

Auto Body Painting Technician

Course Name	Auto Body Painting Technician
Course Code	AUT/2023/ABPT/149
Sector	Automotive
Level	3
Occupation	Auto Paint shop Technician
Job Description	Painting and Surface Treatment Operation
Course Duration	Total Duration 390 Hrs. (T-90, P-180, OJT-60 and ES-60)
Trainees' Entry Qualification	Grade 10 OR Grade 8 with two year of (NTC/ NAC) after 8 th OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs. 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
Trainers Qualification	Diploma in Automobile / Mechanical with 3 yrs. experience in Auto Body Painting OR ITI Fitter with 4 yrs. Experience in Auto Body Painting

Structure of Course:

Module No.	Module name	Outcome	Theory (Hrs.)	Practical (Hrs.)	Total (Hrs.) [Multiple of 30]
1	Introduction to Job role - responsibility and communication skill	Tell the role and responsibilities of an Auto Painting Technician and use effective communication and interpersonal skills.	10	20	30
2	Safety at workplace	Organize work and resources according to safety standards and perform work as per the quality standards.	15	15	30
3	Pre-treatment processes	Identify required tools and equipment and perform the steps to carry out pre-treatment processes.	25	35	60
4	Painting operation – base and top coat	Perform the steps to carry out painting operations.	15	45	60
5	Paint mixing and Post-painting operation	Prepare and apply paint in appropriate proportion and move the finished goods from the production line and store.	25	65	90
TOTAL:			90	180	270

Employability Skill: 60Hrs (Provided by NCVET)

OJT: 60 hours (in multiple of 30)

SYLLABUS:

Module No. 1: Introduction to Job role - responsibility and communication skill

Outcome: Tell the role and responsibilities of an Auto Painting Technician and use effective communication and interpersonal skills.

Theory Content:

- T - 1.1 Brief account of Indian Automotive manufacturing market.
- T - 1.2 Various Automobile Original Equipment Manufacturers (OEMs) and different products/ models manufactured by them.
- T - 1.3 Role and responsibilities of an Automotive Painting Operator.
- T - 1.4 Job opportunities of an Automotive Painting Operator in an automobile industry.
- T - 1.5 Standards and procedures involved in the different processes of vehicle body painting.
- T - 1.6 Communication Skill – communication with colleagues, seniors and others in the organization, ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD).
- T - 1.7 Interpersonal skills – importance of listening to work instructions, importance of respecting personal space of colleagues, importance of teamwork, leadership, motivation and patience.
- T - 1.8 Different ways to rectify commonly occurring errors.
- T - 1.9 Maintenance processes, maintenance and cleaning techniques.

Practical Content:

- P - 1.1 Employ different means of communication depending upon the requirement while interacting with colleagues, seniors and others.
- P - 1.2 Demonstration of new ways of maintaining good relationships with colleagues, customers and supervisor.
- P - 1.3 Demonstration of adjustment in communication styles to other genders and persons with disability (PwD) in a sensitive manner.
- P - 1.4 Preparation of sample report to send the work status to the supervisor.
- P - 1.5 Preparation of sample report to send the work completion report to the supervisor.
- P - 1.6 Demonstration of regular maintenance procedures of equipment/machinery at the workplace.

Tools & Equipment needed: See Annexure - 1

Module No. 2: Safety at workplace

Outcome: Organize work and resources according to safety standards and perform work as per the quality standards.

Theory Content:

- T - 2.1 Risks and hazards in workplace - their causes and preventions.
- T - 2.2 PPE (Personal Protective Equipment) – need, types, use.

- T - 2.3 Various warning signs used at the workplace.
- T - 2.4 Ways to deal with emergencies and accidents at the workplace.
- T - 2.5 Standard health, safety and security policies in any organization.
- T - 2.6 Importance of keeping work area clean and tidy.
- T - 2.7 Significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap etc.
- T - 2.8 Ways of dealing with stress and anxiety.
- T - 2.9 Significance of time management - how to complete the given work within the stipulated time period.
- T - 2.10 Ways to maintain a proper balance between team and individual goals.
- T - 2.11 Various materials used at the workplace.
- T - 2.12 Recommended procedure for storage of tools, equipment and material after completion of work.
- T - 2.13 Ways to optimize usage of resources.
- T - 2.14 Waste Management - 5S guidelines (Sort, Set in Order, Shine, Standardize and Sustain) at workplace.
- T - 2.15 Various methods of waste management and their disposal.
- T - 2.16 Different categories of waste for the purpose of segregation – dry, wet, recyclable, non-recyclable etc.
- T - 2.17 Difference between recyclable and non-recyclable waste.
- T - 2.18 Usage of different colours of dustbins for different types of waste.
- T - 2.19 Common practices for conserving electricity at workplace.
- T - 2.20 Common sources of pollution and ways to minimize it.

Practical Content:

- P - 2.1 Practice to apply appropriate safety practices to ensure safety of people at the workplace.
- P - 2.2 Practice to apply basic first aid procedure in case of emergencies.
- P - 2.3 Demonstration of the usage of fire extinguisher.
- P - 2.4 Demonstration of correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc.
- P - 2.5 Perform routine cleaning of tools, equipment and machines.
- P - 2.6 Checking malfunctions in the equipment as per Standard Operating Procedure (SOP).
- P - 2.7 Practice to sanitize and disinfect one's work area regularly.
- P - 2.8 Demonstration of the correct way of washing hands using soap and water and alcohol-based hand rubs.
- P - 2.9 Demonstration of the way to evacuate the workplace in case of an emergency.
- P - 2.10 Demonstration of sorting of materials, tools and equipment and spare parts after completion of work.
- P - 2.11 Demonstration of the steps involved in storage of tools, equipment and material after completion of work.
- P - 2.12 Perform basic checks to identify any spills and leaks and that need to be plugged /stopped.
- P - 2.13 Demonstration of categorization of waste into dry, wet, recyclable, non-recyclable etc..
- P – 2.14 Demonstration of different disposal techniques depending upon types of waste.
- P – 2.15 To check if equipment/machines are functioning as per requirements.

Tools & Equipment needed: See Annexure - 1

Module No. 3: Pre-treatment processes

Outcome: Identify required tools and equipment and perform the steps to carry out pre-treatment processes.

Theory Content:

- T - 3.1 Standards and procedures followed during pre-treatment and surface preparation process.
- T - 3.2 Procedure to collect information from technician/supervisor about the pre-treatment tasks.
- T - 3.3 Tools, equipment, accessories and materials required during pre-treatment and surface preparation work.
- T - 3.4 Selection criteria of tools, equipment, accessories and materials required during pre-treatment and surface preparation work.
- T - 3.5 Procedure of collecting and arranging the tools, equipment, accessories and materials from the store.
- T - 3.6 Steps for checking the tools, equipment, accessories and materials before use.
- T - 3.7 Ways of safe handling and use of pre-treatment and surface preparation materials and solvents.
- T - 3.8 Procedure of loading/unloading and placing the vehicle body parts on the designated place as per the work instructions.
- T - 3.9 Procedure of pre-treatment and surface preparation processes in proper order i.e. prewash, hot water spray, pre-degreasing, degrease dip, Water rinse I spray & Water rinse II dip, Surface Conditioning, Phosphate dip, Water rinse III spray & Water rinse IV dip, ED Bath, Ultra Filtrate 1, 2 and 3, RCDM dip and Fresh DI spray process.
- T - 3.10 Various cleaning methods to clean the tools, equipment, fixtures, process auxiliaries and work area.
- T - 3.11 Procedure for storage of the tools, equipment and process auxiliaries after completion of work.
- T - 3.12 Methods for disposing off waste material and scrap.

Practical Content:

- P - 3.1 Demonstration of the standard operating procedure to use tools, equipment, accessories and materials required during pre-treatment and surface preparation work.
- P - 3.2 Practice to select and collect the required tools, equipment, accessories and materials from the store.
- P - 3.3 Demonstration of the ways to check the tools, equipment, accessories and materials before use.
- P - 3.4 Practice the steps of loading/unloading and placing the vehicle body parts on the designated place manually or by using lifting tools.
- P - 3.5 Practice to clean the vehicle body or parts before use.
- P - 3.6 Demonstration of pre-treatment and surface preparation processes.
- P - 3.7 Demonstration of removal of any unwanted extra ED drops by using pressurized air as per SOP.
- P - 3.8 Practice the steps to clean the tools, equipment and process auxiliaries after completion of work.
- P - 3.9 Demonstration of standard procedure in storage of tools, equipment and process auxiliaries after completion of work.
- P - 3.10 Practice of disposal of scrap or waste as per standard guidelines.

Tools & Equipment needed: See Annexure - 1

Module No. 4: Painting operation – base and top coat

Outcome: Perform the steps to carry out painting operations.

Theory Content:

- T - 4.1 Types of Paints and Thinners.
- T - 4.2 Standard painting procedures followed by any organization.
- T - 4.3 Procedure of collection of information from technician/supervisor about the painting tasks.
- T - 4.4 List the tools, equipment, accessories and materials required during painting work.
- T - 4.5 Selection criteria of tools, equipment, accessories and materials required during painting work.
- T - 4.6 Steps to be performed for checking the tools, equipment, accessories and materials before use.
- T - 4.7 Procedure of loading/unloading and placing the vehicle body parts on the designated place as per the work instructions.
- T - 4.8 Various cleaning methods to clean the tools, equipment, fixtures, process auxiliaries and work area
- T - 4.9 Cleaning method of the auto body parts to remove dust particles.
- T - 4.10 Selection criteria of base colour and appropriate colorants as per the work requirements/ instructions.
- T - 4.11 Correct technique for efficient use of spray paint equipment.
- T - 4.12 Importance of time gap or drying time between applications of two coats of paints.

Practical Content:

- P - 4.1 Demonstration of standard operating procedure to use tools, equipment, accessories and materials required during painting work.
- P - 4.2 Practice to select and collect the required tools, equipment, accessories and materials from the store.
- P - 4.3 Demonstration of the ways to check the tools, equipment, accessories and materials before use.
- P - 4.4 Practice the steps of lifting and placing the vehicle body parts on the designated place manually or by using lifting tools.
- P - 4.5 Practice to clean the vehicle body or parts before painting work.
- P - 4.6 Demonstration of appropriate ways to check the paint viscosity.
- P - 4.7 Practice to add reducer/ thinner to adjust viscosity of paint mix as per requirement.
- P - 4.8 Demonstration to adjust air pressure and flow of paint gun as required for the job.
- P - 4.9 Practice to apply base and top coat using spray gun.

Tools & Equipment needed: See Annexure - 1

Module No. 5: Paint mixing and Post-painting operation

Outcome: Prepare and apply paint in appropriate proportion and move the finished goods from the production line and store.

Theory Content:

- T - 5.1 Operation of paint booth in automatic and manual mode.
- T - 5.2 Flow process of painting operations.
- T - 5.3 Safety aspects to be followed during painting.
- T - 5.4 Procedure to mix the correct amount of paint material as per specified ratio.
- T - 5.5 Tasks to be performed post-painting.
- T - 5.6 Commonly occurring defects in the painted parts and remedies.
- T - 5.7 Impact of defects on the quality of painted parts.

T - 5.8 Methods of inspection for identifying the defects and checking the quality of painted parts as per the control plan.

T - 5.9 Process of segregating, tagging and storing of damaged and ok workpieces and maintaining records of segregation as per standard guidelines.

T - 5.10 Standard recommended procedure for storage of the tools, equipment and process auxiliaries after completion of work.

T - 5.11 Procedure of maintaining stock of the paint, thinner and other solutions.

T - 5.12 Methods of disposing off waste material and scrap.

Practical Content:

P - 5.1 Demonstration of procedure of mixing of paint material with additives as per the specified ratio.

P - 5.2 Practice the steps to prepare painting tools and material for painting job.

P - 5.3 Demonstration to show the application of appropriate coats of paint on vehicle body parts.

P - 5.4 Demonstration appropriate ways to check that paint coverage is uniform and there are no patches on the painted parts.

P - 5.5 Practice of inspection for identifying the defects and checking the quality of painted parts.

P - 5.6 Practice to segregate, tag, store and record data of damaged and ok parts as per standard guidelines.

P - 5.7 Practice of unloading of finished goods from workplace.

P - 5.8 Practice of proper storage of finished goods.

P - 5.9 Demonstration of cleaning methods to clean the tools, equipment and process auxiliaries after completion of work.

P - 5.10 Demonstrate of standard procedure involved in storage of tools, equipment and process auxiliaries after completion of work.

P - 5.11 Practice ways to clean the work area.

P – 5.12 Dispose scrap or waste as per standard guidelines.

Tools & Equipment needed: See Annexure - 1

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Tell the role and responsibilities of an Auto Painting Technician and use effective communication and interpersonal skills.	<p>After completion of this module students will be able to:</p> <p>1.1 Explain the role and responsibilities of a Auto Body Painting Technician.</p> <p>1.2 Demonstrate the maintenance techniques of equipment/machinery at the workplace.</p> <p>1.3 Maintain clear communication with colleagues, customers and others, wherever needed, through all means i.e. face-to-face, telephonic or written.</p> <p>1.4 Adjust communication styles to reflect gender and persons with disability (PwD) sensitivity.</p>

Module No.	Outcome	Assessment Criteria
		1.5 Work in a way that shows respect for colleagues and others. 1.6 Identify work requirements by receiving instructions from reporting supervisor. 1.7 Report the status of work and completed work. 1.8 Rectify errors as per feedback.
2	Organize work and resources according to safety standards and perform work as per the quality standards.	After completion of this module students will be able to: 2.1 Identify hazardous activities and the possible causes of risks or accidents in the workplace. 2.2 Follow safe working practices while dealing with hazards to ensure safety of self and others. 2.3 Use appropriate protective clothing/equipment for specific tasks and work. 2.4 follow safety hazards and preventive techniques during fire drill. 2.5 Carry out routine check of the machine for identifying potential hazards. 2.6 Follow stress and anxiety management techniques. 2.7 Ensure that work is accomplished as per the requirements within the specified timeline. 2.8 Segregate waste into different categories. 2.9 Dispose non-recyclable, recyclable and reusable waste appropriately at identified location. 2.10 Follow the fundamentals of 5S for waste management. 2.11 Check if the equipment/machine is functioning normally before commencing work and rectify wherever required. 2.12 Check for spills/leakages in various tasks/activities/processes.
3	Identify required tools and equipment and perform the steps to carry out pre-treatment processes.	After completion of this module students will be able to: 3.1 Explain surface preparation, cleaning and pre – treatment of auto body parts. 3.2 List the various chemicals, tools and equipment used in surface preparation, cleaning and pre –

Module No.	Outcome	Assessment Criteria
		<p>treatment of body parts.</p> <p>3.3 Illustrate the steps of loading/unloading and placing the vehicle body parts on the designated place manually or by using lifting tools.</p> <p>3.4 Show different pre-treatment and surface preparation processes - prewash, hot water spray, pre-degreasing, degrease dip, Water rinse I spray & Water rinse II dip, Surface Conditioning, Phosphate dip, Water rinse III spray & Water rinse IV dip, ED Bath, Ultra Filtrate 1, 2 and 3, RCDM dip and Fresh DI spray process.</p> <p>3.5 Carry out proper unloading of body parts.</p>
4	Perform the steps to carry out painting operations.	<p>After completion of this module students will be able to:</p> <p>4.1 Explain Spray painting procedure.</p> <p>4.2 Describe different types of paints and thinners.</p> <p>4.3 Carry out regular check of paint viscosity till the desired viscosity obtained.</p> <p>4.4 Clean the auto body parts to remove dust particles.</p> <p>4.5 Collect the tools, equipment, accessories and materials from store and check them before use.</p> <p>4.6 Prepare paint as per requirements.</p> <p>4.7 Set the paint specification as per defined requirement.</p> <p>4.8 Apply paint with a spray gun.</p>
5	Prepare and apply paint in appropriate proportion and move the finished goods from the production line and store.	<p>After completion of this module students will be able to:</p> <p>5.1 List the materials tools and equipment required for paint mixing.</p> <p>5.2 Clean the vehicle body or parts properly and ensure that they are free from all dust particles.</p> <p>5.3 Use masking tape to mask the vehicle body or parts areas as per the paint shop operator instructions.</p> <p>5.4 Clean and store the tools, equipment and process auxiliaries as per standard guidelines after completion of work.</p>

Module No.	Outcome	Assessment Criteria
		<p>5.5 Remove the masking tape and jigs from vehicle body or parts after completion of all painting activities</p> <p>5.6 Check the painted parts as per the work instructions for product quality.</p> <p>5.7 Clean the workplace properly after completion of work.</p> <p>5.8 Dispose scrap and waste material into the disposal area in accordance with the standard policies and environmental regulations.</p>

Annexure - I

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

Sl. No.	Items Name	Specification	Qty.
1.	Laptop	Intel Core i5 processor, Windows 10, 8GB RAM, 500 GB HDD,	1
2.	White Board	4ft × 6ft	1
3.	White Board Marker	Standard, refillable	4
4.	Projector	1920 × 1080 resolution, Front projection, wall or ceiling mounted, manual focus adjustment, with USB ports	1
5.	Safety boards/Signs		
6.	Fire Extinguisher	Temp range: -30°C to 60°C, Charge – 6kg, Height – 550 mm, Dia. – 160mm	3
7.	Respirator		10
8.	Safety gloves	Standard size	30
9.	Safety glasses	Standard size	30
10.	Aprons	Standard size	30
11.	Safety shoes		30
12.	First aid kit	With standard accessories	5
13.	Cleaning agents		5 L
14.	Cleaning cloth		
15.	Waste container		5
16.	Dust pan		5
17.	Brush set		10
18.	Liquid soap		5
19.	Hand towel		15
20.	Wrenches	350 mm, Pipe wrench	5
21.	Rachets	Standard set	5
22.	Screwdrivers	Standard set	5
23.	Pliers	15 cm, flat nose and round nose	6
24.	Hammer Ball Peen	0.75 kg	3

Sl. No.	Items Name	Specification	Qty.
25.	Hammer Chipping	0.25 kg	3
26.	Mallet		3
27.	LED Flashlight/Headlamp		10
28.	Multi meter	Digital Multi meter, dc: 200 mV – 1000V, ac: 200 mV – 600V	5
29.	Jack		6
30.	Jack stands		10
31.	Spray Guns		10
32.	Degreaser	standard	10 L
33.	Degreasing dip tank	Standard size	2
34.	Water rinse dip tank	Standard size	3
35.	Surface conditioning disc	Standard set, Material: Aluminum Oxide	5
36.	Phosphate solution		5 bottle
37.	Phosphate dip tank	Standard size	2
38.	DI solution		
39.	Painting Booth	Standard with accessories	1
40.	Air booster compressor with accessories	30 – 50 HP	1
41.	Buffing and polishing machine		2
42.	Bench vice	Jaw width: 100 – 120 mm, throat depth: 60 – 75 mm, dimension: 300×150×150 mm	5
43.	emery	Grade number: 40, 60, 80, 100, 120, 220, F	10 each
44.	Primer		15 L
45.	Hardener		3 L
46.	Thinner		10 L
47.	Paints		30 L
48.	Filler		500 mL
49.	Rubbing and polishing compounds		500 mL
50.	Polishing cloth		
51.	Industrial Water Supply (Hot and cold)		

Marks Distribution

OUTCOME	OUTCOME CODE	TOTAL TH. NUMBER	TOTAL PR. NUMBER
Tell the role and responsibilities of an Auto Painting Technician and use effective communication and interpersonal skills.	AUT/0410/OC1	20	100
Organize work and resources according to safety standards and perform work as per the quality standards.	AUT/0410/OC2	20	100
Identify required tools and equipment and perform the steps to carry out pre-treatment processes.	AUT/0410/OC3	30	130
Perform the steps to carry out painting operations.	AUT/0410/OC4	30	120
Prepare and apply paint in appropriate proportion and move the finished goods from the production line and store.	AUT/0410/OC5	50	200
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	AUT/0410/OC6	0	150
Employability Skill-60 Hrs	DGT/VSQ/N0102	50	0