

## Syllabus for Painter

<b>Course Name</b>	Painter
<b>Sector</b>	Capital Goods
<b>Course Code</b>	CGM/2023/PAIN-RPL/262
<b>Level</b>	RPL LEVEL 3
<b>Occupation</b>	Painter
<b>Job Description</b>	A Painter is responsible for the meticulous application of paints, coatings and finishes to surfaces in diverse settings. This role involves extensive surface preparation, including cleaning, sanding and patching, to ensure a smooth canvas for painting. Utilizing brushes, rollers, or spray equipment, Painters apply paint, select and mix colors and consistently achieve even coverage.
<b>Course Duration</b>	Total Duration 80 Hrs. (T-25, P-55) RPL
<b>Trainees' Entry Qualification</b>	Grade 8 with more than 5 Year Experience in the relevant Field
<b>Trainers Qualification</b>	Degree or Diploma in Mechanical Engineering with one/two years experience in relevant field OR NTC/NAC in Painter General/Industrial Painter with 3 years experience

**Structure of Course:**

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs)
1.	Workplace Safety	Apply safe working practices in the industry	1	1	2
2.	Basic Engineering Drawing	Practice & interpret technical drawings	2	6	8
3	Spray painting technique	Perform Spray Painting technique. (Spray Gun / hose handling, air & paint pressure controlling,)	4	8	12
4	Operating system of Spray booth	Operate system of spray booths, Oven, cleaning & their maintenance, application of sealant component on metallic joints.	4	8	12

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs)
5	Aspect ratio and viscosity of paint	Perform aspect ratio mixing of paint, hardener & solvent alongwith measure Viscosity of paint.	4	8	12
6	Application of paint	Identify and apply of spray painting in-Home appliances, Agricultural equipment's, Machines, Automotive Bodies etc.	4	8	12
7	Denting and painting	Removal of dents & recover the damaged accidental area. Repaint & recovering damaged area.	2	6	8
8	Application of powder coating	Identify different types of powder coating and apply the Powder coating technique in appropriate place.	2	6	8
9	Employability Skill		2	4	6
<b>TOTAL:</b>			<b>25</b>	<b>55</b>	<b>80</b>

**SYLLABUS:****Module No. 1: Workplace Safety**

**Outcome:** Apply safe working practices in the industry

**Theory Content:**

1. Awareness of safety norms.
2. Safety-PPE usage and its benefits
3. Fire prevention and personal safety.
4. Ergonomic safety and health principles.
5. Use various PPE while working.
6. Safety during machine / material handling
7. Proper Ventilation and air quality for prevention of inhalation of harmful fumes
8. Chemical handling and storages of paints and solvents

**Practical Content:**

1. Accident prevention and safety regulations while material handling, eliminating unsafe conditions, unsafe actions, discovering causes of accidents.
2. Fire prevention and personal safety.
3. Safety during machine handling.
4. Emergencies, rescue and first aid procedures.
5. Familiar with Personal protective Equipment's and clothes Different Type of Safety Sign, First Aid Box, Safety instrument and clothing
6. Practice using exhaust fans and setting up proper ventilation in different workspaces
7. Handle properly to mix and disposal of paints and solvents inspect electrical tools and equipment's for potential safety hazards.
8. Simulate emergency scenarios, such as spills or injuries.
9. Identify and segregate different types of waste materials generated during painting.

**Tools & Equipment needed:**

Safety goggles, Respiratory protection respirators, Gloves, Full body protection clothes, Ear protection, Safety shoes, Fire extinguisher, First Aid Kit, Eyewash station, Emergency shower, Fire buckets, Safety signs and labels, Chemical spill kit, Waste disposal containers.

**Module No. 2: Basic Engineering Drawing**

**Outcome:** Practice & interpret technical drawings

**Theory Content:**

- Introduction of technical drawing and lettering
- Use and care drawing boards and different drawing instruments, Drawing sheets and their sizes.
- Explain Types of Lines: Horizontal, Vertical, Inclined, parallel lines.
- Concept of using Scales in Drawing – Enlarging, Full Size & Reducing Scale.

**Practical Content:****Introduction of technical drawing and lettering**

- How to begin a drawing – Layout of drawing sheet.
- Drawing of — i) Horizontal lines, ii) Vertical lines, iii) Inclined lines, iv) Parallel lines,
- Single stroke Lettering by conventional method.
- Dimensioning—System of Dimensioning

**Geometrical Construction**

- Geometrical construction of Polygons (Pentagon, Hexagon & Octagon) by general method.

**Orthographic Projection of Line & Lamina**

- Projector; Plane of projection – Vertical Plane, Horizontal Plane & Profile Plane. Concept of 1st angle
- Projection; 3rd angle Projection. Reference Line – Symbol of methods of projection. (Demonstration with models).
- Projection of Points, Lines & Lamina (Square, rectangular, triangular, hexagonal, pentagonal and circular) parallel to VP and angle with HP & vice versa.

**Freehand Sketch**

Introduction – Necessity.

b) Free hand sketches of rolled steel sections – i) T-section, ii) I-section, iii) Angle section, iv) Channel section, v) Circular section, vi) Rectangular Section, vii) Steel flat, viii) Double ended wrench, ix) Screw driver, x) Nail puller

**Tools & Equipment needed:** Drawing instrument box, Drawing instrument box, Set square celluloid 30°-60°, French-curves (set of 12 celluloid), T-Square or Mini drafter, Drawing board.

**Module No. 3: Spray painting technique**

**Outcome:** Perform Spray Painting technique. (Spray Gun / hose handling, air & paint pressure controlling,)

**Theory:**

- Description of spray painting plant
- Components of a Spray Gun
- Types of spray guns
- Spray painting techniques
- Surface preparation
- Paint mixing and Thinning
- Pressure and air control
- Types of booth, description of booth and its ventilation
- Care and maintenance of spray booth
- Paint application on different surfaces

**Practical:**

- Identify and select Spray gun
- Identify and explain the functions of the nozzle, needle, air cap and controls
- Types of spray guns
- Preparation of surface
- Mixing of paint and thinning
- Pressure and air control
- Operation of spray booth
- Paint application techniques
- Paint application on different surfaces viz. corner, square, round and curved areas
- Cleaning and maintenance practices for spray equipment's

**Tools and equipment:**

Measuring tape, Hand masker and painter's tape, Swiss Army knife for painters, Screwdriver Filler, Caulking and gun, Patching knife, Sandpaper, Microfiber and tack cloths, Vacuum cleaner Brushes, Roller frame, Roller cover, Paint tray, Paint sprayer, Stir stick, Drop cloth Drywall tape knife, Roller and brush cleaner (with a bucket), Ladder

**Module No. 4: Operating system of Spray booth**

**Outcome:** Operate system of spray booths, Oven, cleaning & their maintenance, application of sealant component on metallic joints.

**Theory:**

- Introduction to spray booth
- Component of spray booth
- Types of spray booths
- Airflow principles
- Ventilation and exhaust systems
- Lighting systems
- Temperature and humidity control
- Types of oven for painting.
- Description of oven and its care
- Sealant-definition and description.

- Purpose of sealant application
- Edge protection, prevention of water leakage
- Maintenance and cleaning procedures

**Practical:**

- Safety protocols and emergency procedures
- Ventilation system maintenance
- Temperature and humidity control calibration procedure
- Lighting system inspection and maintenance procedure
- Control panel operation
- Operate and maintenance of spray booth
- Operate and safety aspects of Oven setting, temperature and timing
- Apply sealant on metallic joints
- Spray booth cleaning and maintenance
- Disposal of cleaning materials as per environmental guidelines
- Identify potential hazards

**Tools and Equipment:**

Measuring tape, Hand masker and painter's tape, Swiss Army knife for painters, Screwdriver Filler, Caulking and gun, Patching knife, Sandpaper, Microfiber and tack cloths, Vacuum cleaner Brushes, Roller frame, Roller cover, Paint tray, Paint sprayer, Stir stick, Drop cloth Drywall tape knife, Roller and brush cleaner (with a bucket), Ladder

**Module No. 5: Aspect ratio and viscosity of paint**

**Outcome:** Perform aspect ratio mixing of paint, hardener & solvent alongwith measure Viscosity of paint.

**Theory:**

- Aspect ratio in painting
- Paint viscosity- importance, method of the paint viscosity
- Paint preparation and mixing for different application
- Preparation of surfacer on primed or putty finish surface

**Practical:**

- Paint preparation and mixing for spray painting

- Practice to measure the viscosity of paint
- Mixed media composition
- Brushwork exploration
- Layering techniques
- Impasto exploration
- Glazing and washes
- Integration of aspect ratio and viscosity
- Spray painting practice on ornamental objects, with different types of paints
- Application of spray finish for top coat

#### **Tools and Equipment:**

Measuring tape, Hand masker and painter's tape, Swiss Army knife for painters, Screwdriver Filler, Caulking and gun, Patching knife, Sandpaper, Microfiber and tack cloths, Vacuum cleaner Brushes, Roller frame, Roller cover, Paint tray, Paint sprayer, Stir stick, Drop cloth Drywall tape knife, Roller and brush cleaner (with a bucket), Ladder

#### **Module No. 6: Application of paint**

**Outcome:** Identify and apply of spray painting in-Home appliances, Agricultural equipment's, Machines and Automotive Bodies.

#### **Theory:**

- Introduction to paint application
- Surface preparation
- Types of paint application techniques
- Brush applications
- Roller applications
- Spray applications
- Consideration for difference home appliances
- Application of primers and undercoats
- Spray painting in agriculture equipment's
- Spray painting in automotive bodies
- Check the quality control such as visual inspections, thickness measurements and adhesion testing

#### **Practical:**

- Prepare the surface of home appliances (ex- fan, cooler, fridge, washing machine etc.)

- Priming & surfacing on home appliances
- Various types of spray painting
- Apply finish undercoat & top coat on home appliances
- Prepare the surface of machine (ex- lath, drilling, grinding, compressor, suing machine etc.).
- Priming & surfacing on machine.
- Apply finish undercoat & top coat on machine
- Parts of electrostatic gun assembly and airless gun assembly.

#### **Tools & Equipment List:**

Measuring tape, Hand masker and painter's tape, Swiss Army knife for painters, Screwdriver  
 Filler, Caulking and gun, Patching knife, Sandpaper, Microfiber and tack cloths, Vacuum cleaner  
 Brushes, Roller frame, Roller cover, Paint tray, Paint sprayer, Stir stick, Drop cloth  
 Drywall tape knife, Roller and brush cleaner (with a bucket), Ladder

#### **Module No. 7: Denting and painting**

**Outcome:** Removal of dents & recover the damaged accidental area. Repaint & recovering damaged area.

#### **Theory:**

- Introduction to dent removal and repainting
- Assessment procedure for damage analysis
- Dent removal techniques
- Surface preparation for repainting
- Repainting process
- Paint selection
- Finishing and detailing
- Safety measures
- Quality control and customer satisfaction

#### **Practical:**

- Disassemble essential damage parts, inspect & mark denting area. Choose & decide process tools for denting
- Removed dent on marked area, apply essential method.
- Do sanding or burn on denting area& apply primer & surface. Apply putty layer on necessities area evenly
- Use wet sanding, level denting surface area, apply thin coat of surfacer.
- Masking on unwanted area properly (



- Match the shade Overlay proper equally on unmask area.
- Unmasked the mask area carefully & checkout properly & touch-up it by necessary. process.
- Apply final coat rub and wax properly & matched it.

#### **Tools & Equipment:**

Measuring tape, Hand masker and painter's tape, Swiss Army knife for painters, Screwdriver Filler, Caulking and gun, Patching knife, Sandpaper, Microfiber and tack cloths, Vacuum cleaner Brushes, Roller frame, Roller cover, Paint tray, Paint sprayer, Stir stick, Drop cloth Drywall tape knife, Roller and brush cleaner (with a bucket), Ladder

#### **Module No. 8: Application of powder coating**

**Outcome:** Identify different types of powder coating and apply the Powder coating technique in appropriate place.

#### **Theory:**

- Introduction to Powder coatings
- Components of Powder coating
- Types of powder coating in industry
- Advantages of Powder coating
- Operating system of Powder coating technique.
- Surface preparation for powder coating
- Electrostatic spray application process
- Considerations for different substrates
- Masking and finishing techniques
- Maintenance and repair of powder coatings
- Quality control and inspection

#### **Practical:**

- Equipment familiarization
- Surface preparation techniques
- Pre-treated & Clean the metallic article in chemical (degreasing, de-rusting, activation, phosphating, passivation & water rinsing as where required etc.)
- Proceed powder coating on cleaned article & bake it in oven in appropriate temperature & timing
- Electrostatic spray applications
- Masking and finishing techniques
- Maintenance and repair techniques
- Common issues during powder coating applications

**Tools & Equipment:**

Measuring tape, Hand masker and painter's tape, Swiss Army knife for painters, Screwdriver Filler, Caulking and gun, Patching knife, Sandpaper, Microfiber and tack cloths, Vacuum cleaner Brushes, Roller frame, Roller cover, Paint tray, Paint sprayer, Stir stick, Drop cloth Drywall tape knife, Roller and brush cleaner (with a bucket), Ladder

**Module No. 9: Employability Skills****Detail Content**

- **Basic English Skills**

1. Converse using basic English sentences.
2. How to Greet others
3. Read and interpret text written in basic English
4. Write a short note/paragraph / letter using basic English

- **Communication Skills**

1. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
2. Discuss the significance of working collaboratively with others in a team

- **Financial Skills**

1. Outline the importance of selecting the right financial institution, product and service
2. Demonstrate how to carry out offline and online financial transactions, safely and securely like net banking, wallet payment, UPI.
3. List the common components of salary and compute income, expenditure, taxes, investments etc.

- **Essential Digital Skills**

1. Familiarization of working with computer
2. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
3. Send email with attachment. Receive email and download attachment

- **Customer Service Skills**

1. Explain the significance of identifying customer needs and responding to them in a professional manner.
2. Discuss the significance of maintaining hygiene and dressing appropriately

**Learning Outcome – Assessment Criteria**

Module No.	Outcome	Assessment Criteria
1	Apply safe working practices in the industry	<p><b>After completion of this module students will be able to:</b></p> <p>1.1 Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements.</p> <p>1.2 Identify basic first aid and use them under different circumstances.</p> <p>1.3 Identify different fire extinguisher and use the same as per requirement.</p> <p>1.4 Identify safety alarms accurately</p> <p>1.5 Follow about General safety precaution in industry with Blacksmithing Work</p>
2	Practice & interpret technical drawings	<p><b>After completion of this module students will be able to:</b></p> <p>2.1 Draw plane figures applying drawing instruments with proper layout and folding of drawing sheets.</p> <p>2.2 Construct Line, Lettering, Dimensioning, and Scale – Plain, Diagonal</p> <p>2.3 Draw plan, elevation, side view of different objects with appropriate type of lines and dimensions as per standard convention.</p> <p>2.4 Draw simple geometrical figure like square, rectangle, circle using CAD.</p>
3	Perform Spray Painting technique. (Spray Gun / hose handling, air & paint pressure controlling,)	<p><b>After completion of this module students will be able to:</b></p> <p>3.1 Properly hold the controls the spray gun during application</p> <p>3.2 Evaluates the steadiness of the hand while moving the spray gun over the surface</p> <p>3.3 Handle the hose properly without tangling or hindering movement</p> <p>3.4 Adjust and regulate air pressure according to the requirement of the painting task</p> <p>3.5 Coordinate between spray gun handling, hose management and pressure control</p> <p>3.6 Practice the spray on the surface like as edges, corner, square, round and curved area</p>
4	Operate system of spray booths, Oven, cleaning & their maintenance, application of sealant component on metallic joints.	<p><b>After completion of this module students will be able to:</b></p> <p>4.1 set and maintain proper ventilation within the spray booth</p> <p>4.2 adjust airflow to ensure even distribution of paint particles</p> <p>4.3 Utilize the exhaust system to minimize</p>

Module No.	Outcome	Assessment Criteria
		overspray and maintain a clean environment 4.4 Eventuate the precision in setting and maintaining oven temperatures for curing painted surfaces 4.5 follow the cleaning procedures before application of coatings 4.6 ensures proper disposal of cleaning materials and adherence to environmental guidelines 4.7 Follow the procedures for regular inspection of spray booths, ovens and associated equipment's 4.8 evaluate the preparation of metallic joints before applying sealant 4.9 Ensure the proper disposal of waste materials, including the environmental impact of operations 4.10 Identify potential hazards associated with the operation of spray booths, oven and cleaning processes.
5	Perform aspect ratio mixing of paint, hardener & solvent alongwith measure Viscosity of paint.	<b>After completion of this module students will be able to:</b> 5.1 Prepare Paint mixing for spray painting. 5.2 Measure the viscosity of paint. 5.3 Practice Spray Painting on ornamental objects, with deferent types of paints. 5.4 Spray metallic primer on metal surface. 5.5 Apply Carpatch, Putty and Filler on metallic surface & preparation. 5.6 Apply Surfacer on primed or putty finish surface. 5.7 Apply Spraying finish for Top Coat.
6	Identify and apply of spray painting in-Home appliances, Agricultural equipment's, Machines, Automotive Bodies etc.	<b>After completion of this module students will be able to:</b> 6.1 Set and maintain proper ventilation within the spray booth 6.2 Identify different materials used in home appliances, agricultural equipment,, machines and automotive bodies. 6.3 Prepare the surface of home appliances. 6.4 Priming & surfacing process on home appliances. 6.5 Perceive accurately and match colors for different applications 6.6 Apply the proficiency in using spray guns and other application tools for different surfaces 6.7 Evaluate adherence to safety standards and protocols specific to each industry 6.8 Identify the parts of Electrostatic gun assembly & operate it carefully. 6.9 Identify the parts of Airless gun assembly & Operate it carefully.

Module No.	Outcome	Assessment Criteria
		6.10 Practice of Different types of Spray painting. 6.11 Clean the work area after spray painting, minimizing downtime.
7	Removal of dents & recover the damaged accidental area. Repaint & recovering damaged area.	<p><b>After completion of this module students will be able to:</b></p> 7.1 Disassemble essential damage parts, inspect & mark denting area. Choose & decide process tools for denting. 7.2 Remove dent on marked area, apply essential method. 7.3 Do sanding or burn on denting area & apply primer & surface and apply putty layer on spotted area evenly. 7.4 Use wet sanding, level denting surface area, procedure of thin coat of Surfacer. 7.5 Do Mask process on unwanted area properly. 7.6 Unmask the mask area carefully & checkout properly & touch-up it by necessary process. 7.7 Apply final coat rubbing and waxing process properly. 7.8 Demonstrate of Paint defects & its remedies. 7.9 Check & Find out different paint defects (run down, sagging, pin hole, orange peel, oil & water spot, over/ dry spray, uncover, shade variation etc.) 7.10 Mark the defected area, Decide Techniques & apply remedies properly. Make Finished surface.
8	Identify different types of powder coating and apply the Powder coating technique in appropriate place.	<p><b>After completion of this module students will be able to:</b></p> 8.1 Identify different types of powder coatings available in the industry 8.2 Recognize the type of powder coating is commonly used 8.3 Analyze surfaces and determine the compatibility with various types of powder coatings 8.4 Choose the right type of powder coating based on the project requirements 8.5 Apply the technique to use electrostatic spray guns for powder coating 8.6 Check powder coated surfaces for uniformity and color consistency 8.7 Properly dispose the waste materials

Module No.	Outcome	Assessment Criteria
		including unused or reclaimed powder coatings 8.8 Identify common issues during powder coating application, such as orange peel or insufficient coverage.
9	Employability Skill	As per guided curriculum

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

SI No	Items Name	Specification	Qty
1	Measuring tape		30 Nos.
2	Hand masker and painter's tape		10 nos.
3	Swiss Army knife for painters		10 nos.
4	Screwdriver	100mm / 200mm	2 nos. each
5	Filler		10 nos.
6	Caulking and gun		6 nos.
7	Patching knife		6 nos.
8	Sandpaper		30 nos.
9	Microfiber and tack cloths		30 nos.
10	Vacuum cleaner		2 nos.
11	Brushes		30 nos.
12	Roller frame		6 nos.
13	Roller cover		6 nos.
14	Paint tray		6 nos.
15	Paint sprayer		6 nos.
16	Stir stick		6 nos.
17	Drop cloth		10 nos.
18	Drywall tape knife		6 nos.
19	Roller and brush cleaner (with a bucket)		6 nos.
20	Ladder Aluminium	6 ft.	2 nos.
21	Blow Lamp		2 nos.