

## Syllabus for Fiber Glass Reinforced Polymer Products Moulding Assistant

<b>Course Name</b>	Fiber Glass Reinforced Polymer Products Moulding Assistant
<b>Sector</b>	Infrastructure Equipment
<b>Course Code</b>	INF/2024/FGMA/378
<b>Level</b>	3
<b>Occupation</b>	Fiber Glass Reinforced Polymer Products Moulding Assistant
<b>Job Description</b>	The Fiber Glass Reinforced Polymer (FGRP) Products Moulding Assistant plays a crucial role in the manufacturing process by providing essential support in the production of FGRP products. Responsibilities include assisting in the identification and preparation of required raw materials, operating machinery under the guidance of supervisors and ensuring the proper handling and measurement of resins and chemicals. The assistant actively contributes to the maintenance of a safe and organized work environment, follows standard operating procedures for material handling and waste disposal and participates in the dismantling and assembling of tools, tackles and hardware.
<b>Course Duration</b>	Total Duration 360 Hrs (T-90, P-150, OJT-60 and ES-60)
<b>Trainees' Entry Qualification</b>	Grade 10 OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR 5th grade pass with 5 years relevant experience OR Previous relevant Qualification of NSQF Level 2 with one yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
<b>Trainers Qualification</b>	Any graduate in Plastics technology with 5 years experience in the relevant field

**Structure of Course:**

Module No.	Module name	Outcome	Compulsory/ Elective	Theory (Hrs)	Practical (Hrs)	OJT (Hrs.)	Total (Hrs) [Multiple of 30]
1	<b>Identification and use of basic tools</b>	Identify and select basic tools, raw materials, resins, fibres (thermoplastic and thermoset materials), machinery and	Compulsory	20	10		30

Module No.	Module name	Outcome	Compulsory/ Elective	Theory (Hrs)	Practical (Hrs)	OJT (Hrs.)	Total (Hrs) [Multiple of 30]
		moulds associated with the Fibre Reinforced Plastic (FRP) process to complete the job requirement.					
2	<b>Assistance in manufacturing FGRPPMA products</b>	Describe various manufacturing process for FRP products, mould development and selection of suitable process for the product to be produced.	Compulsory	20	40		60
3	<b>Health &amp; safety at the workplace</b>	Comply with the health, safety and security procedures stated by the organization.	Compulsory	20	40		60
4	<b>Work effectively with others</b>	Perform allocated work effectively to achieve department/ organization's goals.	Compulsory	10	20		30
5	<b>Reading and writing reports</b>	Read and write basic reports and write reports related to FRP production.	Compulsory	10	20		30
6	<b>Assistance for smooth manufacturing operation</b>	Carry out assistance activities for operator/ supervisor for smooth operations at the workplace	Compulsory	10	20		30
7	<b>OJT</b>	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	Compulsory	-	-	60	60

Module No.	Module name	Outcome	Compulsory/ Elective	Theory (Hrs)	Practical (Hrs)	OJT (Hrs.)	Total (Hrs) [Multiple of 30]
8	<b>Employability Skill</b>	As per guided curriculum	Compulsory	60	-		60
TOTAL:				<b>150</b>	<b>150</b>	<b>60</b>	<b>360</b>

**SYLLABUS:****Module No. 1: Identification and use of basic tools**

**Outcome:** Identify and select basic tools, raw materials, resins, fibres (thermoplastic and thermoset materials), machinery and moulds associated with the Fibre Reinforced Plastic (FRP) process to complete the job requirement.

**Theory Content:**

- List the major milestones in the developmental history of plastic.
- State the basic industrial scenario of plastics and its prospects.
- List the major industrial associations.
- Describe the roles and responsibilities of an FGRPPMA Assistant.
- List the required tools for FRP manufacturing
- Demonstrate assistance to operator in operating different FGRPPMA machinery available in the shop floor.

**Practical Content:**

- Identify the types of plastic.
- List the required tools for FRP manufacturing
- Describe the tools for FRP manufacturing and its uses
- Select required tool for carrying out allocated process with the help of supervisor/ operator.
- Perform the allocated activities as per the time limits given by the supervisor.
- Perform the functionality check of the tools and equipment to be used.
- Identify the types of the materials, moulds and machinery.
- Demonstrate assistance to operator in operating different FGRPPMA machinery available in the shop floor.

**Module No. 2: Assistance in manufacturing FGRPPMA products**

**Outcome:** Describe various manufacturing process for FRP products, mould development and selection of suitable process for the product to be produced.

**Theory Content:**

- Explain the process of material handling of the raw material
- Describe the significance of handling material safely at the workplace
- Describe the process of measurement of resin and other chemicals
- Explain the process of material handling of the raw material independently and safely at the workplace.

**Practical Content:**

- Describe the process of measurement of resin and other chemicals
- Identify and collect the required raw material from the storage location.
- Perform material handling of the raw material independently and safely at the workplace.
- Measure the required quantity of resin and chemicals as instructed by the supervisor.
- Prepare the mould and machinery as instructed by the operator for manufacturing.
- Perform cleaning of the machines as per the organization's standard operating procedure (SOP).
- Operate the machine by following the established guidelines to complete the production plan.
- Perform material handling of finished FRP product after completing the production cycle.
- Report any identified abnormalities in the FRP production process.

### **Module No. 3: Health & safety at the workplace**

**Outcome:** Comply with the health, safety and security procedures stated by the organisation.

#### **Theory Content:**

- Explain the procedure of rescue techniques during fire hazard.
- Apply good housekeeping in order to prevent fire hazards.
- Identify activities which can cause potential injury.
- Escalate to the concerned authorities on the potential risks identified.
- Apply proper labeling mechanism of instruments/ boxes/ containers.

#### **Practical Content:**

- Demonstrate safe working practices
- Use the appropriate fire extinguisher as per the type of fire.
- Demonstrate rescue techniques during fire hazard.
- Carry out the sorting process on the tools, fixtures and jigs.
- Perform segregation of waste in hazardous/ non-hazardous waste categories.
- Demonstrate the technique of waste disposal as per standard operating procedure (SOP).
- Apply proper labeling mechanism of instruments/ boxes/ containers.

### **Module No. 4: Work effectively with others**

**Outcome:** Perform allocated work effectively to achieve department/ organisation's goals.

#### **Theory Content:**

- Use appropriate communication practices at workplace.
- Apply active listening skills while interacting with others at work.
- Demonstrate disciplined behavior at the workplace.
- Demonstrate effective communication by passing on complete and accurate information
- State one's job responsibility accurately.
- Describe hierarchy in the workplace.
- Follow the process of escalating grievances and problems to appropriate authority.
- Discuss the organisation's safety procedure.
- Identify the reports formats related to his/ her job.

#### **Practical Content:**

- Implement clear and concise communication practices at the workplace
- Utilize active listening skills during workplace interactions
- Exhibit disciplined behavior by adhering to company policies and procedures

- Illustrate the workplace hierarchy, identifying key decision-makers
- Implement a systematic approach to escalate grievances and problems to the appropriate authority
- Adhere to the organization's safety procedures, actively contributing to a secure and hazard-free workplace.
- Identify and proficiently use relevant report formats associated with one's job to streamline communication and documentation processes.

### **Module No. 5: Reading and writing reports**

**Outcome:** Read and write basic reports and write reports related to FRP production.

#### **Theory Content:**

- Explain the production reports as required in the workplace.
- Explain the work instructions with technical terms and jargons used in the workplace.
- Carry out reports filing as per supervisor's instruction.
- Carry out filing of reports and formats in the prescribed location.
- Perform maintenance of filing system as per organization's Standard Operating Procedure (SOP)
- Demonstrate effective retrieval of the specific reports/files to the supervisor as and when required

#### **Practical Content:**

- Interpret production reports in accordance with workplace requirements, summarizing key data and trends for clear analysis.
- Execute report filing based on supervisor's directives, organizing documents systematically for easy retrieval and reference.
- Systematically file reports and formats in designated locations, maintaining an orderly and easily accessible archive for efficient record-keeping.
- Implement routine maintenance of the filing system, adhering to the organization's Standard Operating Procedure (SOP) to ensure the longevity and accuracy of stored information.
- Demonstrate proficiency in retrieving specific reports and files, promptly providing the supervisor with the required information when requested.
- Execute filing tasks with precision, following prescribed guidelines to maintain the integrity

### **Module No. 6: Assistance for smooth manufacturing operation**

**Outcome:** Carry out assistance activities for operator/ supervisor for smooth operations at the workplace

#### **Theory Content:**

- Explain the procedure to identify the tools, tackles and hardware required for the current job and remove any unwanted tool or equipment from the work area.
- Perform checking for availability of tools, tackles and hardware required for the job.
- Carry out assisting in operating the machine by providing necessary material and tools.
- Extend necessary help for smooth and timely completion of the job.
- Describe the process dismantling and assembling of tools tackles and hardware and in carrying out maintenance activities required at the workplace.
- Perform safe return of the tools, tackles and hardware to the stores.
- Report to the supervisor on completion of the assigned job.

#### **Practical Content:**

- Identify the tools, tackles and hardware required for the current job and remove any unwanted tool or equipment from the work area.
- Perform checking for functionality of the tools, tackles and hardware required for the job and ensure that they are fit and ready to use.
- Carry out assisting in operating the machine by providing necessary material and tools.
- Dismantle and assemble tools tackles and hardware and in carrying out maintenance activities required at the workplace.
- Perform oiling and greasing of machine parts after completing of the job as per organization's Standard Operating Procedure (SOP)
- Perform safe return of the tools, tackles and hardware to the stores.

### **Module 7: OJT**

**Outcome:** Work in real job situation with special emphasis on basic safety and hazards in this domain

#### **Practical Content:**

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours**.)

### **Module 8: Employability Skills (60 Hrs)**

#### **Key Learning Outcomes**

#### **Introduction to Employability Skills**

Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

#### **Constitutional values - Citizenship**

Duration: 1.5 Hours

3. 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
4. Show how to practice different environmentally sustainable practices.

#### **Becoming a Professional in the 21st Century**

Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior 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.
7. Describe the benefits of continuous learning.

#### **Basic English Skills**

Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

**Career Development & Goal Setting**

Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

**Communication Skills**

Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

**Diversity & Inclusion**

Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

**Financial and Legal Literacy**

Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

**Essential Digital Skills**

Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

**Entrepreneurship**

Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

**Customer Service**

Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

**Getting Ready for apprenticeship & Jobs**

Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges,

- recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
  36. Perform a mock interview
  37. List the steps for searching and registering for apprenticeship opportunities

### Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Identify and select basic tools, raw materials, resins, fibres (thermoplastic and thermoset materials), machinery and moulds associated with the Fibre Reinforced Plastic (FRP) process to complete the job requirement.	<p><b>After completion of this module students will be able to:</b></p> <ol style="list-style-type: none"> <li>1.1 Identify various types of plastics, distinguishing them based on inherent properties and characteristics.</li> <li>1.2 Compile a comprehensive inventory of tools essential for FRP manufacturing, showcasing their understanding of the necessary equipment.</li> <li>1.3 Comprehend tools for FRP manufacturing through detailed explanations of each tool and its specific functions in the manufacturing process.</li> <li>1.4 Select the appropriate tools for specific processes, demonstrating a sound understanding of tool functionality.</li> <li>1.5 Perform functionality checks on tools and equipment</li> <li>1.6 Demonstrate different FGRPPMA machinery on the shop floor, ensuring effective contribution to the manufacturing process.</li> </ol>
2	Describe various manufacturing processes for FRP products, mould development and selection of suitable process for the product to be produced.	<p><b>After completion of this module students will be able to:</b></p> <ol style="list-style-type: none"> <li>2.1 Demonstrate understanding through raw material handling procedures.</li> <li>2.2 Describe Safe Material Handling</li> <li>2.3 Articulate the significance of safe material handling practices.</li> <li>2.4 Explain Chemical Measurement Process</li> <li>2.5 Elaborate on the precise measurement of resin and chemicals.</li> <li>2.6 Execute independent and safe raw material handling.</li> <li>2.7 Identify and collect necessary raw materials. Perform Safe Material Handling</li> <li>2.8 Follow guidelines while operating machinery.</li> </ol>
3	Comply with the health, safety and security procedures stated by the organisation.	<p><b>After completion of this module students will be able to:</b></p> <ol style="list-style-type: none"> <li>3.1 Demonstrate fire hazard rescue techniques.</li> <li>3.2 Implement good housekeeping practices to</li> </ol>



Module No.	Outcome	Assessment Criteria
		prevent fire hazards. 3.3 Evaluate recognition of activities with potential injury risks. 3.4 Communicate identified risks to authorities. 3.5 Demonstrate the procedure of correct application of labeling on instruments/boxes/containers. 3.6 Use the correct fire extinguisher for specific fire types. 3.7 Demonstrate fire hazard rescue techniques. 3.8 Maintain the accuracy of sorting tools and segregating waste. 3.9 Demonstrate waste disposal following standard operating procedures (SOP).
4	Perform allocated work effectively to achieve department/ organisation's goals.	<b>After completion of this module students will be able to:</b> 4.1 Use Effective Communication Practices 4.2 Apply active listening in interactions. 4.3 State Job Responsibilities Accurately 4.4 Describe Workplace Hierarchy 4.5 Implement Grievance Escalation Process 4.6 Demonstrate Organization's Safety Procedures 4.7 Identify Relevant Report Formats
5	Read and write basic reports and write reports related to FRP production.	<b>After completion of this module students will be able to:</b> 5.1 Articulate production reports effectively. 5.2 Explain Technical Work Instructions 5.3 Evaluate the precision in executing filing tasks. 5.4 Assess adherence to SOP in maintaining the filing system. 5.5 Evaluate proficiency in retrieving specific reports when required. 5.6 Interpret and summarize production reports.
6	Carry out assistance activities for operator/ supervisor for smooth operations at the workplace	<b>After completion of this module students will be able to:</b> 6.1 Identify and remove necessary tools. 6.2 Check tool functionality for readiness. 6.3 Assist in operating machinery. 6.4 Dismantle and assemble tools and hardware. 6.5 Execute maintenance activities at the workplace. 6.6 Implement SOP for Oiling and Greasing 6.7 Practice of safely returning tools to stores. 6.8 Communicate effectiveness in reporting job completion.
7	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).
8	Employability Skill	As per guided curriculum

**List of Tools, Equipment & materials needed for 30 Trainees (Practical)**

S. No.	Description of tools	Qty
1	White board	1
2	Marker	As required
3	Duster	1
4	Laptop with latest configuration	1
5	Projector	1
6	Screen	1
7	Steel ruler	4
8	Steel measuring tape	4
9	Weighing balance	1
10	Hammer	4
11	Screwdriver set with multiple heads	4
12	Allen key	2
13	Triangular file	4
14	Hacksaw	4
15	Spanner set double side	4
16	Adjustable spanner	4
17	FGRPPMA mould	As required
18	Hand layup mould	As required
19	Compression mould	As required
20	PPE kit	30
21	First aid box	1
22	Fire extinguisher	2
23	Flip charts	As required

**Marks Distribution**

Outcome	Outcome Code	Total Th marks	Total Pr marks	Total OJT marks
Identify and select basic tools, raw materials, resins, fibres (thermoplastic and the rmoset materials), machinery and moulds associated with the Fibre Reinforced Plastic (FRP) process to complete the job requirement.	INF/1801/OC1	30	90	0
Describe various manufacturing process for FRP products, mould development and selection of suitable process for the product to be produced.	INF/1801/OC2	30	130	0
Comply with the health, safety and security procedures stated by the organization.	INF/1801/OC3	30	130	0
Perform allocated work effectively to achieve department/ organization's goals.	INF/1801/OC4	20	100	0
Read and write basic reports and write reports related to FRP production.	INF/1801/OC5	20	100	0
Carry out assistance activities for operator/ supervisor for smooth operations at the workplace	INF/1801/OC6	20	100	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	INF/1801/OC7	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0