

**THE REPUBLIC OF KENYA**

**COMPETENCY-BASED MODULAR CURRICULUM**

**FOR**

**SPRAY PAINTING**

**KNQF LEVEL 4**

**PROGRAMME CODE: 0716 354A**

©2025

All rights reserved. No part of this Curriculum may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods without the prior written permission of …….., except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law. For permission requests, write to the Council Secretary/CEO/Chief Principal at the address below:

**FOREWORD**

The provision of quality education and training is fundamental to the Government’s overall strategy for social and economic development. Quality education and training contribute to the achievement of Kenya’s development blueprint and sustainable development goals.

Reforms in the education sector are necessary to achieve Kenya Vision 2030 and meet the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution, and this resulted in the formulation of the Policy Framework for Reforming Education and Training in Kenya (Sessional Paper No. 14 of 2012). A key feature of this policy is the radical change in the design and delivery of TVET training. This policy document requires that training in TVET be competency-based, curriculum development be industry-led, certification be based on demonstration of competence, and the mode of delivery allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that this curriculum has been developed. For trainees to build their skills on foundational hands-on activities of the occupation, units of learning are grouped in modules. This has eliminated duplication of content and streamlined exemptions based on skills acquired as a trainee progresses in the up-skilling process, while at the same time allowing trainees to be employable in the shortest time possible through the acquisition of part qualifications.

It is my conviction that this curriculum will play a great role in developing competent human resources for the Automotive Engineering Sector’s growth and development.

**PRINCIPAL SECRETARY**

**STATE DEPARTMENT FOR TVET**

**MINISTRY OF EDUCATION**

**PREFACE**

Kenya Vision 2030 aims to transform Kenya into a newly industrializing middle-income country, providing high-quality life to all its citizens by the year 2030. Kenya intends to create globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through lifelong education and training. TVET has a responsibility to facilitate the process of inculcating knowledge, skills, and worker behaviour necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency-Based Education and Training (CBET).

TVET Act, CAP 210A and Sessional Paper No. 1 of 2019 on Reforming Education and Training in Kenya for Sustainable Development emphasized the need to reform curriculum development, assessment, and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry, as well as increase the global competitiveness of the Kenyan labour force.

This curriculum has been developed in adherence to the Kenya National Qualifications Framework and CBETA standards and guidelines. The curriculum is designed and organized into Units of Learning with Learning Outcomes, suggested delivery methods, learning resources, and methods of assessing the trainee’s achievement. In addition, the units of learning have been grouped in modules to concretize the skills acquisition process and streamline upskilling.

I am grateful to all expert trainers and everyone who played a role in translating the Occupational Standards into this competency-based modular curriculum.

**ACKNOWLEDGMENT**

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support were received from expert trainers, institutions and organizations.

I recognize with appreciation the role of the Engineering and Manufacturing National Sector Skills Committee (NSSC) in ensuring that competencies required by the industry are addressed in the curriculum. I also thank all stakeholders in the Automotive sector for their valuable input and everyone who participated in developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that individuals aspiring to work in the Automotive Sector acquire competencies to perform their work more efficiently and effectively.

# TABLE OF CONTENTS

[FOREWORD iii](#_Toc196931332)

[ACKNOWLEDGMENT v](#_Toc196931333)

[TABLE OF CONTENTS vi](#_Toc196931334)

[ACRONYMS vii](#_Toc196931335)

[KEY TO UNIT CODE viii](#_Toc196931336)

[OVERVIEW ix](#_Toc196931337)

[SUMMARY OF UNITS OF LEARNING ix](#_Toc196931338)

[MODULE 1 1](#_Toc196931339)

[VEHICLE STRUCTURE WELDING 2](#_Toc196931340)

[VEHICLE BODY REPAIR 8](#_Toc196931341)

[VEHICLE FIBRE WORKS 14](#_Toc196931342)

[MODULE II 20](#_Toc196931343)

[VEHICLE BODY SURFACE PREPARATION 21](#_Toc196931344)

[VEHICLE SPRAY PAINTING 28](#_Toc196931345)

[VEHICLE BODY VALETING 35](#_Toc196931346)

# ACRONYMS

TVETA Technical and Vocational Education Training Authority

KCSE Kenya Certificate of Secondary Education

KNQA Kenya National Qualification Authority

KNQF Kenya National Qualification Framework

TVET Technical and Vocational Education and Training

PPE Personal Protective Equipment

# KEY TO UNIT CODE



# OVERVIEW

The Automotive technology Level 4 curriculum consists of competencies that a person must achieve to enable him/her to repair vehicle body. It involves preparing vehicle body surface, repairing vehicle body and performing vehicle fibre works.

The units of learning comprising spray painting Level 4 qualification include the following competencies

# SUMMARY OF UNITS OF LEARNING

|  |  |  |  |
| --- | --- | --- | --- |
| **CORE UNITS OF LEARNING** | | | |
| **Unit Code** | **Units Title** | **Unit Duration (Hours)** | **Credit Factor** |
| **MODULE I** | | | |
| 0716 251 01A | Vehicle structure welding | 90 | 9.0 |
| 0716 251 02A | Vehicle body repair | 90 | 9.0 |
| 0716 251 03A | Vehicle Fibre Works | 90 | 9.0 |
| **MODULE II** | | | |
| 0716 351 04A | Vehicle Body Surface Preparation | 90 | 9.0 |
| 0716 351 05A | Vehicle Spray Painting | 120 | 12.0 |
| 0716 351 06A | Vehicle body valeting | 90 | 9.0 |
| **Industrial Attachment** | | **320** | **32.0** |
| **GRAND TOTAL** | | **890** | **89.0** |

**Entry Requirements**

An individual entering this course should have any of the following minimum requirements:

1. Kenya Certificate of Secondary Education (KCSE)

**Or**

1. Equivalent qualifications as determined by TVETA

**Trainer qualifications**

Qualifications of a trainer for this course include:

1. Possession of at least level 5 qualification in Auto body Technician or its equivalent.
2. Be licensed by TVETA.
3. Registered by Engineer Board of Kenya (E.B.K) or Kenya Engineering Technology Registration Board (KETRB).

**Industry Training**

An individual enrolled in this course will be required to undergo Industry training for a minimum period of 320 hours in Automotive sector. The industrial training may be taken after completion of all units for those pursuing the full qualification or be distributed equally in each unit for those pursuing part qualification. In the case of dual training model, industrial training shall be as guided by the dual training policy.

**Assessment**

The course shall be assessed formatively and summatively:

1. During formative assessment all performance criteria shall be assessed based on performance criteria weighting.
2. Number of formative assessments shall minimally be equal to the number of elements in a unit of competency
3. Assessment of basic and common competencies shall be integrated in the core units
4. Theoretical assessment shall be integrated in practical assessment and conducted orally in both formative and summative assessments.
5. Theoretical and practical weight shall be as follows
6. 10:90 for the units in modules I and Module II.
7. Formative and summative assessments shall be weighted at 60% and 40% respectively in the overall unit of learning score
8. Assessment performance rating for each unit of competency shall be as follows:

|  |  |
| --- | --- |
| **MARKS** | **COMPETENCE RATING** |
| 80 -100 | Attained Mastery |
| 65 - 79 | Proficient |
| 50 - 64 | Competent |
| 49 and below | Not Yet Competent |
| Y | Assessment Malpractice/irregularities |

1. Assessment for Recognition of Prior Learning (RPL) may lead to award of part and/or full qualification.

**Certification**

A candidate will be issued with a Certificate of Competency upon demonstration of competence in a core Unit of Competency. To be issued with KenyaNational TVET Certificate in Spray Painting Level 4, the candidate must demonstrate competence in all the Units of Competency as given in the qualification pack. A Statement of Attainment certificate may be issued upon demonstration of competence in a certifiable element within a unit.

The certificates will be issued by the Qualification Awarding Institution

# MODULE I

# VEHICLE STRUCTURE WELDING

**ISCED UNIT CODE:** 0716 251 01A

**Relationship to occupational standards**

This unit addresses the unit of competency: Weld vehicle structure.

**Duration of unit:** 90 Hours

**Unit Description:**

This unit of learning covers the learning outcomes, content, assessment methods, methods of delivery and resources required to train vehicle structure welding. This unit covers competencies required to demonstrate skills to weld vehicle structures. It involves competencies to Gas weld vehicle structure, arc weld vehicle structure and perform housekeeping.

**Summary of Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Vehicle Structure Gas Welding | **35** |
| 2. | Vehicle Structure Arc Welding | **35** |
| 3 | House Keeping | **20** |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Vehicle Structure Gas Welding | * 1. Usage of PPEs      1. Safety Glasses or Goggles      2. Overalls      3. Dust Mask      4. Welding shield      5. Welding Goggles   2. Vehicle body panel assessment      1. Cracks      2. Dents      3. rust   3. Materials, tools and equipment      1. Oxygen and Acetylene Cylinders      2. Welding Torch      3. Safety Glasses or Goggles      4. Overalls      5. Dust Mask      6. Welding shield      7. Welding Goggles   4. Types of joints      1. Spot Weld Joints      2. Seam Weld joints      3. Flanged joints      4. Adhesive bonded joints   5. Gas welding process      1. rightward welding      2. leftward welding   6. Types of flames-      1. carburizing flame      2. oxidizing flame      3. neutral   7. panel polishing      1. grinding      2. sanding | * Practical * Projects * Portfolio of evidence * Written tests |
| 1. Vehicle Structure Arc Welding | * 1. Vehicle panels assessment      1. Cracks      2. Dents      3. rust   2. Materials, tools and equipment      1. Welding machine (Arc welder)      2. Electrode holder      3. Ground clamp      4. Welding electrodes      5. Welding cables      6. Welding helmet (with auto-darkening feature welding gloves      7. Welding jacket or apron      8. Safety boots      9. Welding rods      10. Wire brush      11. Chipping hammer      12. Welding table      13. Clamps   3. Types of joints      1. Spot Weld Joints      2. Seam Weld joints      3. Flanged joints      4. Adhesive Bonded Joints   4. methods of arc welding technics      1. rightward welding      2. leftward welding   5. Arc welding equipment      1. Welding machine (Arc welder)      2. Electrode holder      3. Ground clamp      4. Welding electrodes      5. Welding cables      6. Welding helmet (with auto-darkening feature   6. Welding processes   7. Weld polishing      1. Grinding      2. Filing      3. sanding | * Observation * Project * Written assessment * Oral assessment * Portfolio of evidence |
| 1. House Keeping | * 1. Waste disposal and management      1. Recycling      2. Hazardous waste disposal      3. Incineration      4. Landfilling      5. Waste minimization   2. Cleaning of tools and equipment   3. Cleaning of floors | * Observation * Project * Written assessment * Oral assessment |

**Suggested Methods of Instruction**

* Practical
* Project Work
* Demonstrations
* Direct instruction with active learning strategies
* Group Discussions
* Demonstration

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning materials and infrastructure** | | | |
|  | Training Classes: 1 session | 8M\*20M | 1 | 1:25 |
|  | Workshops: 1 practical workshop | 18M\*12M | 1 | 1:25 |
|  | Computer with Internet connectivity |  | 1 | 1:25 |
|  | Projector for presentations |  | 1 | 1:25 |
|  | Whiteboard for collaborative learning |  | 1 | 1:25 |
|  | Textbooks | Vehicle Body Technology Textbooks | 5 pcs | 1:5 |
|  | White board | Quality whiteboard of approximately 4 ft by 8 ft for writing during theory instruction | 1 | 1:25 |
| **B** | **Tools and Equipment** | | | |
|  | Wire Brushes |  | 5 | 1:5 |
|  | Chipping Hammers |  | 5 | 1:5 |
|  | Welding Tables |  | 5 | 1:5 |
|  | Sets of Clamps |  | 10 | 1:3 |
|  | Grinding Tools |  | 10 | 1:3 |
|  | Sanding Tools |  | 2 | 1:13 |
|  | Filing Tools |  | 5 | 1:5 |
|  | Oxygen and Acetylene Cylinder Sets |  | 5 | 1:5 |
|  | Welding Machines (Arc Welders) |  | 5 | 1:5 |
|  | Welding Helmets (with auto-darkening feature) |  | 5 | 1:5 |
|  | Sets of Welding Rods |  | 10 | 1:3 |
|  | Cleaning Kits for Tools and Equipment |  | 10 | 1:3 |
|  | Floor Cleaning Kits (mops, brooms) |  | 5 | 1:5 |
| **C** | **Materials** | | | |
|  | Pairs of clear Safety Glasses or Goggles |  | 25 | 1:1 |
|  | Dust Masks |  | 25 | 1:1 |
|  | Welding Shields |  | 5 | 1:5 |
|  | Welding Goggles |  | 5 | 1:5 |
|  | Pairs of Welding Gloves |  | 2 | 1:13 |
|  | Vehicle Body Assessment Tools (for cracks, dents, rust) |  | 5 | 1:5 |
|  | Recycling Bins |  | 2 | 1:13 |
|  | Hazardous Waste Disposal Containers |  | 3 | 1:8 |

# VEHICLE BODY REPAIR

**ISCED UNIT CODE:** 0716 251 02A

**Relationship to occupational standards**

This unit addresses the unit of competency: repair vehicle body

**Duration of unit:** 90 Hours

**Unit Description:**

This unit of learning covers the learning outcomes, content, assessment methods, methods of delivery and resources required to spray paint vehicle body. It involves competencies in performing vehicle body jacking, performing vehicle body pulling, performing vehicle body panel beating and performing workshop house keeping

**Summary of Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Vehicle Body Jacking | **20** |
| 2. | Vehicle Body Pulling | **30** |
| 3 | Vehicle Body Panel Beating | **30** |
| 4. | Workshop House Keeping | **10** |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| * + - 1. Vehicle Body Jacking | * 1. Work place health and Safety      1. Personal safety      2. Workshop safety      3. Tools Safety   2. Body panel jacking   3. Operation of body jack      1. Hydraulic jack      2. Hoist      3. Pneumatic jack | * Observation * Project * Written assessment * Oral assessment |
| 1. Vehicle Body Pulling | * 1. Workplace health and safety      1. Personal safety      2. Workshop safety      3. Tools safety   2. Vehicle body panels and structures      1. Door      2. Bonnet      3. boot      4. spoiler      5. floor      6. roof      7. under structure   3. vehicle body pulling tools      1. body puller | * Observation * Project * Written assessment * Oral assessment |
| 1. Vehicle Body Panel Beating | * 1. Vehicle body panels      1. Door      2. Bonnet      3. boot      4. spoiler      5. floor      6. roof      7. under structure   2. vehicle body panel tools      1. Dinging hammer      2. Chipping hammer      3. Soft hammer      4. Lever      5. Welding machine      6. Dollies      7. Spoons   3. Vehicle body structures      1. Door      2. Bonnet      3. Boot      4. Spoiler      5. Floor      6. Roof      7. Under structure   4. Body filler application      1. Compound filler      2. Hardener      3. Chemical paste   5. Sanding      1. Sand paper      2. File sander      3. Disc sander      4. Sanding block | * Observation * Project * Written assessment * Oral assessment |
| 1. Workshop House Keeping | * 1. Waste disposal and management      1. Recycling      2. Hazardous waste disposal      3. Incineration      4. Landfilling      5. Waste minimization   2. Cleaning and maintenance of tools and equipment      1. Oiling      2. Greasing   3. Storage of tools      1. Toolbox      2. Tool rack | * Observation * Project * Written assessment * Oral assessment |

**Suggested Methods of Instruction**

* Practical
* Project Work
* Demonstrations
* Direct instruction with active learning strategies
* Group Discussions
* Demonstration

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning materials and infrastructure** | | | |
|  | Training Classes: 1 session | 8M\*20M | 1 | 1:25 |
|  | Workshops: 1 practical workshop | 18M\*12M | 1 | 1:25 |
|  | Computer |  | 1 | 1:25 |
|  | Projector for presentations |  | 1 | 1:25 |
|  | Whiteboard for collaborative learning |  | 1 | 1:25 |
|  | Access to Internet |  | 1 | 1:25 |
|  | Textbooks | Textbooks on vehicle body | 5 pcs | **1:5** |
|  | White board | Quality whiteboard of approximately 4 ft by 8 ft for writing during theory instruction | 1 | **1:25** |
| **B** | **Tools and Equipment** | | | |
|  | Body Pullers | Suction cup type, and or spot weld | 5 | 1:5 |
|  | Dinging Hammers |  | 5 | 1:5 |
|  | Chipping Hammers |  | 5 | 1:5 |
|  | Soft Hammers |  | 5 | 1:5 |
|  | Levers |  | 5 | 1:5 |
|  | Dollies |  | 5 | 1:5 |
|  | Spoons |  | 5 | 1:5 |
|  | Tool Oiling Kits |  | 5 | 1:5 |
|  | Greasing Kits |  | 5 | 1:5 |
|  | Toolboxes |  | 3 | 1:8 |
|  | Tool Racks |  | 2 | 1.13 |
|  | Floor Cleaning Kits (mops, brooms) |  | 5 | 1:5 |
|  | Cleaning Kits for Tools and Equipment |  | 1 | 1:25 |
|  | Welding Machines |  | 2 | 1.13 |
| **C** | **Materials** | | | |
|  | Compound Filler |  | 5 | 1:5 |
|  | Hardener |  | 5 | 1:5 |
|  | Chemical Pastes |  | 10 | 1:3 |
|  | Sets of Sandpaper | various grits | 5 | 1:5 |
|  | File Sanders |  | 2 | 1.13 |
|  | Disc Sanders |  | 2 | 1.13 |
|  | Sanding Blocks |  | 10 | 1:3 |
|  | Recycling Bins |  | 2 | 1.13 |
|  | Hazardous Waste Disposal Containers |  | 3 | 1:8 |
|  | Dust Masks |  | 25 | 1:1 |
|  | Hydraulic Jacks |  | 2 | 1:13 |
|  | Hoists |  | 2 | 1:13 |
|  | Pneumatic Jacks |  | 1 | 1:25 |
|  | Safety Glasses or Goggles |  | 25 | 1:1 |

# VEHICLE FIBRE WORKS

**ISCED UNIT CODE:** 0716 351 03A

**Relationship to occupational standards**

This unit addresses the unit of competency: perform vehicle fibre works

**Duration of unit:** 90 Hours

**Unit Description:**

This unit of learning describes the learning outcomes, content, assessment and delivery methods required in training perform vehicle fibre works. This unit covers competencies required to Perform Vehicle Fibre Works. It involves competencies in reinforcing vehicle fibre structure, repairing vehicle fibre structure and performing housekeeping.

**Summary of Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Vehicle Fibre Structure Reinforcement | **30** |
| 2. | Vehicle Fibre Structure | **40** |
| 3 | House Keeping | **20** |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Vehicle Fibre Structure Reinforcement | * 1. Usage of PPEs      1. Safety Glasses or Goggles      2. Overalls      3. Dust Mask      4. Welding shield      5. Welding Goggles   2. Vehicle body panels assessment      1. Door      2. Bonnet      3. Boot      4. Spoiler      5. Roof      6. Bumper   3. Tools and equipment      1. Dinging hammer      2. Chipping hammer      3. Soft hammer      4. Lever      5. Welding machine      6. Dollies      7. Spoon   4. Fibre materials      1. Fibre glass   5. Materials tools and equipment      1. Resin      2. Hardener      3. Fiberglass mat      4. Carbon fiber fabric      5. Epoxy resin      6. Polyester resin | * Observation * Project * Written assessment * Oral assessment |
| 1. Vehicle Fibre Structure | * 1. Workplace health and safety      1. Personal safety      2. Workshop safety      3. Tools safety      4. material safety   2. Identification of vehicle fibre panels      1. Bumper      2. Hood      3. Dashboard      4. Trunk lid      5. Body panels   3. Fibre materials      1. Fibre glass      2. Resin      3. Hardener      4. Fiberglass mat      5. Carbon fiber fabric      6. Epoxy resin      7. Polyester resin   4. Fibre structure shaping      1. Moldings      2. Weaving   5. Vehicle body filler      1. Compound filler      2. Hardener      3. Chemical paste | * Observation * Project * Written assessment * Oral assessment |
| 1. House Keeping | * 1. Waste disposal and management      1. Recycling      2. Hazardous waste disposal      3. Incineration      4. Landfilling      5. Waste minimization   2. Cleaning and storing of tools and equipment | * Observation * Project * Written assessment * Oral assessment |

**Suggested Methods of Instruction**

* Practical
* Project Work
* Demonstrations
* Direct instruction with active learning strategies
* Group Discussions
* Demonstration

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning materials and infrastructure** | | | |
|  | Training Classes: 1 sessions | 8M\*20M | 1 | 1:25 |
|  | Workshops: 1 practical workshop | 18M\*12M | 1 | 1:25 |
|  | Computer |  | 1 | 1:25 |
|  | Projector for presentations |  | 1 | 1:25 |
|  | Whiteboard for collaborative learning |  | 1 | 1:25 |
|  | Access to Internet |  | 1 | 1:25 |
|  | Textbooks | Vehicle body Technology Textbooks | 5 pcs | 1:5 |
|  | White board | Quality whiteboard of approximately 4 ft by 8 ft for writing during theory instruction | 1 | 1:25 |
| **B** | Tools and Equipment | | | |
| 1 | Pairs of Safety Glasses or Goggles |  | 25 | 1:1 |
| 2 | Safety Goggles |  | 5 | 1:5 |
| 3 | Dinging Hammers |  | 5 | 1:5 |
|  | Chipping Hammers |  | 5 | 1:5 |
|  | Soft Hammers |  | 5 | 1:5 |
|  | Levers |  | 5 | 1:5 |
|  | Dollies |  | 5 | 1:5 |
|  | Spoons |  | 5 | 1:5 |
|  | Cleaning Kits for Tools and Equipment |  | 5 | 1:5 |
|  | Tool Storage Boxes |  | 2 | 1:13 |
|  | Tool Racks |  | 2 | 1:13 |
|  | Sets of Molding Tools |  | 2 | 1:13 |
|  | Weaving Tools |  | 5 | 1:5 |
| **C** | **Materials** | | | |
| 1 | Kits of Fiberglass (sheets or rolls) |  | 5 | 1:5 |
|  | Liter of Resin |  | 5 | 1:5 |
|  | Pieces of Hardener |  | 2 | 1:13 |
|  | Rolls of Fiberglass Mat |  | 1 | 1:25 |
|  | Rolls of Carbon Fiber Fabric |  | 1 | 1:25 |
|  | 1 liter of Epoxy Resin |  | 2 | 1:13 |
|  | 1 liter of Polyester Resin |  | 1 | 1:25 |
|  | Waste Bins for Recycling |  | 2 | 1:13 |
|  | Hazardous Waste Disposal Containers |  | 3 | 1:8 |
|  | Dust Masks |  | 25 | 1:1 |

# MODULE II

# VEHICLE BODY SURFACE PREPARATION

**ISCED UNIT CODE:** 0716 351 04A

**Relationship to occupational standards**

This unit addresses the unit of competency: perform vehicle body surface preparation

**Duration of unit:** 90 Hours

**Unit Description:**

This unit specifies the competencies required to prepare vehicle body surface. It involves; applying primer, applying spot putty, perform wet sanding and perform housekeeping.

**Summary of Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Primer Application | **20** |
| 2. | Spot Putty Application | **30** |
| 3 | Wet Sanding | **30** |
| 4 | House Keeping | **10** |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| * 1. Primer Application | * 1. Workplace health and safety      1. Personal safety      2. Workshop safety      3. Tools safety      4. Material safety   2. Selection of Tools, materials and equipment      1. Body surface primer      2. Assorted sand papers      3. Sander      4. Masking tape      5. Masking papers      6. Spray gun      7. Acrylic thinner      8. Air compressor      9. Hose pipes      10. Measuring cup      11. Spraying booth      12. Detergents      13. Bucket of water   3. Application of primer   4. Sanding      1. Assorted sand papers      2. Sanding discs | * Practical * Observation * Project * Written assessment * Oral assessment |
| 1. Spot Putty Application | 2.1 Inspection of Vehicle body panels   * + 1. Bonnet     2. Wing     3. Hood     4. Roof     5. Doors     6. Boot     7. Spoiler   1. Application of spot putty   2. Sanding      1. Assorted sand papers      2. sander      3. Assorted sanding discs | * Practical * Observation * Project * Written assessment * Oral assessment |
| 3. Wet Sanding | * 1. Tools materials and equipment      1. Sand paper/assorted sand papers      2. Sander      3. Detergent      4. Bucket of water   2. Drying | * Observation * Project * Practical * Written assessment * Oral assessment |
| 1. House Keeping | * 1. Waste disposal and management      1. segregation of waste   2. cleaning and storing of tools and equipment      1. dusting      2. cleaning | * practical * Observation * Project * Written assessment * Oral assessment |

**Suggested Methods of Instruction**

* Practical
* Project Work
* Demonstrations
* Direct instruction with active learning strategies
* Group Discussions
* Demonstration

**Recommended Resources for 25 Trainees**

| **S/No.** | **Category/Item** | **Description/Specifications** | **Quantity** | **Recommended Ratio (Item: Trainee)** |
| --- | --- | --- | --- | --- |
| **A Learning Materials** | | | | |
| 1 | Textbooks | Comprehensive textbooks on workplace safety, tools, materials, and automotive body repair techniques | 25 | 1:1 |
| 2 | Projector | Functional projector for displaying content during presentations | 1 | 1:25 |
| 3 | Computer | Functional desktop computer with online instructional content | 1 | 1:25 |
| 4 | Whiteboard | Quality whiteboard, approximately 6 ft by 3 ft | 1 | 1:25 |
| 5 | Printer | Inkjet or laser printer for printing handouts, instructions, and diagrams | 1 | 1:25 |
| **B Learning Facilities** | | | | |
| 1 | Lecture Room | Spacious room with seating for 25 trainees, approximately 60 sqm | 1 | 1:25 |
| 2 | Workshop | Standard workshop with designated sanding, painting, and finishing areas (approx. 180 sqm) | 1 | 1:25 |
|  | Spray Painting Booth | Standard spray-painting booth | 1 | 1:25 |
| **C Safety Equipment** | | | | |
| 1 | Dust coat/overall | Shields skin and clothes from dust and paint | 25 | 1:1 |
| 2 | Gloves | Protects hands during sanding, painting, and tool handling | 25 | 1:1 |
| 3 | Safety glasses | Protects eyes from flying particles and chemicals | 25 | 1:1 |
| 4 | Respirators | Protects from inhaling harmful fumes and dust | 25 | 1:1 |
| 5 | Ear plugs/muffs | Protects against prolonged exposure to high noise levels | 25 | 1:1 |
| 6 | First Aid Kit | Fully equipped First Aid kit for accidents | 1 | 1:25 |
| **D Tools and Materials** | | | | |
| 1 | Spreaders | Used for applying and spreading filler | 10 | 2:5 |
| 2 | Mixers | For mixing fillers and hardeners | 5 | 1:5 |
| 3 | Sandpapers | Various grits (36, 40, 60, 80, 100, 120, 240, etc.) | Enough | - |
| 4 | Manual Sanders | Hand tools for sanding surfaces | 10 | 2:5 |
| 5 | Power Sanders | Electric sanders for quicker and consistent sanding | 5 | 1:5 |
| 6 | Sealants | Different types (polyurethane, silicone, acrylic, etc.) for bonding and sealing | 10 sets | 1:3 |
| 7 | Paint mixing scales | For accurate measurement of paint ratios | 5 | 1:5 |
| 8 | Spray Guns | HVLP and LVLP types for primer and paint application | 5 | 1:5 |
| 9 | Compressor Machine | To power spray painting equipment | 1 | 1:25 |
| 10 | Masking Tools | Tape, masking paper, plastic wrap | Enough | - |
| **E Consumables** | | | | |
| 1 | Automotive primer |  | 10 liters | - |
| 2 | Degreasers and solvents | For cleaning surfaces | 10 liters | - |
| 3 | Paint thinner | For cleaning spray guns and thinning paint | 5 liters | - |
| 4 | Rust inhibitors | For preventing corrosion | 5 liters | - |
| 5 | Adhesive removers | For removing adhesives | 5 liters | - |
| **F Reference Materials** | | | | |
| 1 | Training manuals | Comprehensive course materials and guides | 25 pcs | 1:1 |
| 2 | Manufacturer manuals | Detailed manuals for automotive paints and equipment | 1 | 1:25 |
| 3 | Digital presentations | Pre-prepared slides on techniques and safety protocols | 1 | 1:25 |

# VEHICLE SPRAY PAINTING

**ISCED UNIT CODE:** 0716 351 05A

**Relationship to occupational standards**

This unit addresses the unit of competency; perform vehicle spray painting

**Duration of unit:** 120 Hours

**Unit Description:**

This unit specifies the competencies required to perform vehicle spray painting. It involves; performing vehicle paint mixing, applying vehicle body paint and performing workshop housekeeping.

The unit specifies the knowledge and attitude to perform vehicle spray painting. It involves; troubleshooting, knowledge on colour mixing, use of vehicle body workshop tools and equipment, performing workplace housekeeping procedure, time management, decision making and vehicle body principles.

**Summary of Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Vehicle Paint Mixing | **40** |
| 2. | Vehicle Body Paint | **50** |
| 3 | Workshop House Keeping | **30** |
| **Total** | | **120** |

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Vehicle Paint Mixing | * 1. Workplace health and safety      1. Personal safety      2. Workshop safety      3. Tools safety      4. material safety   2. Selection of tools, materials and equipment      1. Masking tape      2. Dust masks      3. Masking papers      4. Spray gun      5. Acrylic thinner      6. Air compressor      7. Hose pipes      8. Measuring cup      9. Spraying booth      10. Automotive paints      11. Colour code chart   3. Auto paints      1. Water based      2. Acrylic      3. Oil based   4. Colour mixing      1. Colour code chart | * Observation * Project * Written assessment * Oral assessment |
| * 1. Vehicle Body Paint | 1. Cleaning and masking    * 1. Masking tape      2. Dust masks      3. Masking papers      4. Soft material    1. Selection of tools equipment and materials       1. Spray gun       2. Air compressor       3. Hose pipe       4. Automotive paints       5. Thinner       6. Paint hardener    2. Paint mixing       1. Colours       2. Paint mixing machine       3. Colour chart    3. Spray painting elements       1. Ventilation       2. Spray booth       3. Protective gear       4. Lighting       5. Temperature and humidity control    4. Spray painting patterns       1. Horizontal stripe       2. Vertical stripe       3. Circular pattern       4. Diagonal pattern       5. Fan pattern | * Observation * Project * Written assessment * Oral assessment |
| * 1. . Workshop House Keeping | * 1. Waste disposal and management      1. segregation of waste   2. Cleaning and storing of tools and equipment      1. dusting      2. cleaning | * Observation * Project * Written assessment * Ora assessment |

**Suggested Methods of Instruction**

* Practical
* Project Work
* Demonstrations
* Direct instruction with active learning strategies
* Group Discussions
* Demonstration

**Recommended Resources for 25 Trainees**

| **S/No.** | **Category/Item** | **Description/Specifications** | **Quantity** | **Recommended Ratio (Item: Trainee)** |
| --- | --- | --- | --- | --- |
| **ALearning Materials** | | | | |
| 1 | Textbooks | Comprehensive textbooks on workplace safety, tools, materials, and automotive body repair techniques | 25 | 1:1 |
| 2 | Projector | Functional projector for displaying content during presentations | 1 | 1:25 |
| 3 | Computer | Functional desktop computer with online instructional content | 1 | 1:25 |
| 4 | Whiteboard | Quality whiteboard, approximately 6 ft by 3 ft | 1 | 1:25 |
| 5 | Printer | Inkjet or laser printer for printing handouts, instructions, and diagrams | 1 | 1:25 |
| **BLearning Facilities** | | | | |
| 1 | Lecture Room | Spacious room with seating for 25 trainees, approximately 60 sqm | 1 | 1:25 |
| 2 | Workshop | Standard workshop with designated sanding, painting, and finishing areas (approx. 180 sqm) | 1 | 1:25 |
|  | Spray Painting Booth | Standard spray-painting booth | 1 | 1:25 |
| **CSafety Equipment** | | | | |
| 1 | Dust coat/overall | Shields skin and clothes from dust and paint | 25 | 1:1 |
| 2 | Gloves | Protects hands during sanding, painting, and tool handling | 25 | 1:1 |
| 3 | Safety glasses | Protects eyes from flying particles and chemicals | 25 | 1:1 |
| 4 | Respirators | Protects from inhaling harmful fumes and dust | 25 | 1:1 |
| 5 | Ear plugs/muffs | Protects against prolonged exposure to high noise levels | 25 | 1:1 |
| 6 | First Aid Kit | Fully equipped First Aid kit for accidents | 1 | 1:25 |
| **DTools and Materials** | | | | |
| 1 | Spreaders | Used for applying and spreading filler | 10 | 2:5 |
| 2 | Mixers | For mixing fillers and hardeners | 5 | 1:5 |
| 3 | Sandpapers | Various grits (36, 40, 60, 80, 100, 120, 240, etc.) | Enough | - |
| 4 | Manual Sanders | Hand tools for sanding surfaces | 10 | 2:5 |
| 5 | Power Sanders | Electric sanders for quicker and consistent sanding | 5 | 1:5 |
| 6 | Sealants | Different types (polyurethane, silicone, acrylic, etc.) for bonding and sealing | 10 sets | 1:3 |
| 7 | Paint mixing scales | For accurate measurement of paint ratios | 5 | 1:5 |
| 8 | Spray Guns | HVLP and LVLP types for primer and paint application | 5 | 1:5 |
| 9 | Compressor Machine | To power spray painting equipment | 1 | 1:25 |
| 10 | Masking Tools | Tape, masking paper, plastic wrap | Enough | - |
| **EConsumables** | | | | |
| 1 | Automotive paints | Different finishes (solid, metallic, pearl, matte) |  | - |
| 2 | Degreasers and solvents | For cleaning surfaces | 10 liters | - |
| 3 | Paint thinner | For cleaning spray guns and thinning paint | 5 liters | - |
| 4 | Rust inhibitors | For preventing corrosion | 5 liters | - |
| 5 | Adhesive removers | For removing adhesives | 5 liters | - |
| **FReference Materials** | | | | |
| 1 | Training manuals | Comprehensive course materials and guides | 25 pcs | 1:1 |
| 2 | Manufacturer manuals | Detailed manuals for automotive paints and equipment | 1 | 1:25 |
| 3 | Digital presentations | Pre-prepared slides on techniques and safety protocols | 1 | 1:25 |

# VEHICLE BODY VALETING

**ISCED UNIT CODE:** 0716 351 06A

**Relationship to occupational standards**

This unit addresses the unit of competency; perform vehicle body valeting

**Duration of unit:** 90 Hours

**Unit Description:**

This unit of learning specifies the competencies required to perform vehicle body Valeting. It involves; perform vehicle body polishing, perform vehicle body buffing, and perform housekeeping.

**Summary of Learning Outcomes**

By the end of this unit of learning the trainee should be able to;

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Vehicle Body Polishing | **35** |
| 2. | Vehicle Body Buffing | **45** |
| 3 | House Keeping | **10** |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested assessment methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Vehicle Body Polishing | * 1. Workplace health and safety      1. Personal safety      2. Workshop safety      3. Tools safety      4. Material safety   2. Selection of tools, materials and equipment      1. Polishing compound      2. Microfiber clothing      3. Polishing pads      4. Buffing pads      5. Polishing wax      6. Fine grit sandpaper   3. Polishing and waxing | * Observation * Project * Written assessment * Oral assessment * Portfolio of evidence |
| 1. Vehicle Body Buffing | * 1. Workplace health and safety      1. Personal safety      2. Workshop safety      3. Tools safety      4. material safety   2. selection of tools, materials and equipment      1. Buffing compounds      2. Buffing pads      3. Buffing machine      4. Buffing wax | * Observation * Project * Written assessment * Oral assessment * Portfolio of evidence |
| 1. House Keeping | * 1. Waste disposal and management      1. segregation of waste   2. Cleaning and storage of tools and equipment      1. dusting      2. cleaning |  |

**Suggested Methods of Instruction**

* Practical
* Project Work
* Demonstrations
* Direct instruction with active learning strategies
* Group Discussions
* Demonstration

**Recommended Resources for 25 Trainees**

| **S/No.** | **Category/Item** | **Description/Specifications** | **Quantity** | **Recommended Ratio (Item: Trainee)** |
| --- | --- | --- | --- | --- |
| 1. **Learning Materials** | | | | |
| 1 | Textbooks | Comprehensive textbooks on workplace safety, tools, materials, and automotive body repair techniques | 25 | 1:1 |
| 2 | Projector | Functional projector for displaying content during presentations | 1 | 1:25 |
| 3 | Computer | Functional desktop computer with online instructional content | 1 | 1:25 |
| 4 | Whiteboard | Quality whiteboard, approximately 6 ft by 3 ft | 1 | 1:25 |
| 5 | Printer | Inkjet or laser printer for printing handouts, instructions, and diagrams | 1 | 1:25 |
| **B Learning Facilities** | | | | |
| 1 | Lecture Room | Spacious room with seating for 25 trainees, approximately 60 sqm | 1 | 1:25 |
| 2 | Workshop | Standard workshop with designated sanding, painting, and finishing areas (approx. 180 sqm) | 1 | 1:25 |
|  | Spray Painting Booth | Standard spray-painting booth | 1 | 1:25 |
| **C Safety Equipment** | | | | |
| 1 | Dust coat/overall | Shields skin and clothes from dust and paint | 25 | 1:1 |
| 2 | Gloves | Protects hands during sanding, painting, and tool handling | 25 | 1:1 |
| 3 | Safety glasses | Protects eyes from flying particles and chemicals | 25 | 1:1 |
| 4 | Respirators | Protects from inhaling harmful fumes and dust | 25 | 1:1 |
| 5 | Ear plugs/muffs | Protects against prolonged exposure to high noise levels | 25 | 1:1 |
| 6 | First Aid Kit | Fully equipped First Aid kit for accidents | 1 | 1:25 |
| **D Tools and Materials** | | | | |
| 1 | Spreaders | Used for applying and spreading filler | 10 | 2:5 |
| 2 | Mixers | For mixing fillers and hardeners | 5 | 1:5 |
| 3 | Sandpapers | Fine grits | 50 pieces | - |
| 4 | Manual Sanders | Hand tools for sanding surfaces | 10 | 2:5 |
| 5 | Power Sanders | Electric sanders for quicker and consistent sanding | 5 | 1:5 |
| 6 | Buffing Machines | Powered | 5 | 1:5 |
| 7 | Waste bins | For housekeeping | 5 | 1:5 |
| 8 | Cleaning solvents and materials | For housekeeping | 5 sets | 1:5 |
| **E Consumables** | | | | |
| 1 | Degreasers and solvents | For cleaning surfaces | 10 liters | 1:2.5 |
| 2 | Polishing Compound | For polishing | 10 liters | 1:2.5 |
| 3 | Microfiber Cloths | For cleaning and polishing | 25 pieces | 1:1 |
| 4 | Polishing Pads | 10 sets | 10 sets | 1:2.5 |
| 5 | Polishing Wax | 10 sets | 10 liters | 1:2.5 |
| 6 | Fine Grit Sandpaper | For fine sanding | 10 packets | 1:2.5 |
| 7 | Buffing Pads | For buffing | 10 sets | 1:2.5 |
| 8 | Buffing Wax | For buffing | 10 liters | 1:2.5 |
| 9 | Buffing Compounds | For buffing | 10 liters | 1:2.5 |
| **F Reference Materials** | | | | |
| 1 | Training manuals | Comprehensive course materials and guides | 25 pcs | 1:1 |
| 2 | Manufacturer manuals | Detailed manuals for automotive paints and equipment | 1 | 1:25 |
| 3 | Digital presentations | Pre-prepared slides on techniques and safety protocols | 1 | 1:25 |