taxation Awareness

In the furniture industry, understanding the rules and regulations that govern production, safety, and trade is essential for both compliance and business success. Carpenters and manufacturers must be aware of legal standards that affect how furniture is designed, constructed, and sold. Equally important is knowledge of taxation and trade policies, which influence pricing, invoicing, and the sourcing of materials. This awareness ensures smooth operations and helps avoid legal or financial issues.

Regulatory Compliance

- **Fire Safety Regulations**

  Furniture manufacturers must use fire-resistant materials and follow design standards that reduce the risk of fire hazards. This includes selecting appropriate woods, fabrics, and finishes that comply with fire safety codes to protect users and meet legal requirements.

- **Load-Bearing Rules**

  Furniture must be constructed to safely support the expected weight and usage. Adhering to load-bearing standards helps prevent accidents caused by weak joints, improper materials, or poor design, ensuring both durability and user safety.

- **Finishing Material Norms**

  The choice of paints, varnishes, laminates, and adhesives must comply with environmental and health safety regulations. These norms help reduce harmful emissions, increase product lifespan, and ensure finishes are non-toxic and safe for indoor use.

Trade and Taxation Basics

- **Goods and Services Tax (GST)**

  GST is a crucial component in the pricing and financial management of furniture projects. Carpentry professionals must understand how GST applies to raw materials, labor, and finished products to accurately calculate costs, set prices, and file taxes, maintaining both legal compliance and profitability.

- **Invoice Generation**

  Creating proper invoices with detailed breakdowns of materials, labor, taxes, and total costs is essential for clear financial records. This transparency helps businesses maintain accountability and comply with tax authorities during audits or reporting.

- **Import/Export Regulations**

  Furniture businesses involved in international trade need to understand rules governing the import and export of materials and finished goods. Restrictions or duties may apply, influencing cost and availability of resources. Staying informed enables better planning and market access.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Understanding Compliance in a Furniture Project

Group Size: 4–6 participants

Materials

- Chart paper
- Markers
- printed scenario cards (optional)

Activity Duration: 60 minutes

Instructions

1. **Assign a Project Brief to Each Group**

   Provide each group with a fictional furniture project scenario (e.g., making modular wardrobes for a hotel, installing office furniture, etc.).

2. **Discussion and Planning**

   Each group must:

   Identify at least three regulatory aspects (like fire safety, load-bearing, or material compliance) relevant to the project.

   List the GST implications and explain how the invoice should be structured.

   Highlight if any import/export rules would apply if materials are sourced internationally.

3. **Group Presentation**

   Each group presents their findings to the class.

4. **Debrief**

   Discuss common challenges and best practices for ensuring compliance and financial transparency in carpentry projects.

Activity	Duration	Resources used
Understanding Compliance in a Furniture Project	60 minutes	Chart paper, Markers, printed scenario cards (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage participants to refer to real-world materials or examples they may know (e.g., plywood that meets fire-resistance norms).
- Help guide the discussion if groups struggle with taxation by giving them sample GST rates for common carpentry materials.
- Use the debrief to correct misconceptions and emphasize the importance of documentation and compliance in building a professional career.

Exercise

Multiple Choice Questions (MCQs)

1. Which of the following is not an allied industry to the furniture sector?
   a) Laminates
   b) Foams
   c) Pharmaceuticals
   d) Adhesives
   Answer: c) Pharmaceuticals

2. What is a major trend in modern furniture design?
   a) Use of marble and heavy stone
   b) Smart storage and modular designs
   c) Exclusive use of hand tools
   d) Non-functional decorative pieces
   Answer: b) Smart storage and modular designs

3. What role does an Assistant Carpenter primarily play in a workshop?
   a) Managing project finance
   b) Designing architectural layouts
   c) Assisting with cutting, shaping, and assembling components
   d) Handling marketing tasks
   Answer: c) Assisting with cutting, shaping, and assembling components

4. GST in furniture billing helps to:
   a) Increase manual errors
   b) Avoid quality standards
   c) Ensure tax compliance and transparency
   d) Reduce customer trust
   Answer: c) Ensure tax compliance and transparency

Fill in the Blanks

1. The _____ industry includes the production of plywood, adhesives, and laminates that support furniture manufacturing.
   Answer: allied

2. A built-in wardrobe is an example of _____ furniture that is fixed permanently to the interior space.
   Answer: modular / built-in

3. A carpenter can grow horizontally by shifting into finishing, _____, or installation domains.
   Answer: fabrication

4. An Assistant Carpenter must use _____ equipment like gloves, masks, and safety shoes while working.

   Answer: personal protective

Match the following

1. Match the furniture type with its definition:

Column A	Column B
1. Loose furniture	a. Fixed permanently into structure
2. Modular furniture	b. Freestanding and movable
3. Built-in furniture	c. Assembled from prefabricated units

Answers: 1 - b) , 2 - c) , 3 - a)

2. Match the tool or material with its use:

Column A	Column B
1. Adhesive	a. Panel bonding
2. Laminate	b. Fastening components
3. Screwdriver	c. Surface finishing

Answers: 1 - a) , 2 - c) , 3 - b)

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FURNITURE
& FITTINGS
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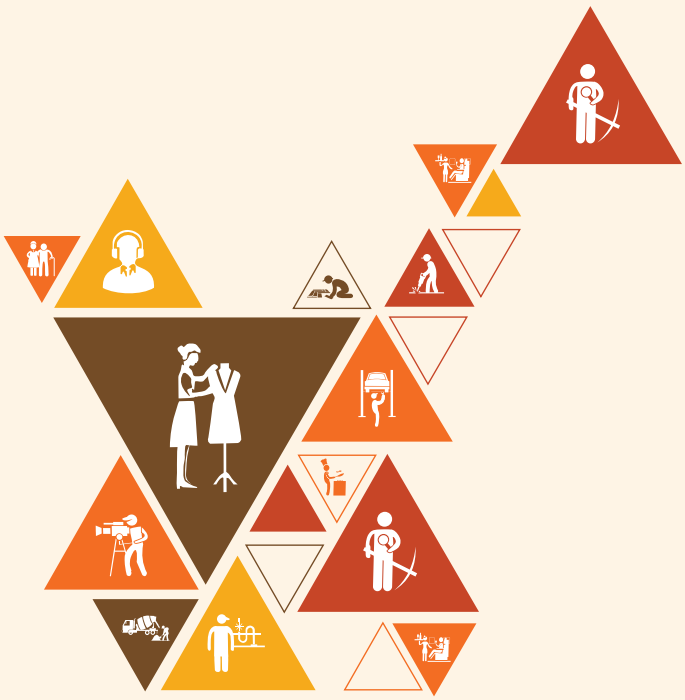
2. Organizational Structure, Communication, and Digital Literacy



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Explain the different types of organizational structures that exist in carpentry, furniture manufacturing, and installation companies, such as flat structures in small workshops or hierarchical structures in larger firms.
2. Describe the internal workflows, roles, and responsibilities within an organization, including who reports to whom, how communication flows, and what types of tasks require escalation to supervisors.
3. Understand and follow established workplace protocols including dress code, attendance, cleanliness, safety behaviour, and adherence to organizational values and policies.
4. Demonstrate awareness of professional behaviour in the workplace, including maintaining hygiene, respecting team norms, and contributing to a cooperative work environment.
5. Explain the process through which team goals are set and communicated in a carpentry or installation setting, including understanding how individual roles contribute to collective performance.
6. Identify strategies for effective team coordination, including delegation of tasks, cross-functional support, and the importance of timely updates during joint work assignments.
7. Communicate clearly and effectively with team members, seniors, or clients using verbal and non-verbal methods that reflect respect, accuracy, and intent.
8. Recognize common workplace conflicts such as miscommunication, disagreements, or role overlap and describe non-confrontational ways to address and resolve such issues constructively.
9. Use appropriate tone, language, and posture when speaking to co-workers and supervisors, particularly in diverse or mixed-experience teams.
10. Demonstrate active listening, patience, and empathy as essential components of positive workplace behaviour, particularly when taking instructions or giving feedback.
11. Identify basic computer hardware components (e.g., CPU, monitor, mouse, keyboard) and explain how each part contributes to the functioning of a digital workstation.
12. Operate a computer for basic job tasks, including opening folders, viewing files, launching applications, and safely shutting down systems.
13. Use the internet to perform work-related searches, such as watching training videos, viewing furniture designs, or checking installation methods.
14. Access and use email platforms to send/receive communication, follow professional email etiquette, and retrieve instructions shared in digital form.
15. Describe the various methods used for financial transactions in carpentry and furniture-related work such as cash payments, UPI, bank transfers, and POS terminals.
16. Explain how to safely and securely perform online transactions using mobile payment applications or websites, including verifying details before submitting payment.
17. Execute a basic online payment step-by-step for a hypothetical work-related purchase (e.g., material bill or tool rental) while ensuring privacy and accuracy.
18. Describe the purpose and core functionalities of common MS Office applications such as Word for documentation, Excel for tabulation, and PowerPoint for visual presentation.

19. Create simple workplace documents such as material lists, job cards, invoices, or presentation slides using MS Office tools as part of routine carpentry operations.
20. Use MS Office tools to generate structured reports, summarize team progress, present project layouts, or share written updates with a supervisor or customer.

Unit 2.1: Understanding Organizational Structure and Workplace Protocols

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the difference between flat, functional, and hierarchical organizational structures used in carpentry and installation businesses.
2. Describe the typical reporting chain, escalation hierarchy, and workflow protocols followed at a furniture manufacturing or site operation unit.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the different types of organizational structures—flat, functional, and hierarchical commonly found in carpentry workshops and installation businesses. Participants will also understand workplace protocols such as reporting chains, escalation procedures, and daily workflow rules. This knowledge helps workers navigate their responsibilities, follow instructions properly, and maintain professionalism and safety on site.

Ask

Ask the participants the following questions:

- Who do you usually report to in a carpentry workshop or installation site when you have a question or face a problem?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Understanding Organizational Structure and Workplace Protocols

A clear understanding of how an organization is structured and how work is managed within that structure is crucial for carpentry professionals. This session explores how businesses organize their teams, how communication flows, and the standard practices that must be followed at the workplace.

1. **Organizational Structures in Carpentry and Installation Businesses**
    - **Flat Structure**

      This type of structure is common in small workshops or start-up units, where there are minimal levels of management. Workers often report directly to the owner or lead carpenter. It allows for quick communication and decision-making, but the lack of formal roles can sometimes lead to confusion regarding task responsibilities.
    - **Functional Structure**

      In medium-sized businesses, the workforce is typically organized based on specific job functions—such as cutting, assembling, finishing, or installation. Each functional group is headed by a supervisor. This structure promotes specialization and helps streamline tasks but requires proper coordination between departments to avoid delays or errors.
    - **Hierarchical Structure**

      Large-scale furniture manufacturers often use a multi-level hierarchy. Employees report to team leaders, who report to supervisors, and so on up to department heads and general managers. This structure provides clarity in roles, responsibilities, and authority. It ensures accountability and organized workflow but may involve slower decision-making due to multiple layers of approval.

2. **Reporting Chains and Workplace Protocols**
    - **Reporting and Escalation Procedure**

      Every employee, especially those in assistant roles, is expected to follow a reporting chain. For example, an Assistant Carpenter must report issues or progress to a site supervisor. If the issue is beyond the supervisor's control (e.g., a material shortage or tool malfunction), it is escalated to a higher authority. This system ensures that responsibilities are managed efficiently and that any delays or challenges are addressed by the right person at the right level.
    - **Standard Workplace Protocols**

      Protocols include rules and routines that maintain order and safety in the workplace. These may involve timekeeping (punching in and out), wearing appropriate PPE (like gloves, goggles, or safety boots), cleaning tools after use, and maintaining discipline on the shop floor or installation site. Such practices ensure a professional environment, minimize safety hazards, and contribute to timely completion of work.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Exploring Organizational Structures and Workplace Protocols in a Furniture Manufacturing Setup

Group Size: 4-6 participants

Materials

- Whiteboard or flipchart
- Markers
- Scenario cards (provided below)
- Sticky notes (optional)

Activity Duration: 60 minutes

Instructions

1. Divide participants into groups.
2. Explain the objectives:
    - Understand different organizational structures in furniture manufacturing and installation.
    - Explore reporting chains and escalation protocols in real work situations.
    - Discuss how workplace protocols affect task execution and communication.
3. Brief overview

    Provide a quick recap of flat, functional, and hierarchical organizational structures and the importance of reporting chains and workflow protocols.
4. Distribute scenario cards (one per group). Each card describes a workplace situation involving organizational or communication challenges within a furniture manufacturing or installation setting.

Group Discussion and Planning

Each group discusses their scenario using the following prompts

- What type of organizational structure is involved or impacted in this scenario?
- How does the reporting or escalation chain affect how the issue is handled?
- What workplace protocols should be followed to resolve the issue effectively?
- Propose solutions or actions to address the scenario while ensuring smooth communication and workflow.

Group Presentations

Each group presents

- Their assigned scenario.
- Analysis of the organizational structure and reporting flow involved.
- Proposed solutions and recommended protocols.

Encourage questions and feedback from other groups.

Debrief and Key Takeaways

Facilitate a discussion focusing on

- Differences in approaches based on organizational structures.
- Importance of clear reporting and escalation channels in resolving issues.
- How workplace protocols support smooth operations and teamwork.

Examples of Scenario Cards

Scenario 1
During an assembly line shift, a new worker is unclear about whom to report a machine malfunction to. The delay in reporting causes a slowdown in production. How should the reporting chain be clarified to avoid such issues, and what protocols can ensure timely communication?

Scenario 2
In a hierarchical organization, a junior carpenter notices a safety hazard on-site but is hesitant to report it directly to the site manager, unsure of proper escalation. How can the reporting hierarchy be improved to empower workers to report safety concerns promptly?

Scenario 3
A functional team is struggling with delays because the finishing department and assembly team are not coordinating their schedules. How can workflow protocols be enhanced to improve inter-department communication and reduce downtime?

Activity	Duration	Resources used
Exploring Organizational Structures and Workplace Protocols in a Furniture Manufacturing Setup	60 minutes	Whiteboard or flipchart, Markers, Scenario cards (provided below), Sticky notes (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage participants to refer to their understanding of organizational types and protocols rather than just guessing.
- Guide groups to think about real-life application and practical communication strategies.
- Highlight how good workplace protocols can reduce errors, improve safety, and enhance productivity.

Unit 2.2: Team Goals, Communication, and Coordination

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain how team goals are communicated and aligned with overall project timelines in a carpentry team.
2. Identify ways to coordinate effectively with colleagues, such as tool sharing, sequencing tasks, and resolving overlaps.
3. Demonstrate how to relay job requirements or updates to teammates and supervisors through clear, concise instructions.
4. Discuss how shared objectives and open communication promote accountability and reduce errors at the worksite.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how team goals are set, communicated, and achieved within a carpentry or furniture manufacturing setup. Participants will learn how effective communication and coordination help teams stay aligned with project timelines, share tools and resources, avoid task overlaps, and reduce workplace errors. The unit also highlights the importance of giving and receiving clear instructions for smooth workflow and improved team performance.

Ask

Ask the participants the following questions:

- What is one simple way team members can avoid confusion while working on the same carpentry project?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points

Team Goals, Communication, and Coordination

In the furniture and carpentry sector, team-based work is essential for maintaining quality, efficiency, and safety on the job. Whether in a workshop or at an installation site, effective communication and coordination help avoid delays, ensure accuracy, and promote a smooth workflow. This session discusses how individual roles align with team objectives and how clear communication channels and collaborative practices create a productive and accountable work environment.

1. **Understanding and Aligning with Team Goals**

   In a carpentry team, every member—from assistant carpenter to site supervisor—works toward a common project goal, such as producing a set number of furniture units or completing a full interior installation. These goals are usually defined during project planning and communicated during team briefings. Workers need to understand how their individual responsibilities contribute to larger project timelines. For example, if the goal is to install ten kitchen cabinets in one day, team members must plan their time and tools accordingly to stay on schedule. A shared understanding of these goals ensures that everyone works in the same direction, reducing confusion and duplication of work.

2. **The Role of Coordination in Smooth Workflow**

   Furniture manufacturing and installation involve a sequence of tasks—cutting panels, assembling parts, sanding surfaces, applying polish, and finally, installation. Coordination is necessary to ensure that one step smoothly follows the other without interruptions. For instance, if the assembly team starts working before the cutting is done, delays and rework may occur. Team members must communicate their readiness, update others on progress, and help each other manage handoffs between tasks. Coordinated planning also includes sharing tools, adjusting task sequences when unexpected issues arise, and stepping in to support others when required.

3. **Clear Communication Prevents Errors**

   In a busy work environment, unclear or incomplete communication can lead to costly mistakes. For example, if one team member mishears a measurement or forgets to relay a change in the plan, it can lead to incorrect cutting or misaligned installation. To avoid this, instructions should be repeated back when needed, job cards or drawings should be checked, and any confusion should be immediately clarified. Team members should also report progress or obstacles in real-time—like tool malfunctions, material shortages, or damaged parts—so that solutions can be quickly found without delaying the project. Regular check-ins and respectful interaction foster a safe and informed workplace.

4. **Team Accountability through Shared Objectives**

   When everyone is clear about what the team aims to achieve—whether it's meeting a deadline, minimizing errors, or maintaining safety standards—it encourages responsibility and teamwork. Each member becomes accountable not only for their tasks but also for how their work affects others. For example, if one person finishes early, they may help another teammate to keep the overall progress on track. Open communication and shared goals create an environment where feedback is welcomed, and issues are addressed constructively. This builds trust and encourages continuous improvement across the team.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Building It Together Team Coordination Challenge

Group Size: 4–6 participants

Materials

- Chart paper or whiteboard
- Task cards
- Colored pens/markers
- Sample carpentry workflow chart

Activity Duration: 60 minutes

Instructions

1. **Introduction and Role Briefing**
   - o Introduce the sample project (e.g., making a wooden table).
   - o Distribute task cards detailing different carpentry stages (e.g., measuring, cutting, assembly, sanding, finishing).
2. **Planning and Coordination Exercise**
   - o Each group organizes the workflow.
   - o Assign roles and dependencies.
   - o Draw a task sequence map showing coordination points and tool/resource sharing.
3. **Group Presentations**

   Each group presents their plan, explaining how they will communicate and coordinate at each stage.
4. **Debrief and Key Learnings**
   - o Facilitate a reflection: What were the challenges in aligning tasks?
   - o Discuss how communication style and teamwork affected their plan.

Activity	Duration	Resources used
Building It Together Team Coordination Challenge	60 minutes	Chart paper or whiteboard, Task cards, Colored pens/markers, Sample carpentry workflow chart etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage teams to think practically what happens if one task is delayed or tools are shared?
- Observe interactions identify if all voices are heard during planning.
- After presentations, highlight good examples of communication and task alignment.

Unit 2.3: Conflict Resolution and Professional Behaviour at Workplace

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify typical workplace conflicts in carpentry settings, including tool sharing, task overlap, and miscommunication.
2. Demonstrate calm and respectful language, posture, and tone while resolving conflicts.
3. Explain how professionalism such as punctuality, reliability, and respect—reduces chances of conflict escalation.
4. Describe how active listening and empathy foster smoother work relationships and better team dynamics.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to handle conflicts professionally and maintain positive behavior at the workplace, especially in carpentry settings. Participants will learn to recognize common reasons for disagreements, use respectful language and body posture during difficult conversations, and understand the importance of professionalism and empathy in daily interactions. The unit aims to build teamwork, reduce tension, and support a respectful and productive work environment.

Ask

Ask the participants the following questions:

- What should you do if two workers argue about using the same tool on a busy worksite?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points

Conflict Resolution and Professional Behaviour at Workplace

In any work environment, especially in hands-on fields like carpentry, conflicts and misunderstandings are natural but must be managed effectively to maintain a productive and positive atmosphere. This session focuses on understanding common sources of workplace conflict and emphasizes the importance of professional behaviour to prevent and resolve disputes smoothly.

1. **Recognizing Workplace Conflicts**
    - In carpentry work environments, conflicts often stem from practical challenges such as sharing limited tools among team members, overlapping job responsibilities, or unclear communication about tasks.
    - Being able to identify these common sources of disagreement early allows workers to address potential problems proactively before they escalate into bigger issues.
    - When team members are aware of typical conflict triggers, they can engage in open conversations that prevent misunderstandings and maintain a smoother workflow.

2. **Communicating Calmly and Respectfully**
    - When conflicts arise, using calm and polite language helps keep the discussion focused on solving the problem rather than creating more tension.
    - Body language, tone of voice, and facial expressions play a crucial role in showing respect and a willingness to listen, which encourages positive dialogue.
    - Respectful communication creates an environment where all parties feel heard and valued, making it easier to find common ground and reach mutually acceptable solutions.

3. **Maintaining Professionalism**
    - Being punctual and reliable shows dedication to the job and respect for colleagues' time, which helps build trust within the team.
    - Professional behaviour, such as respecting others' opinions and working cooperatively, reduces friction and fosters a positive workplace culture.
    - When employees consistently demonstrate professionalism, it lowers the chances of conflicts escalating because the work environment becomes more predictable and respectful.

4. **Practicing Active Listening and Empathy**
    - Active listening means giving full attention to the speaker without interrupting, allowing one to understand the issue completely before responding.
    - Asking questions to clarify points shows genuine interest and helps avoid misunderstandings.
    - Empathy involves putting oneself in others' shoes to appreciate their feelings and perspectives, which promotes trust and rapport among team members.
    - Together, active listening and empathy enable more effective conflict resolution by creating a supportive atmosphere where concerns are acknowledged and addressed collaboratively.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Role-Play: Workshop Conflicts and Resolutions

Objective
To practice common conflicts in carpentry workshops and help participants practice resolving them using professional behaviour, respectful communication, and empathy.

Duration: 45–60 minutes

Group Size: 4–5 participants per group

Materials Needed

- Printed role cards/scenarios
- Paper and pens for note-making or scripting
- Optional: props (e.g., tape measure, toolbag, etc.) for added realism

Instructions

1. **Group Division**

   Form groups of 4–5 participants.

2. **Scenario Assignment**

   Provide each group with one role-play scenario card (see below). Let them read, discuss, and prepare a short skit (2–3 minutes) that includes:

   - A realistic conflict
   - An effective resolution using calm tone, respectful behavior, and empathy

3. **Rehearsal and Performance**

   Give groups 10–15 minutes to rehearse. Then have each group present their role-play in front of the class.

4. **Reflection and Discussion**

   After each presentation, lead a short discussion on:

   - What caused the conflict?
   - How was it resolved?
   - What professional behaviors stood out?

Activity	Duration	Resources used
Role-Play: Workshop Conflicts and Resolutions	45-60 minutes	Printed role cards/scenarios, Paper and pens for note-making or scripting, Optional: props (e.g., tape measure, toolbag, etc.) for added realism etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Promote respectful tone**

  Encourage the use of calm language and polite body posture during role-play.
- **Highlight empathy and listening**

  Ask how understanding the other person's view helped resolve the conflict.
- **Connect to real work life**

  Briefly relate the scenarios to values like punctuality, teamwork, and clear communication.

Unit 2.4: Basic Digital Literacy and Internet Usage

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify the main parts and functions of a computer system and demonstrate basic file operations like opening, saving, and organizing folders.
2. Use the internet for work-related activities such as searching furniture tutorials, downloading product manuals, and browsing technical videos.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the basic components of a computer system and how to carry out simple file operations like saving, opening, and organizing folders. We will also explore how to use the internet for work-related tasks such as finding carpentry tutorials, downloading manuals, and accessing technical resources. This unit helps build digital confidence essential for modern workshop and site-based activities in the furniture industry.

Ask

Ask the participants the following questions:

- What device do you use to move the pointer and click on things on a computer screen?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points

Basic Digital Literacy and Internet Usage

In today's evolving work environment, digital skills are no longer optional—even in hands-on trades like carpentry. Whether accessing design tutorials or maintaining digital records, understanding how to use computers and the internet enhances job efficiency and broadens learning opportunities. This session introduces basic digital literacy tailored for carpentry professionals, ensuring they can navigate simple digital tasks confidently and responsibly.

1. **Understanding the Computer System and File Operations**

   Basic Computer Components and Their Functions

   In today's work environment, having a basic understanding of computer hardware is essential—even for trades like carpentry. Participants will be introduced to key parts of a computer system such as:

   - **Monitor**

     Used to view documents, images, or video tutorials.

   - **Central Processing Unit (CPU)**

     The core unit that processes all commands and enables operations.

   - **Keyboard and Mouse**

     Basic input devices used to type, click, drag, and navigate files and applications.

   Through guided practice, Participants will understand how each component helps them complete common digital tasks such as viewing drawings, typing material lists, or navigating instructional software. This knowledge lays the foundation for interacting confidently with digital systems used in furniture manufacturing units or client-facing documentation.

   File Handling Skills

   Participants will be trained on how to manage digital files and folders, including:

   - Opening and saving documents such as carpentry checklists or invoices.
   - Renaming files to make them identifiable (e.g., "ClientWardrobeDesign_June2025").
   - Organizing folders into categories like "Design Layouts," "Invoices," or "Product Manuals."
   - Deleting unnecessary files to maintain a clutter-free workspace.

   These operations ensure smooth access to essential resources. For example, when a team leader requests a particular material specification sheet or installation image, the assistant carpenter will be able to retrieve it quickly. Effective file management increases productivity and reduces delays on-site or in the workshop.

2. **Using the Internet for Work-Related Purposes**

   Effective Use of Web Browsers

   Participants will learn how to launch and use a web browser (such as Google Chrome or Microsoft Edge). They'll be introduced to search engine basics, including how to:

   - Enter the right keywords (e.g., "modular wardrobe installation tutorial" or "plywood thickness chart").

- Access reliable websites that offer valuable industry-specific content, like supplier pages, training portals, or manufacturer websites.

They will also be taught how to avoid suspicious websites and misleading content by checking for trusted domains and secure connections (https://).

Accessing and Downloading Resources

Participants will be shown how to safely locate and download:

- Installation manuals for various carpentry hardware (e.g., telescopic channels or cabinet hinges).
- Product brochures for laminated boards or fittings.
- Safety guidelines and training videos that explain tool usage or proper lifting techniques.

They will also understand where these files are saved and how to organize them for quick reference. For instance, downloading a fitting manual before a site visit can help reduce errors and improve work accuracy.

Developing Digital Confidence

With regular exposure to digital tools, participants will begin to use computers and the internet more naturally and effectively. This includes:

- Becoming confident in performing everyday tasks like opening email attachments or browsing technical videos.
- Realizing the benefits of digital literacy in terms of learning new skills, improving task precision, and keeping up with modern work standards.
- Using internet resources to solve on-site challenges independently—for example, watching a video guide for assembling a complex modular unit.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Digital Treasure Hunt – Finding Carpentry Resources Online

Group Size: 3–5 participants

Activity Duration: 45 minutes

Materials Needed

- Computer or smartphone with internet access
- List of tasks (printed or projected)
- Pen and paper for notes (optional)

Activity Description

Each group is given a list of simple work-related digital tasks to complete online. These could include:

1. Search for a video tutorial on how to assemble a modular table.
2. Find and download a product manual for a specific hand tool (e.g., electric drill).
3. Visit a known supplier website and find the price of plywood sheets.
4. Look for a safety checklist related to carpentry work.
5. Open a folder on the desktop and save all the downloaded files inside it with appropriate names.

Groups must complete the tasks and present how they did each step. This activity helps reinforce the importance of digital literacy in everyday carpentry operations.

Activity	Duration	Resources used
Digital Treasure Hunt – Finding Carpentry Resources Online	45 minutes	Computer or smartphone with internet access, List of tasks (printed or projected), Pen and paper for notes (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Demonstrate before starting**

  Briefly show participants how to use a browser, enter search terms, and download files safely to avoid confusion.

- **Guide collaboration**

  Encourage participants to divide tasks among themselves to finish efficiently and share their knowledge.

- **Debrief together**

  After the activity, discuss how each task connects to real-life carpentry responsibilities, reinforcing relevance and boosting digital confidence.

Unit 2.5: Financial Transactions and Online Payments

Unit Objectives

At the end of this unit, participants will be able to:

1. List various payment methods used in site-level purchases or reimbursements including UPI, cash, and mobile wallets.
2. Explain basic digital transaction safety steps such as app verification, password protection, and secure networks.
3. Demonstrate a complete transaction process from scanning a code to confirming and saving a receipt for recordkeeping.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss various financial transaction methods commonly used on-site, including UPI, cash, and mobile wallets. We will also cover important digital safety steps to protect your information during online payments. Additionally, you will learn how to complete transactions properly and keep accurate records by saving receipts and confirming payments.

Ask

Ask the participants the following questions:

- What are some common ways to make payments at a worksite?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points

Financial Transactions and Online Payments

In today's digital age, handling money transactions efficiently and securely is crucial, especially in a fast-paced work environment like carpentry and site operations. This session will introduce you to various payment methods commonly used on-site, such as UPI, cash, and mobile wallets. you will also learn essential safety practices to protect your financial information during digital transactions. Additionally, the unit will guide you through the complete process of making and recording online payments to ensure accuracy and accountability in everyday financial dealings.

1. **Common Payment Methods at the Worksite**

   In carpentry and related site operations, various payment methods are used for purchasing materials, tools, or reimbursing expenses. Understanding these methods helps in smooth financial dealings on the ground.

   - **UPI (Unified Payments Interface)**

     This is a fast and convenient digital payment system that links directly to bank accounts, allowing instant transfers between individuals or businesses through mobile apps such as Google Pay, PhonePe, or BHIM. It is commonly used for both small and large payments.

   - **Cash Payments**

     Despite digital growth, cash remains a widely used payment method, especially for smaller purchases or when dealing with local vendors and daily wage workers who may prefer or only accept cash.

   - **Mobile Wallets**

     Digital wallets like Paytm, Amazon Pay, or Mobikwik are popular for quick prepaid payments. These wallets can be loaded with money and used for buying items or services directly, providing an easy alternative to cash and bank transfers.

2. **Digital Transaction Safety Practices**

   Making digital payments requires a strong focus on security to prevent fraud, theft, or unauthorized access to funds.

   - **App Verification**

     It is essential to download and use only authentic payment apps from official platforms like Google Play Store or Apple App Store to avoid counterfeit or malicious applications.

   - **Password and PIN Protection**

     Users must secure their devices and payment apps with strong passwords, PIN codes, or biometric authentication (fingerprint or face recognition). Sharing UPI PINs or passwords with others is highly discouraged to protect account security.

   - **Secure Networks**

     Avoid conducting transactions over public or unsecured Wi-Fi networks, which can be vulnerable to hacking. Using trusted private networks or mobile data helps safeguard transaction details.

3. **Performing a Complete Digital Transaction**

   Understanding the end-to-end process of making a digital payment is vital for accurate and accountable financial management.

- **Scanning a QR Code**

  Participants will learn to use payment apps to scan QR codes provided by vendors or service providers. This method eliminates the need for manual entry of account details.

- **Entering Payment Details**

  They will verify the payment amount carefully and confirm the recipient's name to avoid errors.

- **Authenticating the Transaction**

  Completing the payment requires entering a secure PIN or using biometric authentication, ensuring only authorized users can finalize payments.

- **Saving the Receipt**

  After a successful transaction, saving or taking a screenshot of the digital receipt is crucial for recordkeeping, expense tracking, and reporting back to supervisors or accounts.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Practicing Digital Payments for Workshop Purchases

Group Size: 4–5 participants per group

Materials Needed

- Printed QR codes (mock versions)
- Dummy payment receipt templates
- Scenario cards (with example tasks like purchasing glue, plywood, or tools)
- Pens and notepads

Activity Duration: 45 minutes

Activity Steps

1. Distribute scenario cards to each group. Each card describes a real-life site-level purchase (e.g., buying ₹700 worth of nails using UPI or mobile wallet).
2. Each group will walk through the entire payment process step by step:
   - Decide on the most appropriate payment method (cash, UPI, wallet).
   - If using a digital method, scan the mock QR code, enter the amount, check the merchant's name, and complete the mock transaction.
   - Fill in a payment record slip with details like amount paid, date, purpose, and mode of payment.
3. Groups will then share how they ensured payment safety and accuracy of records and discuss possible issues to avoid.

Activity	Duration	Resources used
Practicing Digital Payments for Workshop Purchases	45 minutes	Printed QR codes (mock versions), Dummy payment receipt templates, Scenario cards (with example tasks like purchasing glue, plywood, or tools), Pens and notepads etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Remind participants to always check the payee's name before confirming digital payments.
- Highlight recordkeeping importance especially for site-level purchases and reimbursements.
- Encourage each group to discuss common digital payment mistakes and how to avoid them in real work situations.

Unit 2.6: Using MS Office for Workplace Productivity

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify how Word, Excel, and PowerPoint support furniture-related documentation and communication.
2. Create a simple Word document for writing a job brief or task list with formatting features.
3. Use Excel to create a material tracking sheet with basic formulas and borders.
4. Generate a PowerPoint presentation summarizing a furniture layout proposal using templates and inserted images.
5. Save, name, and organize files properly for easy access and future use.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how MS Office tools like Word, Excel, and PowerPoint are used to increase workplace productivity in carpentry and furniture-related tasks. Participants will understand how to write and format job briefs, create material tracking sheets, design simple presentations, and manage digital files efficiently. These skills will help improve communication, documentation, and record-keeping in both workshop and on-site environments.

Ask

Ask the participants the following questions:

- What is one basic task you can do using MS Word or Excel in your daily carpentry work?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points

Using MS Office for Workplace Productivity

In today's carpentry and furniture industry, digital skills are increasingly important for managing tasks, maintaining records, and communicating clearly. MS Office tools like Word, Excel, and PowerPoint can greatly improve productivity and organization at the workplace. This session helps Participants understand how to use these software tools in practical, work-related contexts—such as writing a job task list, tracking materials, or preparing a presentation for a furniture layout.

1. **Creating Simple Documents Using MS Word**
   - **Purpose and Practical Use**

     Participants will understand how to use MS Word to prepare job briefs, daily checklists, and carpentry instructions. This is essential for communicating clearly in a workshop or on-site setting.
   - **Formatting Skills**

     They will search basic formatting tools such as font selection, size, bold, underline, bullet points, and headings. These features help organize information logically, making it easy to follow for team members.
   - **Practical Application**

     For example, an Assistant Carpenter can write a formatted document listing the day's assigned tasks, required tools, and special instructions for materials or safety precautions.

2. **Tracking Materials and Costs Using MS Excel**
   - **Data Entry and Organization**

     Participants will be introduced to creating rows and columns in Excel to list items like plywood, adhesives, or fasteners along with their quantities and prices.
   - **Use of Formulas**

     They will apply simple functions such as =SUM() to calculate total quantities or cost. This saves time and reduces manual errors during estimation or recordkeeping.
   - **Visual Enhancement**

     The sheet can be formatted with borders, colors, and bold headings to distinguish key sections, making it visually easy to read and use at the workplace.
   - **Workplace Relevance**

     This Excel skill helps in managing stock, preparing purchase requests, or monitoring material usage on a furniture project.

3. **Presenting Furniture Layouts with MS PowerPoint**
   - **Basic Presentation Building**

     Participants will learn how to create slides using predefined templates and add content like furniture layout sketches, site photos, or short notes.

- **Visual Communication**

  They will insert images, use shapes or arrows to highlight elements, and apply transitions for a polished look. This helps when discussing plans with a supervisor or client.

- **Practical Example**

  A group working on a modular kitchen setup can make a presentation with images and captions explaining cabinet placement, color themes, and space usage.

4. **Organizing Files and Saving Work**

   - **File Naming and Folder Creation**

     Participants will practice how to give clear names to documents (e.g., "Material_List_June2025.xlsx") and store them in well-labelled folders.

   - **Safe Saving Practices**

     They will understand the difference between "Save" and "Save As," and the importance of backing up work regularly to avoid data loss.

   - **Easy Retrieval**

     Well-organized files make it easier to locate important documents, especially when working under deadlines or coordinating with multiple teams.

5. **Save, Name, and Organize Files Properly for Easy Access and Future Use**

   - **Importance of File Management**

     Learning how to save and organize digital files is essential for maintaining clear records in carpentry projects. Proper file management prevents confusion, reduces time spent searching for documents, and ensures critical information is always accessible when needed.

   - **Naming Conventions**

     Participants will understand how to create meaningful file names that reflect the content and date—for example, "Job_Tasks_April2025.docx" or "Material_Inventory_Site1.xlsx". This helps differentiate files and makes them easier to locate later.

   - **Folder Structure**

     They will learn to set up folders by categories such as "Project Reports," "Site Documents," or "Material Lists." This systematic approach ensures that related files are grouped together for better organization.

   - **Saving and Backup**

     Participants will explore the difference between "Save" and "Save As," and understand how to update existing files or create a new version when needed. They will also be introduced to basic backup options, like saving files to a USB drive or uploading them to cloud storage (if accessible), to avoid accidental data loss.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Creating a Project Summary Using MS Office Tools

Activity Duration: 60 minutes

Group Size: 3–5 participants

Materials Needed

- Computer/Laptop with MS Office (Word, Excel, PowerPoint)
- Sample data (project details, materials list, basic layout images)
- Pen and notepad for rough planning

Instructions

Objective

Participants will collaboratively use MS Word, Excel, and PowerPoint to create a mini project summary for a simple furniture installation job.

Steps

1. Divide participants into small groups. Each group is assigned a fictional carpentry project (e.g., installing modular kitchen cabinets or office workstations).
2. Task Distribution
    - o One member creates a Word document summarizing the job brief (work description, site address, contact details).
    - o Another creates an Excel sheet for tracking raw materials (item, quantity, cost).
    - o A third creates a PowerPoint presentation showcasing the furniture layout and work plan using 2–3 slides.
3. Groups will then compile all files, properly name and save them in a clearly labelled folder.

Group Presentation

Each group will present their project files briefly and explain how the documents support workplace productivity.

Activity	Duration	Resources used
Creating a Project Summary Using MS Office Tools	60 minutes	Computer/Laptop with MS Office (Word, Excel, PowerPoint), Sample data (project details, materials list, basic layout images), Pen and notepad for rough planning etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Provide sample data/templates to guide participants who are less confident with MS Office tools.
- Encourage role rotation so each member works with at least one software tool.
- Observe file naming and saving habits to ensure participants understand file organization and retrieval for future use.

Exercise

Multiple Choice Questions (MCQs)

1. What type of organizational structure is commonly found in small carpentry workshops?
   a) Hierarchical
   b) Functional
   c) Flat
   d) Matrix
   Answer: c) Flat

2. Before making an online payment, what is an important safety step?
   a) Sharing your password with colleagues
   b) Verifying payment details carefully
   c) Paying in cash only
   d) Ignoring app updates
   Answer: b) Verifying payment details carefully

3. Which MS Office application is best for creating a material tracking sheet?
   a) Word
   b) PowerPoint
   c) Excel
   d) Outlook
   Answer: c) Excel

4. Active listening in the workplace primarily helps to:
   a) Increase misunderstandings
   b) Foster better team relationships
   c) Avoid communication altogether
   d) Speed up task completion by ignoring others
   Answer: b) Foster better team relationships

Fill in the Blanks

1. In a _____ organizational structure, there are fewer management levels and communication flows directly between team members.
   Answer: flat

2. The _____ is responsible for executing tasks and reports to a supervisor in the carpentry team.
   Answer: team member

3. To protect your privacy during online payments, always use a _____ network instead of public Wi-Fi.
   Answer: secure

4. The main parts of a computer include the monitor, CPU, keyboard, and _____.

   Answer: mouse

Match the following

1. Match Column A with Column B:

Column A (MS Office Applications)	Column B (Primary Use)
1. Word	a) Visual presentation slides
2. Excel	b) Documentation and text formatting
3. PowerPoint	c) Calculations and data tables
4. Flat organizational structure	d) Few management levels and direct communication

   Answers: 1 - b) , 2 - c) , 3 - a), 4 - d)

2. Match Column A with Column B:

Column A (Workplace Communication)	Column B (Description)
1. Effective team coordination	a) Calm and respectful language and tone
2. Professional behavior	b) Delegating tasks and timely updates
3. Conflict resolution	c) Verifying details and using secure networks
4. Online payment safety	d) Punctuality, respect, and reliability

   Answers: 1 - b) , 2 - d) , 3 - a), 4 - c)

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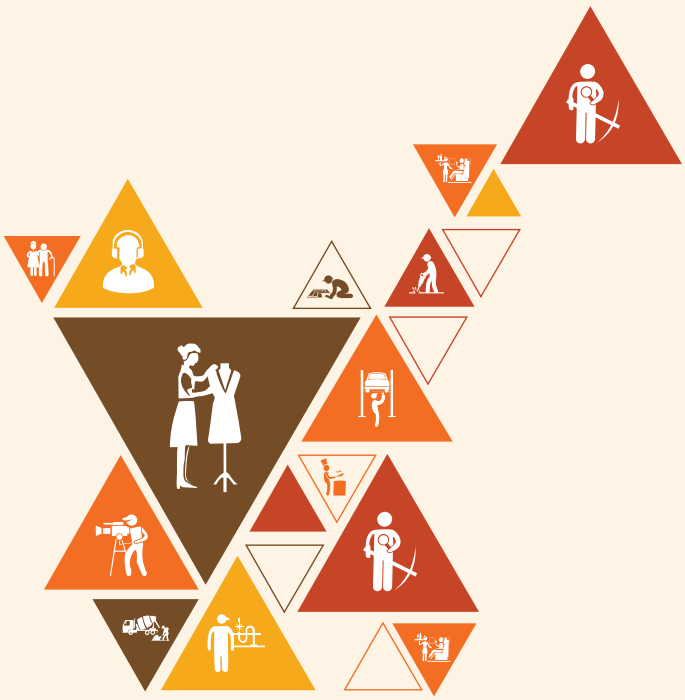
3. Raw Materials, Tools, Equipment, and Hardware Handling Techniques



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Identify various raw materials used in the furniture industry, such as hardwoods (teak, oak), softwoods (pine), plywood, medium-density fiberboard (MDF), and particle board, and understand their availability in the market.
2. Describe the physical and functional properties of each material type including texture, strength, flexibility, moisture resistance, and workability, and relate these to their usage in different furniture components such as frames, tops, and panels.
3. Classify timber based on grain, source, and strength, and link their application to structural roles (e.g., legs, carcass), decorative elements (veneers), or functional panels (shelves, partitions).
4. List the categories of tools used in carpentry such as hand tools (saws, hammers), power tools (drills, routers), measuring tools (tapes, squares), and finishing tools (sanders, polishers), and explain their core function.
5. Match specific tools with specific operations such as cutting wood, shaping joints, measuring accuracy, or finishing surfaces, depending on the type of task and material involved.
6. Demonstrate safe handling of tools and machines, including carrying tools properly, switching off when not in use, and using tools in a stable and controlled manner during operations.
7. Identify and use protective guards, tool shields, and safety features present on carpentry equipment to prevent injury, and describe personal protective equipment (PPE) requirements such as gloves, goggles, and shoes.
8. Perform visual and basic technical checks to ensure tools are working correctly, including verifying blades, bits, cords, and switches before beginning a job.
9. Set up a carpenter's workbench by arranging tools, accessories, and workspace components in a clean, safe, and task-oriented layout to support efficient workflow.
10. Demonstrate how to set up and align jigs, clamps, guide rails, and templates before beginning cutting, joining, or shaping work to ensure accuracy and consistency.
11. Describe tool care procedures such as cleaning sawdust and debris after each job, lubricating moving parts, and proper storage of tools to avoid corrosion or damage.
12. Organize the tool area after job completion in a logical order that allows for quick retrieval during the next task, and ensure the workspace is clear of obstructions and waste.
13. Perform a routine tool inspection and report damaged or malfunctioning items to the supervisor, and ensure power cords and electrical connections are secure and safe before use.
14. Identify and name commonly used hardware fittings such as hinges, screws, cam fittings, L-brackets, and drawer sliders used in modular and traditional furniture.
15. Explain the purpose and location of each hardware type in furniture construction and assembly, such as hinges in shutters, cam locks in knock-down panels, or brackets for structural support.
16. Choose and use the appropriate driver bits, screwdrivers, mallets, or jigs to install different types of hardware securely and neatly, based on the furniture product being built or installed.

Unit 3.1: Raw Materials and Timber Classification

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify different types of raw materials used in furniture making such as hardwoods, softwoods, plywood, MDF, and particle boards.
2. Describe the physical properties, durability, and usability of each material based on its structure and origin.
3. Explain how material choice affects cost, strength, workability, and finish quality in furniture projects.
4. Classify timber types and match them to suitable applications — structural framing, decorative surfaces, or core panels.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss various raw materials used in carpentry and furniture making, including natural timber types like hardwood and softwood, as well as engineered materials such as plywood, MDF, and particle board. Participants will explore how the physical properties, durability, and cost of each material influence its usage in different parts of a furniture project, from framing to finishing.

Ask

Ask the participants the following questions:

- Which type of wood is commonly used for making strong furniture frames — hardwood or softwood?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Raw Materials and Timber Classification

Understanding the types of raw materials used in carpentry is essential for producing high-quality, durable, and cost-effective furniture. Different materials ranging from natural hardwoods and softwoods to engineered boards like plywood and MDF offer varied properties in terms of strength, appearance, and workability. This session introduces Participants to the classification of timber and raw materials, helping them make informed decisions about their appropriate applications in furniture manufacturing, structural use, or decorative finishes.

1. **Identifying Different Types of Raw Materials in Furniture Making**

   Participants will be introduced to the various raw materials commonly used in the carpentry and furniture industry. These include:

   - **Hardwoods**

     Derived from deciduous trees (like teak, oak, and sheesham), hardwoods are typically strong, durable, and suitable for structural elements and high-end furniture. They have a tight grain structure, offering better resistance to wear and tear.

   - **Softwoods**

     Taken from coniferous trees (like pine and cedar), softwoods are lighter and easier to work with. They are often used in temporary structures, framing, or decorative pieces where ease of cutting and cost-saving are priorities.

   - **Plywood**

     A manufactured board made by gluing several layers of thin wood veneers together. It is widely used for cabinets, panels, and wall structures due to its stability and affordability.

   - **MDF (Medium-Density Fibreboard)**

     A dense engineered wood product made from wood fibres and resin. MDF is smooth and uniform, making it ideal for painted surfaces or interiors.

   - **Particle Board**

     Composed of wood chips and shavings bonded with adhesive. It is a cost-effective option for budget furniture, though less durable and weaker than plywood or MDF.

2. **Describing the Physical Properties, Durability, and Usability**

   This part of the unit teaches Participants to evaluate materials based on:

   - **Physical Properties**

     These include aspects such as grain texture, color, and moisture content. Hardwoods have fine grain and are generally more appealing visually, whereas engineered boards offer uniformity.

   - **Durability**

     Materials are compared based on their resistance to factors like moisture, pests, and impact. For instance, teak is naturally resistant to termites and decay, while particle board is vulnerable to water damage.

- **Usability**

  Some materials are easier to cut, screw, or finish than others. Softwoods and MDF are easier to shape, but hardwoods offer better structural support. Participants will also learn about material handling and how usability affects workflow and finish quality.

3. **Explaining How Material Choice Affects Cost, Strength, Workability, and Finish**

   In this section, Participants will understand the broader implications of selecting specific materials:

   - **Cost**

     High-quality hardwoods are more expensive but provide long-term durability. Engineered boards are budget-friendly but may require more care in design.

   - **Strength**

     Hardwood and high-grade plywood offer good load-bearing capabilities. Particle board and MDF, while versatile, are not suited for heavy-duty applications.

   - **Workability**

     MDF and softwood can be easily shaped, drilled, or sanded, making them preferred for intricate or fast-paced projects. Hardwood, while tougher, may require specialized tools.

   - **Finish Quality**

     Depending on the grain and surface, certain materials take polish or laminate better than others. For example, MDF offers a smooth base for paint, while natural grain in hardwood enhances visual aesthetics when varnished or oiled.

4. **Classifying Timber Types and Matching Them to Suitable Applications**

   Participants will explore how to classify and choose the right timber or board based on project requirements:

   - **Structural Timber**

     Hardwoods and marine-grade plywood are suitable for load-bearing structures, furniture legs, and framing.

   - **Decorative Applications**

     Veneered plywood, MDF with laminate, or hardwood with appealing grain are used for visible surfaces such as doors, shelves, or countertops.

   - **Core Panels or Internal Use**

     MDF and particle board are often used inside furniture where strength is less critical but flatness and consistency are important.

   - **Decision Making**

     Participants will gain skills in selecting materials based on visual appeal, structural needs, and budget considerations—crucial for planning efficient and cost-effective furniture production.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Timber Selection Challenge for a Furniture Project

Group Size: 4–6 participants

Materials Needed

- Sample cards/images of various wood types (e.g., teak, pine, MDF, plywood, particle board)
- Furniture project cards (scenarios)
- Flipchart/whiteboard
- Markers and sticky notes

Activity Duration: 60 minutes

Instructions

1. **Introduction and Setup**

   Explain the objective to select appropriate raw materials for different furniture-making scenarios by evaluating material properties, cost, usability, and aesthetics.

2. **Distribute Scenario Cards**

   Each group receives one Furniture Project Card, which describes a real-world carpentry scenario involving client expectations, budget, function, and durability requirements.

3. **Group Discussion and Planning**

   Groups must

   - Identify which wood types or sheet materials are best suited to the given scenario.
   - Justify their choices based on strength, workability, finish quality, and cost.
   - List possible trade-offs (e.g., choosing MDF for affordability but losing durability).

   Discussion Prompts

   - What is the primary function of the furniture (load bearing, decorative)?
   - Is the item going indoors or outdoors?
   - What materials meet the aesthetic or cost requirements?

4. **Group Presentations**

   Each group presents

   - Their chosen materials
   - Their reasoning
   - Potential risks or alternatives

   Encourage peer questions and healthy debate.

5. **Debrief and Key Takeaways**

   Facilitator-led discussion on

   - The reasoning behind material selection
   - How different materials affect durability, cost, and project outcome
   - The importance of understanding timber properties in furniture design

Examples of Scenario Cards

Scenario 1

Low-Cost Wardrobe for a Rented Apartment

The customer wants a wardrobe that looks good but is low-cost. It doesn't need to be moved often or hold very heavy items. What materials will you suggest?

Scenario 2

Outdoor Garden Bench for a Public Park

A client needs a bench that will stay outdoors all year round. It must resist moisture and heavy use. What timber or treatment would you recommend?

Scenario 3

Kitchen Cabinetry with Decorative Finish

The customer wants beautiful cabinets with a smooth, durable surface that matches their polished kitchen. The budget is medium range. What materials offer a good balance?

Activity	Duration	Resources used
Timber Selection Challenge for a Furniture Project	60 minutes	Sample cards/images of various wood types (e.g., teak, pine, MDF, plywood, particle board), Furniture project cards (scenarios), Flipchart/whiteboard, Markers and sticky notes etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Encourage reasoning beyond just expensive = good**

  Help Participants evaluate trade-offs between quality and budget, and functional suitability.
- **Use tactile examples or visuals**

  If real samples are unavailable, show close-up images of wood textures or grains.
- **Connect to real-world carpentry**

  Relate discussions to actual carpentry tasks like sawing, finishing, or assembling, so Participants can apply material knowledge practically.

Unit 3.2: Introduction to Tools, Equipment, and Machines

Unit Objectives

At the end of this unit, participants will be able to:

1. List key categories of carpentry tools such as hand tools, power tools, finishing tools, and measuring instruments.
2. Match specific tools with job tasks like cutting, joining, measuring, or surface preparation.
3. Explain the importance of choosing the right tool based on material, task, and accuracy requirement.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the different categories of carpentry tools, including hand tools, power tools, finishing tools, and measuring instruments. We will explore how each tool is used for specific tasks like cutting, joining, measuring, and surface preparation. Understanding how to select the right tool based on the material and job requirements will also be covered to ensure quality and safety in carpentry work.

Ask

Ask the participants the following questions:

- What is one common hand tool used for cutting wood?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Introduction to Tools, Equipment, and Machines

In carpentry and furniture making, the right tools, equipment, and machines are essential for producing quality work efficiently and safely. This session introduces the main types of tools used on site or in workshops, explaining their purposes and how they contribute to different stages of carpentry tasks. Understanding these tools helps participants select and use them effectively to achieve precision, durability, and good craftsmanship.

1. **Categories of Carpentry Tools**
    - Carpentry tools are grouped based on their function and purpose.
    - Hand tools such as hammers, saws, chisels, and screwdrivers are manually operated.
    - These hand tools provide precise control for detailed work but require physical effort.
    - Power tools include electric drills, circular saws, and sanders.
    - Power tools increase efficiency and reduce physical strain, especially for repetitive tasks.
    - Finishing tools like hand planes, scrapers, and orbital sanders smooth and shape wood surfaces.
    - These finishing tools ensure the final product looks polished and professional.
    - Measuring instruments such as tape measures, squares, levels, and calipers are essential for accuracy.
    - Accurate measurement directly affects the fit and quality of furniture pieces.

2. **Matching Tools with Specific Tasks**
    - Different carpentry tasks require specific tools designed for those purposes.
    - For cutting, tools like hand saws, jigsaws, and circular saws are used depending on wood type and precision.
    - Joining tools such as hammers, nail guns, clamps, and screwdrivers are used to assemble wood pieces.
    - These tools help fasten components securely using nails, screws, or adhesives.
    - Measuring and marking tools like tape measures, marking gauges, and combination squares ensure precise cutting lines.
    - Proper measurement ensures that components fit together perfectly.
    - For surface preparation, sandpaper, power sanders, and hand planes smooth rough edges and surfaces.
    - Surface preparation removes imperfections and readies the wood for finishing like staining or painting.
    - Matching the right tool with each task improves efficiency, quality, and safety.

3. Importance of Selecting the Right Tool

- Selecting the correct tool is essential for quality results and safety.
- Using a hand saw instead of a power saw for large cuts increases effort and reduces efficiency.
- Using a power tool for delicate work can damage the material or cause mistakes.
- The type of wood or material influences which tools are best suited.
- Different materials (hardwood, softwood, plywood, MDF) react differently to cutting and shaping.
- The required accuracy and finish quality determine which tools to use.
- Proper tool selection minimizes waste, speeds up work, and ensures a neat finish.
- Choosing the right tool also reduces the risk of injury and accidents.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Tool Identification and Task Matching

Group Size: 4-6 participants

Materials

- A set of common carpentry tools (hand tools, power tools, measuring instruments) – either real tools or pictures/cards
- Task cards describing different carpentry jobs (e.g., cutting wood, joining parts, measuring dimensions, surface finishing)
- Flipchart or whiteboard for notes

Activity Duration: 45 minutes

Instructions

1. Divide participants into small groups.
2. Distribute tool sets and task cards to each group.
3. Ask groups to:
    - o Identify each tool and discuss its primary use.
    - o Match each tool with the correct job task from the cards.
4. Each group explains their matches and reasoning to the class.
5. Discuss the importance of selecting the right tool for different materials and accuracy needs.

Activity	Duration	Resources used
Tool Identification and Task Matching	45 minutes	A set of common carpentry tools (hand tools, power tools, measuring instruments) – either real tools or pictures/cards, Task cards describing different carpentry jobs (e.g., cutting wood, joining parts, measuring dimensions, surface finishing), Flipchart or whiteboard for notes etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage groups to discuss tool characteristics and why certain tools fit specific tasks better.
- Guide participants to think about safety and precision when selecting tools.
- Use the group presentations to clarify any misconceptions about tool use and task matching.

Unit 3.3: Safe Handling and Operation of Tools and Equipment

Unit Objectives

At the end of this unit, participants will be able to:

1. Demonstrate proper handling and operation of carpentry tools and machines, following safe usage techniques and posture.
2. Identify safety guards, emergency switches, and personal protection measures required while using powered equipment.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to safely handle and operate common carpentry tools and machines. Participants will understand the correct techniques for using hand tools and powered equipment, along with the importance of posture, grip, and control. The unit will also cover essential safety features of machines and the proper use of personal protective equipment (PPE) to prevent accidents and maintain a secure working environment.

Ask

Ask the participants the following questions:

- What should you wear to protect your eyes while using a cutting machine in carpentry?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Safe Handling and Operation of Tools and Equipment

In carpentry, the correct use of tools and machines is not only important for getting the job done well, but also for ensuring safety at the workplace. Accidents can happen when tools are misused or when safety precautions are ignored. In this session, participants will learn how to use tools with proper technique and posture, and how to follow safety guidelines while working with hand tools, power tools, and machines.

1. **Proper Handling and Operation of Carpentry Tools and Machines**

   In this section, participants will gain a clear understanding of how to correctly operate various carpentry tools and machines with precision and safety. Learning the correct grip techniques, tool angles, and body posture helps prevent common errors and reduces the risk of injury. For example, when using a hammer, the grip should be firm but not tight, and the swing should come from the elbow and shoulder—not the wrist—to avoid strain. Similarly, when using hand saws or chisels, the participant must maintain control by positioning the material securely and guiding the tool in a straight and steady motion.

   When it comes to powered machines like circular saws or drills, proper technique becomes even more important. Participants will learn how to maintain a balanced stance, apply consistent pressure, and guide the tool or material safely without forcing it. This includes understanding the machine's operation controls and being able to start, stop, and adjust settings confidently. Overall, this training builds habits that ensure safe, accurate, and fatigue-free tool operation during routine carpentry and furniture tasks.

2. **Awareness of Safety Features and Personal Protection**

   This part of the unit focuses on building a strong safety mindset. Participants will be introduced to the built-in safety mechanisms found in machines, such as blade guards, riving knives, emergency stop switches, and overload protection systems. Knowing where these safety features are and how they function is crucial before beginning any task. For instance, before using a bench saw, participants must inspect whether the blade guard is in place, the work area is clear, and the machine is functioning properly.

   Additionally, the section covers the essential use of Personal Protective Equipment (PPE). Safety goggles protect eyes from flying wood particles; gloves shield hands from splinters or tool slips; earplugs or earmuffs reduce hearing damage caused by loud machinery; and dust masks prevent inhalation of sawdust, especially when sanding or cutting MDF boards.

   By recognizing hazards in advance—such as loose clothing, tangled wires, unstable platforms, or poorly lit workspaces—participants learn to take preventive actions. Practicing these habits daily ensures not only individual safety but also contributes to a safer and more efficient work environment for the entire team.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Tool Safety Demonstration and Checklist Challenge

Objective
To help Participants apply safe handling techniques and identify essential safety features of carpentry tools and machines.

Group Size: 4–6 participants

Activity Duration: 45–60 minutes

Materials Needed

- A set of common hand tools (e.g., hammer, chisel, screwdriver) and mock-up models or images of power tools
- Safety gear (gloves, goggles, dust mask, earplugs)
- Tool Safety Checklist sheet (provided to each group)

Activity Steps

1. **Preparation Phase**

   Each group is given a Tool Safety Checklist sheet that lists key safety steps and personal protective gear needed for using specific tools.

2. **Demonstration Phase**

   Each group selects one tool from a list (either real or model). They will:

   - Explain the correct way to handle and operate the tool.
   - Point out or demonstrate the posture and grip.
   - Identify the safety gear required and simulate proper usage.
   - Highlight emergency stops or safety guards if applicable.

3. **Presentation Phase**

   Groups present their demonstrations to the class, explaining each safety measure and tool handling tip.

4. **Reflection and Discussion**

   Facilitator leads a group discussion on key learnings, common safety oversights, and ways to improve safety habits.

Activity	Duration	Resources used
Tool Safety Demonstration and Checklist Challenge	45-60 minutes	A set of common hand tools (e.g., hammer, chisel, screwdriver) and mock-up models or images of power tools, Safety gear (gloves, goggles, dust mask, earplugs), Tool Safety Checklist sheet (provided to each group) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Ensure all participants handle only safe or mock tools during practice; real power tools should only be demonstrated by the instructor if required.
- Guide Participants to observe body posture and positioning while handling tools—even in demonstration, to reinforce good habits.
- Encourage each group to explain why a safety measure is important, not just what it is, to deepen understanding.

Unit 3.4: Workbench Preparation and Tool Setup

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe how to clean and organize the workbench before beginning a job.
2. Arrange tools logically based on the task sequence to avoid clutter and improve speed.
3. Set up clamps, jigs, or supports to hold materials securely during marking and cutting.
4. Demonstrate alignment of measuring tools for consistent reference during layout work.
5. Ensure the working area is safe, well-lit, and clear of obstructions before starting operations.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the essential steps involved in preparing a carpentry workbench and setting up tools before starting any task. Participants will understand how to organize tools according to workflow, safely secure materials using clamps or jigs, and ensure the workspace is clean, well-lit, and safe. This preparation improves work efficiency, reduces errors, and ensures a smooth start to any carpentry operation.

Ask

Ask the participants the following questions:

- Why is it important to clean and organize your workbench before starting a carpentry job?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Workbench Preparation and Tool Setup

A well-prepared workbench is the foundation of efficient and safe carpentry. Before starting any task, it is important to organize the workspace, arrange tools systematically, and ensure all safety and support systems are in place. This session equips participants with the essential steps to prepare their workbench for smooth and accurate operations.

1. **Clean and Clear the Work Area**
   - **Remove unwanted materials**

     Before starting any project, it's important to sweep away sawdust, leftover fasteners, scrap wood, and any spilled liquids. A clean surface prevents slipping, marking errors, and tool damage.
   - **Check for surface flatness**

     Uneven surfaces can distort measurements and cutting angles. Ensure the workbench top is level, stable, and free of warping or dents.
   - **Promote safety and focus**

     A tidy workbench minimizes distractions, reduces tripping or cutting hazards, and creates a professional habit of working in an organized environment.

2. **Organize Tools According to Workflow**
   - **Arrange based on task sequence**

     Tools should be laid out in the order they are used, such as starting with measuring tape and pencil, followed by marking tools, cutting tools, and fasteners. This prevents wasted time searching for items mid-task.
   - **Maintain accessibility**

     Frequently used tools should be kept on a tool rack or magnetic strip near the bench for easy reach without overcrowding the workspace.
   - **Return tools after use**

     Always return each tool to its designated spot once it's used. This builds good discipline, prevents misplacement, and keeps the surface clear for materials and measurement.

3. **Use Clamps and Supports for Stability**
   - **Secure the workpiece**

     Use clamps or vises to firmly hold down the wood or board being worked on. This is essential when using sharp tools or machines to avoid shifting or sudden slips.
   - **Choose the right clamping method**

     Depending on the size and shape of the material, select from bar clamps, C-clamps, bench vises, or customized jigs for repetitive or angled tasks.
   - **Enhance accuracy and safety**

     A well-clamped workpiece allows for better precision in sawing or chiseling and minimizes the risk of injury from tool kickbacks or material shifting.

4. **Check and Align Measuring Instruments**
   - **Inspect tools before use**

     Make sure that tapes, scales, rulers, and squares are undamaged, readable, and accurate. A bent or stretched measuring tape can lead to serious measurement errors.
   - **Proper alignment during layout**

     Tools like try squares and combination squares must be aligned precisely along the edges or surfaces to ensure accurate marking and cuts.
   - **Ensure calibration**

     Periodically check tools against known standards or use calibration tools to ensure their accuracy is maintained for precise carpentry work.

5. **Ensure Adequate Lighting and Safety Clearance**
   - **Set up proper lighting**

     Good lighting helps in spotting measurement lines, defects in wood grain, or misalignments during layout and assembly. Use task lights if needed in low-light areas.
   - **Clear the surroundings**

     Make sure the area around the workbench is free of cords, scattered tools, or excess materials that may block movement or create tripping hazards.
   - **Maintain a safe work zone**

     Ensure there's sufficient space to move around the workbench freely, especially when handling long boards or operating powered equipment.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Organize Your Workstation Challenge

Objective
To help participants practice proper workbench preparation, tool arrangement, and safe material setup before starting a carpentry task.

Group Size: 4–5 participants

Activity Duration: 45 minutes

Materials Needed

- A basic carpentry workstation (real or mock-up)
- Variety of hand tools (e.g., hammer, chisel, measuring tape, saw)

- Clamps, jigs, safety gear, dummy workpieces
- Chart paper and markers

Instructions

1. Each group is given a messy or unorganized workstation setup.
2. Their task is to clean the space, sort and arrange tools logically as per a task sequence (e.g., cutting, measuring, fixing), and demonstrate how to secure a workpiece using clamps or jigs.
3. Groups should also highlight what safety checks they performed (e.g., clearing obstructions, checking lighting, placing PPE).
4. After 30 minutes, each group explains their setup and rationale to the class.

Activity	Duration	Resources used
Organize Your Workstation Challenge	45 minutes	A basic carpentry workstation (real or mock-up), Variety of hand tools (e.g., hammer, chisel, measuring tape, saw), Clamps, jigs, safety gear, dummy workpieces, Chart paper and markers etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage discussion within teams about why each setup step matters.
- Observe if tools are placed based on workflow (e.g., measuring tools before cutting tools).
- Offer feedback on ergonomics, tool access, and safety compliance.

Unit 3.5: Maintenance and Organization of Tools and Workspace

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain regular cleaning, sharpening, and lubricating methods to keep tools functional.
2. Demonstrate how to store tools properly after use to prevent damage and ensure easy retrieval.
3. Conduct basic checks of tool condition and electrical connections before use.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the essential practices for maintaining and organizing carpentry tools and the workspace. You will learn how to clean, sharpen, and lubricate tools to keep them in good working condition, how to store them properly to prevent damage and loss, and how to perform basic safety checks before use to ensure safe and efficient work.

Ask

Ask the participants the following questions:

- Why is it important to clean and store tools properly after use?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Maintenance and Organization of Tools and Workspace

Proper maintenance and organized storage of tools are vital to sustaining their functionality, ensuring safety, and increasing efficiency in the workplace. Regular upkeep prevents premature wear, while a clean, organized workspace reduces hazards and supports smooth daily operations.

1. **Regular Cleaning, Sharpening, and Lubrication**

   Tools accumulate dust, wood shavings, moisture, and grease during use, which can lead to rust, dullness, and mechanical failure if not cleaned regularly. Cleaning tools after each use removes these harmful substances and prolongs their life. Sharpening blades and cutting edges is necessary to maintain precision and reduce the effort needed for cutting or shaping materials. Dull tools can cause mistakes and increase fatigue. Applying lubricants to hinges, joints, and moving parts reduces friction and wear, ensuring that tools like saws, drills, and clamps operate smoothly and safely over time.

2. **Proper Storage and Organization**

   After work, tools should be returned to designated storage areas such as pegboards, tool chests, or shelves to prevent loss or damage. Tools organized by function, size, or frequency of use are easier to locate quickly, which enhances productivity and reduces downtime. An uncluttered and orderly workspace minimizes the risk of accidents such as tripping or cutting oneself on misplaced sharp tools. Good organization also helps in maintaining inventory control, making it easier to identify when tools need replacement or repair.

3. **Pre-Use Inspection and Safety Checks**

   Before beginning any task, workers must examine their tools to confirm they are in safe and good working condition. This involves checking for cracks, rust, loose parts, or dull edges that could impair performance or cause injury. For electrical tools, inspecting power cords and plugs for damage or frayed wires is essential to avoid electrical hazards. Identifying any faults early ensures tools are either repaired or replaced, thereby maintaining safety standards and preventing disruptions during work.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Tool Maintenance and Workspace Organization Challenge

Group Size: 4-6 participants

Materials

- Various carpentry tools (real or images/models)
- Cleaning supplies (cloth, oil, sharpening stones)
- Storage boxes or tool racks
- Checklist templates for maintenance and organization

Activity Duration
45-60 minutes

Instructions

1. Divide participants into small groups.
2. Assign each group a set of tools and a workspace area to organize (can be physical or hypothetical).
3. Each group will:
   - o Inspect the tools for any signs of wear or damage.
   - o Demonstrate or explain the correct cleaning, sharpening, and lubricating process for their tools.
   - o Organize the tools in a logical, safe manner for storage using the available materials.
   - o Prepare a short checklist for regular tool maintenance and workspace organization to ensure ongoing safety and efficiency.
4. Groups present their maintenance plan and organization setup, highlighting the reasons behind their choices.

Activity	Duration	Resources used
Tool Maintenance and Workspace Organization Challenge	45-60 minutes	Various carpentry tools (real or images/ models), Cleaning supplies (cloth, oil, sharpening stones), Storage boxes or tool racks, Checklist templates for maintenance and organization etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage hands-on participation wherever possible to build practical skills.
- Guide groups to consider safety and accessibility in tool storage arrangements.
- Highlight the importance of routine maintenance and organization for prolonging tool life and maintaining a safe workspace.

Unit 3.6: Common Hardware Fittings in Furniture Manufacturing

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify different types of hardware fittings such as cam locks, brackets, hinges, and drawer sliders used in furniture.
2. Choose appropriate tools and demonstrate how to fix selected hardware components correctly on wood or board surfaces.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the commonly used hardware fittings in furniture manufacturing, such as cam locks, hinges, brackets, and drawer sliders. Participants will learn how to identify each type, understand their functions, and practice the correct use of tools to install them securely on wood or board surfaces. This unit builds essential skills for assembling, repairing, or modifying furniture in both home and commercial settings.

Ask

Ask the participants the following questions:

- Can you name any hardware fitting that helps a cabinet door open and close?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Common Hardware Fittings in Furniture Manufacturing

In furniture manufacturing, hardware fittings are essential components that allow different parts of furniture to move, join, or function properly. These include items like cam locks, hinges, brackets, and drawer runners, which provide both structural support and usability. Understanding the various types of fittings and their correct usage is important for building strong, reliable, and easy-to-use furniture. This session helps Participants become confident in identifying and applying hardware fittings in practical carpentry and assembly tasks.

1. **Identification of Different Types of Hardware Fittings**

   In furniture manufacturing, using the correct hardware fittings is essential for ensuring the piece is functional, strong, and user-friendly. This section helps Participants visually identify and understand the common types of fittings used across different furniture categories.

   - **Cam Locks**

     These are widely used in flat-pack or ready-to-assemble furniture. They provide a hidden and secure joint by locking two panels together using a cam and dowel mechanism. Cam locks are especially useful in modular furniture designs where aesthetics and ease of disassembly are important.

   - **Brackets**

     Typically made of metal, brackets are used to reinforce right angles or join two surfaces—commonly seen in shelf support or corner stabilization. Participants will observe L-brackets, angle brackets, and flat brackets, each with different load-bearing capabilities.

   - **Hinges**

     Hinges allow the rotational movement of doors and flaps. This unit introduces several types including:

     - Butt hinges – basic, traditional hinges used in doors.
     - Concealed (European) hinges – used in modern cabinets for a seamless look.
     - Piano hinges – long, continuous hinges used for evenly distributed weight.

   - **Drawer Sliders**

     These fittings allow drawers to move smoothly in and out. Students will learn about:

     - Side-mounted sliders, which are visible and easier to install.
     - Under-mounted sliders, which are hidden and offer a sleeker appearance.
     - Soft-close sliders, which use a hydraulic mechanism to close drawers gently.

   Understanding not just the appearance but also the application, load capacity, and alignment of each fitting will help Participants choose the most suitable one based on the furniture type and its intended use.

2. **Correct Tool Selection and Installation Techniques**

   Installing hardware fittings correctly is just as important as selecting them. Improper installation can lead to damage, misalignment, or reduced durability. This part of the unit focuses on the tools and techniques required to mount each type of hardware efficiently and safely.

   - **Tool Familiarity**

     Participants will be introduced to essential tools such as:

     - Screwdrivers (manual and electric) for tightening hardware.
     - Power drills for making clean, accurate holes.
     - Measuring tapes and rulers for precision marking.
     - Templates or jigs to speed up repeated installations with consistent accuracy.

   - **Installation Skills**

     - **Accurate Marking**

       Emphasizing how to measure and mark the exact location where hardware is to be fitted, ensuring alignment with other components.

     - **Pilot Holes**

       Explaining the importance of drilling pilot holes before inserting screws to prevent splitting the wood or misaligning the hardware.

     - **Secure Fixing**

       Demonstrating how to insert screws or bolts properly, ensuring fittings are flush and stable, without over-tightening which might strip threads or damage surfaces.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Hardware Fitting Identification and Installation Practice

Activity Title: Furniture Fitting Challenge

Group Size: 3–5 participants per group

Materials Required

- Sample wooden boards or panels
- A set of hardware fittings (cam locks, hinges, brackets, drawer sliders)
- Screwdrivers, drills, measuring tapes, pencils
- Safety gloves and goggles

Activity Duration: 45–60 minutes

Instructions

1. **Briefing**

   Introduce the different types of hardware fittings and their functions using physical samples or images.

2. **Hands-On Task**

   Each group receives a mock panel and a set of hardware fittings. They must:

   - Identify each fitting correctly.
   - Choose the correct tool for installation.
   - Mark, drill, and install the fittings as per a provided sample layout (e.g., fixing a hinge on a cabinet door, or attaching a bracket for shelf support).

3. **Presentation and Feedback**

   Each group explains their process and demonstrates the functionality of their installed components. The facilitator provides feedback.

Activity	Duration	Resources used
Hardware Fitting Identification and Installation Practice	45-60 minutes	Sample wooden boards or panels, A set of hardware fittings (cam locks, hinges, brackets, drawer sliders), Screwdrivers, drills, measuring tapes, pencils, Safety gloves and goggles etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Ensure tool safety**

  Demonstrate safe handling of hand tools and drills before beginning the activity.

- **Encourage role distribution**

  Let group members divide roles (marker, driller, installer, checker) to practice teamwork.

- **Check alignment and accuracy**

  Emphasize the importance of correct measurement and fitting alignment to prevent installation errors.

Exercise

Multiple Choice Questions (MCQs)

1. Which material is commonly used in knock-down furniture for hidden and secure joint assembly?
   a) Hinge
   b) Cam lock
   c) Bracket
   d) Dowel
   Answer: b) Cam lock

2. What is the primary function of a carpenter's square in woodworking?
   a) Cutting curves
   b) Smoothing surfaces
   c) Measuring and marking right angles
   d) Sanding edges
   Answer: c) Measuring and marking right angles

3. Which of the following is a softwood commonly used in furniture manufacturing?
   a) Oak
   b) Pine
   c) Teak
   d) Walnut
   Answer: b) Pine

4. What safety item must be used when operating a power sander to protect the respiratory system?
   a) Ear plugs
   b) Steel-toe shoes
   c) Safety goggles
   d) Dust mask
   Answer: d) Dust mask

Fill in the Blanks

1. _____ and _____ are examples of engineered wood used in budget-friendly furniture.
   Answer: MDF, particle board

2. A _____ is used to hold wooden pieces securely while performing cutting or drilling tasks.
   Answer: clamp

3. Before using an electrical tool, the _____ and _____ should be checked for damage.
   Answer: power cord, switch

4. A _____ fitting allows doors in cabinets to swing open and closed.
   Answer: hinge

Match the following

1. Match the tool to its primary function

Tools	Function
1. Router	a) Smoothing wood surfaces
2. Sander	b) Creating decorative edges
3. Measuring Tape	c) Measuring lengths
4. Hammer	d) Driving nails

Answers: 1 - b) , 2 - a) , 3 - c), 4 - d)

2. Match the hardware fitting with its usage

Hardware Fittings	Usage
1. Drawer slider	a) Seamless cabinet door opening
2. L-bracket	b) Smooth movement of storage units
3. Cam fitting	c) Reinforcing corners in structures
4. Concealed hinge	d) Hidden joints in modular furniture

Answers: 1 - b) , 2 - c) , 3 - d), 4 - a)

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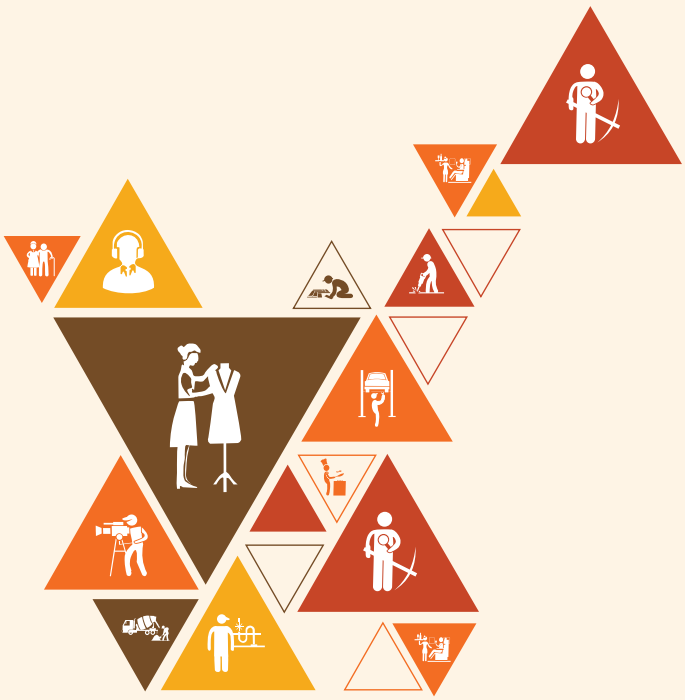
4. Understanding Drawings and Job Planning

Unit 4.1: Types and Components of Architectural and Product Drawings
Unit 4.2: Measurement Principles and Calculation Techniques
Unit 4.3: Component Breakdown and Bill of Materials (BOM) Preparation
Unit 4.4: Jig Usage and Marking Techniques
Unit 4.5: Job Card Preparation and Work Execution Planning



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Identify and distinguish between architectural layout drawings (used for overall site and space planning) and product-specific drawings (used for manufacturing and assembling furniture units).
2. Interpret different drawing types commonly used in furniture and carpentry, including 2D elevations for height and face views, sectional drawings to reveal internal construction, and 3D or isometric views for better visualization of assembled forms.
3. Recognize and understand common drawing symbols, line types (such as hidden, centre, or dimension lines), and notations used to indicate materials, finishes, joints, edge treatments, hardware positioning, and structural components.
4. Refer to a sample drawing of a wooden table and identify all visible and hidden components, including their relationships in plan, elevation, and section, to understand how they connect during fabrication.
5. Explain measurement principles such as length, width, thickness, and height, and understand how these are represented in carpentry drawings using standard units and notation styles.
6. Apply basic arithmetic and geometry to compute dimensions, quantities, and allowances for cuts and joints, including area calculations for surfaces and volume estimations for material ordering.
7. Convert between units of measurement (e.g., millimetres to inches or centimetres to feet) and use standard woodcutting and material planning formulas confidently in job site conditions.
8. Extract exact values from a drawing of a table to calculate component sizes such as the tabletop area, the required height for legs, and clearances needed for assembly or fitting into a room layout.
9. Break down a furniture product drawing into individual measurable components such as tabletop, legs, aprons, rails, or supports, using annotations and guidelines from the drawing itself.
10. Prepare a detailed Bill of Materials (BOM) including quantity, size, thickness, type of material, edge treatment, and finishing details for each identified component based on a real drawing of a wooden table.
11. Link raw material and hardware knowledge from Module 3 with drawing interpretation to make informed decisions about what materials to choose and in what specifications.
12. Describe the function and advantages of using jigs for repetitive marking and cutting tasks in carpentry, especially where accuracy, speed, and consistency are critical.
13. Demonstrate how to use jigs such as drilling templates, corner blocks, or spacing guides to perform marking tasks on timber components like legs, aprons, or frames with minimal error.
14. Apply precise marking techniques using pencils, scribers, squares, and gauges to ensure joints and fittings are placed at accurate locations before actual machining or cutting begins.
15. Create a structured job card listing each task to be performed in a logical order such as marking, cutting, jointing, assembly, surface prep, and final inspection, ensuring a smooth execution of the fabrication process.
16. Include additional job card details such as task allocation (who does what), expected completion time for each step, tools required for every operation, and material references tied to drawings and BOM.

17. Use a sample wooden table project to demonstrate job card filling, tracking daily progress, and updating status of partial or completed tasks.
18. Use the job card as a live document throughout the fabrication and installation process to communicate progress to supervisors, identify delays, and ensure timely completion of work.

Unit 4.1: Types and Components of Architectural and Product Drawings

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify the differences between architectural layout drawings and product-specific views used in carpentry and furniture fabrication.
2. Interpret standard drawing types such as plan views, elevations, cross-sections, and isometric projections with practical reference to a wooden table.
3. Recognize the symbols, line types, and annotations used in technical drawings to denote materials, finishes, hardware points, and construction details.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the different types of architectural and product drawings commonly used in carpentry and furniture making. You will learn to identify and interpret various views like plans, elevations, cross-sections, and isometric projections. The unit also covers the symbols, line types, and annotations that help communicate important details about materials, finishes, and hardware in technical drawings.

Ask

Ask the participants the following questions:

- What is the difference between a plan view and an elevation in technical drawings?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Types and Components of Architectural and Product Drawings

Drawings are essential communication tools in architecture and furniture making, translating ideas into precise instructions for construction and fabrication. Understanding the different types of drawings and their components enables craftsmen and builders to visualize designs accurately, identify necessary details, and execute projects efficiently. This session focuses on familiarizing participants with the key differences between architectural layouts and product-specific views, interpreting standard drawing types, and recognizing the symbols and annotations used in technical drawings.

1. **Distinguishing Architectural and Product Drawings**

   Architectural drawings primarily focus on the overall design and layout of buildings or spaces. These drawings provide a bird's-eye view of the structure, showing walls, doors, windows, rooms, and their arrangement within the site or floor plan. They serve as a guide for architects, builders, and contractors to understand the spatial relationships and flow within the building. On the other hand, product drawings are more detailed and concentrate on specific items such as furniture pieces or cabinetry. These drawings highlight individual components, dimensions, joint types, and assembly methods. Understanding the difference between these drawing types helps craftsmen and carpenters know when to look at broad architectural plans and when to focus on detailed product views during fabrication.

2. **Understanding Different Drawing Views**

   Various types of views are used in technical drawings to represent the object from multiple perspectives, ensuring all details are clearly communicated:

   - **Plan Views**

     These are horizontal cross-sections viewed from above, illustrating the layout and placement of elements like table tops, legs, or room partitions. For example, a plan view of a wooden table shows the shape and size of the tabletop and the positions of legs or drawers.

   - **Elevations**

     These vertical views display the front, side, or back of an object, revealing heights, profiles, and external details such as door styles or panel designs. Elevations help understand the external appearance and proportions of furniture or building walls.

   - **Cross-Sections**

     These cut-through views slice the object along a specific plane to expose internal construction details such as joint types, internal supports, or layers of materials. In a furniture context, a cross-section might show how a drawer is constructed inside a cabinet.

   - **Isometric Projections**

     These 3D views combine length, width, and height in one drawing without perspective distortion. They help visualize the overall form and how different components fit together, offering a clear picture of the finished product like a table or chair.

   Together, these views provide a full understanding of the design from external appearance to internal construction, which is critical for accurate fabrication and assembly.

3. **Reading Symbols, Lines, and Annotations**

   Technical drawings use a set of standardized symbols, line styles, and annotations to convey information precisely and efficiently:

   - **Line Types**

     Different line styles represent various features. For example, continuous thick lines show visible edges, dashed lines indicate hidden parts that are not visible from the current view, and thin dotted lines may represent centerlines or reference marks. Correct interpretation of these lines is essential to understand the shape and structure.

   - **Symbols**

     Drawings include symbols to represent materials (such as wood grain patterns or metal), hardware components (like hinges, screws, and cams), and finishes (such as varnish or paint). Knowing these symbols allows one to quickly identify what materials or fittings are used without lengthy descriptions.

   - **Annotations**

     Text notes on the drawings provide dimensions, tolerances, material specifications, and instructions for assembly or finishing. These annotations guide the craftsman in making precise cuts, choosing appropriate materials, and assembling parts correctly.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Exploring and Creating Architectural and Product Drawings

Group Size: 4-6 participants

Materials

- Sample architectural and product drawings (printed or digital) showing different views of a wooden table (plan, elevation, cross-section, isometric)
- Drawing sheets, pencils, rulers, colored markers
- Flipchart or whiteboard
- Sticky notes

Activity Duration: 60 minutes

Instructions

1. Divide participants into groups.
2. Introduce the activity objective:

   To understand different types of technical drawings and their components, and practice creating simple drawings with correct symbols and annotations.

3. Review briefly
    - Types of drawings: plan view, elevation, cross-section, isometric
    - Common symbols, line types, and annotations used in carpentry/furniture drawings

Group Discussion and Analysis

- Each group reviews the sample drawings provided.
- Discuss these questions:
    - What view does each drawing represent?
    - What materials or hardware can be identified from symbols or annotations?
    - How do the different views help in understanding the furniture design?

Drawing Creation Task

- Each group creates simplified drawings of a basic furniture piece (e.g., stool or small shelf), including
    - At least two different views (plan and elevation or cross-section)
    - Appropriate symbols and labels for materials and hardware points

Group Presentations

- Each group presents their drawings.
- Explain the choice of views, symbols, and annotations used.
- Other groups ask questions or give feedback.

Debrief and Key Takeaways

- Facilitate discussion on
    - How different drawing types communicate design and construction details.
    - Importance of using correct symbols and line types for clarity.
    - Challenges faced during drawing creation and interpretation.

Examples of Scenario Card

Scenario Card 1

Confusing Symbols on a Drawing

Your team receives a technical drawing for a new wooden cabinet, but some symbols for hardware fittings and materials are unclear or missing from the legend. This causes confusion among carpenters about which materials and fittings to use.

Task

How would your group clarify and communicate the correct symbols and annotations to ensure accurate interpretation and avoid construction errors?

Scenario Card 2

Mismatch Between Drawings and Actual Materials

During the preparation phase, you notice that the elevation view of a table shows a different wood finish than what is specified in the plan view. This inconsistency creates doubts about which finish to apply.

Task

How would your group identify and resolve these inconsistencies before fabrication begins, while ensuring everyone understands the final design intent?

Scenario Card 3

Missing Dimensions in Drawings

A cross-sectional drawing of a chair does not include key measurements needed for cutting the components accurately. This could lead to incorrect sizes and wasted materials.

Task

What steps would your group take to verify and supplement the missing dimensions in the drawings? How would you coordinate with the design team to avoid such issues in the future?

Activity	Duration	Resources used
Exploring and Creating Architectural and Product Drawings	60 minutes	Sample architectural and product drawings (printed or digital) showing different views of a wooden table (plan, elevation, cross-section, isometric), Drawing sheets, pencils, rulers, colored markers, Flipchart or whiteboardm Sticky notes etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage teamwork and division of tasks (e.g., one member sketches, others verify symbols).
- Support groups in correctly identifying drawing views and standard symbols.
- Stimulate discussion by asking how drawings aid carpenters and fabricators in real work.

Unit 4.2: Measurement Principles and Calculation Techniques

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain core measurement terms such as height, width, depth, volume, and thickness, and how they apply in carpentry projects.
2. Perform basic arithmetic and geometry operations to calculate length, perimeter, and volume from a drawing.
3. Convert measurements between units like millimetres, inches, and feet based on drawing scales and worksite practices.
4. Use formulas for area and volume estimation in woodcutting, including how to calculate cutting allowances.
5. Derive practical dimensions such as tabletop size or leg height from a table design to aid in cutting and assembly.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the fundamental principles of measurement and calculation techniques used in carpentry and furniture making. You will learn about key measurement terms, how to perform basic calculations from drawings, convert units, and estimate areas and volumes. These skills are essential for accurately cutting and assembling furniture components according to design specifications.

Ask

Ask the participants the following questions:

- What are the basic measurement terms used to describe the size of a piece of wood?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Measurement Principles and Calculation Techniques

Accurate measurement and precise calculations form the backbone of quality carpentry and furniture making. This session equips participants with the knowledge and skills to understand measurement terms, perform essential calculations, convert units, and apply formulas to bring designs to life with accuracy and efficiency.

1. **Core Measurement Terms and Their Application**

   Participants will thoroughly understand important measurement terms such as height (vertical dimension), width (horizontal dimension), depth (front-to-back dimension), thickness (material thickness), and volume (three-dimensional space occupied). They will learn how each term relates to specific parts of furniture or architectural elements. For example, thickness is crucial when selecting boards for panels, while volume is important for estimating the amount of material needed. This knowledge helps in visualizing the physical dimensions and proportions required for a project.

2. **Performing Calculations Based on Drawings**

   Participants will practice calculating lengths, perimeters, and volumes by reading technical drawings. This includes determining the total length of wood required for chair legs or the perimeter of a tabletop for edge banding. Using basic geometry, such as calculating the area of rectangles or triangles and volume of rectangular solids, participants will develop practical skills to translate two-dimensional drawings into three-dimensional construction plans, reducing errors during fabrication.

3. **Converting Between Measurement Units and Understanding Scales**

   This section emphasizes the importance of being able to convert measurements accurately between systems, like millimetres to inches or feet to centimetres, which is often necessary because drawings and worksite measurements may use different units. Understanding drawing scales (e.g., 1:10 or 1:50) allows participants to correctly interpret the size of objects shown on paper and translate them into real-life dimensions, ensuring the final product matches design intent.

4. **Using Formulas for Area and Volume Estimation**

   Participants will learn how to apply mathematical formulas to calculate the surface area of furniture components (like tabletops or panels) and volume for estimating material quantity. Additionally, they will understand how to factor in cutting allowances — extra measurements added to accommodate saw blade width or potential mistakes — ensuring that the material is sufficient and minimizing waste.

5. **Deriving Practical Dimensions from Designs**

   The unit guides participants in extracting useful, actionable measurements from complex drawings, such as determining the appropriate leg height or tabletop size for a table. This involves analyzing different views and sections of drawings to pick exact dimensions needed for cutting and assembly, which supports efficient workflow and precise construction.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Practical Measurement and Calculation Exercise

Group Size: 3-5 participants

Materials Needed

- Sample furniture drawing (e.g., table design),
- Measuring tape or ruler,
- Calculator
- Paper
- Pencils

Activity Duration: 45-60 minutes

Instructions

1. Divide participants into small groups and provide each group with a furniture drawing that includes dimensions (height, width, depth).
2. Ask each group to identify key measurement terms on the drawing (height, width, depth, thickness).
3. Using the drawing, groups will calculate
    - o The perimeter of the tabletop
    - o The volume of a wooden leg (using given dimensions)
    - o The total surface area of the tabletop
4. Groups should also practice converting one or two measurements between millimeters, inches, and feet based on the scale provided.
5. Finally, each group will present their calculation process and results, explaining how these measurements help in accurate cutting and assembly.

Activity	Duration	Resources used
Practical Measurement and Calculation Exercise	45-60 minutes	Sample furniture drawing (e.g., table design), Measuring tape or ruler, Calculator, Paper, Pencils etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage participants to discuss and clarify the measurement terms before starting calculations to ensure everyone understands.
- Provide assistance with unit conversion formulas or offer a quick reference chart for conversions.
- After presentations, lead a short discussion on the importance of accurate measurement and calculation in avoiding material waste and ensuring furniture quality.

Unit 4.3: Component Breakdown and Bill of Materials (BOM) Preparation

Unit Objectives

At the end of this unit, participants will be able to:

1. Break down a sample table drawing into measurable components (top, legs, apron) and document their respective dimensions.
2. Prepare a detailed bill of materials (BOM) listing sizes, materials, finishes, and quantities for each part needed in the table project.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to break down furniture drawings specifically a table—into its key components such as the top, legs, and apron. We will also learn how to measure and record their dimensions accurately. Additionally, the unit will cover how to prepare a detailed Bill of Materials (BOM), including size, material, finish, and quantity for each part needed in the project.

Ask

Ask the participants the following questions:

- What are the three main parts of a basic table that we study in a component breakdown?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Component Breakdown and Bill of Materials (BOM) Preparation

Understanding how to break down a furniture drawing into its essential components and preparing an accurate Bill of Materials (BOM) is critical for effective project planning and execution. This process ensures that every part is identified, measured, and documented to facilitate smooth fabrication, material procurement, and assembly.

1. **Break down a sample table drawing into measurable components (top, legs, apron) and document their respective dimensions**
   - **Identify the Key Parts from Drawing**

     Begin by carefully analyzing the technical drawing or sketch of the table. Focus on recognizing the core components such as the tabletop (top panel), legs, and apron (support frame beneath the top).
   - **Understand the Structure and Proportion**

     Assess how each component fits together in terms of proportion and placement. This step helps in visualizing the complete structure and determining which parts bear weight or provide stability.
   - **Measure Each Component Precisely**

     Take detailed measurements of each component directly from the drawing or design plan. For example, record the length, width, and thickness of the tabletop, the height and cross-section of each leg, and the length, width, and thickness of apron rails.
   - **Document the Dimensions Clearly**

     Organize the measurements in a tabular or listed format for clarity. Ensure that the documentation includes part names, dimensions, and any additional notes like edge profiles or joint notches.
   - **Prepare the Component List**

     The outcome should be a complete list of measurable parts with their dimensions, which serves as a ready reference for material cutting and further BOM preparation.

2. **Prepare a detailed bill of materials (BOM) listing sizes, materials, finishes, and quantities for each part needed in the table project**
   - **Create an Itemized Part List**

     Using the breakdown from the drawing, create a list that includes all necessary parts — tabletop, legs, apron pieces, and additional fittings like screws, brackets, or dowels.
   - **Specify Accurate Sizes**

     For each listed part, include the exact dimensions (length × width × thickness) that match the design and functional requirements.
   - **Mention the Material Type**

     Clearly mention the type of material required for each component, such as teak wood for the tabletop, rubberwood for the legs, or plywood for support panels. Material selection should align with strength, aesthetics, and cost.

- **Include Finish Details**

  Note the surface treatments or finishes to be applied to each part. This might include wood stain, polish, varnish, or paint, depending on the design intent and environmental exposure.

- **Indicate Quantity of Each Part**

  Accurately calculate how many units of each part are needed — e.g., 4 legs, 2 short aprons, 2 long aprons, 1 tabletop, and fasteners in packs or pieces.

- **Compile the BOM in Table Format**

  Organize all the above details into a structured BOM table with columns such as: Part Name | Dimensions | Material | Finish | Quantity. This helps in procurement, cost estimation, and assembly planning.

- **Use as a Production Blueprint**

  The BOM becomes a vital reference document that guides material purchases, workshop operations, and ensures consistency in production.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Component Breakdown and BOM Creation

Group Size: 3–5 participants

Materials Needed

- Sample table design drawing with dimensions (top, legs, apron)
- Measuring scale or ruler
- Paper
- Pencils
- Calculator
- BOM template sheet (optional)

Activity Duration: 45–60 minutes

Instructions

1. Divide participants into small groups and provide each group with a sample technical drawing of a basic wooden table.
2. Ask each group to carefully examine and label all main components of the table: tabletop, legs, and apron.
3. Using the drawing and scale, groups will extract and document the dimensions (length, width, thickness) of each component.

4. Based on these dimensions, each group will prepare a detailed Bill of Materials (BOM) including:
    - Name of the part (e.g., Tabletop, Leg)
    - Quantity required
    - Material type (e.g., teak, plywood)
    - Dimensions for each component
    - Type of surface finish (e.g., paint, polish)
5. Groups will present their component breakdown and BOM to the class, explaining their measurement logic and material choices.

Activity	Duration	Resources used
Component Breakdown and BOM Creation	45-60 minutes	Sample table design drawing with dimensions (top, legs, apron), Measuring scale or ruler, Paper, Pencils, Calculator, BOM template sheet (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Provide clearly labelled table drawings with appropriate measurement scales to ensure all students can work from the same baseline.
- Encourage teamwork and role assignment within each group (e.g., one student measures, another documents, another formats the BOM).
- Guide the groups on standard BOM formatting and remind them to consider material types and finishes based on functional and aesthetic requirements.

Unit 4.4: Jig Usage and Marking Techniques

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain how jigs help maintain uniformity and precision during repetitive marking or drilling tasks.
2. Identify common types of marking jigs used in furniture workshops.
3. Use a jig to mark symmetrical placements of legs or joinery on a wooden table frame.
4. Apply consistent layout marking techniques using measuring tapes, try squares, and scribers before cutting or joining.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how jigs and accurate marking techniques are used in furniture making to ensure precision, uniformity, and efficiency. Participants will explore different types of jigs used in workshops, understand their role in repetitive tasks, and practice using measuring tools like try squares and marking gauges. These skills are essential for producing consistent, symmetrical, and well-aligned wooden components during furniture fabrication.

Ask

Ask the participants the following questions:

- What is a jig used for in furniture making?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Jig Usage and Marking Techniques

Precision and uniformity are the foundations of high-quality furniture making. Whether producing a single item or working on batch production, woodworkers must ensure that all measurements, cuts, and joints are accurate and consistently aligned. Jigs and proper marking techniques help eliminate manual errors and enable craftsmen to reproduce the same component multiple times with identical results. This unit focuses on the use of jigs and layout tools to improve accuracy and workflow in furniture fabrication.

1. **Jigs for Accuracy and Repetitive Tasks**

   Jigs are custom-made or standardized tools used as guides for marking, drilling, or cutting operations. In furniture making, tasks such as creating dowel joints, marking for tenons, or drilling holes for screws often need to be repeated with exact spacing and alignment. A jig allows the woodworker to repeat these steps with precision, ensuring every part is identical to the last. For example, when attaching legs to multiple tables, a jig can mark the leg placement on each frame without having to re-measure manually each time. This not only speeds up the process but also significantly reduces the risk of misalignment or dimensional variation.

2. **Common Types of Marking Jigs in Use**

   Several types of marking jigs are regularly used in furniture workshops. A drill jig ensures that holes are drilled in the correct location and angle every time. A marking jig might help position lines for joinery, such as dovetail or mortise-and-tenon joints. Template jigs, often made from MDF or plywood, are used for replicating curved shapes or marking outlines on multiple workpieces. These tools are especially important when working on large orders or standardized parts, as they support both efficiency and quality assurance in the manufacturing process.

3. **Using Jigs for Symmetry and Balance in Furniture Frames**

   When assembling furniture such as tables, chairs, or cabinets, symmetrical positioning of parts like legs or supports is essential for both functionality and appearance. Jigs help ensure that these parts are marked in exactly the same place on each unit. For example, when marking where legs attach to a table frame, a jig can be positioned on the corner to replicate the exact leg placement on all four sides. This prevents uneven or crooked assembly and contributes to a structurally sound and visually balanced finished product.

4. **Applying Consistent Marking Techniques with Measuring Tools**

   Before making any cuts or drilling holes, accurate marking is the foundation of good workmanship. Woodworkers use tools such as measuring tapes for distances, try squares for checking and marking right angles, and scribers or pencils for drawing lines on the wood. Marking gauges are also used to draw consistent parallel lines from an edge, especially useful in joinery work. These tools ensure that each measurement is transferred precisely onto the material. Consistent and clean marking not only guides cutting and assembly but also helps in visualizing the overall structure and avoiding costly mistakes.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Jig-Based Symmetrical Marking Exercise

Group Size: 3–5 participants

Materials Needed

- Wooden planks or sample table frame components
- Pre-made marking jigs (or allow groups to create simple jigs)
- Measuring tape
- Try square
- Scribers or pencils
- Marking gauge

Activity Duration: 45–60 minutes

Instructions

1. Divide participants into small groups and provide them with wooden components and a basic table frame layout.
2. Ask each group to use a jig to mark the position of the table legs symmetrically on all four corners of the frame.
3. Instruct them to check accuracy using try squares and measuring tapes after applying the jig.
4. Next, groups should mark joinery lines (such as for mortise or dowel placements) using scribers and measuring tools, maintaining equal spacing and alignment.
5. Each group will then explain how their jig helped achieve uniform marking and present their marked frame to the class.

Activity	Duration	Resources used
Jig-Based Symmetrical Marking Exercise	45-60 minutes	Wooden planks or sample table frame components, Pre-made marking jigs (or allow groups to create simple jigs), Measuring tape, Try square, Scribers or pencils, Marking gauge etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Ensure each group understands how to position and use the jig correctly before starting.
- Encourage participants to double-check their markings with measuring tools to reinforce precision.
- Provide sample jigs or templates in advance, or allocate time to let groups design their own simple jigs using available materials.

Unit 4.5: Job Card Preparation and Work Execution Planning

Unit Objectives

At the end of this unit, participants will be able to:

1. Prepare a structured job card detailing task sequence, resource allocation, and estimated time required for each operation in table making.
2. Fill in relevant information such as assigned worker name, tools needed, material references, and deadlines.
3. Use the job card as a reference tool for tracking task progress and reporting status updates to a supervisor.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to prepare and use job cards to plan and organize the work involved in making a table. You will learn how to list task sequences, allocate resources, assign responsibilities, and estimate the time required for each operation. The unit also covers how to use job cards to track progress and report updates during the work process.

Ask

Ask the participants the following questions:

- What is the main purpose of a job card in furniture making?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Job Card Preparation and Work Execution Planning

In woodworking and furniture manufacturing, effective planning and clear documentation are key to delivering quality products on time. Job cards are vital management tools that provide a detailed outline of each step in the production process. They help assign tasks, allocate resources, estimate timelines, and monitor progress, ensuring an organized workflow and minimizing confusion on the shop floor.

1. **Structured Planning and Task Sequencing Using Job Cards**
    - A job card breaks down a complex project, like table making, into clear, manageable tasks arranged in a logical sequence.
    - Each task includes an estimated time requirement and specifies the resources needed, such as tools and manpower.
    - This detailed breakdown helps workers understand exactly what to do, when, and how, preventing overlooked steps.
    - It also enables smooth transition between different phases of work and helps supervisors plan workloads efficiently to optimize productivity.

2. **Comprehensive Recording of Work Details**
    - Job cards record important operational information like the name of the worker responsible for each task, ensuring accountability.
    - They clearly list the tools and materials needed for each operation, reducing delays caused by missing resources.
    - Deadlines for task completion are documented to help workers and supervisors monitor if the project is on schedule.
    - This clarity improves coordination, communication, and reduces the chance of errors caused by misunderstandings.

3. **Active Monitoring and Status Reporting**
    - During the production process, the job card acts as a dynamic document to track the progress of each task.
    - Workers and supervisors update the card with notes on completed tasks, issues encountered, or delays experienced.
    - This ongoing status reporting offers supervisors real-time insights into the project's progress.
    - It allows for timely identification of bottlenecks and supports informed decisions about reallocating resources or adjusting schedules.
    - Using the job card as a communication tool enhances transparency and helps maintain quality by ensuring all steps are properly completed.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Job Card Creation and Task Planning

Group Size: 3–5 participants

Materials

- Sample table project outline or drawing
- Blank job card templates (printed or digital)
- Pens/pencils
- Calculator (optional)

Activity Duration: 45–60 minutes

Instructions

1. Divide participants into small groups and provide each group with a simple table-making project outline or drawing.
2. Ask groups to identify and list the major tasks involved in making the table (e.g., cutting, assembling, finishing).
3. Using the blank job card template, groups should
   - o Sequence the tasks logically.
   - o Assign estimated time and resources (tools, materials, and manpower) for each task.
   - o Fill in fictional worker names and deadlines.
4. Each group will present their job card, explaining how they planned the work and allocated resources.

Activity	Duration	Resources used
Job Card Creation and Task Planning	45-60 minutes	Sample table project outline or drawing, Blank job card templates (printed or digital), Pens/pencils, Calculator (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage groups to think realistically about task order and time needed for each step.
- Remind participants that clarity and detail in the job card help avoid confusion during actual work.
- Support groups in understanding the purpose of resource allocation and time estimates as part of efficient work planning.

Exercise

Multiple Choice Questions (MCQs)

1. Which type of drawing shows the internal construction of a furniture piece?
   a) 2D elevation
   b) Sectional drawing
   c) Isometric drawing
   d) Plan view
   Answer: b) Sectional drawing

2. What does a hidden line in a carpentry drawing represent?
   a) Visible edges
   b) Center points
   c) Edges not visible from the current view
   d) Measurement guidelines
   Answer: c) Edges not visible from the current view

3. Which unit conversion is correct when converting millimeters to centimeters?
   a) 100 mm = 1 cm
   b) 10 mm = 1 cm
   c) 1 mm = 10 cm
   d) 1 mm = 1 cm
   Answer: b) 10 mm = 1 cm

4. What is the main purpose of a job card in furniture making?
   a) To decorate furniture
   b) To plan and track tasks and resources
   c) To design furniture shapes
   d) To list customers' names
   Answer: b) To plan and track tasks and resources

Fill in the blanks

1. A _____ drawing provides a three-dimensional view of the furniture to better visualize the assembled product.
   Answer: isometric

2. The _____ line type is used to indicate edges or features that are not visible from the current viewpoint.
   Answer: hidden

3. The _____ is used to record the sequence of tasks, tool requirements, and worker assignments during fabrication.
   Answer: job card

4. The area of the tabletop can be calculated by multiplying its _____ by its _____.

   Answer: length, width

Match the following

1. Match Column A with Column B:

Column A	Column B
1. Bill of Materials (BOM)	a) Job progress and resource tracking tool
2. Sectional Drawing	b) Lists materials, sizes, and finishes
3. Jig	c) Shows internal details of a furniture piece
4. Job Card	d) Tool to maintain precision during marking

   Answers: 1 - b) , 2 - c) , 3 - a), 4 - d)

2. Match Column A with Column B:

Column A	Column B
1. 2D Elevation Drawing	a) Logical order of operations in a job card
2. Measurement Units	b) Shows front or side face views
3. Marking Tools	c) Millimeters, inches, feet
4. Task Sequence	d) Pencils, scribers, try squares

   Answers: 1 - b) , 2 - c) , 3 - d), 4 - a)

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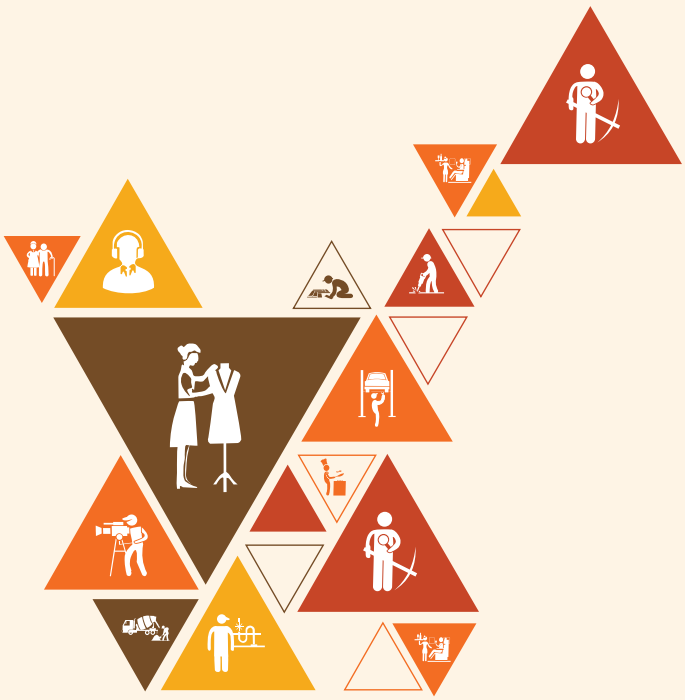
5. Site Recce, Materials, and Measurement Techniques

Unit 5.1: Tools and Equipment for Site Recce
Unit 5.2: Understanding Agencies and Site Operations
Unit 5.3: Site Recce Checklist and Safety Assessment
Unit 5.4: Drawing Interpretation and Layout Marking
Unit 5.5: Site Measurement and Documentation



Key Learning Outcomes

At the end of this module, participants will be able to:

1. List all essential tools and equipment needed to perform a site recce for furniture installation, including both manual and digital measuring instruments such as tapes, spirit levels, and laser distance meters.
2. Match each tool or equipment item to its corresponding use, such as using a laser measurer for room dimensions, a level to check horizontal alignment, and a measuring tape for checking clearance around fixed structures.
3. Prepare a detailed checklist for conducting a site recce that includes tool requirements, safety gear, sketching materials, and documentation formats.
4. Identify the different agencies and personnel that may be present or involved at a furniture installation site, such as electricians, plumbers, civil workers, HVAC teams, and client representatives.
5. Explain the functional roles of these agencies and describe how coordination among them affects the furniture installation sequence, space availability, and site readiness.
6. Interpret a sample job card and demonstrate how to organize work activities on a daily, weekly, and monthly basis based on task lists, dependencies, and available manpower.
7. Explain why a site recce must be conducted before fabrication or installation begins, and describe what kind of data is typically collected during the site visit.
8. Demonstrate the step-by-step process of filling out a recce checklist, including entries for dimensions, obstructions, power outlets, wall conditions, and access paths.
9. Identify common site safety hazards such as loose flooring, exposed wiring, water seepage, or cluttered work zones, and describe simple techniques like hazard tape, chalk marks, or cones to mark these areas temporarily.
10. Read and interpret simple layout drawings showing wall lengths, fixture positions, and furniture placement zones within a room.
11. Accurately mark layout positions on actual floors, walls, or ceilings based on drawings, including correct use of tools for ensuring perpendicular lines, symmetry, and distance from reference points.
12. Perform a layout marking exercise for placing a table in a defined zone, ensuring enough space around the object for movement, access, or additional fittings.
13. Use appropriate measurement techniques (e.g., cross-checking diagonals, checking floor slope) to confirm whether the available site space matches the planned design requirements.
14. Record measurements neatly and precisely in standardized site measurement formats, showing units, tolerances, and references clearly for team and supervisor use.
15. Prepare a comprehensive measurement report that includes all relevant values, obstacles, required adjustments, and client feedback (if any), and submit it in an organized manner for fabrication team planning.

Unit 5.1: Tools and Equipment for Site Recce

Unit Objectives

At the end of this unit, participants will be able to:

1. List the essential tools and equipment used for conducting a furniture installation site recce, including both digital and manual instruments.
2. Match each tool such as laser measurer, level, and tape measure with its respective use during site evaluation.
3. Create a comprehensive checklist of tools and supplies needed for inspecting and documenting a sample mock worksite before installation.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the different tools and equipment used during a site recce for furniture installation. Participants will explore both manual and digital instruments such as laser measurers, spirit levels, and tape measures. The unit also explains how to prepare a checklist for conducting site evaluations effectively, ensuring accurate measurement, layout marking, and documentation before the start of installation work.

Ask

Ask the participants the following questions:

- Can you name one tool that is commonly used to measure room dimensions during a site visit?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Tools and Equipment for Site Recce

In furniture installation projects, a site recce (reconnaissance) is a critical first step to assess spatial conditions, verify measurements, and identify any site-specific challenges. For this task, skilled workers must be equipped with the right tools and understand their purpose. This session focuses on the essential instruments used during site recce and how they support precise planning and execution.

1. **Identifying Essential Tools and Equipment**

   A successful site recce begins with carrying the right set of tools tailored for measurement, alignment, marking, and documentation.

   - **Laser Measurer**

     A compact digital tool used for long-distance measurements. It allows a single person to measure room dimensions, ceiling heights, and diagonals quickly and with high accuracy, even in hard-to-reach areas.

   - **Measuring Tape**

     A flexible, retractable metal tape used for measuring shorter distances like wall recesses, cabinet spaces, and doorway widths. It provides a physical feel and is ideal for cross-checking dimensions on-site.

   - **Spirit Level and Plumb Bob**

     These tools help check if surfaces are level (horizontal) or plumb (vertical). Ensuring level surfaces is critical before mounting furniture like wardrobes, shelves, or counters.

   - **Marking Tools**

     Pencils, chalk lines, and scribers are used to mark center lines, alignment references, and cut indicators. These markings guide where furniture or fittings should be installed.

   - **Notepad and Mobile Devices**

     Used to record observations, sketch layouts, and photograph any special conditions or challenges. Tablets and smartphones also allow for real-time communication with supervisors or design teams.

   - **Safety Gear**

     Helmets, gloves, and flashlights ensure that workers are safe, especially in unfinished or dimly lit interiors.

2. **Matching Tools with Their Use in Site Evaluation**

   Understanding the function of each tool helps ensure that no steps are missed during site evaluation.

   - The laser measurer is ideal for quickly capturing room dimensions and high ceiling heights without needing ladders or additional help. This is particularly helpful in large or empty rooms.
   - The spirit level is used to check if walls and floors are straight and aligned. A sloping or uneven surface may require adjustment during installation, and identifying this early helps avoid delays.
   - A measuring tape provides tactile confirmation of measurements, especially in smaller or cluttered spaces. It helps in measuring niches, corners, and furniture clearances.
   - Digital devices, such as mobile phones or tablets, allow technicians to take photos, make notes, and highlight specific areas of concern, such as electrical points, plumbing fixtures, or beams.

3. Creating a Comprehensive Site Recce Checklist

Preparing a tool checklist ensures a systematic and complete recce process.

- The checklist should cover all essential categories: measuring instruments (laser measurer, tape), alignment tools (spirit level), marking tools (chalk, pencil), and documentation tools (notepad, site recce format).
- It should also include personal protective equipment (PPE), such as gloves, hard hats, and safety goggles, especially if the site is under construction or contains hazards.
- Preparing and reviewing the checklist before the visit helps technicians work more efficiently, saves time, and prevents the need for repeat visits due to missing equipment or incomplete data.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Conducting a Site Recce Scenario for Furniture Installation

Group Size: 4–6 participants

Materials

- Whiteboard or flipchart
- Markers
- Sticky notes (different colors)
- Scenario cards (described below)
- Sample tool checklist (printed)
- Measuring tools (if available)

Activity Duration: 60 minutes

Instructions

1. Divide participants into groups and explain the objectives of the activity: to conduct a realistic recce of a furniture installation site and evaluate the use of correct tools, documentation, and site analysis.
2. Review briefly the common tools used in a site recce (e.g., measuring tape, laser measurer, spirit level, chalk line) and the importance of accurate assessment before installation.
3. Distribute scenario cards (one per group). Each card outlines a unique site challenge or observation situation. Groups must respond by identifying suitable tools, noting site conditions, and planning for smooth installation.

Group Discussion and Planning

Each group will

- Identify tools and methods needed to address the scenario.
- Determine what observations or measurements are critical.
- Discuss how to record and report their findings using a checklist.
- Identify risks or special considerations at the site.

Group Presentations

Each group will present

- A summary of their scenario
- Tools selected and why
- Key measurements or issues noted
- Solutions proposed to handle the scenario effectively

Encourage feedback and follow-up questions from other groups.

Debriefing and Key Takeaways

Facilitate a class discussion to reflect on

- What types of tools were used and how they helped solve the issue?
- What were the differences in approach between groups?
- How does a thorough site recce impact furniture installation success?

Examples of Scenario Cards

Scenario 1
You are assigned to conduct a site recce for a kitchen cabinet installation. However, the walls appear slightly curved, and the ceiling is not level. What tools will you use to check alignment? How will you plan the installation?

Scenario 2
At a furniture installation site, there are electrical points, and plumbing pipes close to where wooden fixtures need to be fitted. How will you ensure safe positioning and correct marking for the furniture units?

Scenario 3
The room is unusually small with tight entry points and sharp turns. You need to evaluate if a pre-assembled wardrobe can be delivered and placed without damage. What measurements will you take? What tools and planning steps are critical?

Activity	Duration	Resources used
Conducting a Site Recce Scenario for Furniture Installation	60 minutes	Whiteboard or flipchart, Markers, Sticky notes (different colors), Scenario cards (described below), Sample tool checklist (printed), Measuring tools (if available) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Encourage hands-on use of physical tools if available; otherwise, simulate tool use with printed visuals.
- Guide participants to think about tool appropriateness (manual vs. digital) for different challenges.
- Support groups by helping them connect tool use with site planning and installation decision-making.

Unit 5.2: Understanding Agencies and Site Operations

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify various external and internal agencies working at a site, such as electricians, plumbers, masons, carpenters, and site managers.
2. Describe the scope of each agency's involvement and how their work influences carpentry timelines and layout feasibility.
3. Explain how collaboration between agencies is critical to safe, efficient site functioning and avoids delays.
4. Demonstrate the process of aligning job-related tasks with timelines (daily, weekly, monthly) using a sample job card.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the various internal and external agencies involved in site operations, such as electricians, plumbers, masons, carpenters, and site managers. You will learn about their roles, how their tasks impact carpentry work, and why inter-agency coordination is critical for safety and timely project completion. The unit also introduces how to use a job card to align carpentry tasks with the overall site schedule.

Ask

Ask the participants the following questions:

- Can you name any two types of professionals who work alongside carpenters at a construction site?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Understanding Agencies and Site Operations

In this session, we will explore the various internal and external agencies that operate at a construction or installation site. Participants will understand the specific responsibilities of each agency, how their tasks influence carpentry timelines, and the importance of collaboration for a safe and efficient work environment. The session also emphasizes how to align carpentry tasks using a job card format for better planning and coordination.

1. **Identification of On-Site Agencies and Their Roles**

   Construction and installation sites involve multiple professionals who specialize in different domains.

   - Electricians are responsible for laying electrical conduits, installing wiring, switchboards, and lighting fixtures.
   - Plumbers handle water pipes, drainage systems, and the installation of sanitary fittings.
   - Masons build and plaster walls, install tiles, and handle concrete work that forms the foundation and surfaces.
   - Carpenters focus on furniture fitting, paneling, door and window frames, and woodwork installations.
   - Site Managers or Supervisors oversee overall site progress, ensure quality standards, and manage schedules and team coordination.

   Recognizing each of these roles helps a carpenter understand dependencies and prepare accordingly.

2. **Influence of Agency Work on Carpentry Timelines**

   Carpentry tasks are often dependent on the timely completion of other work.

   - For example, a wall-mounted cabinet can only be installed after the mason completes plastering and the electrician finishes wiring.
   - If plumbing lines need to pass through wooden partitions, coordination is required to leave appropriate access points.
   - A delay in one agency's work can push the carpenter's tasks, affecting overall deadlines.

   Understanding these dependencies ensures better time management and resource planning for carpentry teams.

3. **Importance of Inter-Agency Coordination for Safety and Efficiency**

   When multiple agencies work in close proximity, coordination is essential to avoid safety hazards and inefficiencies.

   - For instance, if a carpenter starts drilling before electrical wires are secured, it could cause serious accidents.
   - Overlapping tasks (like simultaneous tiling and wooden floor laying) can result in poor finishes or damaged materials.
   - Regular communication, daily site briefings, and clear demarcation of work areas help in preventing confusion.

   Working collaboratively enhances trust among teams, reduces rework, and promotes a safer, more organized worksite.

4. Use of Job Cards to Align Tasks with Overall Site Schedule

Job cards are important tools for planning and tracking carpentry work at a site.

- A job card outlines the sequence of tasks to be performed—such as measuring, cutting, assembling, installing, and finishing.
- It includes details like assigned workers, tools needed, estimated duration, material references, and expected completion dates.
- By using a job card, carpenters can ensure that their tasks are aligned with the overall project schedule, avoiding clashes with other trades.
- Job cards also help supervisors monitor progress, identify delays early, and make necessary adjustments to maintain timelines.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Coordinating Site Agencies and Carpentry Tasks

Group Size: 4–6 participants

Materials

- A3 sheets or chart paper
- Markers or pens
- Sample site layout diagrams (kitchen, hall, washroom, etc.)
- Job card templates (blank)

Activity Duration: 45–60 minutes

Instructions

1. Divide participants into small groups and give each group a sample site layout that includes different zones (e.g., electrical area, plumbing area, carpentry zone).
2. Ask each group to identify all the agencies involved in that layout (e.g., electrician, plumber, carpenter, mason, site manager).
3. Groups will then create a timeline showing which agency needs to complete their task before carpentry work begins, during it, or after it.
4. Using a job card format, participants will plan carpentry-related tasks in line with the overall agency workflow, assigning responsibilities and estimating task durations.
5. Each group will present their chart and job card, explaining how agency coordination impacts efficiency, safety, and project timelines.

Activity	Duration	Resources used
Coordinating Site Agencies and Carpentry Tasks	45-60 minutes	A3 sheets or chart paper, Markers or pens, Sample site layout diagrams (kitchen, hall, washroom, etc.), Job card templates (blank) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Guide the groups to think about real-life dependencies—e.g., “Can a carpenter install a cabinet before the electrician finishes wiring?”
- Encourage clarity in timelines and communication strategies among fictional teams.
- Reinforce the importance of inter-agency coordination to avoid delays or rework on-site.

Unit 5.3: Site Recce Checklist and Safety Assessment

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe how to conduct a site recce and complete a checklist covering dimensions, obstacles, power points, and access areas.
2. Identify potential safety risks such as loose tiles or live wiring and apply caution signage or physical markers to highlight hazards on site.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the process of conducting a thorough site recce using a detailed checklist to capture all important site measurements and conditions. We will also learn how to identify potential safety hazards on site and the ways to mark these risks clearly to ensure a safe working environment. This knowledge helps in effective planning and safe execution of furniture installation.

Ask

Ask the participants the following questions:

- What is the purpose of using a checklist during a site recce?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Site Recce Checklist and Safety Assessment

In this session, we will explore how a detailed site recce (reconnaissance) and safety assessment help prepare the ground for smooth, hazard-free furniture installation. Participants will learn how to use a checklist to gather critical on-site data and how to identify and mark safety risks to ensure both efficiency and protection for workers.

1. **Conducting a Comprehensive Site Recce Using a Checklist**

   A site recce involves a systematic inspection of the installation area to collect all necessary details about the site conditions. This includes measuring dimensions such as length, width, and height of the room or space, noting the locations of doors, windows, power points, and any fixed installations. Using a checklist ensures that no critical information is overlooked. This structured approach aids in precise planning, helps confirm if the furniture components will fit properly, and allows for adjustments to be made before materials or labor are deployed.

2. **Recognizing and Documenting Safety Risks During Site Inspection**

   Safety is a paramount concern during any site visit. During the recce, participants must carefully observe the site to identify potential hazards like exposed electrical wiring, uneven or slippery floors, loose tiles, or unstable structures. These risks should be clearly documented and marked with appropriate safety signage or physical barriers to warn workers and visitors. Proactively managing these hazards reduces the chance of accidents, protects personnel, and ensures compliance with workplace safety regulations. This step also facilitates communication among different agencies working on site, promoting a culture of safety.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Site Recce and Safety Hazard Identification

Group Size: 3-5 participants

Materials

- Sample site layout or site photos
- Site recce checklist (printed)
- Markers or sticky notes
- Printed safety hazard signs/symbols

Activity Duration: 45-60 minutes

Instructions

1. Divide participants into groups and provide site layout/photos and checklist.
2. Groups complete the checklist by measuring dimensions, noting obstacles, power points, and access areas.
3. Identify potential safety risks (e.g., loose tiles, live wiring) on the site visuals.
4. Mark hazards using sticky notes or safety signs on the layout.
5. Present findings and explain hazard identifications and safety measures.

Activity	Duration	Resources used
Site Recce and Safety Hazard Identification	45-60 minutes	Sample site layout or site photos, Site recce checklist (printed), Markers or sticky notes, Printed safety hazard signs/symbols etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Guide participants to carefully observe for visible and hidden hazards.
- Emphasize the importance of accurate site measurements for planning.
- Lead a group discussion post-presentation to share insights and reinforce safety protocols.

Unit 5.4: Drawing Interpretation and Layout Marking

Unit Objectives

At the end of this unit, participants will be able to:

1. Interpret layout drawings provided for a furniture installation, noting dimensions, positions, and references.
2. Identify furniture zones based on design layout, especially for products like tables, cabinets, or seating systems.
3. Mark key layout points on-site using chalk, tape, or markers for walls, floors, or ceilings, referring to plan coordinates.
4. Demonstrate the correct process of layout marking for a table installation, ensuring balance and adequate clearance.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to read and understand layout drawings for furniture installation and how to mark layout points accurately at the site. Learners will explore how to identify furniture zones, use basic marking tools, and carry out layout marking tasks, such as positioning a table. This unit helps ensure that furniture is installed correctly, as per design specifications.

Ask

Ask the participants the following questions:

- What is the purpose of a layout drawing in furniture installation?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Drawing Interpretation and Layout Marking

This session introduces us to the practical skills of reading layout drawings and accurately marking furniture positions on-site. The goal is to ensure that furniture installations are completed with precision, alignment, and adherence to the design intent. Participants will engage with both theoretical concepts and hands-on marking practices to develop professional installation competencies.

1. **Interpreting Layout Drawings for Furniture Installation**
    - Participants will understand how to read and interpret layout drawings provided by designers or architects before the installation begins.
    - Emphasis will be placed on identifying furniture dimensions (length, width, height) and scale proportions used in the drawing.
    - Participants will recognize orientation indicators such as arrows, grid lines, or compass directions to guide positioning.
    - They will also learn how to extract reference points and measurements that relate drawing elements to actual site features like walls, doors, and power points.
    - The outcome is the ability to mentally visualize how each item will appear and function in the space when installed.

2. **Identifying Furniture Zones from the Design Layout**
    - This section enables Participants to divide the space into functional zones based on the layout plan—for example, areas assigned for tables, cabinets, or modular seating.
    - Participants will learn how to recognize these zones by reading labels, symbols, and boundaries shown in the layout drawing.
    - They will develop an understanding of user flow, spacing requirements, and how each furniture zone contributes to the purpose of the room.
    - Importance is given to maintaining clearance, ease of access, and visual balance during installation.
    - This helps ensure that furniture is not only correctly placed but also supports the intended usability and aesthetics of the space.

3. **Marking Key Layout Points On-site**
    - Participants will be trained to transfer measurements from the layout drawing to the physical site using standard tools like measuring tapes, chalk lines, and markers.
    - The process involves identifying base reference points such as wall edges, corners, or fixed architectural features.
    - Participants will practice how to align markings to match drawing coordinates, ensuring furniture is installed exactly where intended.
    - Practical sessions will demonstrate marking on different surfaces—floors, walls, or ceilings—depending on the type of furniture or fixture.
    - Accuracy, neatness, and consistency of layout markings are emphasized, as they directly influence installation quality.

4. **Demonstrating Layout Marking for Table Installation**
    - In this practical task, Participants will perform step-by-step layout marking for a table installation based on a sample layout drawing.
    - They will measure and mark the table's position, ensuring it is aligned with surrounding elements and consistent with the plan.
    - Special attention will be given to balancing the table (checking level) and ensuring clearances are maintained on all sides for comfort and mobility.
    - Participants will also check if the position aligns with utilities like electrical points or lighting as indicated in the layout.
    - This task reinforces drawing interpretation, measurement accuracy, and real-world problem-solving in installation contexts.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Layout Drawing Interpretation and On-Site Marking

Group Size: 3–5 participants

Materials

- Sample layout drawing (printed)
- Measuring tapes
- Chalk, masking tape, or floor markers
- Marking reference sheet (basic symbols and measurements)
- Clipboards and pens

Activity Duration: 45–60 minutes

Instructions

- Divide participants into groups and assign each group a marked workspace (floor area or mock installation zone).
- Distribute a printed furniture layout drawing and reference sheet to each group.
- Instruct groups to interpret the drawing, identify zones for key furniture elements (e.g., table, cabinet), and measure actual distances.
- Using chalk or tape, mark the furniture positions accurately on the floor as per the drawing.
- Once marking is complete, each group presents their layout, explaining how they translated the drawing onto the site and ensured proper alignment and clearance.

Activity	Duration	Resources used
Layout Drawing Interpretation and On-Site Marking	45-60 minutes	Sample layout drawing (printed), Measuring tapes, Chalk, masking tape, or floor markers, Marking reference sheet (basic symbols and measurements), Clipboards and pens etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Demonstrate a sample marking before the activity to show how to interpret and measure from a layout drawing.
- Encourage role division within groups (e.g., reader, measurer, marker) for better coordination.
- Clarify the drawing scale and how to convert it to real-world measurements.

Unit 5.5: Site Measurement and Documentation

Unit Objectives

At the end of this unit, participants will be able to:

1. Apply measurement techniques using tools like laser distance meters or measuring tapes to check available space and furniture fitment areas.
2. Record values clearly in site measurement sheets, maintaining consistency in units and labels.
3. Prepare a final documentation sheet summarizing all measurements and details for the mock table installation zone.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to accurately measure spaces at a furniture installation site using tools like measuring tapes and laser distance meters. Participants will also learn how to record these measurements clearly and prepare a final documentation sheet. This ensures that all required dimensions are available for smooth planning and correct placement of furniture, such as tables, in the given space.

Ask

Ask the participants the following questions:

- What is one tool commonly used to measure room dimensions at a site?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Site Measurement and Documentation

Accurate measurement of space and clear documentation are the foundation of successful furniture installation. In this session, participants will learn how to assess site dimensions using standard tools, document these measurements systematically, and prepare a final reference sheet that ensures furniture is positioned correctly and safely.

1. **Applying Measurement Techniques Using Tools**
    - Participants will gain hands-on experience with common measuring tools, such as measuring tapes and laser distance meters, used to assess room dimensions and available installation areas.
    - They will learn how to identify appropriate reference points like corners, wall edges, or floor junctions to begin measurements.
    - Emphasis will be placed on capturing key details such as room length, width, height, and clearance space around the proposed furniture.
    - Learners will also understand how to handle tools with care to avoid misreadings caused by angles, loose tapes, or obstacles on-site.
    - This skill ensures that measurements are accurate, reliable, and relevant to furniture fitment and layout planning.

2. **Recording Values Clearly in Site Measurement Sheets**
    - After collecting measurements, learners will be trained to record values in a standardized site measurement sheet, which helps keep information organized and accessible.
    - They will use consistent units of measurement, typically in millimeters or centimeters, to avoid confusion during planning and installation.
    - Labels and annotations will be used to describe what each measurement refers to, such as “wall-to-wall width” or “floor to beam height.”
    - Participants will also be guided to avoid common documentation errors such as inconsistent units, missing values, or unclear notes.
    - The aim is to ensure that the recorded data can be easily reviewed by other team members involved in installation.

3. **Preparing Final Documentation for Table Installation Zone**
    - In the final stage, learners will use the collected data to prepare a complete documentation sheet summarizing all critical measurements for a sample table installation.
    - This will include not only the length and width of the installation zone but also surrounding clearance, obstructions (like pillars or electrical panels), and flooring conditions.
    - The sheet will act as a reference guide during the installation, helping technicians position the furniture with confidence and precision.
    - Learners will be encouraged to include simple diagrams or sketches if necessary, to support their measurements with visual clarity.
    - This process reinforces the importance of clear communication, thorough site assessment, and careful preparation in professional furniture fitting.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Site Measurement and Documentation Practice

Group Size: 3–5 participants

Materials

- Measuring tapes or laser distance meters
- Printed site measurement sheets
- Clipboards and pens
- Sample layout or floor zone marked with tape
- Calculator (optional)

Activity Duration: 45–60 minutes

Instructions

1. Divide participants into groups and assign each a designated mock site area marked on the classroom or workshop floor.
2. Provide each group with a measurement sheet and tools.
3. Instruct them to measure the assigned area's length, width, and height, including any relevant clearances or obstructions.
4. Groups will record the data clearly in the provided sheet, maintaining correct units and labels.
5. Each group will then prepare a summary documentation sheet for a mock table installation in the measured area.
6. Groups present their documentation, explaining how the data supports installation planning.

Activity	Duration	Resources used
Site Measurement and Documentation Practice	45-60 minutes	Measuring tapes or laser distance meters, Printed site measurement sheets, Clipboards and pens, Sample layout or floor zone marked with tape, Calculator (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Demonstrate basic measurement technique before the activity, showing how to use the tape or laser tool accurately.
- Ensure consistency in units (e.g., mm or cm) by reminding groups to check unit labels while recording.
- Guide with simple prompts, such as “What measurement are you taking now?” or “How would this affect table placement?”

Exercise

Multiple Choice Questions (MCQs)

1. Which of the following tools is most suitable for measuring long straight distances in a large hall?
   a) Spirit level
   b) Plumb bob
   c) Laser distance meter
   d) Angle finder
   Answer: c) Laser distance meter

2. What is the purpose of conducting a site recce before furniture fabrication?
   a) To deliver materials early
   b) To take photographs of the team
   c) To gather accurate site data and identify constraints
   d) To clean the site
   Answer: c) To gather accurate site data and identify constraints

3. Who among the following is least likely to be involved directly in furniture installation activities?
   a) Electrician
   b) HVAC technician
   c) Furniture installer
   d) Data entry operator
   Answer: d) Data entry operator

4. Which of the following is a correct way to mark a hazard on-site?
   a) Hide it using materials
   b) Use hazard tape or cones
   c) Wait for someone to notice
   d) Ignore it if it looks minor
   Answer: b) Use hazard tape or cones

Fill in the Blanks

1. A _____ is used to check the level or slope of a surface to ensure it is perfectly horizontal or vertical.
   Answer: spirit level

2. Measurements must be recorded using consistent _____ such as millimeters or centimetres.
   Answer: units

3. A _____ sheet is used to document all the dimensions and site-specific observations during a recce.
   Answer: site measurement

4. Civil workers, plumbers, and electricians are examples of on-site _____ who may affect installation readiness.

   Answer: personnel / agencies

Match the following

1. Match Column A with Column B:

Column A	Column B
1. Measuring tape	a) Measures long room dimensions
2. Laser distance meter	b) Confirms floor or wall alignment
3. Spirit level	c) Measures short or curved distances

   Answers: 1 - c) , 2 - a) , 3 - b)

2. Match Column A with Column B:

Column A	Column B
1. Loose flooring	a) Highlight using chalk or cones
2. Water seepage area	b) Mark with hazard tape
3. Exposed electrical wire	c) Use signage and report immediately

   Answers: 1 - a) , 2 - b) , 3 - c)

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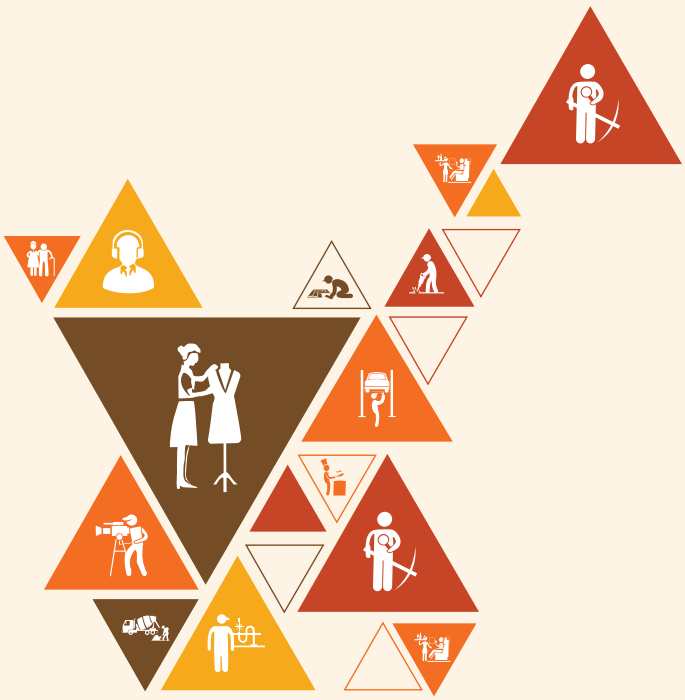
6 Joinery, Fabrication, and Assembly of Components



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Describe the step-by-step process of fabricating a wooden furniture item, beginning from selection of materials and planning of dimensions, through marking, jointing, and component assembly, using a wooden table as a working example.
2. Prepare a complete bill of materials (BOM) for the construction of a wooden table, listing dimensions, material types, and quantity required for each part such as tabletop, legs, apron, and fasteners.
3. Estimate the total amount of wood, screws, adhesives, brackets, and fittings needed to complete a table fabrication job, while accounting for potential material loss and cutting margin.
4. Demonstrate how planning tasks such as layout of components on raw boards, tool readiness, and cut sequencing can help minimize wastage and improve efficiency during furniture making.
5. Identify and describe commonly used joints in carpentry such as butt, lap, mortise and tenon, dowel, and dado joints, highlighting the role each plays in terms of strength, appearance, and load support.
6. Explain where specific joints should be applied within the table structure — for example, mortise and tenon for leg-to-apron joins, dowel joints for edge-to-frame connections, and lap joints for internal bracing.
7. Use measuring tools, marking gauges, chisels, and saws to accurately mark, cut, and form wood joints according to design requirements, ensuring the measurements align with drawing specifications.
8. Reinforce joints using adhesives, dowels, or screws as per requirement, and describe how each method contributes to the durability and stability of the final furniture product.
9. Construct mortise and tenon and dowel joints practically on table components, ensuring smooth fit, correct angle, and readiness for assembly.
10. Demonstrate how to apply joinery techniques by combining prepared joints with appropriate fittings and clamping tools to assemble a table frame with correct alignment and stability.
11. Secure different table parts using fasteners, adhesives, and clamps, while ensuring squareness, edge flushness, and angle precision during the joining process.
12. Conduct checks during joint formation to ensure correct spacing, joint strength, and alignment before proceeding to surface finishing.
13. Describe the process of surface preparation, including sanding of all components, removing splinters or dust, and correcting defects using fillers and sealants before applying surface finishes.
14. Identify surface defects such as scratches, gaps, knots, or uneven patches, and demonstrate how to treat each using correct methods for a clean final appearance.
15. Prepare the table's surface and edges for the selected type of finish, such as matte polish, clear varnish, or stain, depending on product design and user requirement.
16. Assemble the pre-finished components of the wooden table in the correct order — typically legs to apron, apron to tabletop — using tools such as screwdrivers, drills, and clamps.
17. Install corner blocks, support rails, or fitting plates to reinforce the table structure, and ensure that all screws and hardware are placed securely.
18. Test the stability of the assembled table by checking for level balance, load-bearing capability, and joint movement before final delivery or installation.

19. Perform a final inspection of the table using visual checks, measuring tools, and physical testing to ensure all structural and aesthetic standards are met.
20. Identify and correct any detected defects such as wobbly legs, cracked joints, or unfinished edges using sanding, tightening, or component replacement techniques.
21. Document the completion of the fabrication and assembly process, recording details such as time taken, tools used, materials consumed, and any issues faced.
22. Prepare a comprehensive job card that reflects the table's fabrication lifecycle from BOM creation to final inspection, including remarks on quality checks and repairs conducted.
23. Communicate clearly and professionally with the supervisor or project head in case of delays, material mismatch, technical faults, or any deviation from the original product plan, and support this with written records.

Unit 6.1: Product Fabrication and Material Planning

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the step-by-step process of fabricating a wooden table — from selecting raw material to pre-assembly.
2. Prepare a bill of materials (BOM) and cutting list detailing each component's dimensions, quantities, and material types.
3. Estimate the required quantities of wood, adhesives, fasteners, and fittings for table production while factoring in wastage allowance.
4. Demonstrate how planned layout of material, dimension cutting, and organized tool deployment enhance efficiency and reduce production loss.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to fabricate a wooden table by understanding the entire process—from choosing raw materials to pre-assembly. Learners will explore how to prepare a bill of materials (BOM), estimate quantities of required materials, and organize tools and cutting plans. The unit also focuses on how efficient material planning reduces wastage and improves production quality.

Ask

Ask the participants the following questions:

- What is a bill of materials (BOM) used for in furniture making?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Product Fabrication and Material Planning

In this session, participants will gain a thorough understanding of how to fabricate a wooden table through structured steps and careful material planning. They will explore the entire process—from selecting raw materials to preparing a detailed bill of materials and optimizing workflow during production. The unit emphasizes both precision and efficiency, helping learners develop planning and execution skills essential for quality furniture production.

1. **Step-by-step process of fabricating a wooden table — from selecting raw material to pre-assembly**
   - **Material Selection**

     Begin by selecting the most suitable wood material (e.g., solid wood like teak, plywood, or MDF) based on the purpose, aesthetic, and structural needs of the table. Ensure materials are seasoned (dried) to prevent warping, and inspect for knots, cracks, or insect damage.
   - **Measurement and Marking**

     Using layout drawings as reference, accurately transfer dimensions onto the selected wood. Use tools such as a measuring tape, try square, pencil, and chalk for straight lines and accurate angles.
   - **Cutting Components**

     Carefully cut the marked pieces using appropriate tools like table saws, circular saws, or hand saws. Major parts include table legs, top panel, aprons, and stretchers. Accuracy in this step ensures good fit during assembly.
   - **Surface Preparation**

     Smoothen the cut components using sandpaper or mechanical sanders. This prepares surfaces for joinery and finishing, ensuring safe handling and a polished final appearance.
   - **Pre-assembly Check:**

     Before applying adhesives or fixings, assemble the components temporarily to check for alignment, proper fitting, balance, and structural stability. Adjust if needed.

2. **Preparation of bill of materials (BOM) and Cutting List**
   - **Bill of Materials (BOM)**

     Create a detailed list of all components required for the table—such as tabletop, four legs, side rails, and hardware. For each item, specify dimensions, material type, and quantity.
   - **Cutting List**

     Develop an optimized cutting plan that shows how larger wood boards will be divided into smaller parts. This layout helps reduce material wastage and ensures efficient board usage.
   - **Standard Format**

     Use a consistent and easy-to-read table format with labelled rows and columns. Include part name, quantity, size, thickness, material, and any notes (e.g., grain direction or finish).
   - **Purpose**

     A BOM and cutting list streamline procurement, assist the fabrication team during cutting and assembly, and act as a progress tracking sheet throughout production.

3. **Estimation of Materials Including Wastage Allowance**
   - **Wood Quantity Estimation**

     Calculate total board feet or square feet required based on all component dimensions. Adjust for joint allowances and board thickness.
   - **Adhesives, Fasteners, and Fittings**

     Estimate adhesive needs based on total surface area to be bonded. List quantities and types of fasteners like screws, bolts, dowels, brackets, and their locations in assembly.
   - **Wastage Allowance**

     Include 5–10% extra material for potential mistakes, knot removal, or trimming errors. This is crucial to avoid delays or last-minute shortages.
   - **Budget and Procurement Efficiency**

     Proper estimation ensures cost control, helps in accurate ordering, and avoids excess leftovers that may go unused.

4. **Efficient Layout Planning, Cutting, and Tool Deployment**
   - **Material Layout Planning**

     Lay out raw boards and mark cuts based on the cutting list. Consider grain direction, defects, and edge trimming while planning to maximize usable wood.
   - **Cutting Strategy**

     Cut larger components first and utilize off-cuts for smaller parts when possible. This approach optimizes wood usage and minimizes scrap.
   - **Tool Setup and Organization**

     Arrange tools (e.g., saws, clamps, drills, measuring tools) at workstations in logical order to minimize back-and-forth movement. Regular tool maintenance also ensures precision and safety.
   - **Benefits to Production Efficiency**

     Well-organized layouts and tool management lead to faster work, fewer mistakes, improved safety, and reduced material loss—key to successful furniture production.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Planning a Wooden Table Fabrication Process

Group Size: 4–6 participants

Materials

- Whiteboard or flipchart
- Markers
- Sample table design sheet (with dimensions)
- BOM and cutting list templates (printed)
- Sticky notes (optional)

Activity Duration: 60 minutes

Instructions

1. **Introduction**

   Explain the objective: to prepare a complete fabrication plan for a wooden table, focusing on material planning, efficiency, and workflow. Emphasize the importance of accuracy, teamwork, and thoughtful tool organization in real workshop environments.

2. **Group Task**

   Each group will

   - Review the table design provided.
   - Identify and list raw materials for each part of the table (e.g., legs, top, aprons).
   - Prepare a Bill of Materials (BOM) and cutting list with dimensions, quantities, and material types.
   - Draft a material layout plan to minimize wastage and optimize cutting.
   - Outline a step-by-step fabrication plan covering marking, cutting, surface prep, and pre-assembly.

3. **Group Presentations**

   Each group presents:

   - Their BOM and cutting list
   - Material layout plan
   - Fabrication sequence and tool usage strategy
   - Considerations for reducing production loss or managing changes

   Encourage quick peer feedback and discussion.

4. **Debriefing and Key Takeaways**

   Facilitator guides a discussion on:

   - Different planning strategies across groups
   - Importance of proper tool arrangement and workflow planning
   - Lessons learned about minimizing wastage and improving efficiency

Examples of Scenario Card

Scenario 1
Use only standard-sized boards (e.g., 8ft x 4ft) to create all parts. How will you adjust your cutting layout?

Scenario 2
One of your key tools (e.g., electric sander) is unavailable. What alternatives can you use and how does this affect your timeline?

Scenario 3
You are instructed to reduce wastage by 10%. Which adjustments can be made to your cutting and material plan?

Activity	Duration	Resources used
Planning a Wooden Table Fabrication Process	60 minutes	Whiteboard or flipchart, Markers, Sample table design sheet (with dimensions), BOM and cutting list templates (printed), Sticky notes (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Provide BOM and cutting list templates to guide structure.
- Ensure each group has equal access to the same design details.
- Circulate and prompt deeper thinking with questions like
  - o “What made you choose this cutting order?”
  - o “How did you factor in wastage?”

Unit 6.2: Types of Joints and Their Applications

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify and describe basic and advanced joint types such as butt, lap, dowel, dado, and mortise & tenon used in furniture making.
2. Explain the mechanical and aesthetic purpose of each joint, such as how mortise & tenon joints offer strength for table legs.
3. Select appropriate joints based on load, alignment, and visual finish, especially when working on the various parts of a wooden table.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the different types of joints used in furniture making, such as butt, lap, dowel, dado, and mortise & tenon joints. You will learn how each joint works, its purpose in providing strength or appearance, and how to choose the right joint based on function and design needs—especially when building parts of a wooden table.

Ask

Ask the participants the following questions:

- Can you name one type of joint that is used to connect two pieces of wood in furniture?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Types of Joints and Their Applications

Understanding different types of joints is essential in furniture making, as each joint serves a specific purpose based on strength, alignment, and design. Below are main joints used in woodworking, particularly in constructing items like wooden tables, along with their applications:

1. **Joint Types in Furniture Making**

   Furniture joints are fundamental to both the strength and visual appeal of a finished piece. They determine how parts connect, how much weight the structure can support, and how it looks. Below are some common types used in furniture construction:

   Butt Joint

   - **Description**

     This is the most basic joint, where the end of one board is simply butted up against the edge or face of another board.

   - **Use Case**

     It's quick to assemble and requires minimal tools, making it suitable for simple projects or rough carpentry.

   - **Limitation**

     It is mechanically weak on its own and often needs to be reinforced with nails, screws, or glue. Without reinforcement, it cannot hold much load or resist movement.

   - **Common In**

     Temporary structures, basic boxes, internal framing, or areas not exposed to stress or aesthetic scrutiny.

   Lap Joint

   - **Description**

     Formed by overlapping two boards so they partially or fully cover each other. In a half-lap, each piece is notched to half its thickness.

   - **Use Case**

     Offers increased gluing surface and a more stable connection than butt joints.

   - **Strength:**

     Moderately strong, especially when glued or pinned. Works well in structural parts where components need to lie flush.

   - **Common In**

     Drawer frames, light structural frameworks, or reinforcing furniture corners.

   Dowel Joint

   - **Description**

     Wooden dowels (small round pins) are inserted into aligned holes between two pieces of wood to ensure precise alignment and stronger bonding.

- **Use Case**

  An excellent alternative to screws or nails when a clean, fastener-free exterior is desired.

- **Strength**

  Strong and reliable, particularly when multiple dowels are used and glued properly.

- **Common In**

  Chair frames, cabinets, tabletops, and modern flat-pack furniture where visual cleanliness is key.

Dado Joint

- **Description**

  A dado is a groove cut across the grain of a board, into which the end of another board is inserted. It creates a strong, locked-in connection.

- **Use Case**

  Ideal for fixed shelving or internal drawer dividers that carry vertical or horizontal load.

- **Strength**

  Very strong due to increased surface contact; resists side-to-side and downward forces well.

- **Common In**

  Bookshelves, drawer interiors, and cabinets.

Mortise & Tenon Joint

- **Description**

  A rectangular “tenon” at the end of one piece fits precisely into a “mortise” cavity in another. This time-tested joint is known for its tight fit and mechanical strength.

- **Use Case**

  Used in high-stress, load-bearing areas like table legs and chair frames.

- **Strength**

  Extremely strong, especially when glued. Offers superior resistance to twisting, pulling, and movement.

- **Common In**

  Fine furniture like dining tables, benches, and heirloom-quality woodwork where longevity and strength are essential.

2. Mechanical and Aesthetic Purpose

Each type of joint not only serves a structural (mechanical) purpose but also contributes to the overall look (aesthetic) of a piece of furniture.

Mortise & Tenon Joint

- **Mechanical**

  One of the strongest joints. Provides excellent load-bearing capacity and resists movement in multiple directions.

- **Aesthetic**

  Can be completely hidden or featured as a design element (e.g., exposed tenons with decorative wedges or pegs). Often used in visible, high-quality furniture due to its craftsmanship.

Dowel Joint

- **Mechanical**

  Adds internal strength and accuracy, especially useful in mass-produced furniture. Dowels help ensure that parts fit perfectly and stay aligned.

- **Aesthetic**

  Completely concealed within the wood, leaving a clean and modern look with no visible joinery or fasteners. Ideal for furniture with a sleek, minimalist design.

Lap and Dado Joints

- **Mechanical**

  Both offer decent mechanical strength. Lap joints are used in framing, while dado joints firmly hold cross pieces like shelves or dividers.

- **Aesthetic**

  Generally not visible in the final product unless intentionally exposed. They are considered more functional than decorative, but still contribute to neat internal construction.

Butt Joint

- **Mechanical**

  The weakest of the joints. Without reinforcement, it can separate easily under stress or over time.

- **Aesthetic**

  Seams are obvious, and unless the joint is finished or hidden inside the structure, it may look rough or unfinished. Not ideal for visible areas of fine furniture.

3. Choosing Joints Based on Application

The choice of joint should match the purpose, load, alignment needs, and desired appearance of the final furniture piece. Here's how different joints suit specific parts of a wooden table:

Attaching Table Legs to the Frame

- **Recommended Joint: Mortise & Tenon**

  This joint offers unmatched strength and long-term durability. It ensures legs remain stable and square, even under daily use or movement.

Joining Aprons to Legs or Other Frame Components

- **Recommended Joint: Dowel Joint or Lap Joint**

  Use dowel joints for precise alignment and a clean, hidden appearance. Use lap joints if a slightly easier and still strong option is needed for a more traditional build.

Attaching Tabletop to the Base

- **Recommended Solutions:**
  - Hidden dado joints, cleats, or Z-clips for securing the tabletop without visible hardware.
  - Allows for wood expansion and contraction while keeping the appearance neat.
  - Avoid rigid joints that may cause cracking due to seasonal wood movement.

Incorporating Drawers or Shelf Elements Under the Tabletop

- **Recommended Joint: Dado Joint**

  Dadoes provide a solid and clean way to support drawer frames or small under-table shelves. They maintain structural alignment and keep storage parts securely in place.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Exploring Furniture Joints Through Design Application

Group Size: 4–5 participants per group

Materials

- Pre-cut wooden joint samples or joint flashcards (butt, lap, dowel, dado, mortise & tenon)
- Chart paper or whiteboard
- Markers
- Printed diagrams or images of a wooden table (optional: cardboard or wood model pieces)
- Glue or Velcro for assembling mock structures (optional)

Activity Duration: 45–60 minutes

Instructions

Step 1
Distribute Joint Samples and Table Diagrams

Each group receives:

- A set of wooden joint samples or illustrated flashcards.
- A diagram or image of a wooden table with labelled parts (legs, frame, apron, tabletop, drawer/shelf).

Groups will begin by identifying each joint and reviewing their features.

Step 2
Group Matching & Application Discussion

Each group discusses:

- Where each joint is best used in the table structure and why.
- The mechanical strength and visual finish needed for each part.
- Which joints to avoid in specific locations (e.g., not using a butt joint for legs).

They then match each joint sample or flashcard to the correct table part on the diagram.

Step 3

Presentation & Justification

Each group presents their chosen joint-to-part matches.

They explain:

- Why each joint was chosen based on load, alignment, and finish.
- Any trade-offs they considered (e.g., strength vs. appearance).

Peers and facilitator give feedback based on practicality and correctness.

Activity	Duration	Resources used
Exploring Furniture Joints Through Design Application	45-60 minutes	Pre-cut wooden joint samples or joint flashcards (butt, lap, dowel, dado, mortise & tenon) Chart paper or whiteboard, Markers, Printed diagrams or images of a wooden table (optional: cardboard or wood model pieces), Glue or Velcro for assembling mock structures (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Ensure all groups understand joint types by briefly reviewing them before the activity begins.
- Prompt critical thinking with questions like: “What would happen if a weak joint was used for the legs?” or “Is appearance more important for a hidden drawer joint?”
- Encourage creativity in presentations—groups can sketch, use models, or act out a brief “construction demo.”

Unit 6.3: Processes to Build Wood Joints

Unit Objectives

At the end of this unit, participants will be able to:

1. Demonstrate how to mark, cut, and shape joints using chisels, routers, and drills, ensuring accuracy in depth, angle, and width.
2. Practice building specific joints like mortise & tenon and dowel connections to fit structural components of a table frame.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss common workplace conflicts that arise in carpentry settings, such as tool sharing issues, task overlap, and miscommunication. We will also learn how to resolve these conflicts using respectful behavior, calm communication, and empathy. The unit highlights how professional conduct like punctuality and reliability helps maintain a positive work environment and improves team cooperation.

Ask

Ask the participants the following questions:

- Have you ever seen two workers argue over a tool or task at the workplace? What happened, and how was it solved?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Processes to Build Wood Joints

This session focuses on the step-by-step process of constructing wooden joints using hand and power tools. Participants will understand how to accurately mark, cut, and assemble joints that are not only strong and functional but also visually well-finished. Through practical exercises, they will build confidence in handling tools like chisels, routers, and drills, and will develop skill in constructing commonly used joints such as mortise & tenon and dowel joints.

1. **How to mark, cut, and shape joints using chisels, routers, and drills?**
    - **Marking for Precision**

      Participants will begin by learning how to mark joint outlines accurately using tools like measuring tapes, try squares, and marking gauges. Proper marking helps define the depth, width, and angle of each cut, ensuring that the pieces fit together with minimal adjustment.
    - **Using Chisels for Fine Shaping**

      Chisels are used to cleanly shape and finish smaller or more detailed areas of the joint, such as tenon shoulders or the corners of a mortise. Proper grip and cutting angle are emphasized to avoid damaging the material.
    - **Shaping with Routers for Consistency**

      Routers help in removing material evenly over a flat surface, ideal for cutting dado joints or cleaning out mortise slots. Learners will practice setting depth stops and guiding the router smoothly along the marked path.
    - **Drilling Holes for Dowel Joints**

      Drills are used to create precisely aligned and uniformly deep holes for dowels. Learners are trained to use drill guides or jigs to maintain straight entry and accurate spacing, critical for a snug and flush joint fit.
    - **Tool Control and Safety**

      Throughout the process, emphasis is placed on handling tools correctly and safely. Participants will learn to check their cuts against markings and ensure that surfaces are smooth and clean before assembly.

2. **Practice building specific joints like mortise & tenon and dowel connections**
    - **Constructing Mortise & Tenon Joints**

      Learners will practice creating mortise and tenon joints by cutting both the cavity (mortise) and the protruding piece (tenon). Attention is given to ensuring a tight fit, which allows for strong, load-bearing connections—commonly used in table frames and legs.
    - **Dry-Fitting and Adjustment**

      Before gluing, participants will test-fit the parts to ensure alignment and fit. Any necessary adjustments will be made using chisels or sanding tools. This step helps avoid gaps or misalignment in the final assembly.

- **Assembling and Gluing**

  Once the fit is confirmed, joints are glued and clamped properly to ensure strong bonding. Learners are guided in applying even pressure and checking for flush surfaces during curing.

- **Building Dowel Joints**

  Participants will also construct dowel joints by marking and drilling aligned holes in both pieces of wood. Dowels are inserted with adhesive, and the parts are clamped until set, forming a hidden yet strong connection ideal for cabinet frames and tabletops.

- **Achieving Flush Finishes and Stability**

  Special care is taken to ensure that all joints lie flush with the surrounding surface and are structurally stable. This reinforces the dual goal of functional strength and professional visual finish.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Practicing Joint Construction Techniques

Group Size: 4–5 participants per group

Materials Needed

- Pre-cut softwood blocks (for joint practice)
- Measuring tape, try square, marking gauge, pencil
- Chisels, mallet, hand drill or power drill
- Dowels (for dowel joints), adhesive, clamps
- Safety gloves and goggles

Activity Title: Build It Right!" – Joint Making and Assembly Task

Activity Duration: 60 minutes

Instructions

Step 1: Joint Assignment and Planning

Each group is assigned one joint to construct: either a mortise & tenon or a dowel joint.
They begin by

- Studying a simple drawing or reference of the joint.
- Planning dimensions, tool use, and workflow—who will mark, cut, drill, and assemble.

Step 2: Marking, Cutting, and Assembling

Groups perform the following

- Mark the joint layout on provided wood using measuring tools and gauges.
- Cut and shape the joint using chisels, drills, and other tools with a focus on accuracy in width, depth, and angle.
- Assemble the joint using adhesive and clamps (for dowels) or dry-fit (for mortise & tenon). They check the fit, flushness, and joint tightness.

Step 3: Group Demonstration and Reflection

Each group presents their finished joint and explains

- How they planned and executed each step.
- Challenges faced during marking, cutting, or fitting.
- What they would improve in the process.

Facilitator and peers offer observations and practical tips for improvement.

Activity	Duration	Resources used
Practicing Joint Construction Techniques	45-60 minutes	Pre-cut softwood blocks (for joint practice), Measuring tape, try square, marking gauge, pencil, Chisels, mallet, hand drill or power drill, Dowels (for dowel joints), adhesive, clamps, Safety gloves and goggles etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Observe tool handling closely**

  Correct unsafe practices and support those unfamiliar with chisels or drills.
- **Encourage step-by-step thinking**

  Ask groups to explain why they marked or cut a certain way.
- **Promote shared responsibility**

  Ensure all group members take part in at least one hands-on task.

Unit 6.4: Joinery Techniques and Joint Formation

Unit Objectives

At the end of this unit, participants will be able to:

1. Apply tested joinery methods for combining wooden parts using adhesives, clamps, and reinforcing materials.
2. Demonstrate how to align and fit joints with proper pressure and curing time during the table's assembly.
3. Secure jointed components using fasteners while maintaining squareness and structural balance.
4. Check each joint for flush finish, dimensional accuracy, and grip strength.
5. Rectify minor fitting issues during joint formation to avoid defects in final assembly.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss joinery techniques and joint formation used in wooden furniture assembly. The focus will be on applying adhesives and clamps, aligning and securing parts with fasteners, and checking for precision and strength in joints. Participants will also learn how to correct minor fitting issues to ensure that joints are both structurally sound and visually clean during final assembly.

Ask

Ask the participants the following questions:

- What is the purpose of using glue and clamps when joining two wooden parts?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Joinery Techniques and Joint Formation

In this session, we will discuss the step-by-step techniques involved in forming strong and accurate wood joints using adhesives, fasteners, and pressure tools. The focus will be on ensuring precision in alignment, bonding, and structural strength during furniture assembly.

1. **Using Adhesives and Clamps in Joinery**
   - **Applying adhesive correctly**

     A thin, even layer of wood glue must be applied to both mating surfaces to create a strong bond. Uneven application can lead to gaps or weak spots in the joint.
   - **Choosing the right type of glue**

     PVA glue is suitable for most indoor furniture. For high-strength or moisture-resistant joints, epoxy or polyurethane glue may be preferred, depending on the furniture's usage.
   - **Clamping for strength**

     Clamps are applied firmly to keep parts pressed together during curing. Proper pressure ensures the glue is absorbed into the wood fibers and sets correctly without gaps.
   - **Using protective pads under clamps**

     Scrap wood pieces are placed between the clamp jaws and furniture parts to prevent damage to finished surfaces or soft wood when pressure is applied.

2. **Proper Alignment and Pressure Application**
   - **Ensuring accurate positioning before clamping**

     Before clamps are tightened, the wood parts must be aligned correctly. This includes checking that edges are flush and angles are square, especially in frames.
   - **Using measuring tools for accuracy**

     Tools such as try squares, combination squares, and straightedges help check if the joints are aligned properly in both horizontal and vertical planes.
   - **Balanced clamp pressure**

     Applying even pressure from both sides or using multiple clamps helps avoid twisting the assembly. Uneven pressure can result in misalignment or glue seepage.
   - **Allowing sufficient curing time**

     Each adhesive requires a specific drying time (often 30 minutes to a few hours). Avoid handling the joint before it fully cures to ensure durability.

3. **Securing Joints with Fasteners and Maintaining Squareness**
   - **Reinforcing joints with screws or nails**

     Fasteners add mechanical strength, especially for structural parts like table legs and aprons. They hold the joint in place even if glue fails under stress.
   - **Drilling pilot holes to prevent wood splitting**

     Pilot holes guide screws and reduce stress on the wood. They also make it easier to position screws accurately at the desired angle.

- **Checking for squareness with a carpenter's square**

  Squareness ensures that the corners form perfect right angles. A misaligned corner can affect stability and appearance, especially in tables or cabinets.

- **Avoiding over-tightening screws**

  Screws should be driven in firmly but not too tightly, as over-tightening can strip the hole or shift the parts out of alignment.

4. **Inspecting Joint Finish and Strength**

- **Checking for flush joints**

  After assembly, all connecting surfaces should sit level with each other. Flush joints create a clean finish and prevent wobble or uneven surfaces.

- **Measuring for dimensional accuracy**

  Verify the finished size and spacing using a tape measure. Even small measurement errors can lead to fitting problems when assembling large furniture pieces.

- **Testing joint grip after curing**

  Apply gentle force to the joint to check for movement. A well-formed joint should feel solid and should not flex or creak under pressure.

- **Cleaning up excess glue for a clean surface**

  Wipe off any glue squeeze-out immediately with a damp cloth. Once hardened, it is harder to remove and may interfere with painting or polishing.

5. **Correcting Minor Fitting Issues**

- **Fixing tight joints with controlled sanding**

  If a joint is too tight to fit, sand the mating surfaces slightly to improve fit without removing too much material.

- **Adjusting loose joints with shims or glue fillers**

  In case of gaps, thin wood shims or high-viscosity glue can be used to fill and secure the space, restoring tightness and strength.

- **Repositioning misaligned parts before glue sets**

  If a joint shifts while clamping, reposition the parts quickly before the adhesive cures. Re-adjust clamps to restore proper alignment.

- **Using gradual clamp adjustment for fit**

  Tighten clamps a little at a time, alternating sides. This helps slowly draw the pieces together evenly, especially in corner or frame joints.

Say

Let us participate in an activity to study the unit a little more.

Activity

Group Activity: Practicing Joint Assembly with Adhesives and Clamps

Group Size: 4–5 participants per group

Materials

- Pre-cut wooden pieces for joints (e.g., mortise & tenon, dowel, butt)
- Wood glue
- Clamps (C-clamps or bar clamps)
- Measuring tape or square
- Damp cloths (for glue cleanup)
- Sandpaper
- Markers and labels

Activity Duration: 45–60 minutes

Instructions:

Step 1: Planning and Preparation

Each group receives a joint type to assemble (e.g., dowel or mortise & tenon). They examine the parts and plan how to apply glue and clamp the joint properly.

Step 2: Glue and Clamp Application

Participants apply glue, align the joint, and secure it with clamps. They must ensure proper squareness, even pressure, and cleanup of excess glue.

Step 3: Inspection and Peer Review

Once clamped, groups inspect each other's joints for alignment, fit, and cleanliness. The facilitator guides short feedback exchanges.

Activity	Duration	Resources used
Practicing Joint Assembly with Adhesives and Clamps	45-60 minutes	Pre-cut wooden pieces for joints (e.g., mortise & tenon, dowel, butt), Wood glue, Clamps (C-clamps or bar clamps), Measuring tape or square, Damp cloths (for glue cleanup), Sandpaper, Markers and labels etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Observe technique and alignment**

  Guide learners on correct glue application and clamp use. Correct errors gently as they work.
- **Time management**

  Ensure groups don’t rush curing steps. Reinforce why drying time matters for joint strength.
- **Encourage peer review**

  Let participants compare their results and suggest improvements in joint quality and finish.

Unit 6.5: Surface Preparation and Finishing

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain how to prepare wooden surfaces for finishing by sanding, smoothening, and correcting defects like splinters or cracks.
2. Identify and treat minor surface imperfections to ensure an even texture and colour absorption.
3. Prepare the table's surfaces for polish or sealant using the appropriate abrasive tools and fillers.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to prepare wooden surfaces before applying finishes such as polish or sealant. Participants will learn proper sanding techniques, ways to smoothen rough textures, and methods to fix minor surface defects like splinters or cracks. The unit also explains how to ensure the surface is clean and ready to absorb the finish evenly, resulting in a smooth and professional appearance.

Ask

Ask the participants the following questions:

- Why is it important to sand a wooden surface before polishing it?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Surface Preparation and Finishing

In this session, we will study how to prepare wooden surfaces for finishing to ensure a smooth, defect-free, and visually appealing result. Proper surface preparation is critical for achieving professional-quality finishes that enhance both durability and appearance.

1. **Sanding and Smoothening the Surface**
   - **Purpose of Sanding**

     Sanding is essential to remove imperfections such as tool marks, rough edges, or uneven textures left after cutting or shaping. This process improves surface quality, ensuring better adhesion of finishes like polish, paint, or sealant.
   - **Types of Abrasives Used**

     Begin with coarse-grit sandpaper (e.g., 80–120) to shape and remove high spots. Progressively move to finer grits (180–220) for smoothing. Each grade removes scratches from the previous one, leading to a refined finish.
   - **Sanding Techniques**

     Flat areas can be machine sanded for efficiency, while curved or detailed parts require hand sanding for precision. Always sand in the direction of the wood grain to prevent scratches and fiber tearing.
   - **Expected Outcome**

     The final surface should feel even to touch, with no visible scratches, splinters, or ridges. A properly sanded surface enhances the appearance and durability of any finishing product applied later.

2. **Treating Surface Imperfections**
   - **Identifying Defects**

     Scrutinize the wooden surface for common flaws like small cracks, nail holes, dents, or scratches. These imperfections can affect the uniformity and appearance of the final finish if not treated properly.
   - **Use of Fillers**

     Wood fillers or putty are applied to damaged areas to level the surface. The filler should match the wood color or be stainable. Apply with a spatula or finger and ensure the filler fills the gap completely.
   - **Post-Filling Preparation**

     Once the filler has dried (based on manufacturer instructions), sand the area lightly to integrate it smoothly with the surrounding surface. This prevents noticeable patches after polish or sealant is applied.
   - **Result**

     A uniform surface free from blemishes, ensuring consistent color absorption and smooth texture when finished.

3. **Final Surface Readiness for Polish or Sealant**

- **Cleaning the Surface**

  Use a tack cloth or soft brush to remove dust created during sanding. Dust particles can interfere with finish adhesion, leading to a rough or blotchy final appearance.

- **Checking for Smoothness**

  After cleaning, gently run your hand over the surface to ensure no rough spots or unfinished areas remain. If necessary, re-sand lightly to correct inconsistencies.

- **Moisture Consideration**

  Ensure the surface is completely dry before applying any finish. Excess moisture can cause wood to swell, delay drying times, or lead to poor bonding of the polish or sealant.

- **Preparing for Application**

  Depending on the final finish (e.g., water-based polish, oil-based stain, lacquer), the wood may require additional priming or sealing. This step ensures a uniform and durable finish.

Say

Let us participate in an activity to study the unit a little more.

Activity

Group Activity: Smooth to Finish" – Preparing Wood Panels for Polishing

Group Size: 4–5 participants per group

Materials

- Raw wooden panels with minor surface imperfections
- Sandpaper (coarse and fine grit)
- Wood filler or putty
- Spatulas or applicator sticks
- Dust brushes or dry cloths
- Gloves and safety masks

Activity Duration: 45–60 minutes

Instructions:

Step 1: Surface Inspection

Each group receives a wooden panel with rough edges, splinters, or small cracks. They inspect the surface and mark areas needing correction.

Step 2: Surface Preparation

Groups use sandpaper to smooth the surface, starting with coarse grit and moving to finer grit. They fill cracks or dents using wood filler and allow it to dry.

Step 3: Final Finishing Readiness

After the filler sets, they sand those areas to match the rest of the surface and wipe the panel clean, making it ready for finishing.

Step 4: Group Reflection

Each group discusses:

- What problems they faced during sanding or filling
- How they ensured the surface was ready for polish
- Importance of preparing a clean and smooth surface

Activity	Duration	Resources used
Smooth to Finish" – Preparing Wood Panels for Polishing	45-60 minutes	Raw wooden panels with minor surface imperfections, Sandpaper (coarse and fine grit), Wood filler or putty, Spatulas or applicator sticks, Dust brushes or dry cloths, Gloves and safety masks etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Ensure all students follow basic safety measures (e.g., use gloves/masks when sanding or applying filler).
- Monitor how participants differentiate between sanding stages and treat surface defects properly.
- Encourage peer feedback on each group's surface preparation technique.

Unit 6.6: Product Assembly and Installation

Unit Objectives

At the end of this unit, participants will be able to:

1. Demonstrate the assembly of a wooden table by aligning parts in sequence and tightening fasteners such as corner brackets or screws.
2. Inspect the final structure for flatness, wobble, joint gaps, and alignment with installation space.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the step-by-step process of assembling and installing a wooden table. Participants will learn how to align different parts accurately, use appropriate fasteners like screws and brackets, and ensure the final product is stable and well-fitted. The unit also covers how to inspect the assembled furniture for any defects such as wobbling, uneven surfaces, or joint gaps before installation.

Ask

Ask the participants the following questions:

- What is the first thing you should check before starting the assembly of a wooden table?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Product Assembly and Installation

In this session, learners will study the practical process of assembling a wooden table and ensuring it is securely installed in its intended space. The focus is on following a proper sequence, using fasteners correctly, and checking for structural accuracy.

1. **Aligning and Joining Table Components**

   Before fastening, it is critical to align each component in the correct sequence. This involves:

   - Positioning the table legs, aprons (side supports), and tabletop in the correct orientation based on design plans or pre-drilled holes.
   - Using measuring tools, squares, or clamps to ensure angles are accurate and edges are flush.
   - Temporarily clamping or lightly tacking parts to test fit and structure before permanent fastening.

   Using Fasteners Securely

   Once aligned, participants will learn how to join the parts using common fasteners like screws, corner brackets, dowels, or bolts:

   - Applying fasteners with the right tool (e.g., screwdriver, drill driver) using moderate, even pressure.
   - Ensuring fasteners are sunk at the correct angle and depth to prevent wood cracking, loosening, or surface damage.
   - Reinforcing high-stress joints (like legs and aprons) with corner brackets or wood glue where needed.

2. **Inspection of Final Structure**

   After assembly, participants inspect the finished table to verify build quality and readiness for use or installation. Key checks include:

   - **Flatness**

     Placing a straightedge or level on the tabletop to ensure it lies evenly without curves or bulges.
   - **Wobble**

     Testing the table by gentle movement or placing weight to see if legs are uneven or unstable.
   - **Joint Gaps**

     Checking that joints are tight with no visible gaps between connected parts, ensuring proper fitting.
   - **Alignment with Installation Space**

     Ensuring that the assembled table fits correctly in its designated space (e.g., kitchen, study, or office area) without tilting or obstruction.

Say

Let us participate in an activity to study the unit a little more.

Activity

Group Activity: Assembling and Inspecting a Wooden Table

Group Size: 4–5 participants per group

Materials

- Disassembled wooden table parts (legs, apron, top, etc.)
- Fasteners (screws, corner brackets)
- Screwdrivers or cordless drill
- Measuring tape and spirit level
- Inspection checklist
- Pencil and notepad

Activity Duration: 60–75 minutes

Instructions

Step 1: Distribute Materials and Assign Roles

Each group receives one disassembled table set and fasteners. Assign roles such as lead assembler, measurer, fastener, and final inspector.

Step 2: Table Assembly

The team follows step-by-step assembly:

- Aligns legs and aprons accurately.
- Uses tools to fasten joints securely without over-tightening.
- Ensures squareness using measuring tools.

Step 3: Inspection and Adjustment

After assembly, the group uses the checklist to inspect:

- Flatness of the tabletop
- Gaps at joints
- Stability and wobble
- Overall alignment with floor
- Make any necessary adjustments.

Step 4: Team Presentation

Each group explains:

- Their assembly approach
- Any challenges faced
- Final observations from the inspection

Activity	Duration	Resources used
Assembling and Inspecting a Wooden Table	45-60 minutes	Disassembled wooden table parts (legs, apron, top, etc.), Fasteners (screws, corner brackets), Screwdrivers or cordless drill, Measuring tape and spirit level, Inspection checklist, Pencil and notepad etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Ensure each group understands safe use of tools before beginning.
- Encourage teamwork and role rotation for hands-on learning.
- Walk around to monitor correct alignment, fastener usage, and structural balance.

Unit 6.7: Quality Inspection and Defect Rectification

Unit Objectives

At the end of this unit, participants will be able to:

1. Conduct systematic quality checks on the finished table using measuring tools and visual inspection.
2. Identify errors like misaligned joints, surface scratches, or instability and choose suitable methods for correction.
3. Rework or reinforce parts to meet quality benchmarks.
4. Finalize the product only after ensuring it complies with dimensional, structural, and finishing standards.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to inspect wooden furniture for quality and ensure it meets design and finishing standards. Learners will understand how to use tools like measuring tape and spirit level, identify defects such as misaligned joints or scratches, and carry out simple corrections to improve product durability and appearance. Emphasis will be placed on step-by-step checking and final approval procedures before installation or delivery.

Ask

Ask the participants the following questions:

- What are some common defects you might see in a finished wooden table?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Quality Inspection and Defect Rectification

In this session, we will discuss how to carry out thorough quality inspections on finished furniture products, specifically a wooden table. Participants will learn to use measurement and visual tools to detect alignment issues, surface defects, or structural weaknesses. This unit also covers how to correct such issues and ensure the product meets design and functional standards before final handover.

1. **Conducting Systematic Quality Checks**
   - Begin inspection from the base structure (legs, joints) and move upward to the tabletop.
   - Use tools like
     - Measuring tape – to check length, width, and height.
     - Spirit level – to confirm the tabletop is even.
     - Try square – to verify right angles at corners.
   - Perform a visual check for surface issues, joint fitting, and overall balance.
   - Ensure all components align with the product's design drawing.

2. **Identifying and Understanding Common Defects**
   - Observe and record common issues like:
     - Loose or misfitting joints.
     - Uneven table legs causing wobbling.
     - Scratches, dents, or unpolished spots.
   - Assess if the problem is:
     - Cosmetic (e.g., rough finish, uneven stain).
     - Structural (e.g., weak connections, lack of stability).
   - Understand possible causes such as improper gluing, misalignment during assembly, or poor handling.

3. **Rectifying Errors through Rework and Reinforcement**
   - Use sandpaper or abrasives to remove minor surface scratches or blemishes.
   - Re-align joints if necessary; apply adhesive and clamp again for strength.
   - Add fasteners like screws or brackets for added reinforcement.
   - Ensure rework blends with the original design and doesn't compromise appearance or function.

4. **Verifying Product Readiness and Compliance**
   - Check final dimensions, joint stability, surface finish, and polish uniformity.
   - Confirm the furniture stands evenly without rocking or gaps at the base.
   - Use a checklist to ensure every parameter meets set quality standards.
   - Approve the product only when it meets:

- Dimensional accuracy
- Structural strength
- Visual finish

- Mark and record the inspection as completed before delivery or installation.

Say

Let us participate in an activity to study the unit a little more.

Activity

Group Activity: "Inspector's Checklist – Spot and Fix!"

Group Size: 4–5 participants per group

Materials

- A sample assembled wooden table (with intentional minor defects like uneven legs, scratches, or misaligned joints)
- Measuring tape, spirit level, try square
- Sandpaper, filler, clamps, screwdrivers, or fasteners
- Printed defect checklist (includes joint alignment, surface finish, stability, etc.)
- Pens or markers

Activity Duration: 45–60 minutes

Instructions

Step 1: Defect Identification

Each group is given a sample table and a quality inspection checklist.

Participants visually and physically examine the table using measuring tools and check off any defects (e.g., loose joints, uneven finish, or lack of structural balance).

Step 2: Suggest and Execute Fixes

Groups discuss the appropriate method to rectify each issue (e.g., sanding a rough patch, tightening a screw, realigning a leg).

They then apply basic corrections where possible using the provided materials.

Step 3: Final Re-Check and Presentation

Once corrections are made, groups perform a final inspection.

They present their findings, explain the defects they spotted, and demonstrate how they resolved them.

Activity	Duration	Resources used
"Inspector's Checklist – Spot and Fix!"	45-60 minutes	A sample assembled wooden table (with intentional minor defects like uneven legs, scratches, or misaligned joints), Measuring tape, spirit level, try square, Sandpaper, filler, clamps, screwdrivers, or fasteners, Printed defect checklist (includes joint alignment, surface finish, stability, etc.), Pens or markers etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Encourage role rotation**

  Assign roles like inspector, recorder, and fixer to promote participation.
- **Focus on observation and reasoning**

  Ask follow-up questions like "Why did you prioritize that defect first?" to deepen analysis.
- **Reinforce safety and care**

  Ensure proper use of tools and emphasize that minor adjustments must maintain structural integrity.

Unit 6.8: Documentation and Reporting

Unit Objectives

At the end of this unit, participants will be able to:

1. Maintain accurate records of materials used, time spent, tool usage, and repair work for a given table fabrication job.
2. Prepare a structured job card tracking all stages — from cutting and assembly to quality checks.
3. Communicate job progress, delays, or material issues clearly to the supervisor using written documentation.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to properly document and report the progress of furniture fabrication work. Participants will learn how to maintain records of materials, tools, and time used, and how to prepare job cards that track each step of the assembly process. The unit also covers how to report issues or delays clearly to supervisors, helping ensure quality and coordination at every stage.

Ask

Ask the participants the following questions:

- What is a job card used for in furniture making?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Documentation and Reporting

In this session, we will study how accurate documentation and timely reporting help ensure smooth coordination, quality control, and accountability during table fabrication and installation.

1. **Maintaining Work and Material Records**
   - Keep a daily log of materials used such as types of wood, adhesives, nails, and polish.
   - Record tool usage for each task to help in maintenance and tool tracking.
   - Track time spent on key activities like cutting, assembling, sanding, and finishing.
   - Maintain these records systematically to support project planning and auditing.

2. **Preparing Job Cards for Stage-wise Progress**
   - Use a job card to document all stages of table fabrication—cutting, assembly, polishing, etc.
   - Note the date, worker's name, and equipment used at each stage.
   - Tick off each step once completed to ensure tasks are performed in the right order.
   - This helps ensure quality control, proper task tracking, and team accountability.

3. **Reporting Problems and Updates Clearly**
   - Write clear notes or short reports if there are delays, material shortages, or tool failures.
   - Communicate status updates in writing to supervisors or team leads during daily briefings.
   - Mention what was done, what is pending, and any support needed for smoother execution.
   - This encourages transparent communication and reduces operational delays.

Say

Let us participate in an activity to study the unit a little more.

Activity

Group Activity: Creating a Job Card for a Fabrication Task

Group Size: 4–5 participants per group

Materials

- Blank job card templates (printed)
- Sample table fabrication process handouts (detailing materials, tools, tasks, time, and challenges)
- Pens or markers
- Clipboards (optional)

Activity Duration: 45–60 minutes

Instructions

Step 1: Review the Table-Making Process

Each group receives a description of a table fabrication process that includes all stages — cutting, assembling, finishing, and inspection — along with details about time spent, tools used, and any problems faced (e.g., tool breakage or material shortage).

Step 2: Fill Out the Job Card

Based on the information provided, groups complete a job card covering:

- Materials and quantities used
- Time taken for each task
- Tools and equipment utilized
- Defects or issues noticed
- Remarks to update the supervisor

Step 3: Share and Reflect

Groups present their completed job cards and explain the choices made in documenting each step. The facilitator and other participants provide feedback on the accuracy, clarity, and completeness of their records.

Activity	Duration	Resources used
Creating a Job Card for a Fabrication Task	45-60 minutes	Blank job card templates (printed), Sample table fabrication process handouts (detailing materials, tools, tasks, time, and challenges), Pens or markers, Clipboards (optional) etc.

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Clarify Expectations**

  Walk participants through the job card format before the activity begins.

- **Focus on Relevance**

  Guide them to include only useful and necessary information — not just fill in every box.

- **Connect to Real Work**

  Reinforce how job cards help maintain quality, improve communication, and support accountability at worksites.

Exercise

Multiple Choice Questions (MCQs)

1. Which of the following joints is most suitable for connecting a table leg to the apron?
   a) Butt Joint
   b) Mortise and Tenon Joint
   c) Lap Joint
   d) Dowel Joint
   Answer: b) Mortise and Tenon Joint

2. Why is it important to account for cutting margin when estimating material quantity?
   a) To save time during fabrication
   b) To make joints stronger
   c) To reduce the number of tools required
   d) To compensate for material loss during cutting
   Answer: d) To compensate for material loss during cutting

3. What is the primary purpose of applying adhesive to joints during assembly?
   a) To make the furniture glossy
   b) To temporarily hold pieces together
   c) To enhance the structural strength of the joints
   d) To reduce the number of fasteners used
   Answer: c) To enhance the structural strength of the joints

4. What tool is best suited for marking accurate measurements on wood before cutting?
   a) Screwdriver
   b) Hammer
   c) Marking Gauge
   d) Chisel
   Answer: c) Marking Gauge

Fill in the Blanks

1. The process of using sandpaper to smooth the wooden surface before applying polish is called _____.
   Answer: sanding

2. A _____ joint uses cylindrical wooden pins to hold two wooden pieces together.
   Answer: dowel

3. The document that records each stage of a furniture fabrication process is known as a _____.
   Answer: job card

4. _____, brackets, and adhesives are common materials used to join table components securely.

   Answer: Screws

Match the following

1. Match Column A with Column B:

A (Components)	B (Usage)
1. Apron	a) Final layer for surface protection
2. Mortise and Tenon Joint	b) Connects tabletop to legs
3. Varnish	c) Strong structural joint
4. Measuring Tape	d) Determines component length

   Answers: 1 - b) , 2 - c) , 3 - a), 4 - d)

2. Match Column A with Column B:

A (Tools/Processes)	B (Purpose)
1. Chisel	a) Accurate linear measurement
2. Clamps	b) Holding components tightly during assembly
3. Bill of Materials	c) Detailed list of required materials
4. Measuring Scale	d) Cutting or shaping wood joints

   Answers: 1 - d) , 2 - b) , 3 - c), 4 - a)

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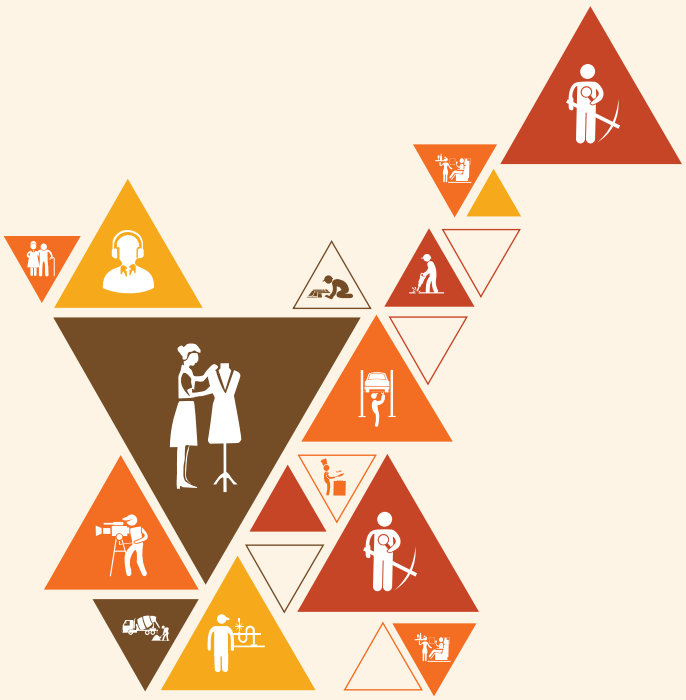
7. Finishing and Installation of Products



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Identify various adhesives such as PVA glue, synthetic resin, and epoxy, and distinguish between their bonding properties, drying times, and recommended usage in carpentry applications.
2. Identify different fastening options such as screws, nails, bolts, and brackets, and explain their use for securing lightweight components, reinforcing frames, or anchoring non-structural parts during final assembly.
3. Select the correct adhesive and fastening method based on the material (e.g., MDF, plywood, hardwood), expected load, environmental exposure, and need for removability or repositioning in modular furniture.
4. Demonstrate the application of adhesives in designated areas such as corner joints or surface attachments using proper techniques for spreading, curing, and clamping without excess residue.
5. Install fasteners with tools like drills and screwdrivers, ensuring clean and tight fixing for components such as corner blocks or bottom panels of a wooden table, without revisiting structural joinery already covered in earlier modules.
6. Use different types of clamps (bar clamps, G-clamps, corner clamps) to hold table components in place during adhesive curing or when making minor adjustments during final assembly.
7. Explain the significance of surface finishing in improving product appearance, user experience, and product life span, especially in furniture exposed to human touch and household cleaning.
8. Perform different surface finishing operations such as sanding the surface smooth, applying wood filler, staining the timber to desired colour, and finishing with a protective coat like varnish or sealer.
9. Finish all visible surfaces of a wooden table (top, legs, apron) using a selected finish — such as matte PU polish or glossy melamine — ensuring that the application is even, streak-free, and appropriately dried.
10. Identify scenarios where structural cut-outs are needed in furniture, such as creating holes in the tabletop for electrical cable access or plumbing allowances in cabinetry.
11. Use layout tools to plan the location, size, and shape of cut-outs on furniture pieces while ensuring that the design does not compromise the structural integrity of the product.
12. Carry out a clean and accurate cut-out on a tabletop using appropriate cutting tools, maintaining a finished edge and avoiding splintering or surface damage — especially when the table is designed as a study or office desk.
13. Demonstrate how to install accessories and fittings such as drawer knobs, locks, handles, gliders, hinges, or brackets with the correct screws and tools, following manufacturer specifications.
14. Install the fully finished wooden table at a site by placing and leveling it on the floor, aligning it with walls or other fixtures, and ensuring that it is secure, balanced, and functionally placed.
15. Address and rectify minor issues during on-site installation such as adjusting uneven legs, correcting tilts, or filling minor surface gaps to improve product alignment and customer satisfaction.
16. Conduct a final product inspection by checking for alignment, wobbling, surface finish quality, and functionality of all attached components like hinges, gliders, and decorative fittings.

17. Clean the product using recommended cleaning agents and tools to remove dust, fingerprints, or adhesive residues, ensuring the table is presentable and ready for use at handover.
18. Describe the hygiene protocols to be followed during product installation or delivery at residential or office locations, including personal cleanliness, use of clean tools, and workspace sanitation.
19. Practice responsible post-installation cleanup by disposing of packaging materials, wiping down surfaces, and leaving the client's space clean and organized.

Unit 7.1: Adhesives and Fastening Techniques

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify different adhesives (such as PVA glue, epoxy, and contact adhesive) and fasteners (screws, nails, bolts) used in non-structural fixing during final product assembly.
2. Demonstrate correct application techniques for adhesives and fasteners when attaching components like corner blocks, drawer bottoms, or surface trims on a wooden table.
3. Choose fastening techniques based on type of material, expected load, and whether future disassembly or adjustment is needed.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the different types of adhesives and fastening techniques used in assembling wooden furniture components. Learners will explore how to select and apply suitable adhesives like PVA, epoxy, or contact glue, and fasteners such as screws, nails, and bolts. The focus will be on ensuring secure, neat, and appropriate fixing of parts like corner blocks, trims, and drawers, based on material, strength requirements, and future maintenance needs.

Ask

Ask the participants the following questions:

- Can you name one common adhesive and one fastener used to fix wooden furniture parts?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Adhesives and Fastening Techniques

In this unit, we will discuss the various types of adhesives and fasteners used in furniture assembly, along with their correct application techniques and criteria for selecting suitable fixing methods based on materials, load, and the need for future adjustments.

1. Understanding Common Adhesives and Fasteners

Adhesives

- **PVA Glue (Polyvinyl Acetate)**

  Commonly known as white glue or carpenter's glue, PVA is suitable for bonding wood surfaces. It dries clear, has moderate water resistance, and is ideal for indoor furniture applications like attaching trims, drawer bottoms, and corner supports.

- **Epoxy Adhesive**

  A two-part adhesive (resin and hardener) that provides a strong, durable bond. It is used in high-stress areas where mechanical fasteners alone may not be enough. Suitable for bonding different materials such as metal brackets to wood.

- **Contact Adhesive**

  This glue is applied to both surfaces, allowed to dry slightly, and then pressed together. It forms an instant bond and is often used for sticking laminates or veneer sheets.

Fasteners

- **Screws**

  Provide a strong and removable connection, commonly used in table frames, support rails, and drawer construction.

- **Nails**

  Quick to apply and suitable for non-load-bearing joints or internal parts. Often used with glue for added strength.

- **Bolts and Nuts**

  Used when a strong, adjustable joint is required, especially in parts that might need dismantling or repositioning.

2. Correct Application Techniques

Adhesive Application

- Surfaces should be clean, dry, and properly aligned before applying glue. Use an even, thin layer to avoid excess spillage.
- After application, clamp the parts firmly for the duration specified by the adhesive manufacturer to ensure maximum bonding strength.
- Wipe away any excess glue immediately to maintain a clean finish.

Fastener Application

- Select fasteners based on material thickness and the location of the component. Pilot holes should be drilled when using screws to prevent the wood from splitting.
- Use a screwdriver or drill to drive screws straight and flush with the surface. In exposed areas, countersinking the screw head allows for a neater appearance.

- When attaching drawer bottoms or thin panels, use nails combined with adhesive for stronger attachment.

Adhesive Application

- Surfaces should be clean, dry, and properly aligned before applying glue. Use an even, thin layer to avoid excess spillage.
- After application, clamp the parts firmly for the duration specified by the adhesive manufacturer to ensure maximum bonding strength.
- Wipe away any excess glue immediately to maintain a clean finish.

Fastener Application

- Select fasteners based on material thickness and the location of the component. Pilot holes should be drilled when using screws to prevent the wood from splitting.
- Use a screwdriver or drill to drive screws straight and flush with the surface. In exposed areas, countersinking the screw head allows for a neater appearance.
- When attaching drawer bottoms or thin panels, use nails combined with adhesive for stronger attachment.

3. Selecting the Right Fixing Method

Material Type Consideration

- Hardwoods require pre-drilling for screws and work well with epoxy and PVA glues.
- Softwoods may be easier to fasten but can split, so choosing thinner fasteners and proper adhesives is crucial.

Load Requirements

- High-load parts (like legs or frames) require a combination of strong adhesives and fasteners, such as screws or bolts with PVA glue.
- Low-load or decorative parts (like surface trims) can be affixed using only adhesives or small nails.

Future Adjustability

- For parts that might need to be removed or repositioned, screws or bolts are preferred. Avoid permanent adhesives in these areas.
- In cabinets or modular furniture, using knock-down fittings or bolts ensures easy disassembly and transport.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: "Fix It Right – The Adhesive & Fastener Challenge"

Group Size: 4–6 participants

Materials Required

- Sample wooden components (tabletop corners, drawer bases, trims)
- Variety of adhesives (PVA glue, epoxy, contact adhesive)
- Variety of fasteners (screws, nails, bolts)
- Scenario cards (provided below)
- Flipchart/whiteboard and markers
- Safety gloves and basic hand tools

Activity Duration: 60 minutes

Instructions

1. Introduction

   Explain the goal of the activity: to encourage practical understanding of different adhesives and fasteners and their correct usage based on scenarios. Briefly review the types of adhesives and fastening techniques used in furniture fabrication and the criteria for selecting them.

2. Scenario Distribution

   Each group receives one scenario card. These describe realistic challenges during the application of adhesives and fasteners in furniture assembly.

3. Group Discussion and Planning

   Groups analyse their scenario and plan:

   - What materials and components are involved?
   - What adhesive or fastener type is appropriate?
   - What technique should be used and why?
   - How can safety and efficiency be ensured?

4. Hands-on Task

   Each group physically demonstrates their selected method on sample components using the correct tools and materials.

5. Group Presentation

   Each group presents:

   - Scenario summary
   - Chosen solution and justification
   - Challenges faced during the hands-on process

6. Debriefing and Key Takeaways

   Facilitator leads discussion on:

   - Why certain adhesives or fasteners were preferred
   - Real-world implications of improper selection
   - Importance of safety and precision in application

Examples of Scenario Cards

Scenario 1

Your team is installing wooden surface trims to the edge of a table where aesthetic finish is important, and disassembly is unlikely. Choose an adhesive or fastener and explain your selection and application method.

Scenario 2

While attaching corner blocks under the table for structural support, you have to ensure a strong, load-bearing connection. Which fastener(s) or adhesive(s) will you use and why?

Scenario 3

You're assembling a drawer base using lightweight ply and the components are thin. You need a technique that won't damage the material but provides good hold. What would you use?

Activity	Duration	Resources used
Fix It Right – The Adhesive & Fastener Challenge	60 minutes	Sample wooden components (tabletop corners, drawer bases, trims), Variety of adhesives (PVA glue, epoxy, contact adhesive), Variety of fasteners (screws, nails, bolts), Scenario cards (provided below), Flipchart/whiteboard and markers, Safety gloves and basic hand tools etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Pre-arrange materials and tools per group to ensure hands-on practice aligns with each scenario.
- Guide participants to think about load bearing, reversibility, and finish when selecting adhesives/ fasteners.
- Encourage teams to explain the why behind each choice focus on application logic, not just task completion.

Unit 7.2: Clamping and Surface Finishing Methods

Unit Objectives

At the end of this unit, participants will be able to:

1. Demonstrate use of clamps for maintaining alignment and pressure during adhesive curing or final touch-ups on a wooden table.
2. Explain and apply multiple surface finishing methods (e.g., sanding, staining, polishing) to complete a smooth and even finish on the table surface and legs.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the importance of clamping and surface finishing methods during the final stages of wooden table fabrication. Participants will learn how to use different types of clamps to hold furniture parts in place during adhesive curing. They will also explore basic surface finishing techniques like sanding, staining, and polishing to enhance the table's appearance and protect its surface.

Ask

Ask the participants the following questions:

- Why is it important to use clamps while glue is drying on a wooden table?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Clamping and Surface Finishing Methods

In this session, we will study essential post-assembly techniques that ensure both structural accuracy and high-quality appearance of a wooden table. Clamping is used to hold parts in position while adhesives cure, ensuring precision and stability. Surface finishing methods such as sanding, staining, and polishing are applied to smoothen the surface, enhance visual appeal, and protect the wood. These methods are crucial to achieving a refined, professional finish in any furniture-making process.

1. **Clamping for Alignment and Adhesive Curing**
    - Ensures structural accuracy during gluing

      Clamping is used to hold wooden components tightly in position while the adhesive cures. For instance, when fixing the apron to table legs or attaching a drawer bottom, clamps prevent the pieces from shifting and ensure that the alignment remains true throughout the curing time.
    - Different types of clamps for different tasks
        - Bar clamps are ideal for securing long edges or large surfaces like tabletops.
        - Corner clamps help fix right-angle joints such as apron-to-leg connections.
        - C-clamps or G-clamps are used for smaller tasks such as fixing trims or performing touch-up repairs.

      The correct selection and placement of clamps ensure stable pressure and secure bonding.
    - Maintaining even pressure and protecting surfaces

      To avoid indentations or warping, clamps must distribute pressure evenly across the surface. This is done by inserting soft wooden pads or scrap blocks between the clamp jaws and the actual wood surface. Uneven clamping may cause damage or misalignment of components, which can be difficult to correct later.

2. **Surface Finishing for Smoothness and Durability**
    - Sanding as a preparatory step

      Sanding is performed using sandpaper of different grits—starting with coarse grit to remove major roughness or glue marks and gradually shifting to finer grits for a smooth finish. Sanding helps eliminate surface imperfections like splinters and ensures a uniform texture for better stain or polish adhesion.
    - Staining to enhance natural aesthetics

      Wood stain is applied to change or enrich the colour of the wood while preserving the natural grain. The stain penetrates the fibres and adds warmth, richness, or specific tones (like walnut or oak), depending on the design needs. Uneven application or failure to wipe excess can lead to blotchy appearances.
    - Final finishing for protection and appeal

      Once staining is complete, a protective topcoat—such as varnish, lacquer, or polish—is applied. This not only adds shine or matte effect but also guards the surface against moisture, dust, and scratches. The finish enhances longevity and gives the furniture a professional, refined look. Each coat should be applied thinly and evenly, with sanding in between if needed, to achieve the best results.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Collaborative Table Surface Finishing and Clamping Setup

Group Size: 4–5 participants

Materials Needed

- Wooden table components (miniature or actual-sized)
- Various types of clamps (C-clamps, bar clamps, spring clamps)
- Sandpaper (various grits)
- Staining or polishing materials
- Brushes or cloths
- Safety gloves and aprons

Duration: 45–60 minutes

Activity Instructions

1. **Clamping Task**

   Each group is assigned a table joint (e.g., leg to apron). They must select appropriate clamps and demonstrate correct clamping techniques to ensure strong adhesive bonding and alignment.

2. **Surface Finishing Task**

   After clamping is done, the group prepares a table surface or leg using sanding and applies a basic finish (polish or stain). They must ensure even application and smooth finishing.

3. **Group Presentation**

   Each group will present their approach, why specific clamps or finishing tools were used, and share any challenges they faced.

Activity	Duration	Resources used
Collaborative Table Surface Finishing and Clamping Setup	45-60 minutes	Wooden table components (miniature or actual-sized), Various types of clamps (C-clamps, bar clamps, spring clamps), Sandpaper (various grits), Staining or polishing materials, Brushes or cloths, Safety gloves and aprons etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Demonstrate Tool Safety First**

  Ensure participants understand safe handling of clamps and finishing chemicals before starting.

- **Encourage Division of Roles**

  Assign one participant for clamping, one for sanding, one for staining, etc., to promote collaboration.

- **Highlight Quality Check**

  Prompt groups to assess joint pressure (no gaps) and finish consistency (no blotches or rough patches) during their work.

Unit 7.3: Cut-outs and Structural Preparations

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify the functional requirement for structural cut-outs in furniture products such as for cable management or plumbing access.
2. Plan the location and size of cut-outs without affecting the integrity of the furniture unit.
3. Mark cut-out shapes and sizes on wooden surfaces using templates, rulers, or measuring tools.
4. Perform clean and accurate cut-outs on the tabletop (e.g., for a study desk) using tools such as hole saws or jigsaws.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the purpose and methods of creating structural cut-outs in wooden furniture pieces. Participants will learn how to identify functional requirements like cable or pipe access, plan cut-out placement without compromising strength, mark the layout accurately, and use tools such as hole saws or jigsaws for clean execution. This unit emphasizes both functionality and craftsmanship in preparation work.

Ask

Ask the participants the following questions:

- Why do some study desks or TV cabinets have holes or cut-outs in their surface panels?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Cut-outs and Structural Preparations

In this session, we will understand how to create precise structural cut-outs in furniture without compromising strength or aesthetics. These cut-outs are often essential for functionality, especially in modern furniture that integrates cables, pipes, or ventilation.

1. **Understanding the Need for Cut-outs in Furniture**

   Structural cut-outs are intentional openings designed to serve a functional purpose in furniture products. These may include holes or notches for cable routing in desks, access panels for plumbing in kitchen cabinets, or ventilation slots in enclosed storage units. Understanding the reason for each cut-out ensures that it is not merely decorative but supports the practical use of the furniture, making the product more user-friendly and adaptable to modern needs.

2. **Planning the Size and Position of Cut-outs Without Compromising Strength**

   Proper planning is crucial before executing any cut-out. The craftsperson must evaluate where the cut-out can be placed to avoid damaging load-bearing parts of the furniture. For example, placing a large cut-out near the leg joint of a table could reduce its strength and lead to instability. Therefore, cut-outs must be planned by assessing structural drawings or design templates, selecting dimensions that meet the functional requirement while ensuring the surrounding material remains strong and stable.

3. **Marking the Cut-out Accurately Using Measuring and Layout Tools**

   Once the position and size are finalized, accurate marking becomes the next critical step. Templates, measuring tapes, squares, and rulers are used to draw clean outlines on the surface where the cut is to be made. Precision during this step is important because it guides the actual cutting process. Poor marking can result in off-center or uneven cut-outs that spoil both the functionality and the appearance of the product.

4. **Executing Clean and Precise Cut-outs with Suitable Tools**

   Tools such as hole saws (for round cut-outs) and jigsaws (for complex or rectangular shapes) are typically used to perform the cut-out. The process requires steady hand movement, firm clamping of the workpiece, and proper control of the tool. Before beginning, safety checks must be done, and appropriate personal protective equipment (PPE) like safety goggles should be worn. After cutting, the edges of the cut-out should be smoothed using sandpaper or files to remove splinters and provide a neat finish.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Designing and Marking Cut-outs for a Study Desk

Objective: To collaboratively plan, mark, and explain functional cut-outs (e.g., for cable management or charging slots) on a wooden study desk surface.

Group Size: 4–5 participants per group

Materials Needed

- Large chart paper or wooden board mock-ups
- Rulers, measuring tapes, set squares

- Pencils, markers
- Sample cut-out requirement cards (e.g., “cable slot at back corner”, “round hole for wire grommet”, “rectangular space for power box”)
- Templates (circle, square)

Duration: 25–60 minutes

Instructions

1. Give each group a sample cut-out requirement card describing the structural need.
2. Ask groups to discuss the appropriate size and placement of the cut-out to ensure it meets functional needs while maintaining the strength of the desk.
3. Using measurement tools and templates, each group should mark the cut-out shape accurately on their mock board/chart.
4. Groups should present their marked layout and explain why they chose the particular position, shape, and size.

Activity	Duration	Resources used
Designing and Marking Cut-outs for a Study Desk	25-60 minutes	Large chart paper or wooden board mock-ups, Rulers, measuring tapes, set squares, Pencils, markers, Sample cut-out requirement cards (e.g., “cable slot at back corner”, “round hole for wire grommet”, “rectangular space for power box”), Templates (circle, square) etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Emphasize safety and structural awareness**

  ask learners why improper placement can weaken the furniture.
- **Ensure every participant contributes**

  assign roles like measurer, sketcher, and presenter.
- Encourage peer feedback after group presentations to foster collaborative learning.

Unit 7.4: Installation of Product Components and Hardware

Unit Objectives

At the end of this unit, participants will be able to:

1. Install final fittings such as handles, glides, hinges, or locks using appropriate hand tools and measurement references.
2. Position and install the finished wooden table in a room or layout, ensuring balance, spacing, and levelness.
3. Troubleshoot and resolve minor fitting issues, such as adjusting leg positions or tightening hardware for better alignment.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to correctly install product components and hardware such as handles, hinges, glides, and locks on finished wooden furniture. Participants will also learn how to place and level the furniture in a room setup and address minor issues like loose fittings or misalignments. The unit ensures learners are confident in completing and presenting ready-to-use furniture pieces professionally.

Ask

Ask the participants the following questions:

- What tools do you think are used to install handles or hinges on a wooden table?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Installation of Product Components and Hardware

In this session, we will study the final stage of table fabrication — the careful installation of fittings and correct placement of the finished product. Participants will gain the skills to use hand tools to install components such as handles and hinges, position the furniture in its final setting, and troubleshoot any minor issues that affect the appearance or function of the table.

1. **Accurate Installation of Final Fittings**
    - Participants will learn how to install essential hardware fittings such as handles, hinges, drawer glides, and locks that are typically added during the final stages of furniture assembly.
    - Proper use of measurement references, pre-marked points, and alignment guides will be emphasized to ensure that each fitting is positioned accurately and functions correctly.
    - A variety of hand tools will be used, including screwdrivers, hand drills, Allen keys, and measuring tapes, depending on the type of fitting and the material of the furniture.
    - The focus will be on avoiding damage to the surface or structure during installation, maintaining symmetry, and ensuring that all moving parts like hinges or glides operate smoothly and without friction.
    - Trainees will also be guided on pre-checking measurements, marking drill points lightly, and using clamps or jigs for precise alignment, where required.

2. **Correct Positioning and Setup of the Furniture Unit**
    - Once the product components are fully installed, learners will practice positioning the finished furniture, such as a table or cabinet, in its final location within a room or display setup.
    - They will be trained to use tools such as spirit levels, plumb lines, and measuring tapes to ensure the furniture is even, balanced, and aligned with other room elements.
    - Factors such as spacing from walls, accessibility, and visual aesthetics will be considered when choosing the exact placement of the product.
    - The aim is to teach the participant how to create a clean, professional presentation of the furniture while ensuring its functionality in a practical space.
    - Attention will also be paid to protecting floors and surfaces during installation, using felt pads or mats if necessary.

3. **Resolving Minor Fitting and Placement Issues**
    - Participants will be introduced to common on-site fitting issues, such as:
        - Legs that are not level,
        - Slight misalignment in handles or hinges,
        - Loose hardware or uneven drawer movement.
    - They will be taught practical techniques to identify and fix these problems quickly, including:
        - Tightening or repositioning screws,
        - Slight adjustments to hinges or locks,
        - Reinforcement of loose joints.

- Troubleshooting might involve using shims, rubber buffers, or wood filler for minor corrections, depending on the material and problem.
- This session helps participants build confidence in handling real-world errors and delivering a polished, well-aligned final product to clients or supervisors.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Complete Installation and Adjustment of a Furniture Unit

Objective: Participants will collaboratively install final product components (e.g., handles, hinges, glides) and position a wooden table accurately within a layout space. They will also troubleshoot any minor alignment or fitting issues encountered during the process.

Group Size: 4–6 participants

Materials Needed

- Wooden table units (partially assembled, with loose components)
- Fittings: handles, hinges, glides, locks
- Tools: screwdrivers, hand drills, measuring tape, spirit level, pencil/marker
- Spacer blocks or shims, adjustment tools
- Setup zone marked on the floor (mock layout room)

Activity Duration: 60–75 minutes

Steps

1. **Briefing**

   Each group is given a wooden table and its hardware components. A layout plan is shared showing where the table is to be installed within the mock setup.

2. **Installation Task**

   - Participants work together to mark, drill, and fix the hardware (handles, locks, glides, etc.) using the reference points provided.
   - The group then moves and installs the table in the designated spot using spirit levels and measuring tools to ensure balance and alignment.

3. **Troubleshooting Task**

   A few pre-set minor fitting issues are planted (e.g., a misaligned hinge or an uneven leg). Groups must identify and fix these issues using appropriate methods.

4. **Presentation and Feedback**

   - Each group explains their process, any issues they faced, and how they resolved them.

o The facilitator provides feedback and discusses key takeaways from the exercise.

Activity	Duration	Resources used
Complete Installation and Adjustment of a Furniture Unit	60-75 minutes	Wooden table units (partially assembled, with loose components), Fittings: handles, hinges, glides, locks, Tools: screwdrivers, hand drills, measuring tape, spirit level, pencil/marker, Spacer blocks or shims, adjustment tools, Setup zone marked on the floor (mock layout room) etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Tool Safety**

  Demonstrate proper use of hand tools and supervise their use.
- **Role Sharing**

  Encourage participants to switch roles during the task for complete exposure.
- **Prompt Problem-Solving**

  Use guiding questions instead of giving direct answers during troubleshooting.

Unit 7.5: Final Checks and Hygiene Practices

Unit Objectives

At the end of this unit, participants will be able to:

1. Conduct final quality inspection of the table's structural and surface finish, and confirm all components function properly.
2. Clean and prepare the table for delivery, ensuring hygiene, client-ready appearance, and tidiness of the work area.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the final steps involved in preparing a wooden table for delivery, focusing on quality inspection and hygiene practices. Learners will understand how to assess the table's structure, surface finish, and functional components to ensure everything is secure and visually appealing. The unit also covers proper cleaning techniques and maintaining a tidy, client-ready work environment to ensure professionalism and customer satisfaction.

Ask

Ask the participants the following questions:

- Why is it important to clean and inspect a table before delivering it to a client?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Final Checks and Hygiene Practices

Final checks and hygiene practices are the last but crucial steps in the table-making process. They ensure that the product is structurally sound, visually appealing, and clean before it is handed over to the client. This session focuses on quality inspections and cleanliness routines that uphold professional standards.

1. **Conduct final quality inspection of the table's structural and surface finish, and confirm all components function properly**

   - **Structural Inspection**

     Begin by thoroughly checking the table's structure. This involves applying light pressure to the top and sides to detect any looseness, instability, or creaking. Ensure that the legs are firmly attached and that all joints are tightly secured, with no signs of cracks, separation, or weakness that might affect durability or safety.

   - **Surface Finish Evaluation**

     Inspect the surface of the table, including the top, edges, and legs, for uniformity in finish. Look for scratches, dents, blotches, rough patches, or dull areas. Check that the polish, paint, or varnish has been evenly applied, giving the table a smooth, clean, and professional appearance that enhances its visual appeal.

   - **Functional Testing of Components**

     Operate any mechanical or movable parts, such as drawers, sliding panels, locks, or foldable components. Ensure they open, close, and align smoothly without sticking or requiring excessive force. Check that handles, knobs, glides, or hinges are securely fastened and function as intended, without any rattling or imbalance.

   - **Correction and Adjustment**

     If issues are identified during inspection, take immediate corrective steps. This may include tightening loose screws or bolts, reapplying finish to patch minor scratches, aligning drawer tracks, or sanding down uneven edges. Re-inspect once adjustments are made to confirm that the product meets quality standards.

2. **Clean and prepare the table for delivery, ensuring hygiene, client-ready appearance, and tidiness of the work area**

   - **Surface Cleaning**

     Use a clean cloth to remove sawdust, fingerprints, glue marks, or leftover polish residue. A slightly damp microfiber cloth may be used for water-resistant finishes, while dry or chemically safe cloths should be used for delicate finishes. This ensures the product is free from debris and visually clean.

   - **Final Appearance Touch-Up**

     If the table has a polished or glossy finish, gently buff it using a soft cloth to restore its shine. If matte, ensure the surface is even and blemish-free. This is the final opportunity to improve visual appeal, giving attention to corners, edges, and frequently touched surfaces for a flawless finish.

- **Work Area Clean-Up**

  After the product is ready, clear the workspace of all unwanted materials such as used rags, sandpaper, plastic wraps, and packaging foam. Sweep or vacuum the floor to remove dust or wood shavings. Keep all tools organized or returned to storage to ensure safety and professionalism.

- **Client-Ready Preparation**

  Before delivery, review the entire setup one last time. Ensure the product looks new, clean, and free of smudges or damage. This stage is critical in forming a good impression with the client, as a well-presented, hygienic product reflects high standards and attention to detail.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Final Table Inspection and Hygiene Preparation

Group Size: 3–4 participants

Materials Required

- A sample assembled wooden table
- Checklist template for quality inspection
- Cleaning cloths and basic cleaning agents
- Basic hand tools (e.g., screwdriver, level)
- Protective gloves

Activity Duration: 45–60 minutes

Activity Description

Each group is assigned a wooden table that simulates a final product ready for delivery. They must perform a complete final inspection and hygiene check using the following steps

1. **Quality Inspection**
   - Check table structure (joints, stability, balance).
   - Examine surface finish for scratches, stains, or rough patches.
   - Test movable parts like drawers, locks, and hinges.
2. **Hygiene and Presentation**
   - Wipe the table clean of dust, fingerprints, or glue residue.
   - Polish the surface and ensure a neat, professional appearance.
   - Tidy the workspace around the table.

3. **Report Submission**
   - o Fill out a mock inspection checklist.
   - o Highlight any corrections made or issues noted.
   - o Present findings briefly to the facilitator or class.

Activity	Duration	Resources used
Final Table Inspection and Hygiene Preparation	45–60 minutes	A sample assembled wooden table, Checklist template for quality inspection, Cleaning cloths and basic cleaning agents, Basic hand tools (e.g., screwdriver, level), Protective gloves etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Remind participants to handle the table carefully and use tools only if minor corrections are required.
- Encourage the use of the checklist for a structured inspection process.
- Prompt participants to observe not just the table but also the cleanliness and safety of their working area.

Exercise

Multiple Choice Questions (MCQs)

1. Which of the following adhesives is most commonly used for interior wooden furniture due to its strong bond and ease of use?
   a. PVA glue
   b. Silicone adhesive
   c. White cement
   d. Acrylic paint
   Answer: a. PVA glue

2. What is the main purpose of using clamps during furniture assembly?
   a. To decorate joints
   b. To temporarily hold parts for photography
   c. To ensure alignment and hold parts securely while adhesive cures
   d. To mark positions
   Answer: c. To ensure alignment and hold parts securely while adhesive cures

3. Which finishing operation is carried out before applying a stain or sealer?
   a. Drilling holes
   b. Screwing fasteners
   c. Sanding the surface
   d. Assembling the legs
   Answer: c. Sanding the surface

4. What must be checked during the final inspection of a table before delivery?
   a. The shop inventory
   b. The brand of the table
   c. Surface finish, alignment, and component functionality
   d. The client's payment receipt
   Answer: c. Surface finish, alignment, and component functionality

Fill in the Blanks

1. _____ clamps are useful for securing corners while adhesive sets.
   Answer: Corner

2. _____ is used to give furniture a smooth and protective finish after staining.
   Answer: Varnish

3. Cut-outs in furniture are often made to allow access for _____ or plumbing.
   Answer: Electrical cables

4. After installation, leftover packaging must be _____ responsibly to maintain hygiene.

   Answer: Disposed

Match the following

1. Match Column A with Column B:

Column A	Column B
1. Epoxy adhesive	a. Smooths surfaces for finish application
2. Drawer knobs	b. High-strength bonding for load-bearing joints
3. Sanding	c. Checks for scratches, stains, or gaps
4. Surface inspection	d. Installed using screws for ease of use

   Answer: 1 → b, 2 → d, 3 → a, 4 → c

2. Match Column A with Column B:

Column A	Column B
1. Gliders	a. Personal cleanliness and tool sanitation
2. PU Polish	b. Allow movement of table without scratch-ing floor
3. Layout Tools	c. Durable, smooth finish for wooden surfaces
4. Hygiene Protocols	d. Used to mark position and size of cut-outs

   Answer: 1 → b, 2 → c, 3 → d, 4 → a

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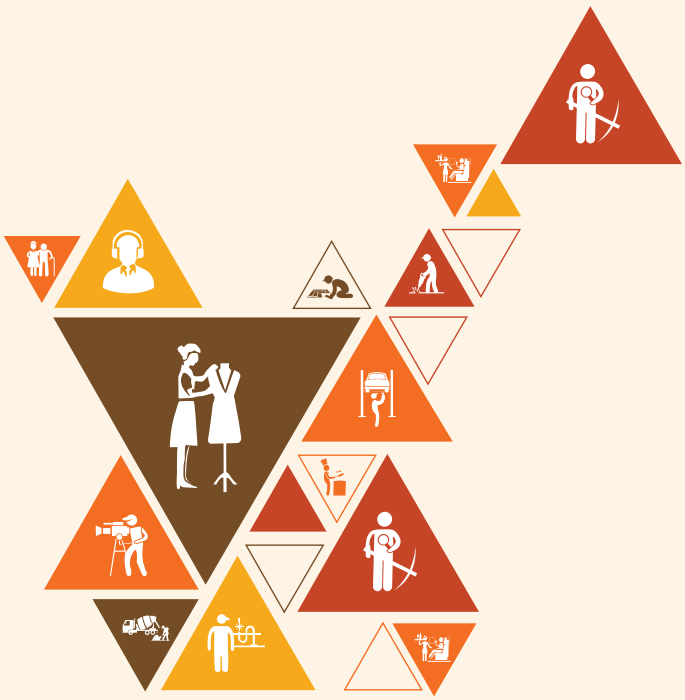
8. Health, Safety, and Greening Practices at the Worksite



Key Learning Outcomes

At the end of this module, participants will be able to:

1. Explain the importance of maintaining personal hygiene, wearing clean uniforms, and following a proper dress code as a professional in the carpentry and furniture installation domain.
2. Demonstrate how to maintain a well-groomed appearance and ensure a tidy presentation at the worksite, especially in client-facing or residential environments.
3. Describe how ethical behaviors such as honesty, punctuality, discipline, and responsibility contribute to a safe, respectful, and productive work environment.
4. Identify and name personal protective equipment (PPE) such as safety gloves, helmets, goggles, ear protection, dust masks, and safety shoes commonly used in carpentry and installation tasks.
5. Demonstrate the correct way to wear, adjust, and store each type of PPE depending on the nature of work being carried out (e.g., cutting wood, drilling, sanding, or chemical handling).
6. Access and use a basic first aid kit to treat minor workplace injuries such as small cuts, splinters, or abrasions, and describe situations where professional medical help must be called.
7. Explain standard safety rules for working at a furniture workshop or installation site, including rules for lifting heavy materials, bending posture, overhead work, and use of ladders or platforms.
8. Describe fire safety measures such as how to identify fire extinguisher types, read fire exit signs, follow alarm signals, and evacuate a building calmly through designated escape routes.
9. Identify common safety signs and hand signals such as those indicating danger zones, electric hazard, flammable storage, or instructions for using tools and equipment, and respond to them appropriately.
10. Demonstrate correct and safe handling of tools and machines during use and while transporting or storing them, to prevent injury to self or damage to the equipment.
11. Inspect tools before and after use for any visible damage, misalignment, frayed cords, or loose parts, and report any defects or unsafe conditions to the supervisor for action.
12. Explain proper housekeeping practices such as sweeping the area after work, stacking tools and wood neatly, and disposing of sawdust or packaging responsibly to avoid clutter and hazards.
13. Classify different types of waste generated at the worksite — including wood scrap, plastic wrappers, chemical cans, and packaging materials — into recyclable and non-recyclable waste.
14. Describe how to safely store and handle hazardous materials like adhesives, varnishes, thinners, and paint, ensuring containers are sealed, labelled, and kept away from heat or ignition sources.
15. Document and report any observed safety risks, unsafe acts, near-misses, or violations of protocol to supervisors using standard workplace reporting procedures.
16. Explain how to minimize material waste by accurate cutting, reusing leftover pieces, and avoiding over-application of adhesives, fillers, or coatings.
17. Describe energy-saving methods such as switching off unused tools, using LED lighting in workshops, and planning work batches to reduce repetitive tool operations.
18. Demonstrate ways to conserve water during cleaning tasks by using buckets instead of running taps, reusing rinse water where applicable, and choosing low-water-use cleaning methods.
19. Practice responsible post-job cleanup by properly washing tools, storing them dry, and using eco-friendly cleaning materials where possible.
20. Discuss the importance of regular maintenance, cleaning, and correct tool storage in extending the life of equipment, reducing resource consumption, and maintaining environmental sustainability at the worksite.

Unit 8.1: Personal Hygiene, Dress Code, and Work Ethics

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the relevance of personal hygiene, appropriate dress code, and respectful conduct in professional settings like workshops and installation sites.
2. Demonstrate good grooming practices, maintenance of uniforms, and personal cleanliness while at work.
3. Describe how punctuality, honesty, and discipline contribute to team coordination, safety, and work efficiency.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the importance of personal hygiene, dress code, and work ethics in professional environments such as workshops and installation sites. Participants will explore how grooming, clean attire, punctuality, and respectful behavior positively influence workplace safety, teamwork, and customer trust. These habits not only create a good impression but also ensure efficient and smooth operations at the workplace.

Ask

Ask the participants the following questions:

- Why is it important to stay clean and wear proper clothes at work?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Personal Hygiene, Dress Code, and Work Ethics

In this session, we will discuss how maintaining personal hygiene, following a proper dress code, and demonstrating professional work ethics play a vital role in creating a safe, respectful, and efficient workplace environment. These practices not only improve individual presentation and health but also promote teamwork, trust, and customer satisfaction in furniture workshops and on-site installations.

1. **Significance of Personal Hygiene and Dress Code**
   - Personal hygiene plays a crucial role in ensuring a healthy and professional work environment. Practices such as bathing daily, keeping hands clean, and maintaining oral hygiene help prevent the spread of germs and protect both workers and clients.
   - A clean and appropriate dress code is essential on job sites. Wearing uniforms, protective footwear, and work-specific attire helps prevent injuries, presents a professional image, and maintains industry standards.
   - Overall appearance contributes to the worker's reputation. A well-maintained look reflects seriousness, discipline, and pride in one's work.

2. **Proper Grooming and Uniform Maintenance**
   - Grooming involves daily personal care trimming nails, combing hair neatly, and shaving or keeping facial hair tidy as per workplace expectations.
   - Uniform maintenance is part of workplace discipline. Workers are expected to wear clean, ironed uniforms with company branding if provided, and repair or replace damaged clothing as needed.
   - Avoiding distractions caused by appearance such as loose clothing or excessive accessories — helps maintain safety and professionalism during tasks like cutting, lifting, or installation.

   Workplace Behaviour and Respectful Conduct
   - Respectful communication fosters team coordination. Workers must speak politely, listen actively, and avoid interrupting or dismissing others' opinions during discussions or collaborative tasks.
   - Maintaining a positive attitude and avoiding conflicts or gossip helps create a healthy work atmosphere, allowing everyone to focus on completing work efficiently.
   - Upholding dignity in client interactions builds trust and strengthens the company's reputation, especially during product delivery or service visits.

3. **Value of Punctuality, Honesty, and Discipline**
   - Punctuality demonstrates commitment. Arriving on time ensures that the day's workflow begins smoothly and projects remain on schedule.
   - Being honest in the workplace builds trust. Whether reporting material usage, mistakes, or task completion, integrity helps supervisors plan and manage work effectively.
   - Workplace discipline ensures consistency. Following rules, using tools responsibly, and avoiding shortcuts in quality and safety practices contribute to the overall success of projects and job satisfaction.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Workplace Scenarios on Hygiene, Dress Code, and Work Ethics

Group Size: 4–6 participants

Materials

- Scenario cards
- Chart paper or flipchart
- Markers
- Sticky notes

Activity Duration: 45–60 minutes

Instructions

1. **Introduction**

   Begin with a short discussion on the importance of maintaining personal hygiene, proper work attire, and good work ethics in professional environments such as workshops and client sites.

2. **Distribute Scenario Cards**

   Each group receives a card describing a workplace situation involving hygiene, dress code, or ethical behaviour. These reflect real-life issues commonly seen in fieldwork or carpentry jobs.

3. **Group Discussion & Solution Planning**

   Groups should discuss their scenario using the following guiding questions:

   - What is the main issue in this situation?
   - What negative outcomes could result from it?
   - What actions or improvements can be suggested?
   - How can team values and professionalism be strengthened?

4. **Presentations**

   Each group presents

   - A summary of the issue
   - Recommended actions or solutions
   - The importance of hygiene, uniform, and ethical practices in this context

5. **Class Discussion**

   Wrap up with a reflection session

   - What were the key lessons?
   - Which solutions were practical and easy to apply?
   - How can everyone maintain a high standard of professionalism in daily work?

Examples of Scenario Cards

Scenario 1

A carpenter arrives at the client's home in casual clothes and open shoes. The client is unhappy with his appearance. Discuss the importance of dress code and how this affects professionalism and client trust.

Scenario 2

An installer has poor hygiene habits. He does not wash his hands before touching finished furniture, leaving smudges. What are the consequences, and how can hygiene standards be improved?

Scenario 3

A worker often comes late, takes long breaks, and avoids cleaning up his area. Team members are frustrated. How should this be handled in a way that promotes responsibility and team discipline?

Activity	Duration	Resources used
Workplace Scenarios on Hygiene, Dress Code, and Work Ethics	45–60 minutes	Scenario cards, Chart paper or flipchart, Markers, Sticky notes etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Remind groups to consider both team values and client expectations.
- Encourage respectful communication while addressing behavioral concerns.
- Highlight practical workplace standards such as being punctual, wearing clean uniforms, and maintaining cleanliness.

Unit 8.2: Personal Protective Equipment (PPE) and First Aid Readiness

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify PPE items suitable for carpentry and site-based activities, including helmets, safety shoes, goggles, gloves, and hearing protection.
2. Demonstrate the correct use and storage of PPE and access a first aid kit to treat minor injuries like cuts, splinters, or abrasions.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the importance of using personal protective equipment (PPE) such as helmets, gloves, and safety goggles to prevent injuries in carpentry and site-based work. We will also learn how to use, store, and maintain PPE correctly, and understand basic first aid procedures to handle minor injuries like cuts or splinters at the workplace. This unit helps build a strong foundation in workplace safety and emergency readiness.

Ask

Ask the participants the following questions:

- Why is it important to wear safety gear like gloves or helmets while working on a furniture installation site?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Personal Protective Equipment (PPE) and First Aid Readiness

In this session, we will discuss the importance of using proper Personal Protective Equipment (PPE) and being prepared to handle minor injuries through first aid. Working in carpentry or installation sites involves exposure to potential hazards like falling objects, sharp tools, and dust. To ensure safety, workers must wear suitable PPE such as helmets, gloves, goggles, and safety shoes. Additionally, understanding how to use a first aid kit for treating small cuts or splinters is essential for quick response and preventing further injury. This unit focuses on promoting safety awareness and practical skills to create a healthier and hazard-free workplace.

1. **Importance and Identification of PPE in Carpentry and Site Work**
    - In carpentry and furniture installation, workers often handle tools, sharp-edged materials, heavy boards, and machinery that pose potential safety hazards. PPE (Personal Protective Equipment) helps reduce the risk of injury by acting as a physical shield between the worker and the hazard.
    - Common PPE includes
        - **Safety Helmets**

          Protect the head from falling objects or accidental bumps in tight installation spaces.
        - **Safety Shoes**

          Steel-toe boots prevent foot injuries from heavy material drops or nail punctures.
        - **Goggles or Safety Glasses**

          Prevent sawdust, wood chips, and chemical finishes from reaching the eyes.
        - **Gloves**

          Protect hands from splinters, abrasions, or sharp tools during handling and assembly.
        - **Hearing Protection**

          Earplugs or earmuffs help reduce the risk of hearing loss when working around loud machines like routers or sanders.
    - It is essential for workers to correctly identify the right type of PPE depending on the nature of the task—cutting, polishing, drilling, lifting, or assembling.

2. **Proper Usage, Maintenance, and Storage of PPE**
    - Simply having PPE is not enough—correct usage ensures its effectiveness. For instance, helmets should fit snugly and not tilt, and goggles must completely cover the eyes without gaps.
    - Before use, each item should be inspected for damage. A cracked helmet, worn-out gloves, or scratched goggles can compromise safety.
    - After completing tasks, reusable PPE should be cleaned according to material guidelines. For example, rubber gloves can be wiped down, and earmuffs can be sanitized.
    - PPE should be stored in a designated, clean, and dry area to prevent contamination or damage. Keeping gear organized helps workers locate and use it consistently, reinforcing a safety culture at the workplace.

First Aid Awareness and Readiness

- Small injuries such as cuts, abrasions, and splinters are common in woodworking environments. Being prepared to handle them prevents complications like infection or excessive bleeding.

- A basic first aid kit should be present at all work sites, equipped with antiseptic, cotton, adhesive bandages, burn ointments, tweezers (for splinter removal), and disposable gloves.
- Workers should be trained in basic first aid response—including how to stop bleeding, clean wounds, apply ointments, and dress injuries.
- Additionally, understanding when to escalate to professional medical help is critical. First aid is not a replacement for medical treatment but a way to control the situation until help is available.
- A well-maintained first aid protocol reflects responsibility, care for team members, and a well-managed work environment.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: PPE and First Aid Practice Drill

Group Size: 4–6 participants

Materials Needed:

- Sample PPE items (helmet, gloves, goggles, safety shoes, earplugs)
- A basic first aid kit
- Scenario cards with minor injury cases (e.g., splinter, minor cut, dust in eyes)

Duration: 45–50 minutes

Instructions

1. Divide participants into small groups and set up two stations:
    - Station 1 – PPE Identification and Use
    - Station 2 – First Aid Response
2. At Station 1, participants identify different PPE items and demonstrate their correct usage for various carpentry/site-based scenarios (e.g., sawing, drilling, carrying materials).
3. At Station 2, each group receives a first aid scenario card (e.g., “A worker gets a minor cut while handling a wooden board”). They must:
    - Identify the injury
    - Choose the right PPE that could’ve prevented it
    - Demonstrate the correct first aid response using the kit
4. Groups rotate between the stations.
5. End with a short reflection discussion on key safety lessons learned.

Activity	Duration	Resources used
PPE and First Aid Practice Drill	45–60 minutes	Sample PPE items (helmet, gloves, goggles, safety shoes, earplugs), A basic first aid kit, Scenario cards with minor injury cases (e.g., splinter, minor cut, dust in eyes) etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Brief participants on basic PPE types and their uses before starting.
- Ensure all PPE and first aid materials are safe and clean for practice use.
- Encourage team discussion during demonstrations to build confidence and learning.

Unit 8.3: Safety Protocols, Fire Evacuation, and Ergonomics

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain best practices for body posture, safe lifting, and bending techniques to prevent work-related injuries.
2. Describe fire evacuation protocols, emergency alarm responses, and exit route identification.
3. Recognize and interpret commonly used safety signs (e.g., danger, flammable, PPE required) and hand signals.
4. Apply the appropriate ergonomic principles while working with machines, materials, or in confined spaces.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the essential safety protocols needed in carpentry and installation worksites, including proper body posture, safe lifting techniques, and ergonomic practices to prevent injuries. The unit will also cover fire evacuation procedures, the correct response to emergency alarms, and how to identify and follow safety signs and hand signals used at job sites.

Ask

Ask the participants the following questions:

- Why is it important to know the correct way to lift heavy objects at work?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Safety Protocols, Fire Evacuation, and Ergonomics

Safety in carpentry and workshop environments goes beyond just wearing protective gear—it includes following safe practices, being prepared for emergencies, and ensuring physical comfort during work. This session highlights essential protocols such as proper body movement, fire evacuation readiness, understanding safety signs, and ergonomic principles. These practices are vital to prevent injuries, maintain health, and respond correctly during any onsite emergency.

1. **Best Practices for Body Posture, Safe Lifting, and Bending Techniques**
    - Maintaining proper body posture helps reduce fatigue and avoid long-term back and joint injuries. Workers should keep the spine straight, bend the knees when lifting, and avoid twisting the body while carrying loads.
    - Safe lifting involves assessing the object's weight, ensuring a firm grip, keeping the load close to the body, and using leg muscles rather than the back to lift.
    - Bending should be done by squatting or lunging instead of hunching forward, particularly when working at lower levels or handling heavy materials.

2. **Fire Evacuation Protocols and Emergency Responses**
    - Fire evacuation protocols include knowing the location of fire exits, alarms, extinguishers, and assembly points.
    - In case of a fire, workers must remain calm, activate the nearest alarm, and follow marked evacuation routes without using elevators.
    - Employees should participate in regular fire drills to stay familiar with the steps to be taken during real emergencies.

3. **Safety Signs and Hand Signals**
    - Safety signs like "Danger," "Caution," "Flammable," or "PPE Required" are critical for alerting workers about hazards and necessary precautions in specific zones.
    - Common hand signals are used for communication during machine operations or noisy environments—such as gestures for "stop," "start," "move left/right," or "lift."
    - Workers should be trained to recognize, interpret, and follow these signs and signals correctly to avoid accidents.

4. **Ergonomics in Machine Handling and Confined Spaces**
    - Ergonomics ensures that tools, tasks, and workspaces are designed to match human body capabilities and limitations, reducing strain or repetitive stress injuries.
    - While working with machines, proper height adjustment, reach distance, and seating/standing positions should be maintained.
    - In confined spaces, workers must maintain a neutral body position, use tools with ergonomic grips, and ensure adequate lighting and ventilation to reduce discomfort and risk.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Safety Response Drill and Ergonomic Workstation Setup

Group Size: 4–6 participants

Materials Required:

- Printed safety signs and hand signals
- Floor map/exit plan of a sample workshop
- Props like empty boxes (for lifting), chairs, desks
- Red and green markers or cards
- Stopwatch or timer

Activity Duration: 50–60 minutes

Activity Steps:

Part 1: Fire Evacuation and Sign Recognition Drill

1. Each group is given a mock floor plan of a workshop with entrances, machines, fire extinguishers, and exits.
2. Groups must identify:
    - o All safety signs and their meaning (provided as printed cards).
    - o A correct fire evacuation route.
    - o Emergency response steps (e.g., raising alarm, safe movement to exit).
3. Once done, groups perform a "dry run" evacuation — simulating movement and assigning roles (alarm, guide, last-person check).

Part 2: Ergonomic Assessment and Setup

1. Provide each group with a typical workstation layout (e.g., machine station or desk).
2. Ask them to identify unsafe postures or incorrect setups.
3. Each group should then redesign the setup applying ergonomic principles (e.g., adjusting height, body position, lifting posture, etc.).
4. Each team presents their setup and explains their ergonomic improvements.

Activity	Duration	Resources used
Safety Response Drill and Ergonomic Workstation Setup	50–60 minutes	Printed safety signs and hand signals, Floor map/exit plan of a sample workshop, Props like empty boxes (for lifting), chairs, desks, Red and green markers or cards, Stopwatch or timer etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Assign clear roles (e.g., fire warden, first responder)**
  to keep all group members engaged.
- **Use printed signs and maps**
  to reinforce quick recognition of safety elements.
- **Demonstrate posture techniques**
  before the ergonomic activity to ensure correct understanding.

Unit 8.4: Tool Handling, Inspection, and Housekeeping Practices

Unit Objectives

At the end of this unit, participants will be able to:

1. Demonstrate proper tool handling before, during, and after operations, ensuring safety for self and others.
2. Conduct inspection of machines/tools for signs of wear, damage, or malfunction, and report any issues.
3. Follow proper housekeeping practices such as workspace cleaning, dust control, and organized tool storage.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the correct methods of handling tools, inspecting them for damage or wear, and maintaining a clean and organized work environment. Participants will learn how to use tools safely before, during, and after operation, identify signs of malfunction, and follow best housekeeping practices to prevent accidents, ensure efficiency, and promote a safe workplace.

Ask

Ask the participants the following questions:

- Why is it important to keep tools clean and stored properly after use?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Tool Handling, Inspection, and Housekeeping Practices

In this session, we will discuss essential safety practices related to the use of tools and machines in a furniture or woodworking environment. Proper tool handling prevents injuries, routine inspections help detect issues before they become hazards, and systematic housekeeping ensures a clean and efficient workspace. Together, these practices contribute to a safe, productive, and professional work environment.

1. **Safe and Responsible Tool Handling**
    - **Before use**
        - Check tools for damage or defects.
        - Ensure blades are sharp and cords or connections are intact.
    - **During use**
        - Maintain a steady grip and balanced posture.
        - Use tools for their intended purpose only.
        - Keep hands dry and ensure electrical safety (grounded plugs, no loose wires).
    - **After use**
        - Clean tools to prevent rust and residue buildup.
        - Store tools in their designated places—away from edges or walkways.
        - Do not leave tools lying around unattended.

2. **Regular Inspection for Safety and Maintenance**
    - **What to inspect**
        - Check for wear and tear (cracks, dull blades, loose parts).
        - Examine power tools for frayed cords, strange sounds, or overheating.
    - **How to act**
        - Tag and report any defective tools or equipment immediately.
        - Avoid using malfunctioning tools; wait for repair or replacement.
    - **Why it's important**
        - Prevents accidents and downtime.
        - Extends the lifespan of tools and ensures consistent performance.

3. **Clean and Organized Work Environment (Housekeeping)**
    - **Workspace cleanliness**
        - Sweep dust, wood shavings, and debris regularly.
        - Mop spills promptly to avoid slips.
    - **Tool and material organization**
        - Return all tools to their proper places after use.

- Keep frequently used tools within easy reach but not cluttered.

- **Safety and hygiene**
  - Properly store flammable or chemical materials.
  - Dispose of waste in labelled bins and manage cables to avoid tripping.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Tool Safety and Housekeeping Drill

Group Size: 4–5 participants per group

Duration: 45–60 minutes

Materials Needed:

- Assorted hand tools (screwdriver, hammer, wrench, etc.)
- Tool inspection checklist (printed for each group)
- Cleaning cloths and brushes
- Storage rack or tool board
- Labels/stickers
- Dummy tool/machine with minor fault (optional for inspection simulation)

Activity Instructions

1. **Introduction**

   Begin with a short discussion about tool safety, inspection, and the importance of housekeeping in a workshop.

2. **Tool Handling and Inspection**

   Each group receives a set of tools and a printed checklist. They must:
   - Inspect each tool for wear, rust, or damage.
   - Record any findings and recommend whether to use, repair, or replace.
   - Demonstrate correct handling and storage of the tools.

3. **Housekeeping Setup**

   The group organizes a mock tool area:
   - Clean tools using provided materials.
   - Arrange tools on a rack or board.
   - Label and sort them according to use/type.

o Ensure the area is tidy and dust-free.

4. **Presentation and Discussion**

Each group presents their setup, key inspection observations, and how their housekeeping practice improves safety and efficiency.

Activity	Duration	Resources used
Tool Safety and Housekeeping Drill	45-60 minutes	Assorted hand tools (screwdriver, hammer, wrench, etc.), Tool inspection checklist (printed for each group), Cleaning cloths and brushes, Storage rack or tool board, Labels/stickers, Dummy tool/machine with minor fault (optional for inspection simulation) etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Encourage Role Rotation**

  Let each group member take a role (inspector, cleaner, recorder, organizer) to build responsibility.

- **Observe Tool Usage**

  Gently correct unsafe tool handling or poor posture during the drill.

- **Promote Peer Learning**

  After presentations, allow groups to ask each other questions or give constructive feedback.

Unit 8.5: Waste Management and Hazardous Material Handling

Unit Objectives

At the end of this unit, participants will be able to:

1. Classify worksite waste into recyclable (e.g., wood offcuts) and non-recyclable (e.g., plastic wraps), and dispose of them using the correct bins.
2. Explain safe handling procedures for flammable or toxic substances like adhesives and thinners, and describe how to report breaches of safety.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss the proper methods for managing waste at the workplace and the safe handling of hazardous materials like adhesives, thinners, or flammable liquids. Participants will learn how to segregate recyclable and non-recyclable waste, follow safe disposal practices, and handle potentially dangerous substances using safety protocols to reduce risks and maintain a healthy work environment.

Ask

Ask the participants the following questions:

- What should you do with leftover wood pieces or empty glue containers at your workplace?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Waste Management and Hazardous Material Handling

In any carpentry or furniture installation environment, proper waste management and safe handling of hazardous substances are crucial for maintaining a clean, safe, and compliant workspace. Understanding how to sort waste correctly and manage dangerous materials not only protects the environment but also safeguards workers from health and fire risks. This session focuses on practical steps to classify, dispose, and handle materials responsibly.

1. **Understanding Waste Types and Disposal Practices**
    - **Worksite Waste Classification**

      In carpentry and furniture-making tasks, waste is generated in various forms. This includes recyclable items like wood offcuts, cardboard packaging, and metal scraps, as well as non-recyclable waste such as contaminated cloths, plastic wrappers, and mixed material waste.
    - **Recyclable Waste Disposal**

      Clean, dry waste that can be repurposed or reprocessed (e.g., unused wood pieces, paperboard, aluminium shavings) should be sorted and placed in clearly marked recycling bins. This helps reduce landfill load and supports environmental responsibility.
    - Non-Recyclable Waste Disposal

      Items that are contaminated, broken, or not suitable for recycling—such as solvent-soaked rags, used sandpaper, or plastic film with adhesive—should be sealed in proper bags or containers and disposed of in general waste bins, following site-specific protocols.
    - Maintaining Waste Segregation

      Clearly color-coded or labelled bins and posters should be used to help workers quickly identify the correct bin for each type of waste. This not only keeps the work area clean but also prevents health hazards from mixing incompatible waste types.

2. **Handling Flammable and Toxic Materials**
    - **Types of Hazardous Substances**

      Common hazardous materials include solvent-based adhesives, paints, varnishes, and cleaning chemicals like turpentine or acetone. These materials are flammable, toxic when inhaled, and sometimes corrosive.
    - **Safe Handling Procedures**

      Workers must always wear appropriate personal protective equipment (PPE), including gloves, safety goggles, and face masks when dealing with these substances. Hands should be washed thoroughly after use, and contact with skin should be avoided.
    - **Proper Storage Practices**

      These materials should be stored in original containers with intact labels, in well-ventilated, fire-safe areas. They should not be kept near heat sources, electrical panels, or under direct sunlight.
    - **Response to Accidents or Leaks**

      In case of spillage, the affected area should be isolated, and material safety data sheets (MSDS) must be referred to for cleanup procedures. Workers must report any accidents immediately and not attempt to clean without proper guidance or equipment.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Waste Sorting and Hazardous Handling Drill

Group Size: 4–6 participants

Materials Needed:

- Printed images or actual samples of various workplace waste (wood shavings, plastic wrap, broken tools, glue containers, etc.)
- Three bins labelled: Recyclable, Non-Recyclable, and Hazardous Waste
- Safety gloves and masks
- Chart paper and markers

Activity Duration: 45 minutes

Instructions

1. **Waste Sorting Task**

   Each group receives a set of 8–10 sample items or images. They must inspect each item and decide which bin it belongs in: Recyclable, Non-Recyclable, or Hazardous.

   They will also note down a safe handling procedure for any item classified as hazardous.

2. **Team Explanation**

   Each group presents their sorting decisions and explains the reasoning behind hazardous handling steps.

3. **Reflection**

   Discuss what could go wrong if hazardous waste is mishandled and the importance of waste segregation.

Activity	Duration	Resources used
Waste Sorting and Hazardous Handling Drill	45 minutes	Printed images or actual samples of various workplace waste (wood shavings, plastic wrap, broken tools, glue containers, etc.), Three bins labelled: Recyclable, Non-Recyclable, and Hazardous Waste, Safety gloves and masks, Chart paper and markers etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- **Ensure Safety Awareness**

  Provide a quick reminder about the properties of hazardous substances and demonstrate safe glove/mask use before the activity begins.

- **Clarify Waste Categories**

  Give simple definitions or examples of recyclable, non-recyclable, and hazardous waste to avoid confusion during sorting.

- **Encourage Group Debate**

  Prompt groups to justify their sorting choices and listen to alternative views. This deepens understanding and builds teamwork.

Unit 8.6: Material, Energy, and Water Conservation Practices

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain how to reduce material wastage through accurate cutting, optimal planning, and reuse of offcuts.
2. Describe methods to conserve electricity through efficient tool usage, natural lighting, and switching off idle equipment.
3. Demonstrate responsible use of water during tool cleaning and workstation washdowns.
4. Discuss the role of regular tool maintenance in prolonging lifespan and reducing environmental impact.

Resources to be Used

Participant handbook, pen, notebook, whiteboard, flipchart, markers, laptop, overhead projector, laser pointer, etc.

Note

In this unit, we will discuss how to use materials, electricity, and water more responsibly in the workshop. Participants will explore methods to reduce material wastage, conserve energy by switching off idle tools, and use water wisely during cleaning activities. The unit also highlights the importance of regular tool maintenance to extend tool life and reduce environmental impact.

Ask

Ask the participants the following questions:

- What is one simple way to save electricity while working in a workshop?

Write down the participants' answers on a whiteboard/flipchart. Take appropriate clues from the answers and start teaching the lesson.

Elaborate

In this session, we will discuss the following points:

Material, Energy, and Water Conservation Practices

In this session, we will study that how efficient use of materials, electricity, and water not only reduces costs but also supports sustainability in the workplace. We will understand practical steps that can be applied in day-to-day tasks to minimize environmental impact while improving productivity.

1. **Smart Use of Materials to Reduce Waste**
   - **Plan Before Cutting**

     Always measure and mark material accurately before cutting. Use layout drawings or templates to ensure precise cuts.
   - **Minimize Offcuts**

     Arrange cutting patterns to optimize full sheet usage. This avoids unnecessary leftover material and saves cost.
   - **Reuse Scrap Pieces**

     Save usable offcuts for smaller components, jigs, or support blocks rather than discarding them.

2. **Energy Conservation Through Efficient Practices**
   - **Turn Off Idle Tools**

     Switch off machines like drills, saws, or sanders when not in use to prevent electricity wastage.
   - **Unplug When Not Needed**

     Avoid standby energy loss by unplugging equipment during long breaks or at the end of the day.
   - **Use Natural Daylight**

     Position workstations near windows or skylights to reduce dependency on artificial lights during daytime.

3. **Responsible Use of Water in the Workshop**
   - **Use Buckets or Spray Bottles for Cleaning**

     Instead of running taps, use controlled sources of water while cleaning tools or surfaces.
   - **Avoid Unnecessary Washing**

     Clean only when required and use minimum water. Wipe off dust with cloths wherever possible.
   - **Report and Fix Leaks**

     Promptly notify maintenance if taps, pipes, or hoses are dripping or broken.

4. **Tool Maintenance as a Conservation Strategy**
   - **Maintain Sharp and Clean Tools**

     Sharpen blades, oil moving parts, and clean tools regularly to reduce energy and material usage during operation.
   - **Prevent Early Wear and Tear**

     Store tools properly and follow handling guidelines to prevent damage and prolong their usability.

- **Reduce Replacement Frequency**

  Well-maintained tools last longer, reducing the need for frequent purchases and material waste.

Say

Let us participate in an activity to explore the unit a little more.

Activity

Group Activity: Workshop Conservation Planning Challenge

Group Size: 4–6 participants

Activity Duration: 50 minutes

Materials Needed:

- Printed worksheet (see below)
- Pens/Markers
- Chart paper or A3 sheet (optional for presentation)

Activity Instructions

1. Divide participants into small groups.
2. Give each group a worksheet that includes a sample workshop scenario (e.g., furniture manufacturing workshop) with typical processes like cutting, sanding, cleaning, and tool usage.
3. Each group must identify areas where material, energy, and water are being wasted in the scenario.
4. They must then suggest at least three practical actions to reduce waste and conserve resources in each of the following categories:
   - o Material
   - o Energy
   - o Water
5. Groups will present their ideas to the class, explaining the benefits of each proposed change.

Activity	Duration	Resources used
Workshop Conservation Planning Challenge	50 minutes	Printed worksheet (see below), Pens/ Markers, Chart paper or A3 sheet (optional for presentation) etc

Do

- Guide the trainees throughout the activity
- Ensure that all trainees participate in the activity

Notes for Facilitation

- Provide printed workshop scenario sheets with clear examples of wasteful practices.
- Encourage teams to think about real-life applications from their training environment.
- Use a flipchart or whiteboard to collect key ideas from each group to create a final “Conservation Best Practices” list.

Exercise

Multiple Choice Questions (MCQs)

1. Which of the following is considered an essential part of personal protective equipment (PPE) in carpentry?
   a) Sunglasses
   b) Flip-flops
   c) Safety shoes
   d) Woolen gloves
   Answer: c) Safety shoes

2. What should you do if a tool has a frayed power cord?
   a) Continue using it carefully
   b) Repair it with tape
   c) Report it to the supervisor immediately
   d) Hide it away
   Answer: c) Report it to the supervisor immediately

3. What is the best way to conserve water during tool cleaning?
   a) Use a garden hose
   b) Keep the tap running
   c) Use buckets and reuse rinse water
   d) Rinse every tool separately
   Answer: c) Use buckets and reuse rinse water

4. Which behaviours reflects professionalism and ethics at the worksite?
   a) Taking frequent breaks
   b) Being punctual and responsible
   c) Arguing with supervisors
   d) Ignoring instructions
   Answer: b) Being punctual and responsible

Fill in the Blanks

1. Wearing _____ helps protect the eyes from dust and flying wood particles.
   Answer: safety goggles

2. _____ signs are used to warn workers about potential hazards like fire or electric shock.
   Answer: Safety

3. Waste like plastic wraps and chemical containers should be classified as _____ waste.
   Answer: non-recyclable

4. The correct method to lift heavy materials includes bending the _____, not the back.

   Answer: knees

Match the following

1. Match Column A with Column B:

Column A	Column B
1. Dust mask	a) Emergency exit
2. Fire evacuation route	b) Reduces inhalation of particles
3. Tool inspection	c) Reuse of materials
4. Material conservation	d) Checking for damage or wear

   Answer: 1 → b, 2 → a, 3 → d, 4 → c

2. Match Column A with Column B:

Column A	Column B
1. Safety helmet	a) Prevents slips and accidents
2. First aid kit	b) Protects head from falling objects
3. Housekeeping practices	c) Used for minor cuts and injuries
4. Labelled chemical containers	d) Prevents misuse and ensures safety

   Answer: 1 → b, 2 → c, 3 → a, 4 → d

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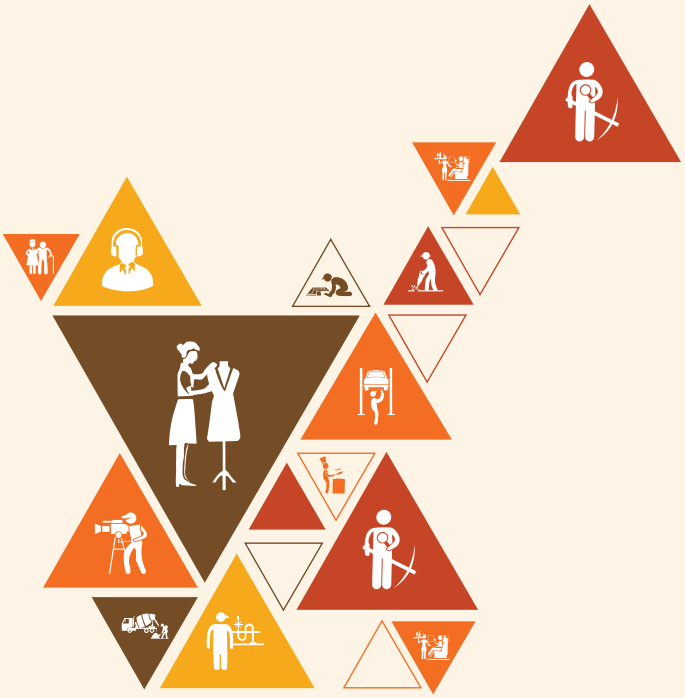
9. Employability Skills



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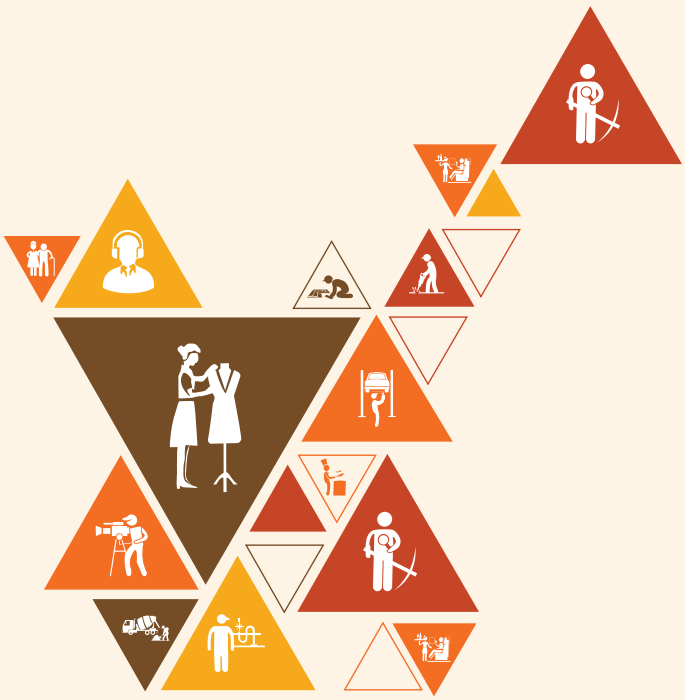
Employability Skills

9. Annexures

Annexure - I
Annexure - II
Annexure - III



Annexure - I

Training Delivery Plan

Program Name	Assistant Carpenter		
Qualification Pack and reference ID	Assistant Carpenter-FFS/Q2201		
Version No.	3.0	Version Update Date	31-08-2023
Pre-Requisite License or Training	NA		
Training Outcomes	**After completing this program, participants will be able to:** • Describe the process of conducting a recce of the worksite. • Explain the basics of material management in Furniture and Fittings Installation. • Describe various steps involved in the planning and fabrication of products. • Demonstrate the selection of different resources, tools, and materials. • Explain and understand the process of joinery and fabrication of products. • Explain the process of assembling the various components of the product. • Explain and demonstrate the process of installation of the product and its handover. • Maintain safety, health, and hygiene at the worksite. • Optimize resources, work efficiently and adhere to safety standards. • Discuss various aspects of employability skills and employ such practices towards personal and organizational growth. • Demonstrate the skills related to performing occupational standards of Assistant Carpenter while performing on-the-job training at the worksite.		

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
1.	**Overview of the Furniture and Allied Industries & Assistant Carpenter Role**	**Unit 1.1: Introduction to the Furniture Industry and Its Scope**	1. Describe the national and global scope of the furniture industry and its contribution to economy and employment. 2. Explain how furniture enhances utility, comfort, and design in various interior spaces like homes, offices, and hospitality areas. 3. Identify recent industry trends, including modular systems, ergonomic innovations, and material sustainability.	Bridge Module(s)	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 1.2: Allied Industries and Their Role in Furniture Manufacturing	1. List key allied industries such as laminates, plywood, adhesives, foams, and describe their integration into carpentry workflows. 2. Explain how interdependencies with these sectors impact material sourcing, production planning, and final installation.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 1.3: Interior Design and Furniture Integration	1. Explain the importance of aligning furniture design with interior layout, space utilization, and client preference. 2. Identify how styles such as minimalist, traditional, or industrial influence furniture form, colour, and finish. 3. Distinguish between built-in, modular, and loose furniture and their role in different settings. 4. Describe how carpenters collaborate with interior designers during project execution.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 1.4: Occupational Map of the Furniture Industry	1. Describe job roles across functions like cutting, shaping, assembly, finishing, logistics, and after-sales installation. 2. Explain how a carpenter can grow vertically to supervisory roles or horizontally across fabrication, finishing, or installation.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 1.5: Role and Responsibilities of an Assistant Carpenter	1. Describe the typical day-to-day duties of an Assistant Carpenter in a workshop and on-site. 2. Identify essential tools, materials, and PPE used in entry-level carpentry tasks. 3. Recognize the importance of discipline, teamwork, and communication for effective task completion. 4. Understand what tasks must be supervised and which require escalation to a senior.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 1.6: Career Growth and Work Expectations	1. Explain the working conditions, schedules, and workplace behavior expected from a carpentry professional. 2. Discuss how continuous learning, certification, and task ownership can open opportunities for role enhancement.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			3. Identify ways to improve work output through time management, safety adherence, and quality focus.				
		Unit 1.7: Regulatory, Trade, and Taxation Awareness	1. Identify key regulations such as fire safety, load-bearing rules, and finishing material norms that affect carpentry work. 2. Explain basic concepts of taxation (GST), import/export restrictions, and invoice generation in a small furniture project.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
2.	**Organizational Structure, Communication, and Digital Literacy**	**Unit 2.1: Understanding Organizational Structure and Workplace Protocols**	1. Explain the difference between flat, functional, and hierarchical organizational structures used in carpentry and installation businesses. 2. Describe the typical reporting chain, escalation hierarchy, and workflow protocols followed at a furniture manufacturing or site operation unit.	Bridge Module(s)	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 2.2: Team Goals, Communication, and Coordination	1. Explain how team goals are communicated and aligned with overall project timelines in a carpentry team. 2. Identify ways to coordinate effectively with colleagues, such as tool sharing, sequencing tasks, and resolving overlaps. 3. Demonstrate how to relay job requirements or updates to teammates and supervisors through clear, concise instructions.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			4. Discuss how shared objectives and open communication promote accountability and reduce errors at the worksite.				
		Unit 2.3: Conflict Resolution and Professional Behavior at Workplace	1. Identify typical workplace conflicts in carpentry settings, including tool sharing, task overlapping, and miscommunication. 2. Demonstrate calm and respectful language, posture, and tone while resolving conflicts. 3. Explain how professionalism—such as punctuality, reliability, and respect—reduces chances of conflict escalation. 4. Describe how active listening and empathy foster smoother work relationships and better team dynamics.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 2.4: Basic Digital Literacy and Internet Usage	1. Identify the main parts and functions of a computer system and demonstrate basic file operations like opening, saving, and organizing folders. 2. Use the internet for work-related activities such as searching furniture tutorials,		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			downloading product manuals, and browsing technical videos.				
		Unit 2.5: Financial Transactions and Online Payments	1. List of various payment methods used in site-level purchases or reimbursements including UPI, cash, and mobile wallets. 2. Explain basic digital transaction safety steps such as app verification, password protection, and secure networks. 3. Demonstrate a complete transaction process—from scanning a code to confirming and saving a receipt—for recordkeeping.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 00:00
		Unit 2.6: Using MS Office for Workplace Productivity	1. Identify how Word, Excel, and PowerPoint support furniture-related documentation and communication. 2. Create a simple Word document for writing a job brief or task list with formatting features. 3. Use Excel to create a material tracking sheet with basic formulas and borders. 4. Generate a PowerPoint presentation summarizing a furniture layout proposal using templates and inserted images.				

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			5. Save, name, and organize files properly for easy access and future use.				
3.	**Raw Materials, Tools, Equipment, and Hardware Handling Techniques**	**Unit 3.1: Raw Materials and Timber Classification**	1. Identify different types of raw materials used in furniture making such as hardwood, softwoods, plywood, MDF, and particle boards. 2. Describe the physical properties, durability, and usability of each material based on its structure and origin. 3. Explain how material choice affects cost, strength, workability, and finish quality in furniture projects. 4. Classify timber types and match them to suitable applications — structural framing, decorative surfaces, or core panels.	Bridge Module(s)	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	T: 04:00 P: 04:00
		Unit 3.2: Introduction to Tools, Equipment, and Machines	1. List key categories of carpentry tools such as hand tools, power tools, finishing tools, and measuring instruments. 2. Match specific tools with job tasks like cutting, joining, measuring, or surface preparation. 3. Explain the importance of choosing the right tool based on material, task, and accuracy requirement.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	T: 04:00 P: 04:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 3.3: Safe Handling and Operation of Tools and Equipment	1. Demonstrate proper handling and operation of carpentry tools and machines, following safe usage techniques and posture. 2. Identify safety guards, emergency switches, and personal protection measures required while using powered equipment.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	T: 04:00 P: 04:00
		Unit 3.4: Workbench Preparation and Tool Setup	1. Describe how to clean and organize the workbench before beginning a job. 2. Arrange tools logically based on the task sequence to avoid clutter and improve speed. 3. Set up clamps, jigs, or supports to hold materials securely during marking and cutting. 4. Demonstrate alignment of measuring tools for consistent reference during layout work. 5. Ensure the working area is safe, well-lit, and clear of obstructions before starting operations.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	T: 04:00 P: 04:00
		Unit 3.5: Maintenance and Organization of Tools and Workspace	1. Explain regular cleaning, sharpening, and lubricating methods to keep tools functional. 2. Demonstrate how to store tools properly after use to		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	T: 04:00 P: 04:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			prevent damage and ensure easy retrieval. 3. Conduct basic checks of tool condition and electrical connections before use.			Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	
		Unit 3.6: Common Hardware Fittings in Furniture Manufacturing	1. Identify different types of hardware fittings such as cam locks, brackets, hinges, and drawer sliders used in furniture. 2. Choose appropriate tools and demonstrate how to fix selected hardware components correctly on wood or board surfaces.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	T: 04:00 P: 04:00
4.	**Understanding Drawings and Job Planning**	**Unit 4.1: Types and Components of Architectural and Product Drawings**	1. Identify the differences between architectural layout drawings and product-specific views used in carpentry and furniture fabrication. 2. Interpret standard drawing types such as plan views, elevations, cross-sections, and isometric projections with practical reference to a wooden table. 3. Recognize the symbols, line types, and annotations used in technical drawings to denote materials, finishes, hardware points, and construction details.	Bridge Module(s)	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, House-keeping-Materials, Tools and Equipment, Theme based props	T: 04:00 P: 10:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 4.2: Measurement Principles and Calculation Techniques	1. Explain core measurement terms such as height, width, depth, volume, and thickness, and how they apply in carpentry projects. 2. Perform basic arithmetic and geometry operations to calculate length, perimeter, and volume from a drawing. 3. Convert measurements between units like millimeters, inches, and feet based on drawing scales and worksite practices. 4. Use formulas for area and volume estimation in woodcutting, including how to calculate cutting allowances. 5. Derive practical dimensions such as tabletop size or leg height from a table design to aid in cutting and assembly.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, House-keeping-Materials, Tools and Equipment, Theme based props	T: 04:00 P: 10:00
		Unit 4.3: Component Breakdown and Bill of Materials (BOM) Preparation	1. Break down a sample table drawing into measurable components (top, legs, apron) and document their respective dimensions. 2. Prepare a detailed bill of materials (BOM) listing sizes, materials, finishes, and quantities for each part needed in the table project.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, House-keeping-Materials, Tools and Equipment, Theme based props	T: 04:00 P: 10:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 4.4: Jig Usage and Marking Techniques	1. Explain how jigs help maintain uniformity and precision during repetitive marking or drilling tasks. 2. Identify common types of marking jigs used in furniture workshops. 3. Use a jig to mark symmetrical placements of legs or joinery on a wooden table frame. 4. Apply consistent layout marking techniques using measuring tapes, try squares, and scribers before cutting or joining.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, House-keeping-Materials, Tools and Equipment, Theme based props	T: 04:00 P: 10:00
		Unit 4.5: Job Card Preparation and Work Execution Planning	1. Prepare a structured job card detailing task sequence, resource allocation, and estimated time required for each operation in table making. 2. Fill in relevant information such as assigned worker name, tools needed, material references, and deadlines. 3. Use the job card as a reference tool for tracking task progress and reporting status updates to a supervisor.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, House-keeping-Materials, Tools and Equipment, Theme based props	T: 04:00 P: 10:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
5.	**Site Recce, Materials, and Measurement Techniques**	**Unit 5.1: Tools and Equipment for Site Recce**	1. List the essential tools and equipment used for conducting furniture installation site recce, including both digital and manual instruments. 2. Match each tool such as laser measurer, level, and tape measure with its respective use during site evaluation. 3. Create a comprehensive checklist of tools and supplies needed for inspecting and documenting sample mock worksite before installation.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Measurement and Marking Tools, Housekeeping-Materials, Tools and Equipment, Sample of measurement sheet	T: 1200 P: 20:00
		Unit 5.2: Understanding Agencies and Site Operations	1. Identify various external and internal agencies working at a site, such as electricians, plumbers, masons, carpenters, and site managers. 2. Describe the scope of each agency's involvement and how their work influences carpentry timelines and layout feasibility. 3. Explain how collaboration between agencies is critical to safe, efficient site functioning and avoids delays. 4. Demonstrate the process of aligning job-related tasks with timelines (daily, weekly, monthly) using a sample job card.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Measurement and Marking Tools, Housekeeping-Materials, Tools and Equipment, Sample of measurement sheet	T: 1200 P: 20:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 5.3: Site Recce Checklist and Safety Assessment	1. Describe how to conduct a site recce and complete a checklist covering dimensions, obstacles, power points, and access areas. 2. Identify potential safety risks such as loose tiles or live wiring and apply caution signage or physical markers to highlight hazards on site.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Measurement and Marking Tools, Housekeeping-Materials, Tools and Equipment, Sample of measurement sheet	T: 1200 P: 20:00
		Unit 5.4: Drawing Interpretation and Layout Marking	1. Interpret layout drawings provided for furniture installation, noting dimensions, positions, and references. 2. Identify furniture zones based on design layout, especially for products like tables, cabinets, or seating systems. 3. Mark key layout points on-site using chalk, tape, or markers for walls, floors, or ceilings, referring to plan coordinates. 4. Demonstrate the correct process of layout marking for a table installation, ensuring balance and adequate clearance. 5. Cross-verify layout against on-site realities (e.g., plug points, obstacles) and suggest practical adjustments if needed.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Measurement and Marking Tools, Housekeeping-Materials, Tools and Equipment, Sample of measurement sheet	T: 1200 P: 20:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 5.5: Site Measurement and Documentation	1. Apply measurement techniques using tools like laser distance meters or measuring tapes to check available space and furniture fitment areas. 2. Record values clearly in site measurement sheets, maintaining consistency in units and labels. 3. Prepare a final documentation sheet summarizing all measurements and details for the mock table installation zone.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional) Measurement and Marking Tools, Housekeeping-Materials, Tools and Equipment, Sample of measurement sheet	T: 1200 P: 20:00
6 .	**Joinery, Fabrication, and Assembly of Components**	**Unit 6.1: Product Fabrication and Material Planning**	1. Explain the step-by-step process of fabricating a wooden table — from selecting raw material to pre-assembly. 2. Prepare a bill of materials (BOM) and cutting list detailing each component's dimensions, quantities, and material types. 3. Estimate the required quantities of wood, adhesives, fasteners, and fittings for table production while factoring in wastage allowance. 4. Demonstrate how planned layout of material, dimension cutting, and organized tool deployment enhance efficiency and reduce production loss.	FFS/N2206 – Prepare the worksite for on-site operations	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 6.2: Types of Joints and Their Applications	1. Identify and describe basic and advanced joint types such as butt, lap, dowel, dado, and mortise & tenon used in furniture making. 2. Explain the mechanical and aesthetic purpose of each joint, such as how mortise & tenon joints offer strength for table legs. 3. Select appropriate joints based on load, alignment, and visual finish, especially when working on the various parts of a wooden table.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00
		Unit 6.3: Processes to Build Wood Joints	1. Demonstrate how to mark, cut, and shape joints using chisels, routers, and drills, ensuring accuracy in depth, angle, and width. 2. Practice building specific joints like mortise & tenon and dowel connections to fit structural components of a table frame.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00
		Unit 6.4: Joinery Techniques and Joint Formation	1. Apply tested joinery methods for combining wooden parts using adhesives, clamps, and reinforcing materials. 2. Demonstrate how to align and fit joints with proper pressure and curing time during the table's assembly.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual	T: 04:00 P: 16:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			3. Secure jointed components using fasteners while maintaining squareness and structural balance. 4. Check each joint for flush finish, dimensional accuracy, and grip strength. 5. Rectify minor fitting issues during joint formation to avoid defects in final assembly.			Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	
		Unit 6.5: Surface Preparation and Finishing	1. Explain how to prepare wooden surfaces for finishing by sanding, smoothening, and correcting defects like splinters or cracks. 2. Identify and treat minor surface imperfections to ensure an even texture and colour absorption. 3. Prepare the table's surfaces for polish or sealant using the appropriate abrasive tools and fillers.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00
		Unit 6.6: Product Assembly and Installation	1. Demonstrate the assembly of a wooden table by aligning parts in sequence and tightening fasteners such as corner brackets or screws. 2. Inspect the final structure for flatness, wobble, joint gaps, and alignment with installation space.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 6.7: Quality Inspection and Defect Rectification	1. Conduct systematic quality checks on the finished table using measuring tools and visual inspection. 2. Identify errors like misaligned joints, surface scratches, or instability and choose suitable methods for correction. 3. Rework or reinforce parts to meet quality benchmarks. 4. Finalize the product only after ensuring it complies with dimensional, structural, and finishing standards.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00
		Unit 6.8: Docum-entation and Reporting	1. Maintain accurate records of materials used, time spent, tool usage, and repair work for a given table fabrication job. 2. Prepare a structured job card tracking all stages — from cutting and assembly to quality checks. 3. Communicate job progress, delays, or material issues clearly to the supervisor using written documentation.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props, Sample of a job card.	T: 04:00 P: 16:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
7.	**Finishing and Installation of Products**	**Unit 7.1: Adhesives and Fastening Techniques**	1. Identify different adhesives (such as PVA glue, epoxy, and contact adhesive) and fasteners (screws, nails, bolts) used in non-structural fixing during final product assembly. 2. Demonstrate correct application techniques for adhesives and fasteners when attaching components like corner blocks, drawer bottoms, or surface trims on a wooden table. 3. Choose fastening techniques based on type of material, expected load, and whether future disassembly or adjustment is needed.	FFS/N2206 – Prepare the worksite for on-site operations	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Housekeeping-Materials, Tools and Equipment, Theme based props.	T: 08:00 P: 30:00
		Unit 7.2: Clamping and Surface Finishing Methods	1. Demonstrate the use of clamps for maintaining alignment and pressure during adhesive curing or final touch-ups on a wooden table. 2. Explain and apply multiple surface finishing methods (e.g., sanding, staining, polishing) to complete a smooth and even finish on the table surface and legs.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Housekeeping-Materials, Tools and Equipment, Theme based props.	T: 08:00 P: 30:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 7.3: Cut-outs and Structural Preparations	1. Identify the functional requirement for structural cut-outs in furniture products such as for cable management or plumbing access. 2. Plan the location and size of cut-outs without affecting the integrity of the furniture unit. 3. Mark cut-out shapes and sizes on wooden surfaces using templates, rulers, or measuring tools. 4. Perform clean and accurate cut-outs on the tabletop (e.g., for a study desk) using tools such as hole saws or jigsaws.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Housekeeping-Materials, Tools and Equipment, Theme based props.	T: 08:00 P: 30:00
		Unit 7.4: Installation of Product Components and Hardware	1. Install final fittings such as handles, glides, hinges, or locks using appropriate hand tools and measurement references. 2. Position and install the finished wooden table in a room or layout, ensuring balance, spacing, and levelness. 3. Troubleshoot and resolve minor fitting issues, such as adjusting leg positions or tightening hardware for better alignment.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Housekeeping-Materials, Tools and Equipment, Theme based props.	T: 08:00 P: 30:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 7.5: Final Checks and Hygiene Practices	1. Conduct final quality inspection of the table's structural and surface finish, and confirm all components function properly. 2. Clean and prepare the table for delivery, ensuring hygiene, client-ready appearance, and tidiness of the work area.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Personal Protective Equipment, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Housekeeping-Materials, Tools and Equipment, Theme based props.	T: 08:00 P: 30:00
8.	**Health, Safety, and Greening Practices at the Worksite**	**Unit 8.1: Personal Hygiene, Dress Code, and Work Ethics**	1. Explain the relevance of personal hygiene, appropriate dress code, and respectful conduct in professional settings like workshops and installation sites. 2. Demonstrate good grooming practices, maintenance of uniforms, and personal cleanliness while at work. 3. Describe how punctuality, honesty, and discipline contribute to team coordination, safety, and work efficiency.	FFS/N2207 – Assist in the fabrication of the products at the worksite	Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props	T: 16:00 P: 24:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 8.2: Personal Protective Equipment (PPE) and First Aid Readiness	1. Identify PPE items suitable for carpentry and site-based activities, including helmets, safety shoes, goggles, gloves, and hearing protection. 2. Demonstrate the correct use and storage of PPE and access a first aid kit to treat minor injuries like cuts, splinters, or abrasions.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props	T: 16:00 P: 24:00
		Unit 8.3: Safety Protocols, Fire Evacuation, and Ergonomics	1. Explain the best practices for body posture, safe lifting, and bending techniques to prevent work-related injuries. 2. Describe fire evacuation protocols, emergency alarm responses, and exit route identification. 3. Recognize and interpret commonly used safety signs (e.g., danger, flammable, PPE required) and hand signals. 4. Apply the appropriate ergonomic principles while working with machines, materials, or in confined spaces.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props	T: 16:00 P: 24:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
		Unit 8.4: Tool Handling, Inspection, and Housekeeping Practices	1. Demonstrate proper tool handling before, during, and after operations, ensuring safety for self and others. 2. Conduct inspection of machines/ tools for signs of wear, damage, or malfunction, and report any issues. 3. Follow proper housekeeping practices such as workspace cleaning, dust control, and organized tool storage.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props	T: 16:00 P: 24:00
		Unit 8.5: Waste Management and Hazardous Material Handling	1. Classify worksite waste into recyclable (e.g., wood offcuts) and non-recyclable (e.g., plastic wraps), and dispose of them using the correct bins. 2. Explain safe handling procedures for flammable or toxic substances like adhesives and thinners and describe how to report breaches of safety.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props	T: 16:00 P: 24:00
		Unit 8.6: Material, Energy, and Water Conservation Practices	1. Explain how to reduce material wastage through accurate cutting, optimal planning, and reuse of offcuts. 2. Describe methods to conserve electricity through efficient tool usage, natural lighting, and switching off idle equipment. 3. Demonstrate responsible use of water during tool cleaning and workstation washdowns.		Interactive Lecture in the Class	White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional). Workbench, Measurement and Marking Tools, Manual Tools, Electric/ Power Tools, Theme based props	T: 16:00 P: 24:00

S No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools Aids	Duration
			4. Discuss the role of regular tool maintenance in prolonging lifespan and reducing environmental impact.				
9.	**Employability Skills**	Employability Skills		DGT/VSQ/ N0102: Employability Skills	Interactive Lecture in the Class	LCD Projector for PPT and Video Presentation, Speakers, and Whiteboard & marker	T: 30:00 P: 30:00
10.	**On-the-Job Training**						**60 Hours**

Annexure - II

Assessment Criteria

CRITERIA FOR ASSESSMENT FOR TRAINEES

Job Role	Assistant Carpenter
Qualification Pack	FFS/Q2201
Sector Skill Council	Furniture and Fittings Skill Council

S. No.	Assessment Guidelines
1.	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.
2.	The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3.	Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4.	Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5.	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6.	To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.
7.	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
FFS/N2206: Prepare the worksite for on-site operations	*Interpret the job cards and manage the workday*	**4**	**9**	**6**	**1**
	PC1. interpret and plan out the work in accordance with the job cards received from the supervisor	1	2	3	1
	PC2. prepare a list of all the necessary materials, tools, and equipment required for the various job work	1	3	-	-
	PC3. ensure coordination with the various departments for material movement at various intervals	1	2	-	-
	PC4. ensure daily filling and timely submission of job cards to the supervisor	1	2	3	-
	Prepare the worksite for recce and take measurements	**6**	**12**	**-**	**3**
	PC5. update the supervisor for any shortage or requirement of the tools and equipment	1	-	-	1
	PC6. assist in interpreting the site layout in order to perform the physical survey of the worksite during recce	2	3	-	-
	PC7. examine the recce site for any possible health and safety hazards and ensure it is prepared for marking and measurement purpose	1	3	-	1
	PC8. assist in marking the worksite as per layout plan and take measurements	1	4	-	1
	PC9. prepare the measurement sheet and handover to supervisor in-time	1	2	-	-
	Perform loading and unloading operations	**5**	**10**	**-**	**3**
	PC10. interpret the material loading/ unloading/ handling instruction sheet	1	-	-	-
	PC11. assist in preparing the execution plan with supervisor as per the instruction sheet	1	-	-	-
	PC12. assist in performing a visual quality check of handling equipment	1	4	-	1
	PC13. ensure proper arrangement of the handling equipment for loading and unloading of the materials at the specified location	1	3	-	1
	PC14. assist in the Quality Checking (QC) process of the materials before loading and unloading	1	3	-	1
	Segregate and store the materials, tools, and equipment	**4**	**11**	**-**	**1**
	PC15. ensure the use of appropriate containers to store or carry rivets, bolts, drift pins, etc.	1	3	-	-
	PC16. ensure that all the materials and equipment are stacked properly for easy identification and traceability	1	3	-	-
	PC17. ensure proper disposal of combustible waste products at the end of each workday	1	2	-	1

NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	PC18. maintain proper records of materials, tools, and equipment for each workday and update the supervisor	1	3	-	-
	Prepare the worksite for fabrication, assembly, and installation purposes	**3**	**17**	**4**	**1**
	PC19. organize all the necessary tools, materials, and equipment required for the specified operations	1	3	-	-
	PC20. ensure the work area is cleaned for hazard-free operations and appropriate floor and machine guards are in place	1	4		-
	PC21. ensure power sockets are functional as per the required job work	-	3	-	-
	PC22. set the work bench, tools, and machines as per the required job work	-	4	4	-
	PC23. ensure the usage of proper methods for cleaning and maintenance of the tools and equipment at regular intervals	1	3	-	1
	NOS Total	**22**	**59**	**10**	**9**
FFS/N2207: Assist in the fabrication of the products at the worksite	*Interpret and select resources as per instructions*	**4**	**9**	**-**	**-**
	PC1. interpret the job card and plan out the workday in consultation with the supervisor	1	2	-	-
	PC2. interpret the CAD-based or conventionally prepared drawings and specifications	2	4	-	-
	PC3. select the correct materials to comply with drawings and specifications	1	3	-	-
	Set out, measure, and mark the timber and timber-based materials	**11**	**12**	**-**	**-**
	PC4. identify the timber and timber-based materials for appropriate operations	1	3	-	-
	PC5. assist in identifying different members of the products as per the given specifications	1	4	-	-
	PC6. assist in preparing the part list of products with the supervisor	3	-	-	-
	PC7. use the suitable tool for marking the wood as per the specified dimensions	1	2	-	-
	PC8. assist in collecting information related to marking and measuring of materials using appropriate means or techniques	3	3	-	-
	PC9. use appropriate calculations and formulas to confirm the accuracy	2	-	-	-
	Form joints and prepare members of the product for assembly	**11**	**28**	**25**	**-**
	PC10. cut the joints safely and accurately using hand and power tools	2	5	7	-
	PC11. use the appropriate planning and shaping tools to prepare the members of the product as per specifications	2	5	4	-

NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	PC12. smoothen out the wooden surface using suitable sanding papers and tools	1	4	4	-
	PC13. conduct a visual check for any errors or damages in the wood or a given part	1	4	3	-
	PC14. check the overall accuracy and quality in terms of measurements, fitting of assembled parts, rigidity, steadiness, leveling, etc.	1	4	-	-
	PC15. rectify if any defects are found in any members of the product	2	3	2	-
	PC16. clean the parts of the product for the assembly operation	1	3	3	-
	PC17. assist in preparing the production status update report	1	-	2	-
	NOS Total	26	49	25	-
FFS/N2208: Assist in the assembly, finishing, and installation of the products at the worksite	*Assist in assembling the various members of the product*	**5**	**20**	**11**	**-**
	PC1. interpret the assembly drawings and instructions of the product	1	3	2	-
	PC2. measure the various components and segregate them for the pre-assembly marking operation	2	4	2	-
	PC3. select and use the specified fasteners wherever required	1	5	2	-
	PC4. assist in assembling and erecting structures accurately without damage to components	-	5	3	-
	PC5. assist in knocking down the existing cabinets, fixtures, and other fittings on the worksite as per the directions from supervisor	1	3	2	-
	Assist in finishing the surface of the product	**4**	**12**	**9**	**-**
	PC6. attach members neatly using appropriate fasteners or/ add adhesives as applicable	1	5	4	-
	PC7. prepare accurate joints and intersections with no gaps	2	4	3	-
	PC8. use the appropriate wood fillers and sanding papers to finish the product to a specified standard as per the supervisor's instruction	1	3	2	-
	Assist in installation of the product and its handover	**10**	**20**	**9**	**-**
	PC9. identify slots for placing/ installing each furniture part as per design	1	2	1	-
	PC10. undertake requisite cut-outs for electrical outlets, plumbing points, and other arrangements	2	4	2	-
	PC11. assist in installation and fastening of furniture components to the surface/ wall using appropriate adhesives/ hardware, etc.	2	4	2	-
	PC12. assist in installation of fittings (like locks, latch etc.), decorative mouldings/ finish accessories (crown moulding, decorative panels etc.)	2	4	2	-
	PC13. ensure that the installed product is cleaned thoroughly before handover	1	3	2	-

NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	PC14. undertake checks at regular intervals during installation to avoid any defects/ error detection at later stage	2	3	-	-
	NOS Total	**19**	**52**	**29**	**-**
FFS/N8201: Follow health, safety, and greening practices at the worksite	*Maintain cleanliness of the worksite*	**3**	**4**	**3**	**2**
	PC1. ensure adequate stock of cleaning materials and consumables	1	2	-	1
	PC2. identify and report poor organizational practices with respect to hygiene, food handling, cleaning	1	-	-	1
	PC3. ensure that the trash cans or waste collection points are cleared every day	1	2		-
	Follow health and safety procedures	**5**	**6**	**4**	**1**
	PC4. use appropriate personal protective equipment compatible with the work and compliant to relevant Occupational Health and Safety (OHS) guidelines: masks, safety glasses, head protection, ear muffs, safety footwear, gloves, aprons, etc.	3	3	4	-
	PC5. use emergency equipment in accordance with manufacturers' specifications as per requirement	2	3	-	1
	Maintain personal hygiene	**4**	**4**	**5**	**-**
	PC6. follow the dress code of the worksite	2	2	3	-
	PC7. wash hands regularly using suggested material such as soap, one-use disposable tissue, warm water, etc.	2	2	2	-
	Follow precautionary measures to avoid work hazards	**12**	**19**	**-**	**2**
	PC8. follow the safety signs displayed at the worksite	3	2	-	1
	PC9. undertake the safety measures and checks while handling any electrically powered tools, and equipment, etc.	3	7	-	1
	PC10. ensure the usage of harmful chemicals inside work area as per the specified guidelines only	1	3	-	-
	PC11. ensure safe handling and disposal of waste and debris	3	3	-	-
	PC12. undertake correct ways while lifting or movement of the heavy material from one place to another	2	4	-	-
	Ensure material conservation and optimization of resources	**11**	**7**	**8**	**-**
	PC13. ensure optimal material utilization in the specific processes	3	2	-	-
	PC14. implement the suggested ways to conserve and re-use water	3	2	2	-

NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	PC15. ensure to keep the electrical appliances in OFF position when not in use	2	-	3	-
	PC16. carry out routine cleaning of tools, machines, and equipment as per instruction	3	3	3	-
	NOS Total	**35**	**40**	**20**	**5**
DGT/VSQ/ N0102: Employability Skills (60 Hours)	*Introduction to Employability Skills*	**1**	**1**	**-**	**-**
	PC1. identify employability skills required for jobs in various industries	-	-	-	-
	PC2. identify and explore learning and employability portals	-	-	-	-
	Constitutional values – Citizenship	**1**	**1**	**-**	**-**
	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
	PC4. follow environmentally sustainable practices	-	-	-	-
	Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
	PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
	PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	
	Basic English Skills	**2**	**3**	**-**	**-**
	PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
	PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
	PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
	Career Development & Goal Setting	**1**	**2**	**-**	**-**
	PC10. understand the difference between job and career	-	-	-	-
	PC11. prepare a career development plan with short- and long-term goals, based on aptitude	1	2	-	-
	Communication Skills	**2**	**2**	**-**	**-**

NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
	PC13. work collaboratively with others in a team	-	-	-	-
	Diversity & Inclusion	**1**	**2**		**-**
	PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
	PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
	Financial and Legal Literacy	**2**	**3**	**-**	**-**
	PC16. select financial institutions, products and services as per requirement	-	-	-	-
	PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
	PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
	PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
	Essential Digital Skills	**3**	**4**	**-**	**-**
	PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
	PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
	PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-
	Entrepreneurship	**2**	**3**	**-**	**-**
	PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
	PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
	PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
	Customer Service	**1**	**2**		**-**
	PC26. identify different types of customers	-	-	-	-
	PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
	PC28. follow appropriate hygiene and grooming standards	2	3	-	-

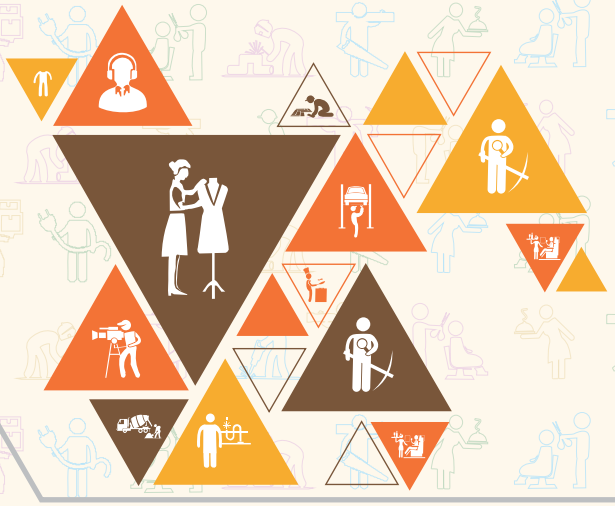
NOS	Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
	PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
	PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
	PC31. apply to identified job openings using offline / online methods as per requirement	-	-	-	-
	PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
	PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
	NOS Total	**20**	**30**	**-**	**-**

Annexure - III

Chapter Name	Unit No.	Topic Name	Page No.	Link to QR code	QR code
Module 1: Overview of the Furniture and Allied Industries & Assistant Carpenter Role	Unit 1.1: Introduction to the Furniture Industry and Its Scope	1.1.1: national and global scope of the furniture industry and its contribution to economy and employment.	46	https://youtu.be/VxX43jRXE-_A?si=CQPjXcs-U8tRHmIMW	national and global scope of the furniture
Module 1: Overview of the Furniture and Allied Industries & Assistant Carpenter Role	Unit 1.3: Interior Design and Furniture Integration	1.3.3 Use storyboards to communicate visual ideas effectively to team members or clients.	46	https://www.youtube.com/watch?v=4tuNDgFmVhU	importance of aligning furniture design with interior layout
Module 1: Overview of the Furniture and Allied Industries & Assistant Carpenter Role	Unit 1.5: Role and Responsibilities of an Assistant Carpenter	1.5.1: the typical day-to-day duties of an Assistant Carpenter in a workshop and on-site.	46	https://youtu.be/q7_YLxQt8RI?si=3Fninx-SQu_H6bTx	day-to-day duties of an Assistant Carpenter in a workshop
Module 2: Organizational Structure, Communication, and Digital Literacy	Unit 2.1: Understanding Organizational Structure and Workplace Protocols	2.1.1: the difference between flat, functional, and hierarchical organizational structures used in carpentry and installation businesses.	88	https://youtu.be/rrBvDcM1quc?si-=gab4h4uJt8i7Tbiw	Types of Organisational Structure
Module 2: Organizational Structure, Communication, and Digital Literacy	Unit 2.3: Conflict Resolution and Professional Behaviour at Workplace	2.3.1: typical workplace conflicts in carpentry settings, including tool sharing, task overlap, and miscommunication.	88	https://youtu.be/4kH1o6rShx8?si-=3KE_69ddcXWyb3bk	Conflict Resolution
Module 2: Organizational Structure, Communication, and Digital Literacy	Unit 2.5: Financial Transactions and Online Payments	2.5.1: various payment methods used in site-level purchases or reimbursements including UPI, cash, and mobile wallets.	88	https://youtu.be/2ugB_KI7ZR8?si=Vo-CTCMUMJbJKjqku	payment methods used in site-level purchases
Module 3: Raw Materials, Tools, Equipment, and Hardware Handling Techniques	Unit 3.1: Raw Materials and Timber Classification	3.1.2: different types of raw materials used in furniture making such as hardwoods, softwoods, plywood, MDF, and particle boards.	129	https://youtu.be/QMMEPaxPh-1o?si=elm8pui_FMm7qaTy	types of raw materials used in furniture making

Chapter Name	Unit No.	Topic Name	Page No.	Link to QR code	QR code
Module 3: Raw Materials, Tools, Equipment, and Hardware Handling Techniques	Unit 3.3: Safe Handling and Operation of Tools and Equipment	3.1.1: proper handling and operation of carpentry tools and machines, following safe usage techniques and posture.	129	https://youtu.be/vMoqfAD2y1M?si=-EYZIipQN54eJxu4w	Introduction to tools and Equipment (Introduction to Carpentry)
Module 3: Raw Materials, Tools, Equipment, and Hardware Handling Techniques	Unit 3.5: Maintenance and Organization of Tools and Workspace	3.1.1: regular cleaning, sharpening, and lubricating methods to keep tools functional.	129	https://youtu.be/7rG4f1BvC9M?si=-Y0QJNWUlp9uB6Rxr	Lubrication Methods
Module 4: Understanding Drawings and Job Planning	Unit 4.1: Types and Components of Architectural and Product Drawings	4.1.1: the differences between architectural layout drawings and product-specific views used in carpentry and furniture fabrication.	129	https://www.youtube.com/watch?v=CDnzaE7j0cE	differences between architectural layout drawings
Module 4: Understanding Drawings and Job Planning	Unit 4.3: Component Breakdown and Bill of Materials (BOM) Preparation	4.3.2: detailed bill of materials (BOM) listing sizes, materials, finishes, and quantities for each part needed in the table project.	164	https://youtu.be/_2TSRs4_9F-E?si=DDpF9lV_azbmEOb3	Bill Of Materials
Module 5: Site Recce, Materials, and Measurement Techniques	Unit 5.1: Tools and Equipment for Site Recce	5.1.1: essential tools and equipment used for conducting a furniture installation site recce, including both digital and manual instruments.	198	https://youtu.be/hQA0dd_0rq8?si=-GXcPsw0U3pZsb1L4	Tools Name with Pictures
Module 5: Site Recce, Materials, and Measurement Techniques	Unit 5.3: Site Recce Checklist and Safety Assessment	5.3.2: potential safety risks such as loose tiles or live wiring and apply caution signage or physical markers to highlight hazards on site.	198	https://youtu.be/WDoVGQKHWsE?si=-rzRK8l1PavrRUiJE	Safety Procedures for Tiling (English)
Module 6: Joinery, Fabrication, and Assembly of Components	Unit 6.1: Product Fabrication and Material Planning	6.1.1: step-by-step process of fabricating a wooden table — from selecting raw material to pre-assembly.	**248**	https://youtu.be/9wRGoG6Hmho?si=-Fdbtf9DAR8a_Bp_	step-by-step process of fabricating a wooden table

Chapter Name	Unit No.	Topic Name	Page No.	Link to QR code	QR code
Module 6: Joinery, Fabrication, and Assembly of Components	Unit 6.3: Processes to Build Wood Joints	6.3.1: how to mark, cut, and shape joints using chisels, routers, and drills, ensuring accuracy in depth, angle, and width.	248	https://youtu.be/HOcy-KfsvAQ?si=gGi-y3qzyJ09CBzT	Router Bits and Their Cuts
Module 6: Joinery, Fabrication, and Assembly of Components	Unit 6.8: Documentation and Reporting	6.8.1: accurate records of materials used, time spent, tool usage, and repair work for a given table fabrication job.	248	https://youtu.be/ElLwRsLAhv8?si=-GTx46iuMBALuZAGP	7 Quality Control Tools
Module 7: Finishing and Installation of Products	Unit 7.1: Adhesives and Fastening Techniques	7.1.1: different adhesives (such as PVA glue, epoxy, and contact adhesive) and fasteners (screws, nails, bolts) used in non-structural fixing during final product assembly.	275	https://youtu.be/bbTAG_6MMhs?si=-aQc44D6n4AjfoAza	How Adhesive Made in Factory
Module 7: Finishing and Installation of Products	Unit 7.3: Cut-outs and Structural Preparations	7.3.1: the functional requirement for structural cut-outs in furniture products such as for cable management or plumbing access.	275	https://youtu.be/IBqO6aUkJSE?si=Fu_tSWj6hl1Wiiuh	functional requirement for structural cut-outs in furniture products
Module 8: Health, Safety, and Greening Practices at the Worksite	Unit 8.1: Personal Hygiene, Dress Code, and Work Ethics	8.1.1 the relevance of personal hygiene, appropriate dress code, and respectful conduct in professional settings like workshops and installation sites.	306	https://youtu.be/UxskKQ9W-OTE?si=SKSL_ntvlaQ04xIG	Personal Health Hygiene
Module 8: Health, Safety, and Greening Practices at the Worksite	Unit 8.3: Safety Protocols, Fire Evacuation, and Ergonomics	8.3.1: best practices for body posture, safe lifting, and bending techniques to prevent work-related injuries.	306	https://www.youtube.com/watch?v=CRd16pBRt2w	safe lifting techniques



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