



**FURNITURE  
& FITTINGS  
SKILL COUNCIL**  
कुशल • सक्षम • आत्मनिर्भर



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**Skill India**  
कौशल भारत - कुशल भारत



# Model Curriculum

**QP Name: Panelworks Machine Operator**

**QP Code: FFS/Q1002**

**QP Version: 1.0**

**NSQF Level: 4.5**

**Model Curriculum Version: 1.0**

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# Training Parameters

<b>Sector</b>	Interiors, Furniture and Fixtures
<b>Sub-Sector</b>	Furniture Design & Production
<b>Occupation</b>	Furniture Production (Machine Shop)
<b>Country</b>	India
<b>NSQF Level</b>	4.5
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/7523.9900
<b>Minimum Educational Qualification and Experience</b>	<p>Completed 1st year of 3-year/ 4-years UG Or Pursuing 1st year of 3-year/ 4-years UG and continuing education Or Pursuing 3rd year of 3-year diploma after 10th and continuing education Or Completed 3-year diploma after 10<sup>th</sup> Or Completed 1st year of 2-year diploma after 12th Or Pursuing 2nd year of 2- year diploma after 12 and continuing education Or Grade 12 Pass with 1 year of relevant experience Or Grade 10 pass with 2 years of any combination of NTC/NAC/CITS or equivalent with 1 year of relevant experience Or Grade 10 pass with 3 years of relevant experience Or Previous relevant Qualification of NSQF Level 4 (Assistant Panelworks Machine Operator) with 1.5 years of relevant experience</p>
<b>Minimum Level of Education for Training in School</b>	NA
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed on</b>	31-08-2023
<b>Next Review Date</b>	31-08-2026
<b>NSQC Approval Date</b>	31-08-2023

<b>Q.P. Version</b>	1.0
<b>Model Curriculum Creation Date</b>	29-06-2023
<b>Model Curriculum Valid Up to Date</b>	31-08-2026
<b>Model Curriculum Version</b>	1.0
<b>Minimum Duration of the Course</b>	510 (Min. of 1 Electives to be selected)
<b>Maximum Duration of the Course</b>	660 (Max. of 2 Electives to be selected)

# Program Overview

This section summarizes the end objectives of the program along with its duration.

## Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills:

- Display comprehensive understanding of the Interiors, Furniture, and Allied industry, including its key aspects, trends, and practices.
- Explain the organizational context and workplace policies specific to the Interiors, Furniture, and Allied industry.
- Comprehend the responsibilities and tasks associated with the role of an Panelworks Machine Operator in the manufacturing process.
- Demonstrate the ability to plan and delegate tasks effectively, ensuring efficient workflow and utilization of resources in the workplace.
- Develop skills in team management, including effective communication, collaboration, and coordination with team members to achieve common goals.
- Prepare and manage the worksite for machine operations, ensuring proper setup, organization, and safety measures.
- Demonstrate skills in setting up machines, including calibration, tooling, and alignment, to ensure accurate and efficient operation.
- Demonstrate the ability to initiate and operate machines following standard procedures, ensuring proper safety precautions and quality control.
- Perform the necessary machining operations with precision, accuracy, and adherence to specifications and quality standards.
- Learners will understand and apply regular machine maintenance procedures, including cleaning, lubrication, and minor troubleshooting to ensure optimal machine performance.
- Employ quality control measures and effectively manage the worksite, ensuring adherence to quality standards, productivity, and efficiency.
- Demonstrate a strong understanding and practice of health and safety protocols, including hazard identification, PPE usage, and safe work practices.
- Display and skills related to greening practices in the workplace, including waste management, energy conservation, and sustainable resource usage.
- Develop essential employability skills, such as communication, teamwork, problem-solving, time management, and adaptability, relevant to the industry.
- Set up the worksite for pasting/pressing operations, ensuring proper material positioning and preparation, and implementing safety measures.
- Perform pasting operations effectively, including applying adhesives, positioning materials accurately, and using appropriate tools and techniques.
- Demonstrate proficiency in pressing operations, including operating the pressing machine, setting appropriate parameters, and achieving proper bonding of materials.
- Manage the worksite during pasting/pressing operations, ensuring quality control, adherence to specifications, and maintaining a safe and organized work environment.
- Develop practical skills and proficiency in operating pasting/pressing machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.



- Set up the worksite for cutting/sizing operations, ensuring proper material positioning, tool selection, and implementing safety measures.
- Perform cutting/sizing operations accurately, employing appropriate techniques, tools, and machinery to achieve precise and desired dimensions of furniture components.
- Manage the worksite during cutting/sizing operations, implementing quality control measures, monitoring specifications, and maintaining a safe and organized work environment.
- Develop practical skills and proficiency in operating cutting/sizing machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.
- Prepare the worksite for edge banding operations, including material preparation, tool selection, and configuring edge banding parameters for desired results.
- Perform edge banding operations skilfully, including applying edge banding materials, trimming excess, and ensuring a seamless finish on furniture edges.
- Manage the worksite efficiently during edge banding operations, maintaining quality control, verifying adherence to specifications, and promoting a safe and organized work environment.
- Develop practical skills and proficiency in operating edge banding machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.
- Set up the worksite for drilling operations, including material positioning, tool selection, and configuring drilling parameters based on project requirements.
- Perform drilling operations accurately, employing proper drilling techniques, maintaining alignment and precision, and ensuring the desired outcomes are achieved.
- Manage the worksite during drilling operations, implementing quality control measures, monitoring specifications, and maintaining a safe and organized work environment.
- Develop practical skills and proficiency in operating drilling machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.
- Prepare the worksite for routing operations, including material setup, selection of appropriate router bits, and configuring routing parameters for desired results.
- Perform routing operations effectively, using appropriate routing techniques, controlling depth and speed, and achieving precise cuts and shapes in furniture components.
- Manage the worksite proficiently during routing operations, ensuring quality control, verifying specifications, and promoting safety and organization in the work environment.
- Develop practical skills and proficiency in operating routing machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.
- Set up the worksite for veneer cutting/splicing operations, including material preparation, positioning, and utilizing appropriate tools and techniques.
- Demonstrate proficiency in veneer cutting/splicing operations, ensuring accurate cuts, precise alignment, and proper adhesion to achieve desired veneer patterns and finishes.
- Manage the worksite during veneer cutting/splicing operations, implementing quality control measures, monitoring specifications, and maintaining a safe and organized work environment.
- Develop practical skills and proficiency in operating veneer cutting/splicing machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.
- Prepare the worksite for panelworks CNC operations, including material setup, programming CNC parameters, and ensuring proper tooling and fixturing.
- Perform panelworks CNC operations proficiently, including loading and unloading materials, running CNC programs, monitoring machine operation, and ensuring accurate machining of furniture components.

- Manage the worksite effectively during panelworks CNC operations, implementing quality control measures, monitoring specifications, and maintaining a safe and organized work environment.
- Develop practical skills and proficiency in operating panelworks CNC machines during on-the-job training, including machine setup, operation, troubleshooting, and maintenance.

## Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>Bridge Module(s)</b>	<b>12:00</b>	<b>18:00</b>	<b>00:00</b>	<b>00:00</b>	<b>30:00</b>
Module 1: Introduction to the Interiors, Furniture, and Allied industry	04:00	00:00	00:00	00:00	04:00
Module 2: Introduction to the organizational context and workplace policies	04:00	18:00	00:00	00:00	22:00
Module 3: Introduction to the role of a Panelworks Machine Operator	04:00	00:00	00:00	00:00	04:00
<b>FFS/N1010: Perform team &amp; task management for required machining operation NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
Module 4: Task planning and delegation	06:00	24:00	00:00	00:00	30:00
Module 5: Team Management	06:00	24:00	00:00	00:00	30:00
<b>FFS/N1011: Manage the worksite for required machine operations NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
Module 6: Prepare and manage worksite for machine operation	04:00	18:00	00:00	00:00	22:00
Module 7: Perform machine setup	08:00	30:00	00:00	00:00	38:00



<b>FFS/N1012: Perform Machine Operations for required job work NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
Module 8: Machine initiation process	08:00	24:00	00:00	00:00	32:00
Module 9: Performing required machining operation	04:00	24:00	00:00	00:00	28:00
<b>FFS/N1013: Perform machine maintenance and quality checking for required specifications NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
Module 10: Machine maintenance	08:00	30:00	00:00	00:00	38:00
Module 11: Quality control and worksite management	04:00	18:00	00:00	00:00	22:00
<b>FFS/N8203: Maintain health, safety, and greening practices at the worksite NOS Version No. 3 NSQF Level- 5</b>	<b>12:00</b>	<b>18:00</b>	<b>00:00</b>	<b>00:00</b>	<b>30:00</b>
Module 12: Health, safety, and hygiene protocols	08:00	12:00	00:00	00:00	20:00
Module 13: Material conservation and resources optimization	04:00	06:00	00:00	00:00	10:00
<b>DGT/VSQ/N0102: Employability Skills (60 Hours) NOS Version No. 1 NSQF Level- 4</b>	<b>30:00</b>	<b>30:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
Module 14: Employability Skills	30:00	30:00	00:00	00:00	60:00
<b>Total Duration</b>	<b>102:00</b>	<b>258:00</b>	<b>00:00</b>	<b>00:00</b>	<b>360:00</b>

## Elective Modules

The table lists the modules and their duration corresponding to the Elective NOS of the QP.

### Elective 1: Pasting and Pressing Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1014: Setup and operate pasting and pressing machines NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 15: Setup worksite for pasting/pressing operation	02:00	10:00	00:00	00:00	12:00
Module 16: Pasting operation	04:00	16:00	00:00	00:00	20:00
Module 17: Pressing Operation	04:00	16:00	00:00	00:00	20:00
Module 18: Worksite management and quality control for pasting/pressing operation	02:00	06:00	00:00	00:00	08:00
Module 19: On-the-job training for pasting & pressing machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

### Elective 2: Cutting & Sizing Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1015: Setup and operate cutting and sizing machines NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 20: Setup worksite for cutting/sizing operation	04:00	16:00	00:00	00:00	20:00
Module 21: cutting/sizing operation	06:00	26:00	00:00	00:00	32:00
Module 22: Worksite management and quality	02:00	06:00	00:00	00:00	08:00

control for cutting/sizing operation					
Module 23: On-the-job training for cutting & sizing machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

### Elective 3: Edge Banding Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1016: Setup and operate edge band machines</b> <b>NOS Version No. 1</b> <b>NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 24: Setup worksite for edge banding operation	04:00	16:00	00:00	00:00	20:00
Module 25: Edge Banding operation	06:00	26:00	00:00	00:00	32:00
Module 26: Worksite management and quality control for edge banding operation	02:00	06:00	00:00	00:00	08:00
Module 27: On-the-job training for edge banding machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

### Elective 4: Drilling Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1017: Setup and operate drilling machines</b> <b>NOS Version No. 1</b> <b>NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 28: Setup worksite for drilling operation	04:00	16:00	00:00	00:00	20:00
Module 29: Drilling operation	06:00	26:00	00:00	00:00	32:00

Module 30: Worksite management and quality control for drilling operation	02:00	06:00	00:00	00:00	08:00
Module 31: On-the-job training for drilling machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

### Elective 5: Routing Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1018: Setup and operate routing machines</b> NOS Version No. 1 NSQF Level- 4.5	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 32: Setup worksite for routing operation	04:00	16:00	00:00	00:00	20:00
Module 33: Routing operation	06:00	26:00	00:00	00:00	32:00
Module 34: Worksite management and quality control for routing operation	02:00	06:00	00:00	00:00	08:00
Module 35: On-the-job training for routing machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

### Elective 6: Veneer Cutting and Splicing Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1019: Setup and Operate veneer cutting and splicing machine</b> NOS Version No. 1 NSQF Level- 4.5	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 36: Setup worksite for veneer cutting/splicing operation	04:00	16:00	00:00	00:00	20:00

Module 37: Veneer cutting/splicing operation	06:00	26:00	00:00	00:00	32:00
Module 38: Worksite management and quality control for veneer cutting/splicing operation	02:00	06:00	00:00	00:00	08:00
Module 39: On-the-job training for veneer cutting/splicing machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

### Elective 7: Panelworks CNC Machine

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>FFS/N1020: Setup and Operate panel works CNC machines NOS Version No. 1 NSQF Level- 4.5</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>
Module 40: Setup worksite for panel works CNC operation	04:00	16:00	00:00	00:00	20:00
Module 41: CNC programming and machining operation	06:00	26:00	00:00	00:00	32:00
Module 42: Worksite management and Quality Control for panel works CNC operation	02:00	06:00	00:00	00:00	08:00
Module 43: On-the-job training for CNC machine	00:00	00:00	90:00	00:00	90:00
<b>Total Duration</b>	<b>12:00</b>	<b>48:00</b>	<b>90:00</b>	<b>00:00</b>	<b>150:00</b>

# Module Details

## Module 1: Introduction to the Interiors, Furniture, and Allied Industry

### Bridge Module

#### Terminal Outcomes:

- Explain the functioning of the furniture industry.
- Describe the segments of the furniture industry.
- Explain the scope and significance of the furniture industry.

Duration: 04:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Describe the scope and significance of the furniture industry.</li> <li>• Discuss the various segments of the furniture industry and how they function.</li> <li>• Explain various types and categories of furniture.</li> <li>• Describe the types of allied or enabling industries involved in furniture manufacturing.</li> <li>• Describe the relationship between interiors and the furniture industry.</li> <li>• Classify different types of Interior projects.</li> <li>• Describe the occupational map of the furniture industry.</li> <li>• Explain the significance of the Interiors, Furniture, and Allied industries.</li> </ul>	
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
N.A.	



## Module 2: Introduction to the organizational context and workplace policies

### Bridge Module

#### Terminal Outcomes:

- Explain the methods and mechanisms for effective communication.
- Demonstrate the usage of effective communication and interpersonal skills.
- List the latest skills and technologies prevalent in the furniture industry.
- Demonstrate the usage of different tools and technologies.
- Describe organizational hygiene and sanitation guidelines.

<b>Duration: 04:00</b>	<b>Duration: 18:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of team objectives and goals.</li> <li>• List the basic parts of a computer and explain their functions.</li> <li>• Explain the working of various social media platforms: WhatsApp, Facebook, Twitter, etc.</li> <li>• State the significance of payment methods and gateways for financial transactions.</li> <li>• List the steps involved in a financial transaction using a suitable medium.</li> <li>• Differentiate and learn the escalation in the hierarchy.</li> <li>• Explain the functions of MS Office.</li> <li>• Explain the importance of effective communication and team coordination.</li> <li>• Explain the difference between briefing and debriefing.</li> <li>• State the importance of coordinating and resolving conflicts with the team members to achieve a smooth workflow.</li> <li>• Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps, if any.</li> <li>• Describe how to address and resolve conflicts among employees.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate the use of appropriate behaviour and language while communicating with colleagues.</li> <li>• Perform how-to-report problems that need escalation.</li> <li>• Demonstrate active listening skills while communicating.</li> <li>• Demonstrate how to sign up for an email account.</li> <li>• Demonstrate how to search for a video on the internet.</li> <li>• Demonstrate how to operate various social media platforms: YouTube, WhatsApp, Facebook, Twitter, etc.</li> <li>• Demonstrate the steps involved in a financial transaction using a suitable medium.</li> <li>• Demonstrate how to use the internet to gather work-related information.</li> <li>• Prepare an MS office project using a suitable medium.</li> <li>• Demonstrate how to start and operate computers.</li> <li>• Demonstrate how to access stored data or files.</li> <li>• Demonstrate how to interact with the supervisor in person and on the phone.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Sample of Job Cards, Sample of Escalation Matrix, Organization Structure.	

## Module 3: Introduction to the role of an Panelworks Machine Operator

### Bridge Module

#### Terminal Outcomes:

- Explain the role and responsibilities of an Panelworks Machine Operator.
- Discuss the scope of work for an Panelworks Machine Operator.

<b>Duration:</b> 04:00	<b>Duration:</b> 00:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Elaborate on the various organizational structure, processes, code of conduct, reporting matrix, and escalation hierarchy.</li> <li>• Explain the role, responsibilities, and limitations of an Panelworks Machine Operator.</li> <li>• Describe the attributes and basic skill sets required for an Panelworks Machine Operator.</li> <li>• Explain the process of communication with team members and supervisors as per the protocol of the organization.</li> <li>• List all the documents required to carry out the job, such as a job sheet and checklist for oneself.</li> <li>• List the various operations/activities that take place at the worksite and Panelworks Machine Operator’s role in the same.</li> <li>• Discuss the regulatory authorities, laws, and regulations related to an individual while working in the Furniture and Fittings Industry.</li> <li>• Discuss the career path for the Panelworks Machine Operator job role.</li> <li>• Explain the nature of work, timeliness, and requirement.</li> </ul>	
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
N.A.	

## Module 4: Task planning and delegation

Mapped to FFS/N1010, v 1.0

### Terminal Outcomes:

- Discuss the process and techniques involved in identifying and analysing work orders and product details.
- Assist in planning and scheduling machine operations to maximize machine capacity utilization and achieve maximum productivity.
- Allocate tasks to team members based on their skills and capabilities to optimize productivity and performance.
- Communicate effectively with assistants, ensuring mutual understanding of assigned tasks and fostering a collaborative work environment.

<b>Duration: 06:00</b>	<b>Duration: 24:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss how to analyze work orders and project details to identify job work requirements accurately.</li> <li>• Explain the principles of effective planning and scheduling to maximize machine capacity utilization.</li> <li>• Discuss the importance of assessing team members' skills and capabilities when allocating tasks.</li> <li>• Explain the importance of effective communication in clarifying tasks and promoting a collaborative work environment.</li> <li>• Discuss the significance of timely job card filling and submission in maintaining accurate project tracking and reporting.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate the ability to analyze work orders and project details, identifying job work requirements accurately and effectively.</li> <li>• Collaborate with the supervisor in planning and scheduling machine operations, optimizing machine capacity utilization, and achieving maximum productivity.</li> <li>• Effectively allocate tasks to team members based on their skills and capabilities to optimize productivity and performance.</li> <li>• Display skills to communicate clearly and effectively with assistants, ensuring understanding of assigned tasks and fostering a collaborative work environment.</li> <li>• Oversee the timely and accurate filling and submission of job cards, adhering to documentation standards and utilizing project tracking systems effectively.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Sample job card.	

## Module 5: Team Management

Mapped to FFS/N1010, v 1.0

### Terminal Outcomes:

- Discuss the parameters involved in evaluating team members' performance and provide constructive feedback.
- Explain the process of grievance redressal and conflicts management within the team promptly.
- Perform documentation of deliverables accurately based on the project scope and organizational requirements.

<b>Duration: 06:00</b>	<b>Duration: 24:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of evaluating team members' performance and providing constructive feedback and guidance for improvement.</li> <li>• Describe the steps involved in addressing performance issues and conflicts within a team promptly.</li> <li>• Explain the significance of documenting deliverables accurately based on the project scope and organizational requirements.</li> <li>• Discuss the importance of providing regular work updates to the supervisor for effective coordination and progress tracking.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate team members' performance effectively, provide constructive feedback, and offer guidance to facilitate their improvement and growth.</li> <li>• Demonstrate how to address performance issues and conflicts within the team promptly, utilizing conflict resolution strategies and problem-solving techniques effectively.</li> <li>• Perform documentation of deliverables accurately, adhering to project documentation standards, templates, and organizational requirements.</li> <li>• Provide timely and accurate work updates to the supervisor at regular intervals, utilizing appropriate communication protocols and reporting formats.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
NA	

## Module 6: Prepare and manage worksite for machine operation

Mapped to FFS/N1011, v 1.0

### Terminal Outcomes:

- Discuss the process of interpreting drawings, part lists, cuttings lists, material lists, tools and equipment to determine job work requirements accurately.
- Discuss and list different machining methods, tools, equipment, and consumables for a given machining task.
- Organize and maintain all necessary tools, materials, and components based on job work requirements effectively.
- Explain the process of verifying the availability and quality of materials accurately to comply with drawing and specifications.

<b>Duration: 04:00</b>	<b>Duration: 18:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of analysing technical drawings, part lists, cuttings lists, material lists, tools and equipment to determine job work requirements.</li> <li>• Differentiate various machining methods, tools, equipment, and consumables for specific machining tasks.</li> <li>• Describe the importance of organizing tools, materials, and components based on job work requirements.</li> <li>• Explain the importance of verifying the availability and quality of materials to comply with drawing and specifications accurately.</li> <li>• Discuss the significance of maintaining health and safety requirements, including the proper use of personal protective equipment (PPE), during machine operations.</li> <li>• Describe the importance of regular cleaning and maintenance of the worksite for efficient and safe panelworks machine operations.</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse technical drawings, part lists, cuttings lists, material lists, tools and equipment to determine accurate job work requirements.</li> <li>• Identify and select appropriate machining methods, tools, equipment, and consumables for a given machining task, ensuring efficiency and quality.</li> <li>• Demonstrate skills in organizing necessary tools, materials, and components based on job work requirements.</li> <li>• Verify the availability and quality of materials to ensure compliance with drawing and specifications.</li> <li>• Maintain health and safety (WHS) requirements, including the correct utilization of personal protective equipment (PPE), to ensure a safe working environment during panelworks operations.</li> <li>• Perform the cleaning and maintenance of the worksite at regular intervals, ensuring a clean and organized environment.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panelworks machines with requisite tools and equipment, PPE kits, WHS kits.	

## Module 7: Perform machine setup

Mapped to FFS/N1011, v 1.0

### Terminal Outcomes:

- Demonstrate skills for setting out and adjusting the machining program accurately based on job work specifications.
- Illustrate the process of selecting and feeding the suitable machine consumables based on job work details effectively.
- Perform loading and unloading of the job work on/from the machine bed safely and efficiently.
- Perform measurement and marking operations accurately based on job work specifications.

Duration: 08:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Explain the process of setting out and adjusting the machining program based on job work specifications.</li> <li>• Describe the selection and feeding process of suitable machine consumables on different machines based on job work details.</li> <li>• Explain the importance of monitoring the loading and unloading of the job work on/from the machine bed and the associated safety precautions for different machines.</li> <li>• Discuss the process of performing measurement and marking operations based on job work specifications during machine operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Set out and adjust the machining program accurately based on job work specifications, ensuring precise and efficient machining operations.</li> <li>• Select and feed the appropriate machine consumables, such as glue, adhesives, edge bands, etc., based on job work details on specific machines.</li> <li>• Monitor the loading and unloading of the job work on/from the machine bed safely and efficiently, ensuring smooth operations and minimizing risks.</li> <li>• Perform accurate measurement and marking operations based on job work specifications, ensuring precise cutting and shaping of materials on machines.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panelworks machines with requisite tools and equipment.	



## Module 8: Machine initiation process

Mapped to FFS/N1012, v 1.0

### Terminal Outcomes:

- Ensure the checking and maintaining of fundamental systems as per the machine initiation checklist effectively.
- Illustrate the installation and adjustment of the appropriate tools and equipment per the project requirements effectively.
- Display proper checking of safety equipment before machine initiation effectively.

<b>Duration: 08:00</b>	<b>Duration: 24:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the importance of supervising the checking of fundamental systems as per the machine initiation checklist and the associated safety considerations.</li> <li>• Explain the process of installing and adjusting appropriate tools and equipment as per the project requirements.</li> <li>• Describe the importance of properly checking safety equipment before machine initiation and the specific checks required.</li> <li>• Discuss the process of monitoring machine trial run and the evaluation criteria for required operation, accuracy, and quality.</li> </ul>	<ul style="list-style-type: none"> <li>• Supervise the checking of fundamental systems such as air pressure, duct collector, stabilizers, etc., as per the machine initiation checklist, ensuring proper functioning and safety compliance.</li> <li>• Install and adjust the appropriate tools and equipment, such as blades, edge bands, drill bits, etc., as per the project requirements.</li> <li>• Perform thorough checks of safety equipment, including emergency stops, gauges, guards, and controls, before machine initiation.</li> <li>• Monitor the machine trial run, evaluate the required operation, accuracy, and quality, and make necessary adjustments if required.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panelworks machines with requisite tools and equipment.	

## Module 9: Performing required machining operation

Mapped to FFS/N1012, v 1.0

### Terminal Outcomes:

- Explain the steps involved in feeding and handling of the job work in the machine using appropriate handling equipment.
- Demonstrate the skills in operating the machine with designed capacity and purpose.
- List standard operating procedures and safety protocols associated with different machine operations.
- Discuss the material handling and movement involved in a machining operation.

<b>Duration: 04:00</b>	<b>Duration: 24:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the process of proper feeding and handling of job work in the machine for the required operation and the associated safety protocols.</li> <li>• Describe the importance of performing the operation in accordance with the machine's designed capacity, purpose, and manufacturer recommendations.</li> <li>• Discuss the significance of monitoring the operation periodically to evaluate product quality and yield and the techniques involved in the assessment.</li> <li>• Explain the importance of following standard operating procedures and safety protocols during machine operation and the specific procedures and protocols to be followed.</li> <li>• Describe the role of material handling and movement after the operation and the techniques involved.</li> <li>• Discuss the importance of operating the machine to full efficiency and safety and the measures involved in achieving optimal performance.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform feeding and handling of the job work in the machine for the required operation, ensuring accuracy and adherence to safety protocols.</li> <li>• Perform the operation in accordance with the machine's designed capacity and purpose, following the manufacturer's recommendations, to ensure optimal performance and desired results.</li> <li>• Monitor the operation periodically to evaluate product quality and yield, ensuring adherence to quality standards and maximizing output efficiency.</li> <li>• Follow standard operating procedures and safety protocols during machine operation.</li> <li>• Perform storage, transportation, and organization of materials in compliance with safety guidelines after machine operation.</li> <li>• Ensure the machine is operated to full efficiency and safety, maximizing productivity while prioritizing the well-being of operators.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panelworks machines with requisite tools and equipment, Handling and storage tools.	

## Module 10: Machine maintenance

Mapped to FFS/N1013, v 1.0

### Terminal Outcomes:

- Discuss the steps involved in checking and reporting machine malfunctions or deviations from standard procedures effectively.
- Demonstrate the process of conducting routine maintenance checks on machines. tools and equipment effectively
- List the steps involved in cleaning, lubrication, and calibration of machines effectively as per maintenance schedules.

<b>Duration: 08:00</b>	<b>Duration: 30:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain how to report machine faults and deviations from regular processes.</li> <li>• Discuss the significance of conducting routine maintenance checks on machines and the procedures involved in conducting inspections.</li> <li>• Describe the importance of performing necessary cleaning, lubrication, and calibration of machines and the procedures involved in these tasks.</li> <li>• Explain the importance of inspecting tools and equipment for wear and tear and the actions to be taken based on the inspection findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Record and report any machine malfunctions or deviations from standard procedures accurately and promptly.</li> <li>• Conduct routine maintenance checks on machines, inspecting key components and systems according to maintenance schedules.</li> <li>• Perform necessary cleaning, lubrication, and calibration of machines</li> <li>• Inspect tools and equipment for any wear, tear, or damage, identifying signs of deterioration, and taking appropriate action.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Machine maintenance tools.	

## Module 11: Quality control and worksite management

Mapped to FFS/N1013, v 1.0

### Terminal Outcomes:

- List the constraints involved in inspecting finished panels and the feasible solutions to rectify the defects.
- Discuss the steps involved in the identification and storage of material after machining operations for re-use effectively.
- Ensure the collection and disposal of waste/offcut material in the designated bay effectively.
- Supervise cleanliness at the machine station, tools, and equipment effectively.

<b>Duration: 04:00</b>	<b>Duration: 18:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of inspecting finished panels for measurement, quality, accuracy, and the techniques and tools used in the inspection.</li> <li>• Explain the types of defects commonly found in panels, the visual inspection techniques used to identify defects, and the procedures for marking identified defects.</li> <li>• Describe the key constraints and procedures involved in identifying and storing material after machining operations for re-use purposes</li> <li>• Discuss the process of collecting and disposing of waste/offcut material in the designated bay.</li> <li>• Illustrate the process of cleaning tools and machines after machining operations using appropriate cleaning agents and tools.</li> <li>• Describe the importance of maintaining cleanliness at the machine station, tools, and equipment and the procedures for regular cleaning and maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect finished panels for measurement, quality, accuracy, and adherence to specifications, using appropriate measurement tools.</li> <li>• Inspect finished panels for defects such as wear &amp; tear, paint imperfections, dents, grooves, cracks, rough edges, etc., and accurately mark the identified defects for further action.</li> <li>• Identify and properly store materials after machining operations for re-use purposes.</li> <li>• Collect and dispose of waste/offcut material generated during machining operations in the designated bay.</li> <li>• Perform internal cleaning of tools and machines after machining operations, using the appropriate cleaning agents and tools.</li> <li>• Perform cleanliness at the machine station, tools, and equipment by following the established cleaning procedures and schedules.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Quality checking hand and power tools.	

## Module 12: Health, safety, and hygiene protocols

Mapped to FFS/N8203, v 3.0

### Terminal Outcomes:

- Describe how to maintain a healthy, safe and secure environment at the workplace.
- Demonstrate health and safety procedures.
- Employ personal hygiene practices at the worksite.

Duration: 08:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Discuss the importance of complying with organizational health, safety, and security policies and procedures.</li> <li>• Discuss the various types of cleaning consumables and equipment.</li> <li>• Discuss the importance of following the standard operating procedures (SOP) of the organization w.r.t cleaning and hygiene practices.</li> <li>• Distinguish between different color-coded dustbins.</li> <li>• Explain the importance of maintaining housekeeping documents.</li> <li>• Label appropriate personal protective equipment needed for a job role and their application.</li> <li>• Discuss the significance of maintaining work ethics, dress code, and personal hygiene.</li> <li>• Explain the operational guidelines for the usage of emergency tools and equipment.</li> <li>• List the various causes of fires and the safety procedures associated with them.</li> <li>• Explain different types of fire and fire extinguishers to be used.</li> <li>• Explain the steps involved in responding to an emergency situation.</li> <li>• Describe the first aid procedures in case of emergency.</li> <li>• Describe the types of hand signals, and signage and their application.</li> <li>• Discuss various storage and handling procedure associated with hazardous substances.</li> <li>• State the benefits associated with the periodic cleaning of tools and equipment.</li> <li>• State the importance of safe lifting practices and correct body postures.</li> </ul>	<ul style="list-style-type: none"> <li>• Illustrate different types of cleaning equipment and consumables.</li> <li>• Employ a suitable process to report any deviations to the appropriate authority.</li> <li>• Demonstrate the identification of possible breaches in health, safety, and security policies.</li> <li>• Demonstrate different disposal techniques depending on different types of waste.</li> <li>• Demonstrate the process of record-keeping and reporting to the supervisor.</li> <li>• Demonstrate the use of personal protective equipment such as goggles, gloves, earplugs, shoes, etc.</li> <li>• Demonstrate the correct way of sanitizing and washing hands.</li> <li>• Demonstrate the use of emergency tools and equipment.</li> <li>• Illustrate the emergency evacuation process in line with organizational protocols.</li> <li>• Apply effective preventive measures in case of a fire.</li> <li>• Demonstrate how to use equipment safely like fire extinguishers.</li> <li>• Design a contingency plan for emergency situations like fire, short circuit, accidents, earthquakes, etc.</li> <li>• Demonstrate the use of First Aid, CPR and safety evacuation process as part of routine operations.</li> <li>• Identify and interpret the given pictorial representations of safety signs and hand signals.</li> <li>• Demonstrate the correct techniques while working and handling hazardous materials at the worksite.</li> <li>• Demonstrate the housekeeping process using appropriate equipment.</li> </ul>

	<ul style="list-style-type: none"> <li>• Employ appropriate techniques for disposing hazardous materials.</li> <li>• Demonstrate the correct postures while working and handling hazardous materials at the workplace.</li> </ul>
<p><b>Classroom Aids</b></p>	
<p>White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).</p>	
<p><b>Tools, Equipment, and Other Requirements</b></p>	
<p>Personal Protective Equipment, Housekeeping- Materials, Tools and Equipment, Project/Theme based props for simulation as required.</p>	



## Module 13: Material conservation and resources optimization

Mapped to FFS/N8203, v 3.0

### Terminal Outcomes:

- Implement safety practices and optimize the use of resources.
- Apply conservation practices at the worksite.
- Illustrate sustainable practices at the workplace for energy efficiency and waste management.

<b>Duration: 04:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of efficient utilization and conservation of material.</li> <li>• State the difference between renewable and non-renewable sources of energy.</li> <li>• Explain the various ways of saving energy.</li> <li>• Differentiate between recyclable and non-recyclable waste.</li> <li>• Explain the importance of effective utilization of electrical appliances.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate various techniques of effective utilization of resources.</li> <li>• Employ ways for efficient utilization of material and water.</li> <li>• Illustrate the process of collecting and analyzing the energy utilization data.</li> <li>• Employ suitable energy-efficient practices in the process.</li> <li>• Sort the various reusable materials from the accumulated waste.</li> <li>• Practice the segregation of recyclable and non-recyclable waste.</li> <li>• Demonstrate different methods of energy resource use optimization and conservation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Housekeeping- Materials, Tools and Equipment, Project/Theme based props for simulation as required.	

## Module 14: Employability skills

Mapped to DGT/VSQ/N0102, v 1.0

### Terminal Outcomes:

- Understand basics of 21st-century learning concepts like Blended Learning, Facilitation & Self Learning.
- Discuss the concept of Employability skills and their importance towards organizational growth.
- Explain the role of Employability skills in the future of work during changing markets and scenarios.
- Demonstrate steps involved in preparing a career plan using a specified tool kit.
- Employ suitable employability skills while working in an organization or at a workplace.
- Demonstrate the process of preparing sample session plans and related templates using the specified toolkit.

<b>Duration: 30:00</b>	<b>Duration: 30:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the Employability Skills required for jobs in various industries.</li> <li>• Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society, and personal values and ethics such as honesty, integrity, caring, and respecting others that are required to become a responsible citizen.</li> <li>• Discuss importance of relevant 21st century skills.</li> <li>• Describe the benefits of continuous learning</li> <li>• Explain the importance of active listening for effective communication.</li> <li>• Discuss the significance of working collaboratively with others in a team.</li> <li>• Discuss the significance of escalating sexual harassment issues as per the POSH act.</li> <li>• Outline the importance of selecting the right financial institution, product, and service.</li> <li>• Discuss the legal rights, laws, and aids.</li> <li>• Describe the role of digital technology in today's life.</li> <li>• Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely.</li> <li>• Explain the types of entrepreneurship and enterprises.</li> <li>• Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan.</li> </ul>	<ul style="list-style-type: none"> <li>• List different learning and employability related GOI and private portals and their usage.</li> <li>• Show how to practice different environmentally sustainable practices.</li> <li>• Exhibit 21st century skills like Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.</li> <li>• Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone.</li> <li>• Read and interpret text written in basic English.</li> <li>• Write a short note/paragraph / letter/e - mail using basic English.</li> <li>• Create a career development plan with well-defined short- and long-term goals.</li> <li>• Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.</li> <li>• Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD.</li> <li>• Demonstrate how to carry out offline and online financial transactions, safely and securely.</li> </ul>

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| <ul style="list-style-type: none"> <li>• Describe the 4Ps of Marketing-Product, Price, Place, and Promotion and apply them as per requirement.</li> <li>• Describe the significance of analyzing different types and needs of the customers.</li> <li>• Explain the significance of identifying customer needs and responding to them in a professional manner.</li> <li>• Discuss the significance of maintaining hygiene and dressing appropriately.</li> <li>• Discuss the significance of maintaining hygiene and confidence during an interview.</li> </ul> | <ul style="list-style-type: none"> <li>• List the common components of salary and compute income, expenditure, taxes, investments, etc.</li> <li>• Demonstrate how to operate digital devices and use the associated applications and features, safely and securely.</li> <li>• Create sample word documents, excel sheets, and presentations using basic features.</li> <li>• utilize virtual collaboration tools to work effectively.</li> <li>• Create a sample business plan, for the selected business opportunity.</li> <li>• Create a professional Curriculum Vitae (CV).</li> <li>• Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively.</li> <li>• Perform a mock interview.</li> <li>• List the steps for searching and registering for apprenticeship opportunities.</li> </ul> |
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#### **Classroom Aids**

White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).

#### **Tools, Equipment, and Other Requirements**

Sample CV and Biodata, Payment Gateway Devices, Sample Business Plan, Sample formats for English communication.

## Module 15: Setup worksite for pasting/pressing operation

Mapped to FFS/N1014, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for pasting/pressing machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, equipment and adhesives or glue for job work.
- Demonstrate the skills in setting up, configuring, and calibrating pasting/pressing machines for various production requirements.

<b>Duration: 02:00</b>	<b>Duration: 10:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of preparing materials and workpieces to meet job specifications and quality standards for pasting and pressing operations.</li> <li>• Discuss the factors to consider when identifying and selecting appropriate adhesives or glue for specific job work, including bonding strength, drying time, and compatibility factors.</li> <li>• Explain the steps involved in setting up, configuring, and calibrating pasting/pressing machines for different production requirements.</li> <li>• Describe the importance of adjusting machine settings, such as time, temperature, and pressure, to achieve optimal pasting/pressing results.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare materials and workpieces appropriately for pasting and pressing operation to meet job specifications and quality standards.</li> <li>• Identify and select the appropriate adhesives or glue for the pasting and pressing operations.</li> <li>• Set up, configure, and calibrate the pasting/pressing machine for various production requirements</li> <li>• Adjust machine settings, such as time, temperature, and pressure, based on the job work requirements.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Pasting Machine, Pressing Machine, Manual Glue Applicator, Adhesive for pasting machine, Glue Scrapper, Glue Mixer.	

## Module 16: Pasting operation

*Mapped to FFS/N1014, v 1.0*

### Terminal Outcomes:

- Illustrate the process of applying adhesive or glue accurately and evenly to materials using specialized tools or equipment.
- List the usage of different types of adhesives and their optimal parameters for pasting requirement.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss various methods and tools used for applying adhesive or glue accurately and evenly to materials, such as rollers, sprayers, or applicators.</li> <li>• Describe the process of proper alignment and positioning of materials in achieving precise and consistent bonding, using guides, jigs, or templates.</li> <li>• Explain the factors that contribute to the compatibility and adherence of different material types and sizes in successful pasting operations.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply adhesive or glue accurately and evenly to the materials using specialized tools or equipment.</li> <li>• Check the alignment and positioning of materials using guides, jigs, or templates.</li> <li>• Verify the compatibility and adherence of different material types and sizes before pasting, ensuring successful bonding and desired results.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Pasting Machine, Pressing Machine, Manual Glue Applicator, Adhesive for pasting machine, Glue Scrapper, Glue Mixer.	

## Module 17: Pressing operation

Mapped to FFS/N1014, v 1.0

### Terminal Outcomes:

- Display skills relating to loading and unloading of the job work into the pasting/pressing equipment.
- Demonstrate the setting up of pasting/pressing parameters for effective machine operations.
- Discuss the process of operating and monitoring appropriate pasting/pressing machines in accordance with standard operating procedures and safety guidelines.

<b>Duration:</b> 04:00	<b>Duration:</b> 16:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the technical details of proper loading and unloading of job work into the pasting/pressing equipment</li> <li>• Explain the significance of setting up pasting/pressing parameters, such as pressure, thickness, and duration, to achieve desired results.</li> <li>• Describe the standard operating procedures and safety guidelines for operating pasting/pressing machines in a safe and efficient manner.</li> <li>• Discuss the importance of monitoring the pasting/pressing operation periodically to evaluate product quality and yield.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform loading and unloading of the job work into the pasting/pressing equipment, ensuring proper alignment using offcut materials</li> <li>• Set up pasting/pressing parameters, such as pressure, thickness, and duration, to ensure optimal bonding and desired outcomes.</li> <li>• Operate appropriate pasting/pressing machines following standard operating procedures and safety guidelines.</li> <li>• Monitor the pasting/pressing operation periodically, evaluating product quality and yield to ensure adherence to specifications and desired outcomes.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Pasting Machine, Pressing Machine, Manual Glue Applicator, Adhesive for pasting machine, Glue Scraper, Glue Mixer.	

## Module 18: Worksite management and quality control for pasting/pressing operation

*Mapped to FFS/N1014, v 1.0*

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the pasting/pressing machine.
- Discuss the principles of organization and waste management after pasting/pressing operation.
- Illustrate the process of conducting quality checks and inspections on the pasted/pressed materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the key constraints involved in routine maintenance tasks for pasting and pressing machines, such as cleaning, lubricating, and replacing worn parts.</li> <li>• Describe the techniques and constraints involved in workspace management, including arranging and disposing of materials after the machining operation.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on pasted/pressed materials.</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine maintenance tasks on the pasting and pressing machine, including cleaning, lubricating, and replacing worn parts.</li> <li>• Ensure the proper management of the workspace by arranging materials in an organized manner and disposing of waste materials.</li> <li>• Perform quality checks and inspections on pasted/pressed materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Pasting Machine, Pressing Machine, Manual Glue Applicator, Adhesive for pasting machine, Glue Scraper, Glue Mixer.	



## Module 19: On-the-Job Training for pasting and pressing machines

Mapped to FFS/N1014, v 1.0

<b>Mandatory Duration:</b> 90:00	<b>Recommended Duration:</b> 00:00
<b>Module Name:</b> On-the-Job Training	
<b>Location:</b> On Site	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Ensure that materials and workpieces are prepared appropriately for machine operation, meeting job specifications and quality standards.</li> <li>• Identify and select appropriate adhesives or glue for the job work, considering factors such as bonding strength, drying time, and compatibility.</li> <li>• Set up, configure, and calibrate pasting/pressing machines for various production requirements, ensuring optimal machine performance.</li> <li>• Perform adjustments of machine settings, such as time, temperature, and pressure, to ensure optimal pasting/pressing results.</li> <li>• Apply adhesive or glue accurately and evenly to the materials, utilizing specialized tools or equipment such as rollers, sprayers, or applicators.</li> <li>• Check proper alignment and positioning of the materials, using guides, jigs, or templates, to achieve precise and consistent bonding.</li> <li>• Verify the compatibility and adherence of different material types and sizes to ensure successful pasting.</li> <li>• Perform loading and unloading of the job work into the pasting/pressing equipment, ensuring proper alignment using offcut materials.</li> <li>• Ensure the proper setting up of pasting/pressing parameters, such as pressure, thickness, and duration, to achieve desired results.</li> <li>• Operate appropriate pasting/pressing machines in accordance with standard operating procedures and safety guidelines.</li> <li>• Monitor the pasting/pressing operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> <li>• Perform routine maintenance tasks on the pasting/pressing machine, such as cleaning, lubricating, and replacing worn parts, to ensure optimal machine performance.</li> <li>• Perform quality checks and inspections on the pasted/pressed materials, evaluating the bond strength, alignment, and overall appearance to ensure adherence to quality standards.</li> <li>• Ensure that manufacturing specifications, quality control inspections, and any modifications are accurately recorded and maintained for traceability and quality assurance purposes.</li> </ul>	

## Module 20: Setup worksite for cutting/sizing operation

Mapped to FFS/N1015, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for cutting/sizing machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, and equipment for job work.
- Demonstrate the skills in setting up, configuring, and calibrating cutting/sizing machines for various production requirements.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of preparing materials and workpieces to meet job specifications and quality standards for cutting and sizing operations.</li> <li>• Describe the factors to consider when selecting and installing cutting blades or tools based on material type, thickness, and desired cutting outcome.</li> <li>• Explain the steps involved in setting up, configuring, and calibrating cutting/sizing machines for different production requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare materials and workpieces appropriately for cutting and sizing operation to meet job specifications and quality standards.</li> <li>• Select and install appropriate cutting blades or tools based on the material type, thickness, and desired cutting outcome</li> <li>• Set up, configure, and calibrate cutting/sizing machines for various production requirements.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panel Saw Machine, Beam Saw Machine, Dust Extractor.	

## Module 21: Cutting/Sizing operation

Mapped to FFS/N1015, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing loading and unloading of job work into the cutting/sizing equipment, ensuring proper alignment using offcut materials.
- Discuss the importance of effective positioning and securing panel materials on the machine.
- Discuss the factors associated with cutting/sizing machines to perform desired machining operation.
- Operate and monitor the cutting/sizing machines in accordance with standard operating procedures and safety guidelines.

<b>Duration: 06:00</b>	<b>Duration: 26:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the steps involved in loading and unloading job work into the cutting/sizing equipment, ensuring proper alignment using offcut materials.</li> <li>• Describe the methods for positioning and securing panel materials on the machine for precise cutting/sizing.</li> <li>• Explain the importance of accurately setting up cutting/sizing parameters, such as speed, depth, or angle, for efficient and precise cutting/sizing results.</li> <li>• Describe the methods for accurately measuring and marking materials based on project specifications and cutting requirements.</li> <li>• Explain the importance of following standard operating procedures and safety guidelines when operating cutting/sizing machines.</li> <li>• Describe the advanced techniques and jigs used to achieve intricate cuts, angles, or patterns as required by project specifications.</li> <li>• Explain the importance of monitoring the cutting/sizing operation periodically to evaluate product quality and yield.</li> </ul>	<ul style="list-style-type: none"> <li>• Load and unload the job work into the cutting/sizing equipment using offcut materials for accurate and efficient cutting operations.</li> <li>• Position and secure panel materials on the machine to facilitate accurate cutting/sizing operations.</li> <li>• Set up cutting/sizing parameters accurately, including speed, depth, or angle, to achieve efficient and precise cutting/sizing operations.</li> <li>• Measure and mark the materials accurately based on project specifications and cutting requirements</li> <li>• Operate cutting/sizing machines in accordance with standard operating procedures and safety guidelines</li> <li>• Apply advanced techniques and utilize jigs to achieve intricate cuts, angles, or patterns as required by the project specifications</li> <li>• Monitor the cutting/sizing operation periodically to evaluate product quality and yield, making necessary adjustments to ensure desired outcomes.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panel Saw Machine, Beam Saw Machine, Dust Extractor.	

## Module 22: Worksite management and Quality Control for cutting/sizing operation

*Mapped to FFS/N1015, v 1.0*

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the cutting and sizing machine.
- Discuss the principles of organization and waste management after cutting and sizing operation.
- Illustrate the process of conducting quality checks and inspections on the cut/sized materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the key constraints involved in routine maintenance tasks for cutting and sizing machines, such as cleaning, lubricating, and replacing worn parts.</li> <li>• Describe the techniques and constraints involved in workspace management, including arranging and disposing of materials after the machining operation.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on cut/sized materials</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine maintenance tasks on the cutting and sizing machine, including cleaning, lubricating, and replacing worn parts.</li> <li>• Ensure the proper management of the workspace by arranging materials in an organized manner and disposing of waste materials.</li> <li>• Perform quality checks and inspections on cut/sized materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Panel Saw Machine, Beam Saw Machine, Dust Extractor.	

## Module 23: On-the-Job Training for cutting and sizing machines

Mapped to FFS/N1015, v 1.0

<b>Mandatory Duration:</b> 90:00	<b>Recommended Duration:</b> 00:00
<b>Module Name:</b> On-the-Job Training	
<b>Location:</b> On Site	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Ensure that materials and workpieces are prepared appropriately for machine operation, meeting job specifications and quality standards.</li> <li>• Select and install appropriate cutting blades or tools based on the material type, thickness, and desired cutting outcome.</li> <li>• Set up, configure, and calibrate cutting/sizing machines for various production requirements, including blade height, alignment, mitre angles, etc.</li> <li>• Perform loading and unloading of the job work into the cutting/sizing equipment, ensuring proper alignment using offcut materials.</li> <li>• Position and secure panel materials on the machine, ensuring proper alignment and stability during the cutting/sizing process.</li> <li>• Ensure that cutting/sizing parameters, such as speed, depth, or angle, are set up accurately for efficient and precise results.</li> <li>• Measure and mark the materials accurately based on the project specifications and cutting requirements.</li> <li>• Operate cutting/sizing machines in accordance with standard operating procedures and safety guidelines.</li> <li>• Utilize advanced techniques and jigs to achieve intricate cuts, angles, or patterns as required by the project specifications.</li> <li>• Monitor the cutting/sizing operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> <li>• Perform routine maintenance tasks on the cutting/sizing machine, such as cleaning, lubricating, and replacing worn parts, to ensure optimal machine performance.</li> <li>• Ensure the management of the workspace by arranging and disposing of materials after the machining operation, maintaining a clean and organized work environment.</li> <li>• Perform quality checks and inspections on the cut and sized materials, verifying dimensional accuracy, surface finish, and overall quality to ensure adherence to quality standards.</li> <li>• Ensure that manufacturing specifications, quality control inspections, and any modifications are accurately recorded and maintained for traceability and quality assurance purposes.</li> </ul>	

## Module 24: Setup worksite for edge banding operation

Mapped to FFS/N1016, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for edge banding operation to meet job specifications and machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, equipment and adhesives or glue for job work.
- Demonstrate the skills in setting up, configuring, and calibrating edge banding operation to meet job specifications and machines for various production requirements.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of preparing materials and workpieces to meet job specifications and quality standards for edge banding operations.</li> <li>• Describe the selection and installation process of appropriate cutting tools, edge banding materials, adhesives, and other consumables for different edge banding requirements.</li> <li>• Explain the process of adjusting machine settings, such as feed rate, temperature, pressure, and trimming tools, to ensure optimal edge banding results.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare materials and workpieces appropriately for edge banding operation to meet job specifications and quality standards.</li> <li>• Select and install appropriate cutting tools, edge banding materials, adhesives, and other consumables based on the specific requirements.</li> <li>• Adjust machine settings, such as feed rate, temperature, pressure, and trimming tools, according to job specifications and quality standards.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Edge banding machine, Edge band Adhesive, Dust Extractor.	

## Module 25: Edge banding operation

Mapped to FFS/N1016, v 1.0

### Terminal Outcomes:

- Demonstrate the steps involved in setting up, configuring, and calibrating the edge banding machine.
- Discuss the key constraints while preparing the machining program on a edge banding machine
- Discuss the factors associated with edge banding machines to perform desired machining operation.
- Operate and monitor the edge banding machines in accordance with standard operating procedures and safety guidelines

<b>Duration: 06:00</b>	<b>Duration: 26:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the process of setting up, configuring, and calibrating edge band machines based on job work requirements.</li> <li>• Describe the process of preparing the desired program on the machine to perform edge banding operations in the required configurations.</li> <li>• Explain the significance of preheating the machine before operation, ensuring the appropriate temperature for the glue is maintained.</li> <li>• Explain the process of operating edge banding machines in accordance with standard operating procedures and safety guidelines.</li> <li>• Describe the proper feeding and guiding techniques for panel materials in edge banding machines.</li> <li>• Explain the factors affecting proper alignment and positioning of the edge band material.</li> <li>• Describe the manual application techniques for adhesive and edge banding material to panel edges using hand or power tools.</li> <li>• Explain the importance of monitoring the edge banding operation periodically to evaluate product quality and yield.</li> </ul>	<ul style="list-style-type: none"> <li>• Set up, configure, and calibrate edge band machines based on job work requirements, including adhesive type, panel thickness, edge band thickness, etc.</li> <li>• Prepare the desired program on the machine to perform edge banding operations in the required configurations based on job specifications and quality standards.</li> <li>• Execute the machine initialization process, ensuring the appropriate temperature for the edge banding.</li> <li>• Operate edge banding machines in accordance with standard operating procedures and safety guidelines.</li> <li>• Feed panel materials into the machine and guide them through the edge banding process accurately and smoothly.</li> <li>• Ensure proper alignment and positioning of the edge band material to achieve precise edge banding results.</li> <li>• Perform the manual application of adhesive and edge banding material to the panel edges using hand or power tools for effective edge banding.</li> <li>• Monitor the edge banding operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Edge banding machine, Edge band Adhesive, Dust Extractor.	



## Module 26: Worksite management and Quality Control for edge banding operation

*Mapped to FFS/N1016 v 1.0*

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the edge banding machine.
- Discuss the principles of organization and edge banding operation.
- Illustrate the process of conducting quality checks and inspections on the edge banding materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the key constraints involved in routine maintenance tasks for edge banding machines, such as cleaning, lubricating, and replacing worn parts.</li> <li>• Describe the techniques and constraints involved in workspace management, including arranging and disposing of materials after the machining operation.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on finished materials.</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine maintenance tasks on the edge banding machine, including cleaning, lubricating, and replacing worn parts.</li> <li>• Ensure the proper management of the workspace by arranging materials in an organized manner and disposing of waste materials.</li> <li>• Perform quality checks and inspections on finished materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Edge banding machine, Edge band Adhesive, Dust Extractor.	

## Module 27: On-the-Job Training for edge band machines

Mapped to FFS/N1016, v 1.0

<b>Mandatory Duration:</b> 90:00	<b>Recommended Duration:</b> 00:00
<b>Module Name:</b> On-the-Job Training	
<b>Location:</b> On Site	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Ensure that materials and workpieces are prepared appropriately for machine operation, meeting job specifications and quality standards.</li> <li>• Select and install appropriate cutting tools, edge banding materials, adhesives, and other consumables required for the edge banding process.</li> <li>• Perform adjustment of machine settings, such as feed rate, temperature, pressure, and trimming tools, to ensure optimal edge banding results.</li> <li>• Set up, configure, and calibrate edge banding machines based on job work requirements, including adhesive type, panel thickness, edge band thickness, etc.</li> <li>• Prepare the desired program on the machine to perform the edge banding operation in the required configurations.</li> <li>• Execute the machine initialization process to preheat the machine prior to operation, ensuring the appropriate temperature for the glue is maintained.</li> <li>• Operate edge banding machines in accordance with standard operating procedures and safety guidelines.</li> <li>• Feed panel materials into the machine and guide them through the edge banding process, ensuring proper alignment and positioning of the edge band material for precise edge banding results.</li> <li>• Perform the manual application of adhesive and edge banding material to the panel edges with precision and consistency using hand or power tools.</li> <li>• Monitor the edge banding operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> <li>• Perform routine maintenance tasks on the edge banding machine, such as cleaning, lubricating, consumables re-filling, and replacing worn parts, to ensure optimal machine performance.</li> <li>• Ensure the management of the workspace by arranging and disposing of materials after the machining operation, maintaining a clean and organized work environment.</li> <li>• Perform quality checks and inspections on the edge banding results, evaluating adherence, smoothness, and overall quality to ensure adherence to quality standards.</li> <li>• Ensure that manufacturing specifications, quality control inspections, and any modifications are accurately recorded and maintained for traceability and quality assurance purposes.</li> </ul>	

## Module 28: Setup worksite for drilling operation

Mapped to FFS/N1017, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for drilling machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, and equipment for job work.
- Demonstrate the skills in setting up, configuring, and calibrating drilling machines for various production requirements.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of preparing materials and workpieces to meet job specifications and quality standards for drilling operations.</li> <li>• Explain the criteria for selecting and installing appropriate drill bits and cutting tools.</li> <li>• Describe the steps involved in setting up, configuring, and calibrating drilling machines for different production requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare materials and workpieces appropriately for drilling operation to meet job specifications and quality standards.</li> <li>• Select and install the appropriate drill bits and cutting tools for the drilling machine.</li> <li>• Set up, configure, and calibrate the drilling machine for various production requirements.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Drilling Machine, Drill Bits, Dust Extractor.	

## Module 29: Drilling operation

Mapped to FFS/N1017, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing loading and unloading of job work into the drilling machine, ensuring proper alignment using offcut materials.
- Discuss the importance of effective positioning and securing panel materials on the machine.
- Demonstrate the steps involved in setting up, configuring, and calibrating the drilling machine.
- Operate and monitor the drilling machines in accordance with standard operating procedures and safety guidelines.

<b>Duration: 06:00</b>	<b>Duration: 26:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of safely loading and positioning workpieces onto the machine table or holding fixtures.</li> <li>• Describe the process of machine initiation and guiding workpieces through drilling operations, maintaining proper feed rates and tool engagement.</li> <li>• Explain the importance of following standard operating procedures and safety guidelines when operating drilling machines.</li> <li>• Describe the process of setting up drilling parameters accurately, such as speed, depth, or angle.</li> <li>• Explain the importance of monitoring the drilling operation periodically to evaluate product quality and yield.</li> </ul>	<ul style="list-style-type: none"> <li>• Safely load and position workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place for safe and stable drilling operations.</li> <li>• Perform the machine initiation and guide the workpieces through the drilling operations, maintaining proper feed rates and tool engagement.</li> <li>• Operate drilling machines in accordance with standard operating procedures and safety guidelines.</li> <li>• Set up drilling parameters accurately, such as speed, depth, or angle, for efficient and precise drilling results according to job requirements and quality standards.</li> <li>• Monitor the drilling operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Drilling Machine, Drill Bits, Dust Extractor.	

## Module 30: Worksite management and Quality Control for drilling operation

*Mapped to FFS/N1017, v 1.0*

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the drilling machine.
- Discuss the principles of organization and waste management after drilling operation.
- Illustrate the process of conducting quality checks and inspections on the drilling materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the key constraints involved in routine maintenance tasks for drilling machines, such as cleaning, lubricating, and replacing worn parts.</li> <li>• Explain the process of regular inspections of machine components and the procedures for checking, sharpening, and tightening as needed.</li> <li>• Describe the techniques and constraints involved in workspace management, including arranging and disposing of materials after the machining operation.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on finished materials.</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine maintenance tasks on the drilling machine, including cleaning, lubricating, and replacing worn parts.</li> <li>• Conduct regular inspections of the drilling machine's components, checking for loose screws, belts, bearings, and taking appropriate actions.</li> <li>• Ensure the proper management of the workspace by arranging materials in an organized manner and disposing of waste materials.</li> <li>• Perform quality checks and inspections on finished materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Drilling Machine, Drill Bits, Dust Extractor.	

## Module 31: On-the-Job Training for drilling machines

Mapped to FFS/N1017, v 1.0

<b>Mandatory Duration:</b> 90:00	<b>Recommended Duration:</b> 00:00
<b>Module Name: On-the-Job Training</b>	
<b>Location: On Site</b>	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Ensure that materials and workpieces are prepared appropriately for machine operation, meeting job specifications and quality standards.</li> <li>• Select and install appropriate drill bits and cutting tools, ensuring they are securely mounted and aligned for precise cutting.</li> <li>• Set up, configure, and calibrate drilling machines for various production requirements, including speed, feed rate, depth, or angle, to achieve optimal drilling results.</li> <li>• Safely load and position workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place.</li> <li>• Perform the machine initiation and guide the workpieces through the drilling operations, maintaining proper feed rates and tool engagement.</li> <li>• Perform drilling operations, accurately creating holes or recesses in the workpieces according to the specified locations and dimensions.</li> <li>• Ensure drilling parameters are set up accurately, such as speed, depth, or angle, for efficient and precise drilling results.</li> <li>• Monitor the drilling operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> <li>• Perform routine maintenance tasks on the drilling machine, such as cleaning, lubricating, and replacing worn parts, to ensure optimal machine performance.</li> <li>• Conduct regular inspections of the machine's components, checking for loose screws, belts, or bearings, and tightening or replacing them as needed.</li> <li>• Ensure the management of the workspace by arranging and disposing of materials after the machining operation, maintaining a clean and organized work environment.</li> <li>• Inspect the drilled workpieces using measuring tools, such as callipers or rulers, to verify hole diameters, depths, and other specifications.</li> <li>• Ensure that manufacturing specifications, quality control inspections, and any modifications are accurately recorded and maintained for traceability and quality assurance purposes.</li> </ul>	

## Module 32: Setup worksite for routing operation

Mapped to FFS/N1018, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for routing machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, and equipment for job work.
- Demonstrate the skills in setting up, configuring, and calibrating routing machines for various production requirements.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of preparing materials and workpieces to meet job specifications and quality standards for routing operations.</li> <li>• Explain the criteria for selecting and installing appropriate router bits and cutting tools.</li> <li>• Describe the steps involved in setting up, configuring, and calibrating routing machines for different production requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare materials and workpieces appropriately for routing operation to meet job specifications and quality standards.</li> <li>• Select and install the appropriate router bits and cutting tools for the routing machine.</li> <li>• Set up, configure, and calibrate the routing machine for various production requirements.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Routing Machine, Router Bits, Dust Extractor.	



## Module 33: Routing operation

Mapped to FFS/N1018, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing loading and unloading of job work into the routing machine, ensuring proper alignment using offcut materials.
- Discuss the importance of effective positioning and securing panel materials on the machine.
- Demonstrate the steps involved in setting routing machine.
- Operate and monitor the routing machines in accordance with standard operating procedures and safety guidelines.

<b>Duration: 06:00</b>	<b>Duration: 26:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of safely loading and positioning workpieces onto the machine table or holding fixtures</li> <li>• Describe the process of machine initiation and guiding workpieces through routing operations, maintaining proper feed rates and tool engagement.</li> <li>• Explain the process of routing operations for creating holes or recesses in the workpieces according to the specified locations and dimensions.</li> <li>• Explain the importance of following standard operating procedures and safety guidelines when operating routing machines.</li> <li>• Describe the process of setting up routing parameters accurately, such as speed, depth, or angle</li> <li>• Explain the importance of monitoring the routing operation periodically to evaluate product quality and yield.</li> </ul>	<ul style="list-style-type: none"> <li>• Safely load and position workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place for safe and stable routing operations.</li> <li>• Perform the machine initiation and guide the workpieces through the routing operations, maintaining proper feed rates and tool engagement</li> <li>• Perform routing operations, accurately creating holes or recesses in the workpieces according to the dimensions for precise and quality outcomes.</li> <li>• Operate routing machines in accordance with standard operating procedures and safety guidelines</li> <li>• Set up routing parameters accurately, such as speed, depth, or angle, for efficient and precise routing results according to job requirements and quality standards.</li> <li>• Monitor the routing operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Routing Machine, Router Bits, Dust Extractor.	

## Module 34: Worksite management and Quality Control for routing operation

Mapped to FFS/N1018, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the routing machine.
- Discuss the principles of organization and waste management after routing operation.
- Illustrate the process of conducting quality checks and inspections on the routing materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the key constraints involved in routine maintenance tasks for routing machines, such as cleaning, lubricating, and replacing worn parts.</li> <li>• Explain the process of regular inspections of machine components and the procedures for checking, sharpening, and tightening as needed.</li> <li>• Describe the techniques and constraints involved in workspace management, including arranging and disposing of materials after the machining operation.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on finished materials</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine maintenance tasks on the routing machine, including cleaning, lubricating, and replacing worn parts.</li> <li>• Conduct regular inspections of the routing machine's components, checking for loose screws, belts, bearings, and taking appropriate actions.</li> <li>• Ensure the proper management of the workspace by arranging materials in an organized manner and disposing of waste materials.</li> <li>• Perform quality checks and inspections on finished materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Routing Machine, Router Bits, Dust Extractor.	

## Module 35: On-the-Job Training for routing machines

Mapped to FFS/N1018, v 1.0

<b>Mandatory Duration: 90:00</b>	<b>Recommended Duration: 00:00</b>
<b>Module Name: On-the-Job Training</b>	
<b>Location: On Site</b>	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Ensure that materials and workpieces are prepared appropriately for machine operation, meeting job specifications and quality standards.</li> <li>• Select and install appropriate router bits and cutting tools, ensuring they are securely mounted and aligned for precise cutting.</li> <li>• Set up, configure, and calibrate routing machines for various production requirements, including speed, feed rate, depth, or angle, to achieve optimal routing results.</li> <li>• Safely load and position workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place.</li> <li>• Perform the machine initiation and guide the workpieces through the routing operations, maintaining proper feed rates and tool engagement.</li> <li>• Perform routing operations, accurately creating holes or recesses in the workpieces according to the specified locations and dimensions.</li> <li>• Ensure routing parameters are set up accurately, such as speed, depth, or angle, for efficient and precise routing results.</li> <li>• Monitor the routing operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> <li>• Perform routine maintenance tasks on the routing machine, such as cleaning, lubricating, and replacing worn parts, to ensure optimal machine performance.</li> <li>• Conduct regular inspections of the machine's components, checking for loose screws, belts, or bearings, and tightening or replacing them as needed.</li> <li>• Ensure the management of the workspace by arranging and disposing of materials after the machining operation, maintaining a clean and organized work environment.</li> <li>• Inspect the routed workpieces using measuring tools, such as callipers or rulers, to verify hole diameters, depths, and other specifications.</li> <li>• Ensure that manufacturing specifications, quality control inspections, and any modifications are accurately recorded and maintained for traceability and quality assurance purposes.</li> </ul>	

## Module 36: Setup worksite for veneer cutting/splicing operation

Mapped to FFS/N1019, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for veneer cutting/splicing machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, equipment and adhesives or glue for job work.
- Demonstrate the skills in setting up, configuring, and calibrating veneer cutting/splicing machines for various production requirements.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the process of preparing materials and workpieces to meet job specifications and quality standards for veneer cutting and splicing operations.</li> <li>• Explain the criteria for selecting and usage of appropriate tools, adhesives, veneer materials</li> <li>• Describe the steps involved in setting up, configuring, and calibrating veneer cutting and splicing machines for different production requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare materials and workpieces appropriately for veneer cutting and splicing operation to meet job specifications and quality standards.</li> <li>• Select the appropriate tools, adhesives, and veneer materials for the veneer cutting and splicing operation.</li> <li>• Set up, configure, and calibrate the veneer cutting and splicing machine for various production requirements.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Veneer Cutting Machine Veneer Splicing Machine Adhesive roll for veneer splicing machine, Dust Extractor.	

## Module 37: Veneer cutting/splicing operation

Mapped to FFS/N1019, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing loading and unloading of job work into the veneer cutting/splicing machine, ensuring proper alignment using offcut materials.
- Prepare the veneer sheets in desired shape by marking and measurement of job work based on required specifications.
- Demonstrate the steps involved in setting veneer cutting/splicing machine.
- Operate and monitor the veneer cutting/splicing machines in accordance with standard operating procedures and safety guidelines.

<b>Duration: 06:00</b>	<b>Duration: 26:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of safely loading and positioning workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place.</li> <li>• Describe the process of machine initiation and guiding workpieces through the veneer cutting/splicing machine.</li> <li>• Explain the importance of measuring, marking out, and cutting veneers within specified tolerances to meet specifications.</li> <li>• Describe the process of jointing veneers using a veneer splicing machine, ensuring edges are correctly aligned with required tolerances and without distortion.</li> <li>• Explain the importance of preparing veneer sheets with the desired size, shape, and pattern by marking, tracing, cutting, and joining techniques.</li> <li>• Explain the importance of monitoring the veneer cutting/splicing operation periodically.</li> </ul>	<ul style="list-style-type: none"> <li>• Safely load and position workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place for safe and stable veneer cutting/splicing operations.</li> <li>• Perform the machine initiation and guide the workpieces through the veneer cutting/splicing machine for efficient and accurate cutting/splicing operations.</li> <li>• Measure, mark out, and cut veneers within the specified tolerances using a veneer cutting machine to meet specifications accurately.</li> <li>• Operate veneer splicing machine for joining ends of veneers with required tolerances and without distortion</li> <li>• Prepare the veneer sheets with the desired size, shape, and pattern by marking, tracing, cutting, and joining the veneer sheets accurately.</li> <li>• Monitor the veneer cutting/splicing operation periodically to evaluate product quality and yield, making adjustments as necessary to ensure desired outcomes.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Veneer Cutting Machine Veneer Splicing Machine Adhesive roll for veneer splicing machine, Dust Extractor.	

## Module 38: Worksite management and Quality Control for veneer cutting/splicing operation

Mapped to FFS/N1019, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the veneer cutting and splicing machine.
- Discuss the principles of organization and waste management after veneer cutting and splicing operation.
- Illustrate the process of conducting quality checks and inspections on the cut/spliced veneer materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the key constraints involved in routine maintenance tasks for veneer cutting and splicing machines, such as cleaning, lubricating, and replacing worn parts.</li> <li>• Explain the process of regular inspections of machine components and the procedures for checking, sharpening, and tightening as needed.</li> <li>• Describe the techniques and constraints involved in workspace management, including arranging and disposing of materials after the machining operation.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on finished materials</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform routine maintenance tasks on the veneer cutting and splicing machine, including cleaning, lubricating, and replacing worn parts.</li> <li>• Conduct regular inspections of the veneer cutting and splicing machine's components, checking for loose screws, belts, bearings, and taking appropriate actions.</li> <li>• Ensure the proper management of the workspace by arranging materials in an organized manner and disposing of waste materials.</li> <li>• Perform quality checks and inspections on finished materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
Veneer Cutting Machine Veneer Splicing Machine Adhesive roll for veneer splicing machine, Dust Extractor.	

## Module 39: On-the-Job Training while assisting in veneer cutting & splicing machines

*Mapped to FFS/N1019, v 1.0*

<b>Mandatory Duration:</b> 90:00	<b>Recommended Duration:</b> 00:00
<b>Module Name: On-the-Job Training</b>	
<b>Location: On Site</b>	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Ensure that materials and workpieces are prepared appropriately for machine operation, meeting job specifications and quality standards.</li> <li>• Select and install appropriate tools, adhesives, and veneer materials based on the material type, thickness, and desired cutting outcome.</li> <li>• Set up, configure, and calibrate veneer cutting/splicing machines for optimal results, including time, pressure, thickness, and other parameters.</li> <li>• Safely load and position workpieces onto the machine table or holding fixtures, ensuring they are securely clamped or held in place.</li> <li>• Perform the machine initiation and guide the workpieces through the veneer cutting/splicing machine.</li> <li>• Measure, mark out, and cut veneers within the specified tolerances using the veneer cutting machine to meet the required specifications.</li> <li>• Joint veneers using the veneer splicing machine, ensuring edges are correctly aligned with the required tolerances and without distortion.</li> <li>• Prepare the veneer sheets with the desired size, shape, and pattern by marking, tracing, cutting, and joining the veneer sheets.</li> <li>• Monitor the veneer cutting/splicing operation periodically to evaluate product quality and yield, making adjustments as necessary.</li> <li>• Perform routine maintenance tasks on the veneer cutting/splicing machine, such as cleaning, lubricating, and replacing worn parts, to ensure optimal machine performance.</li> <li>• Conduct regular inspections of the machine's components, checking for loose screws, belts, or bearings, sharpening tools, and tightening as needed.</li> <li>• Ensure the management of the workspace by arranging and disposing of materials after the machining operation, maintaining a clean and organized work environment.</li> <li>• Perform quality checks and inspections on the veneer materials, verifying dimensional accuracy, surface finish, and overall quality.</li> <li>• Ensure that manufacturing specifications, quality control inspections, and any modifications are accurately recorded and maintained for traceability and quality assurance purposes.</li> </ul>	



## Module 40: Setup worksite for panelworks CNC operation

Mapped to FFS/N1020, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in ensuring materials and workpieces are prepared appropriately for panelworks CNC machine operation, meeting job specifications and quality standards.
- List the constraints involved in identifying and selecting appropriate tools, and equipment for job work.
- Demonstrate the skills in setting up, configuring, and calibrating panelworks CNC machines for various production requirements.

<b>Duration: 04:00</b>	<b>Duration: 16:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of proper stacking and storage of materials and workpieces for panelworks CNC machine.</li> <li>• List the key constraints involved in checking the quality of job work received for panelworks CNC machine operation.</li> <li>• Explain the process of configuring the CNC program to align with task requirements to achieve desired results.</li> <li>• Describe various parameters relating to the adjustment of machine settings and performing necessary modifications to meet job requirements.</li> <li>• Explain the factors contributing to the final adjustments to CNC programs and equipment to meet task requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform stacking and storage of materials and workpieces following the specified procedures and guidelines.</li> <li>• Employ appropriate quality standards and techniques to assess the quality of job work received for panelworks CNC operation.</li> <li>• Configure the CNC program, as instructed by the operator, to align with the task requirements following the specified procedures and guidelines.</li> <li>• Adjust machine settings and perform necessary modifications based on job requirements and instructions provided by the machine and tool manufacturers.</li> <li>• Make final adjustments to CNC programs and equipment according to the task requirements, as instructed by the operator.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
CNC Machine and requisite tools and equipment.	

## Module 41: CNC programming and machining operation

Mapped to FFS/N1020, v 1.0

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the panelworks CNC cutting and splicing machine.
- Discuss the importance of effective positioning and securing panel materials on the machine.
- Demonstrate skills in measuring and marking the job work based on CNC machining requirements.
- Assist and monitor the processing of panelworks CNC machines in accordance with standard operating procedures and safety guidelines.

<b>Duration: 06:00</b>	<b>Duration: 26:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the process of proper loading and unloading techniques for safe and efficient machine operations.</li> <li>• List various methods for positioning and securing materials on panelworks CNC machines, utilizing clamps, jigs, or other appropriate methods.</li> <li>• Describe the importance of measurement and marking for panelworks CNC operations.</li> <li>• Describe the importance of operating the machine within its designated capacity, intended purpose, and manufacturer's recommendations.</li> <li>• Explain the importance of actively monitoring machine operations to ensure quality and identify any irregularities or defects.</li> </ul>	<ul style="list-style-type: none"> <li>• Support the machine operator in loading and unloading workpieces onto and off the machine table or holding fixtures.</li> <li>• Employ appropriate methods in positioning and securing of materials on panelworks CNC machines.</li> <li>• Assist in performing accurate measurement and marking on-the-job work for panelworks CNC operations, applying the principles and techniques discussed.</li> <li>• Operate the Panelworks CNC machine within its designated capacity, intended purpose, and the manufacturer's recommendations.</li> <li>• Assist in monitoring machine operations, actively looking for irregularities or defects, and promptly communicating them to the machine operator.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
CNC Machine and requisite tools and equipment.	

## Module 42: Worksite management and Quality Control for panelworks CNC operation

*Mapped to FFS/N1020, v 1.0*

### Terminal Outcomes:

- Demonstrate proficiency in performing routine maintenance tasks on the panelworks CNC machine.
- Discuss the principles of organization and waste management after CNC operation.
- Illustrate the process of conducting quality checks and inspections on the CNC machined materials.
- Ensure proper documentation and traceability of the processes.

<b>Duration: 02:00</b>	<b>Duration: 06:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the specific cleaning procedures for the panelworks CNC machine and its components, ensuring proper maintenance.</li> <li>• Describe the principles of organizing and managing the workspace for panels storage and waste disposal procedures.</li> <li>• Explain the key constraints and criteria involved in performing quality checks and inspections on finished materials.</li> <li>• Discuss how to properly document production specs, quality control inspections, and adjustments.</li> </ul>	<ul style="list-style-type: none"> <li>• Assist the operator in cleaning and maintaining the panelworks CNC machine and its parts.</li> <li>• Organize and manage the workspace effectively, implementing proper storage techniques for panels and adhering to waste disposal procedures.</li> <li>• Perform quality checks and inspections on finished materials, using the appropriate techniques and evaluation criteria.</li> <li>• Accurately record and maintain manufacturing specifications, quality control inspections, and modifications in the appropriate documentation.</li> </ul>
<b>Classroom Aids</b>	
White Board, Board Marker, Duster, Projector, Tablet, Chairs, Tables, Smart Board (Optional).	
<b>Tools, Equipment, and Other Requirements</b>	
CNC Machine and requisite tools and equipment.	

## Module 43: On-the-Job Training for Panelworks CNC machines

Mapped to FFS/N1020, v 1.0

<b>Mandatory Duration:</b> 90:00	<b>Recommended Duration:</b> 00:00
<b>Module Name:</b> On-the-Job Training	
<b>Location:</b> On Site	
<b>Terminal Outcomes</b>	
<ul style="list-style-type: none"> <li>• Perform stacking and storage of materials and workpieces for machine operation at the designated machine stations.</li> <li>• Check the quality of job work received for the CNC operation, ensuring it meets the required standards and specifications.</li> <li>• Configure the CNC program to align with the task requirements, ensuring the correct toolpaths, cutting parameters, and dimensions are set.</li> <li>• Adjust machine settings and perform necessary modifications based on job requirements and instructions provided by the machine and tool manufacturers.</li> <li>• Make final adjustments to CNC programs and equipment according to the task requirements and workplace protocols to optimize performance and output quality.</li> <li>• Support in handling and loading workpieces onto the CNC machine accurately and efficiently.</li> <li>• Support in positioning and securing the materials on the CNC machine, utilizing clamps, jigs, or other appropriate methods to ensure stability during machining.</li> <li>• Assist in performing measurement and marking on the job work for CNC operation, ensuring precise dimensions and alignment.</li> <li>• Operate the CNC machine in line with its designated capacity, intended purpose, and the manufacturer's recommendations, following standard operating procedures and safety guidelines.</li> <li>• Monitor machine operation to ensure the production of high-quality outputs, continuously checking for any irregularities or defects and making adjustments as necessary.</li> <li>• Assist the operator in cleaning and maintaining the CNC machine and its parts, such as the machine bed and blade chamber, to ensure optimal performance and longevity.</li> <li>• Organize and manage the workspace, ensuring proper storage of panels and disposal of waste, maintaining a clean and organized work environment.</li> <li>• Assist in inspecting the materials for dimensional accuracy, cleanliness, and quality, ensuring they meet the required specifications.</li> <li>• Maintain proper documentation of manufacturing specifications and quality control inspections for the CNC process, recording relevant information for traceability and quality assurance purposes.</li> </ul>	

## Annexure

### Trainer Requirements

Trainer Prerequisites – either one of the 3 options						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate	Engineering (Civil, Mechanical), Architecture, Interior Design, Furniture Manufacturing, Wood Work, Product Design or Any other discipline	5	Furniture manufacturing/ Furniture Design/ Furniture Installation/Carpentry/ Interior Design/ Architecture	1	Preferable - Vocational or Academic Training	Preferable - Additional Certification related to specialization in furniture or interior design sector (Software like AutoCAD, etc.), Communication Skills.
Certificate-NSQF	NSQF Level 4.5 Panelworks Machine Operator	4	Furniture manufacturing/ Furniture Design/ Furniture Installation/Carpentry/ Interior Design/ Architecture	1	Preferable - Vocational or Academic Training	Required- Work Experience and Recommendation letter from Employer, Certificates of Training from companies.  Preferable - Additional Certification related to specialization in furniture or interior design sector (Software like AutoCAD, etc.), Communication Skills.
Certificate-NSQF	NSQF Level 5 Advanced Furniture Machinist Or Above	3	Furniture manufacturing/ Furniture Design/ Furniture Installation/Carpentry/ Interior Design/ Architecture	1	Preferable - Vocational or Academic Training	Required- Work Experience and Recommendation letter from Employer, Certificates of Training from companies.  Preferable - Additional Certification related to specialization in furniture or interior design sector (Software like AutoCAD, etc.), Communication Skills.

### Trainer Certification

Domain Certification	Platform Certification
<p>Certified for Job Role: "Panelworks Machine Operator" mapped to QP: "FFS/Q1002, v1.0" Level 4.5.</p> <p>The minimum accepted score will be 80% aggregate.</p>	<p>Recommended that the Trainer is certified for the Job Role: "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0".</p> <p>The minimum accepted score will be 80% aggregate.</p>

## Assessor Requirements

### Assessor Prerequisites - either one of the 3 options

Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate	Engineering (Civil, Mechanical), Architecture, Interior Design, Furniture Manufacturing, Wood Work, Product Design or Any other discipline	5	Furniture manufacturing/ Furniture Design/ Furniture Installation/Carpentry/ Interior Design/ Architecture	1	Preferable - Vocational or Academic Training	Preferable - Additional Certification related to specialization in furniture or interior design sector (Software like AutoCAD, etc.), Communication Skills.
Certificate-NSQF	NSQF Level 4.5 Panelworks Machine Operator	4	Furniture manufacturing/ Furniture Design/ Furniture Installation/Carpentry/ Interior Design/ Architecture	1	Preferable - Vocational or Academic Training	Required- Work Experience and Recommendation letter from Employer, Certificates of Training from companies.  Preferable - Additional Certification related to specialization in furniture or interior design sector (Software like AutoCAD, etc.), Communication Skills.
Certificate-NSQF	NSQF Level 5 Advanced Furniture Machinist Or Above	3	Furniture manufacturing/ Furniture Design/ Furniture Installation/Carpentry/ Interior Design/ Architecture	1	Preferable - Vocational or Academic Training	Required- Work Experience and Recommendation letter from Employer, Certificates of Training from companies.  Preferable - Additional Certification related to specialization in furniture or interior design sector (Software like AutoCAD, etc.), Communication Skills.



### Assessor Certification

Domain Certification	Platform Certification
<p>Certified for Job Role: "Panelworks Machine Operator" mapped to QP: "FFS/Q1002, v1.0" Level 4.5.</p> <p>The minimum accepted score will be 80% aggregate.</p>	<p>Recommended that the Assessor is certified for the Job Role: "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0".</p> <p>The minimum accepted score will be 80% aggregate.</p>

## Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the learner on the required competencies of the program.

At FFSC, we believe to gauge the performance of a candidate a holistic approach for assessment is essential. As such we have devised a multi-tier process to keep track of candidate overall progress at various stages. While a few techniques are imbibed as part of the training delivery program, others are explicit ways of testing. These are:

1. Internal (Preferred)
  - a. Trainer Led Assessment
  - b. Master Trainer/ Program Mentor Led Assessment
2. External
  - a. Assessment Partners/ Freelance Assessors (Mandatory)
  - b. Industry (Preferred)

### 1. Internal (Preferred)

#### a. Trainer Led Assessment:

As part of the Training Delivery Program, various tests and projects are designed at regular intervals to gauge the progress of the candidate during the training program. These are mix of Theory and practical, individual and group activities.

Trainers will be provided specific training under the ToT programs to conduct these assessments. A report of the same will be submitted to the assigned Master Trainer/ Program Mentor.

#### b. Master Trainer/ Program Mentor Led Assessment:

Every trainer/ batch should be connected with a Master Trainer/ Program Mentor, who will keep a check on the progress of the batch. Trainer can consult the Master Trainer/ Program Mentor with regards to training delivery or conducting periodic assessments.

Master Trainer/ Program Mentor may conduct their own session to assess the progress of the candidates, using the means as deemed suitable and feasible.

### 2. External

#### a. Assessment Partners/ Freelance Assessors:

An external assessment shall mandatorily be conducted by Assessment Partners via ToA certified Assessors or ToA certified Freelance Assessors. There are 3 key stages of any assessment activity – Pre-Assessment, During Assessment and Post Assessment. The defined system for conducting the assessment shall be followed at each stage.

FFSC Training and Assessment Team or any other assigned authority by FFSC, may conduct surprise or planned visits and checks from quality assurance and monitoring perspective.

The requirements and details of each stage are as highlighted below:

### 1. Pre-Assessment:

- a. Assessment Partner/ Assessor/ Freelance Assessor Validation
- b. Training Centre Check for Assessment Setup/ Infra
- c. Question Papers submission by Assessment Partner/ Freelance Assessor to FFSC
- d. FFSC to validate and approve the Question papers in line with NOS and PC.
- e. FFSC Affiliation and Project Assessment Approval
- f. Centre ready for Assessment intimation by Training Partner or by the assigned Neutral Assessment Centre

### 2. During Assessment (on the Assessment Day):

The assessment can be conducted in offline, online or hybrid format depending on the feasibility and approvals from FFSC. Under either process the below guidelines are important to be compiled:

- a. Check the availability of the Lab Equipment for the particular Job Role as per the mode of conducting assessment.
- b. Candidate Validation: Confirm the Aadhar Card details of candidates
- c. Check the duration of the training
- d. Check the Assessment Start and End time to be as specified in documents
- e. Assessor/ Freelance Assessor must follow the assessment guidelines at all times.
- f. Intimation to FFSC Training and Assessment Monitoring Team for Assessment Quality Assurance checks.
- g. Ensure evidence of conducting assessment is gathered as per FFSC protocol:
  - i. Time-stamped and geotagged reporting of the assessor from assessment location
  - ii. Centre photographs with signboards and scheme-specific branding
  - iii. Biometric or manual attendance sheet (stamped by T.P.) of the trainees during the training period
  - iv. Time-stamped and geotagged assessment (Theory + Viva + Practical) photographs and videos
- h. Required documentation for submissions to the FFSC

### 3. Post Assessment:

- a. Timely submission of the assessment documentation and feedback to FFSC
- b. Hard copies of the documents are stored
- c. Soft copies of the documents and photographs of the Assessment are uploaded/accessed from Cloud Storage
- d. Soft copies of the documents and photographs of the Assessment stored in the Hard Drives
- e. Any other compliance requirement as defined by FFSC

### b. Industry Partner:

FFSC may engage the Industry Partners and the Subject Matter Experts to conduct the Assessment of the candidates at various stages during the training program.

## References

## Glossary

Term	Description
<b>Declarative Knowledge</b>	Declarative knowledge refers to facts, concepts, and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
<b>Key Learning Outcome</b>	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on-site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on-site
<b>Procedural Knowledge</b>	Procedural knowledge addresses how to do something or how to perform a task. It is the ability to work or produce a tangible work output by applying cognitive, affective, or psychomotor skills.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
<b>Terminal Outcome</b>	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

## Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
QC	Quality Checking
PwD	Person with Disability
ToT	Training of Trainers
ToA	Training of Assessors
FFSC	Furniture and Fittings Skill Council
TP	Training Partner
PC	Performance Criteria
NA	Not Applicable
MS	Microsoft
PPE	Personal Protective Equipment
2D	2-Dimensional
3D	3-Dimensional
SOP	Standard Operating Procedure
AR	Augmented Reality
VR	Virtual Reality
OJT	On-the-Job Training
FF&E	Furniture Fixtures & Equipment
POC	Point of Contact
POSH	Prevention Of Sexual Harassment
CPR	Cardiopulmonary Resuscitation