



Republic of Rwanda
Ministry of Education



CURRICULUM



**TVET Short
course**

**TVET CERTIFICATE
in
Automobile Mechanics**

March 2026

AUTMEC0001



Republic of Rwanda
Ministry of Education



TVET SHORT COURSE in Automobile Mechanics

Customized by:



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FOREWORD

The global rapid changes in the labour market tends to call for appropriate training and skills development through outcome-based training approaches. Skills development and employment promotion are central to Rwanda's transformative Vision 2050, aiming to secure high standards of living for all Rwandans. In a bid to transform Rwanda into a knowledge based economy, the National Strategic Transformation 1 (NST1) calls socio-economic transformation through TVET skills development. The Rwanda TVET Board (RTB) was established to promote quality education in technical and vocation education and training from level one (1) to five (5) aimed at fast tracking socio-economic development of the country. Designing and distributing curricula, teaching materials, trainer's guides, methodologies and establish training methods for technical and vocation education and training from level one (1) to five (5); is among other RTB's responsibilities.

The TVET modernization process has begun with a clear picture of the programs focusing on Transport and Logistics sector with the high employment potential like Automobile Mechanic among others. In this respect, Rwanda TVET Board and Action colleges are honoured to avail the shortcourse curriculum in Automobile Mechanics which serves as the official document and respond to the above mentioned concerns.

With the help of the training providers, trainers, parents whose role is central to the success of this curriculum, the trainees will gain appropriate hands on skills which will make a difference not only to their own lives but also to the success of Rwanda's economy.

I wish to sincerely extend my appreciation to the people who contributed towards the development of this document.

Dipl. - Eng. Paul UMUKUNZI
Director General/ RTB

Acknowledgments

Action colleges and Rwanda Technical and Vocational Education and Training Board (RTB) wishes to extend its gratitude to the following partners, stakeholders and institutions involved in development of this program including private sector, government institutions and other professionals.

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List of Abbreviations

4IR	Fourth Industrial Revolutions
AI	Artificial Intelligence
BPO	Business Process Outsourcing
CDU	Curriculum Development Unit
CM	Complementary Modules
CV	Curriculum Vitae
DACUM	Developing a Curriculum
ESSP	Education Sector Strategic Plan
HR	Human Resources
IAP	Industrial Attachment Program
IOT	The Internet of Things
MINEDUC	Ministry of Education
NST	National Strategy for Transformation
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
PSDYES	Private Sector Development & Youth Employment Strategy
REQF	Rwandan Education Qualification Framework
RP	Rwanda polytechnic
SWOT	Strength Weakness Opportunities and Treats
TSS	Technical Secondary School
SDC	Swiss Agency for Development and Cooperation
TVET	Technical and Vocational Education and Training
WHS	Work Health & Safety
WPL	Workplace learning

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1. GENERAL INTRODUCTION

Complying with government strategies and policies such as National Strategy for Transformation (NST1)¹, National Skills Development and Employment Promotion Strategy (NSDEPS)², Private Sector Development & Youth Employment Strategy (PSDYES)³, Education Sector Strategic Plan (ESSP)⁴, TVET Policy & Strategy, Workplace Learning Policy among others, the Government of Rwanda wants to improve access, quality and relevance of the TVET system and the labour market integration of TVET graduates. It is therefore that Action college developed short course **curriculum of Automobile mechanics** that will be taught in company. The training scheme will contribute to closely match the needs of the private sector and enhance the quality of the training through learning in authentic professional situations. In addition, it will provide an accurate basis for engaging the private sector in training programme design, training delivery and certification as well as co-financing TVET, thus contributing to increased sustainability of the TVET system in Rwanda.

TVET Short course in Automobile mechanics presents a coherent and significant set of competencies required to perform the occupation of an **Automobile mechanic**. This curriculum is aligned with specific needs of the companies linked to the acquired vocational skills and abilities as well as professional and personal suitability of company/industry and vocational school training personnel. It is designed with an approach that takes into account the training needs, the real work situation, as well as the goals and the means to implement training.

The curriculum structure consists of four parts. The first part is of general introduction. It shows the philosophy behind the development of the curriculum and how the document will be used. The second part presents the qualification, its level in the qualification framework, its purpose, its rationale and the list of modules it comprises. The third part deals with the training package. The pedagogical fundamentals define the division of competence acquisition to both learning sites, including general roles of each site. The training package is described also the course structure, the flow chart (the sequence of modules) and the distribution of competencies and elements of competencies in training sites. Finally, the

¹The National Strategy for Transformation (NST1) which is also the Seven Year Government Program (7YGP) comes at a unique moment in the country's development trajectory which will see the crossover from Vision 2020 towards Vision 2050. This strategy is expected to lay the foundations for decades of sustained growth and transformation that will accelerate the move towards achieving high standards of living for all Rwandans.

² National Skills Development and Employment Promotion (NSDEPS) is an optimized skills and employment ecosystem drawn from Vision 2050 and its associated strategies and policies, to foster long-term economic transformation.

³ Private Sector Development and Youth Employment Strategy (PSDYES) is a unified umbrella for all support to the private sector targeting so-called Anchor Firms in key value chain with technology upgrading support, skills development, access to finance, trade facilitation and more.

⁴ Education Sector Strategic Plan (ESSP) 2018/19-2023/24 marks the update of the ESSP 2013/14-2017/18 and alignment of plans for Rwanda's education sector in line with country development plans like the Economic Development and Poverty Reduction Strategy (EDPRS 3), National Strategy for Transformation (NST-1) and 7 Year Government Program (7 YGP).

assessment specifications and guidelines are included. The assessment procedures are designed due to the fact, that the trainee will mainly learn in the company. The assessments by the company facilitators must therefore influence considerably progress and final certification. The workplace comprehensive assessment as well as the summative/ integrated assessments done at the company asks for several procedures, guidelines, and forms to be implemented.

A part of this curriculum structure, a course structure is provided. It presents the title of the module, the length of training, the amount of credits, the context in which the competency is performed, the element of competency and the performance criteria. The course structure describes also the learning outcomes (knowledge, skills and attitudes) and the indicative contents related to each learning outcomes as well as time spent at each learning site. In addition, the learning activities and resources are suggested. The assessment specifications and guidelines are also included in each module

2. QUALIFICATION DETAILS

2.1. Description

Title:	TVET Short course in Automobile mechanics
Level:	N/A
Credits:	80
Sector:	Transport and Logistics
Program:	Automobile Mechanics
Issue date:	March 2026

2.2. Graduate profile

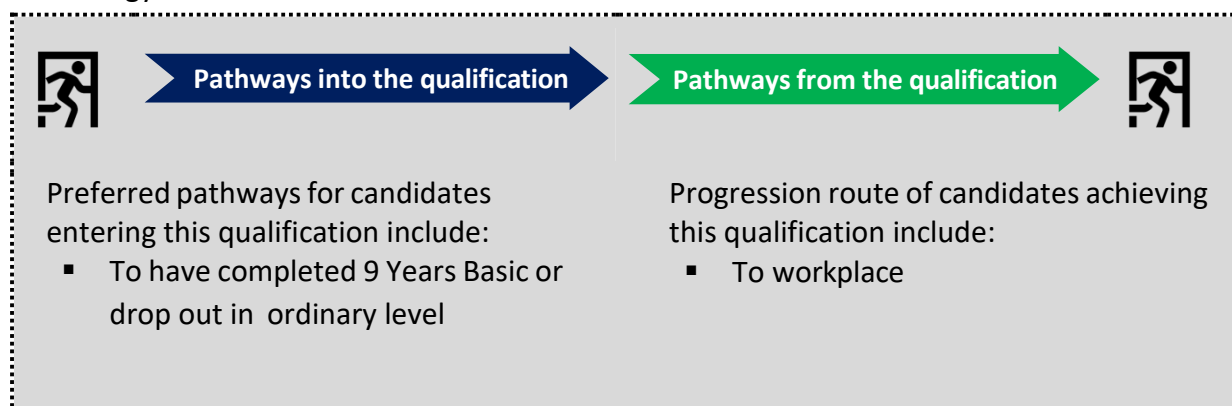
This qualification provides the skills, knowledge, and attitude for a learner to be competent in a range of routine tasks and activities that require the application of practical skills in a defined context. Work would be undertaken in Construction Companies, farming, transport, warehouses, garages performing a range of tasks related to the work with the biggest engines, inspecting, servicing, and repairing any damage to the engine or vehicle where mechanical activities are carried out. Graduates may work with some autonomy or in a team but usually under supervision.

At the end of this program, qualified learners will be able to:

1. Practice occupational health and safety
2. Run micro business
3. Repair automobile engine
4. Repair engine cooling system
5. Repair engine fuel supply system
6. Repair starting system
7. Repair suspension and steering system
8. Repair driveline system
9. Repair wheel and tyre
10. Repair ignition system
11. Repair brake system
12. Integrate the workplace

2.3 Minimum entry requirements and pathways

The minimum entry requirement to this course is to be mentally fit and interest in automobile technology and related areas.



2.4 Job related information

This qualification prepares individuals to integrate the transport and logistic sector with the professionalization of automobile technology. This qualification again offers the opportunity to execute the works as **car body work mechanic, wheel and tyre maintainer engine repair mechanic, and auto electrician** while ensuring that safety, security and environmental regulations are respected.

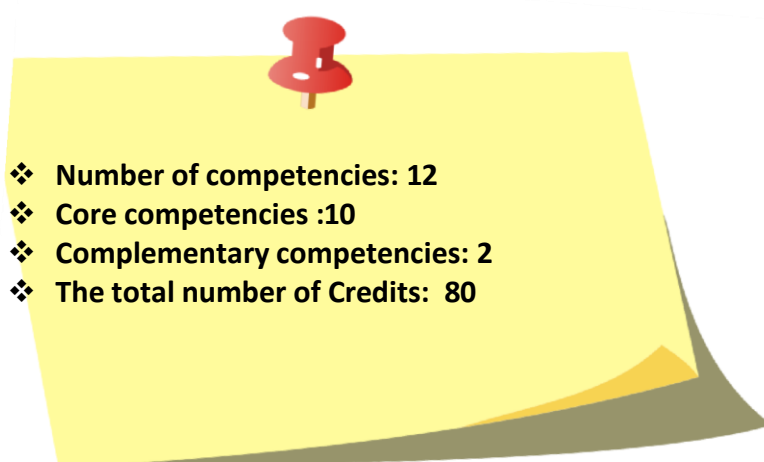
	Possible jobs related to this qualification
Drive line repair mechanic	
Wheel and tyre maintainer	
Engine repair mechanic	
Engine repair electrician	
Suspension and steering maintainer	

2.5 Information about competencies

No	Code	Complementary competencies	Credit
1	CCMOH001	Practice occupational health and safety	4
2	CCMRM001	Run micro business	3
Total			7

No	Code	Core competencies	Credit
1	AUTER001	Repair automobile engine	12
2	AUTCS002	Repair engine cooling system	4

3	AUTFS002	Repair engine fuel supply	5
4	AUTSR002	Repair starting system	4
5	AUTDR002	Repair driveline system	12
6	AUTWT002	Repair wheel and tyre	4
7	AUTSS002	Repair suspension and steering system	7
8	AUTIR002	Repair ignition system	4
9	AUTBR002	Repair brake system	5
10	AUIA001	Integrate the workplace	16
Total			730



2.6 Allocation of Learning Hours

N0	Module name	Learning Outcome	Theoretical hours	Practical hours	Total hours
1	Brake system repairing	1. Identify mechanical brake system	3	5	8
		2. Disassemble and inspect brake system	3	14	17
		3. Maintain brake system components	2	13	15
		Test brake systems	2	8	10
Total hours			10	40	50
		1. Prepare the workplace	3	5	8

2	Repair cooling	2.Describe engine cooling systems	3	10	13
		3.Repair engine cooling system components	2	17	19
		Total hours	8	32	40
3	Driveline system repairing	1. Describe transmission line sytem	8	12	20
		2. Dismantle transmission line components	10	40	50
		3. Maintain transmission line system	10	40	50
		Total hours	28	92	120
4	Automotive engine repairing	1.Describe automotive engine	10	10	20
		2. Maintain engine systems	10	30	40
		3. Overhaul engine	20	40	60
		Total Hours	40	80	120
5	Engine fuel supply repairing	1. Describe engine fuel supply system	5	5	10
		2.Diagnose petrol engine fuel supply	5	10	15
		3.Repair engine fuel supply system	5	20	25
		Total hours	15	35	50
6	Ignition system repairing	1.Describe ignition system	3	5	8
		2. Repair ignition system components	3	10	13
		3.Test ignition system	4	15	19
		Total hours	10	30	40
7	Starting system repairing	1.Describe starting system	3	5	8
		2.Repair starter motor components and control circuit	3	13	16
		3.Test starting system	4	12	16
		Total hours	20	40	40
8	Suspension and steering system repairing	1.Identify steering systems	5	5	10
		2.Maintain steering system	5	15	20
		3.Identify suspension system	5	10	15
		4.Maintain syspension system	5	20	25
		Total hours	20	50	70

9	Wheel and tyre repairing	1.Prepare the workplace and apply safety	3	5	8
		2.Describe wheel and tyre	3	10	13
		3.Repair wheel and type	4	15	19
Total hours			10	30	40

3. TRAINING PACKAGE

The training package includes the competencies chart, the flowchart, the modules, the course structure, and the assessment guidelines.

3.1 Course structure

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

3.2 Flowchart

The flowchart of sequencing of learning is a schematic representation of the order of acquisition of the competencies. It provides an overall planning of the entire training programme and shows the relationship between the modules. This type of planning is to ensure consistency and progression of learning. For each module, the flowchart shows the learning that is already in place, the learning that is to take in parallel or later. The positions defined will have a decisive impact on all subsequent pedagogical choices. The flowchart of the sequence of learning of the modules of the training programme is presented on the following page.

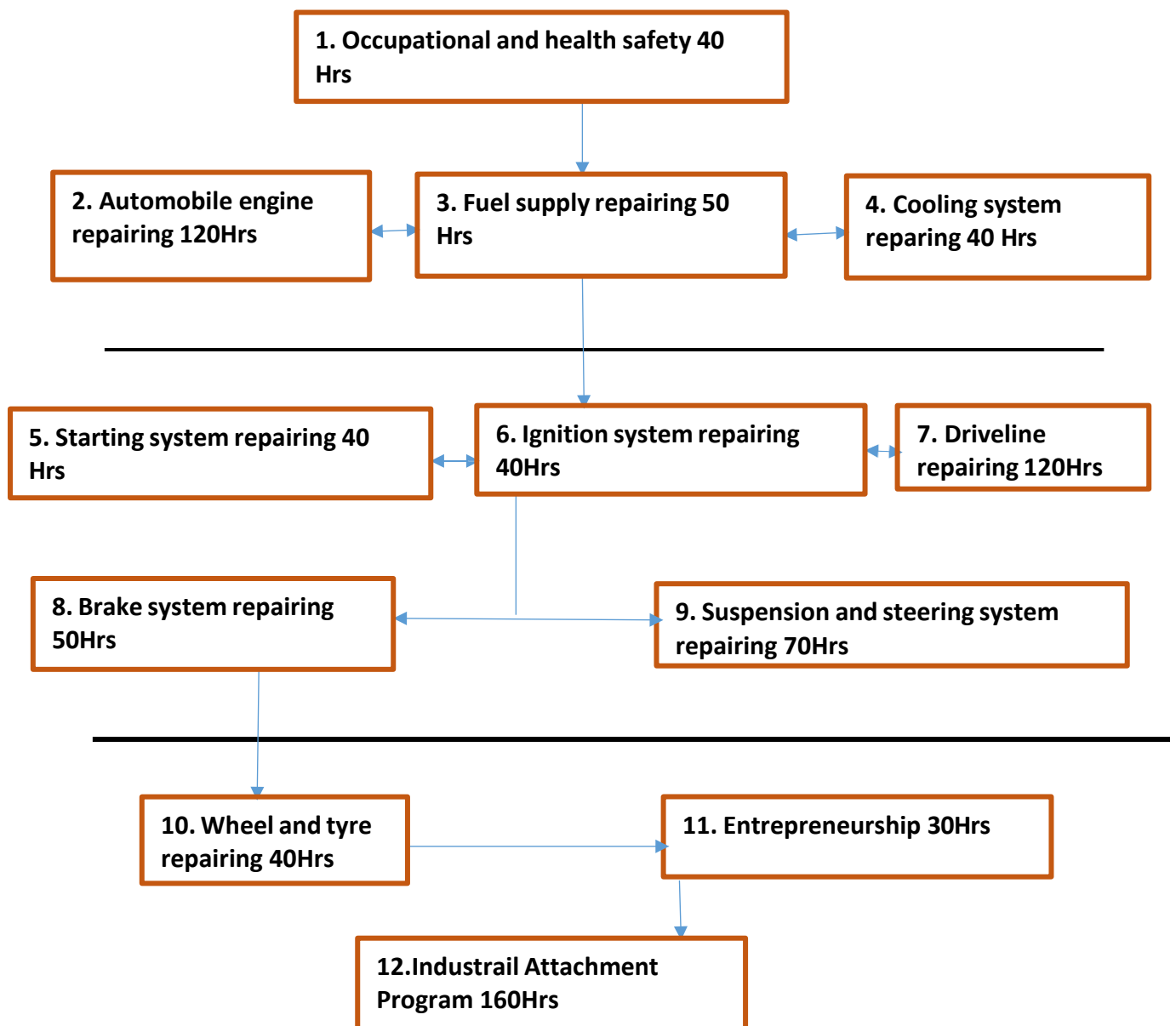


Figure 2: flowchart

4. ASSESSMENT GUIDELINES

4.1. Assessment Methodology

To assess knowledge, practical, and application skills through a jury system of continuous evaluation that encourages learners to display understanding of the principles in application to set practical tasks and their attendant theory to assess self-learning.

There are two types of assessment (Formative Assessment and Summative/Integrated Assessment). Each assessment has its own rule for passing to be declared competent.

4.2. Formative Assessment

This is applied on all types of modules (e.g. Complementary, General and Specific modules)

A trainee to be competent for a formative module must have at least 70%

A trainee to be eligible to undertake integrated assessment of specific modules must have at least 50% as passing line for general and complementary modules.

Each trainee should be competent on all formative assessments to be declared competent on that module.

All formative assessment should be declared competent before taking the summative/integrated assessment.

4.3. Summative Assessment

All Summative/Integrated assessment should match with the content of the module in the curriculum. Summative/Integrated Assessment is always in practical, giving it as a theoretical type of assessment is not acceptable.

The integrated situation provided in the curriculum is a sample of the assessment to be carried out, the Trainer/Teacher has the role of developing another one referring to the task to be carried out in the integrated situation in accordance to the circumstances inside school, but the integrated situation should stick on the components of a task.

During Summative/Integrated assessment, assessor panel members should be three (3).

The trainee can be declared competent based on the assessment CRITERIA and its respective assessment indicators

The Passing Line for the modules is:

1. 50 % for general and complementary modules
2. 70 % for specific modules

Training delivery	100%	Assessment		Total 100%
Theoretical content	30%		30%	
Practical work:				

Group project and presentation	20%	70%	Formative assessment	70%	50%
Individual project /Work	50%				
		Summative Assessment			50%

Note:

1. Summative assessment is always conducted at the completion of module delivery. It should be practical through an integrated situation for specific modules and in any other forms of assessment for complementary and general modules.
2. Learning hours assigned to specific module includes the duration assigned to integrated assessment

GLOSSARY

1. **Assessment:** A process of gathering and judging evidence in order to decide whether a person has attained a standard of performance.
2. **Assessment criteria:** Statements which describe performances and place them in context with sufficient precision to allow valid and reliable assessment.
3. **Best practice:** Management practices and work processes that lead to outstanding or top-class performance and provide examples for others.
4. **Competency standard:** An industry-determined specification of performance which sets out the skills, knowledge and attitudes required to operate effectively in employment. Competency standards are made up of units of competency, which are themselves made up of elements of competency, together with performance criteria, a range of variables, and an evidence guide.
5. **Competency:** means the ability to apply knowledge, skills and personal, social and methodological skills in the workplace or during learning, as well as in personal and professional development. This ability or capacity is acquired through learning, exposure to the tasks and series of training allowing one to perform specific task autonomously. Reason why in the context of the CBE Framework competencies are described as responsibility and independence.
6. **Competency-based assessment (or CBA):** The gathering and judging of evidence in order to decide whether a person has achieved a standard of competency.
7. **Complementary competencies:** Set of knowledge, skills and attitudes which are not directly linked to a specific occupation or industry, but which are important for work, education and life in general, such as communication, mathematics, organizational aptitude, and computer literacy, interpersonal and analytical competency.
8. **Core modules:** Modules leading to competencies' acquisition that an industry sector has agreed upon as essential for a person to be accepted as competent at a particular level. All modules may be core, but in many cases competency at a level will involve core modules plus optional or specialization modules. Core competencies are normally those central to work in a particular industry.
9. **Credential:** Formal certification issued for successful achievement of a defined set of outcomes, e.g. successful completion of a course in recognition of having achieved particular knowledge, skills or competencies; successful completion of an apprenticeship or traineeship.

10. **Credit:** The acknowledgement that a person has satisfied the requirements of a module.
11. **Curriculum:** The specifications for a course or subject (module) which describe all the learning experiences a learner undergoes, generally including objectives, content, intended learning outcomes, teaching methodology, recommended or prescribed assessment tasks, assessment exemplars, etc.
12. **Evidence guide:** The part of a competency standard which provides a guide to the interpretation and assessment of the unit of competency, including the aspects which need to be emphasized in assessment, **relationships to other units, and the required evidence of competency.**
13. **Flexible delivery:** A range of approaches to providing education and training, giving learners greater choice of when, where and how they learn. Flexible delivery may involve distance education, mixed-mode delivery, online education, self-paced learning, self-directed learning, etc.
14. **Formal education:** Also formal training education or training provided in educational institutions such as schools, universities, colleges, etc. or off the job in a workplace, usually involving direction from a teacher or instructor.
15. **General competencies:** competencies correspond to larger operations that go beyond the tasks, but generally contribute to their implementation. These activities require more fundamental learning and are generally common to several tasks and transferable to many work situations.
16. **Generic modules:** Modules leading to the attainment of complementary competencies.
17. **Informal education:** The acquisition of knowledge and skills through experience, reading, social contact, etc.
18. **Internship:** An opportunity for a learner to integrate career related experience by participating in planned, supervised work.
19. **Key competencies:** Any of several generic skills or competencies considered essential for people to participate effectively in the workforce. Key competencies apply to work generally, rather than being specific to work in a particular occupation or industry. The following are key areas of competency which were developed into seven key competencies: collecting, analyzing and organizing information; communicating ideas and information; planning and organizing activities; working with others and in teams; using mathematical ideas and techniques; solving problems; and using technology.
20. **Knowledge:** means the result of the adoption of information through the learning process. Knowledge is a set of facts, principles, theories and practices related to area of work or study. In CBE context lifelong learning

knowledge is described as theoretical and / or factual.

21. **Learning outcomes:** are statements of what learner knows, understands and can perform, based on the completion of the learning process, defined by knowledge, skill and competency.
22. **Learning activities:** Suggested activities that can be developed during lesson planning and activity preparation. The choice of learning activities must be tailored according to group size, available material resources and communication tools.
23. **Learning hours:** Amount of hours required to acquire the competency, including the time allocated to evaluation, which is estimated between 5 and 10% of the total learning time of the competency.
24. **Learning outcomes:** Statements that indicate what learners will know or be able to do as a result of a learning activity. Learning outcomes are usually expressed as knowledge, skills, or attitudes.
25. **Learning unit:** Any of the basic building blocks of a module, which describes the key activities or the elements of the work covered by the module
26. **Module:** A unit of training which corresponds to one competency and which can be completed on its own or linked to others.
27. **Occupation:** The principal business of one's life.
28. **Performance criteria** The part of a competency standard specifying the required level of performance in terms of a set of outcomes which need to be achieved in order to be deemed competent. It describes the quality requirements of the result obtained in labor performance.
29. **Qualification:** means the formal name for the result of a process of assessment and validation, which is obtained when a competent body determines that an individual has achieved learning outcomes to the standards laid down.
30. **Quality assurance:** The systems and procedures designed and implemented by an organization to ensure that its products and services are of a consistent standard and are being continuously improved.
31. **Recognition of prior learning (or RPL):** The acknowledgement of a person's skills and knowledge acquired through previous training, work or life experience, which may be used to grant status or credit in a subject or module.
32. **Skills:** are the ability to apply knowledge and use the principle of "know how" to perform a specific task and to solve the problem. In the context of the CBE Framework, skills are defined as cognitive (involving the use of logical, intuitive and creative thinking), practical (including physical skill and use of methods, materials, devices and instruments) and social skills (communication and cooperation skills, emotional intelligence and other).
33. **Specific competencies:** Competencies that are directly

related to the tasks of the occupation in the workplace context. They refer to concrete, practical, and focused aspects

34. **Traineeship:** A system of vocational training combining off-the-job training at an approved training provider with on-the-job training and practical work experience. Traineeships generally take one to two years and are now

a part of the New Apprenticeships system.

35. **Unit of competency:** A component of a competency standard. A unit of competency is a statement of a key function or role in a particular job or occupation. See also element of competency, performance criteria, range of variables.



Employable Skills for Sustainable Job Creation

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Republic of Rwanda
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CCMOH001

OCCUPATIONAL HEALTH AND SAFETY PROCEDURES

Practice Occupational Health and Safety at Workplace

Competence

RQF Level: Short Course

Learning Hours



40

Credits: 4

Sector: All

Trade: All

Module Type: Complementary

Curriculum: ELTFKR0001- Short course training program in Fridge and
Kitchen appliances Repair

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Issue Date: October 2025

Purpose statement	This module describes the skills, knowledge and attitudes required to respect and apply occupational health and safety procedures at workplace; and it also covers the personal protective attitudes required in the sector. Moreover, the module describes occupation and learning process, the skills, knowledge and attitudes required to maintain personal hygiene, safety and health, to sustain a safe and healthy environment at workplace, and ensure environmental sustainability.						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	100%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment			N.A

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Describe occupation and learning process	1.1. The occupation is properly described in line with related sector and trades
	1.2. The learning process is effectively explained as per CBT/A guidelines
	1.3. Personal learning plans are appropriately elaborated in line with personal values, skills and interests
2. Maintain personal hygiene, safety and health	2.1. Personal hygiene, safety and Health habits are properly maintained according to the World Health Organisation recommendations
	2.2. Safe nutritional behaviour and food safety is effectively demonstrated with regards to World Health Organisation recommendations
	2.3. Safe reproductive health practices are applied in line with the comprehensive sexuality education program
	2.4. The contamination and spread of pandemic diseases are effectively prevented in accordance with the World Health Organization guidelines

	2.5. Work clothing and personal protective Equipment are correctly used in line with the workplace regulations.
3. Sustain a safe and healthy environment at the workplace	3.1. Workplace unsafe situation is properly avoided in line with workplace regulations
	3.2. Hazards are properly controlled with respect to methods of hazard control and SHE signs in the workplace
	3.3. Workplace health and safety risks are effectively assessed and controlled with respect to risk assessment steps
	3.4. Workplace emergencies are promptly handled in line with policy and regulations
4. Ensure environmental sustainability	4.1. Environmental laws, standards and regulations are properly identified in line with working context
	4.2. Best practices to keep the environmental clean are properly applied according to environmental laws, standards and regulations
	4.3. Climate change adaptation and mitigations measures are described in line with environmental laws, standards and regulations.

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Describe occupation and learning process 2. Maintain personal hygiene, safety and health 3. Sustain a safe and healthy environment at Work Place 4. Ensure environmental sustainability
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Learning outcome 1: Describe occupation and learning process	Learning hours: 10
Indicative content	
• Description of the occupation, sector and trades ✓ Self - introduction and integration of learners in a team ✓ Definition of terms ✚ Occupation ✚ Sector ✚ Trade ✓ Rationale of the short course ✓ Importance of the occupation in own sector ✓ Working conditions in the occupation ✓ The job positions within the trade ✓ Content of the training program (modules, durations and flowchart) ✓ Learning timetable ✓ Learning place's rules and regulation • Explanation of the learning process learning process ✓ Introduction to Competence Based Training (CBT) ✚ Key terms definitions ✚ Concept of CBT ✚ Importance of CBT in TVET schools ✚ CBT vs traditional teaching ✓ Student role in the learning ✓ Competence Based Assessment guidelines ✚ Definition of assessment ✚ Types of assessments in TVET system ✚ Assessment tools ✚ Passing lines	

- ✚ Evidence gathering and portfolio building
- ✓ Certification process
- **Development of learning plans**
 - ✓ Identification of learners' values, skills and interests vis-à-vis the occupation
 - ✓ Setting learning goals
 - ✚ Characteristic of goals (SMART)
 - ✚ Types of goals (long- and short-term goals)
 - ✓ Developing plans for goals achievement
 - ✚ Sample of plan format
 - ✚ Long term plans vs short term plans
 - ✓ Developing strategies for plans achievement

Resources required for the learning outcome

Equipment	Flipcharts stand, Projector, Computer, chalkboard
Materials	Markers, flipcharts, chalks, pens, papers
Tools	Individual assessment checklist, reference books, training manuals, visual aids
Facilitation techniques	Demonstration, individual and group work, Group discussion, role play
Formative assessment methods	Written assessment, Oral presentation

Learning outcome 2: Maintain personal hygiene, health and safety

Learning hours: 15

Indicative content

- **Maintenance of Personal hygiene, safety and Health habits**
 - ✓ Key terms definitions
 - ✚ Hygiene
 - ✚ Safety
 - ✚ Health
 - ✚ Sanitation
 - ✓ Relationship between Water, Sanitation and Hygiene
 - ✓ Personal hygiene
 - ✚ Hand hygiene (hand washing technic, WASH)
 - ✚ Body hygiene;
 - ✚ Clothes hygiene
 - ✚ Mouth hygiene
 - ✚ Hair cutting
 - ✚ Foot hygiene
 - ✓ Measures to ensure hygiene

- ✚ Edible products hygiene
- ✚ Cross infection reduction
- ✚ Ensuring safe water at 'point of use
- ✚ Water distribution
- ✓ Aspects of good personal safety health
- ✓ Measures to ensure sanitation practices
 - ✚ Household sanitation
 - ✚ Safe disposal of wastes
 - ✚ Control of wastewater and rainwater

- **Demonstration of Safe nutritional behaviour**

- ✓ Balanced diet
 - ✚ Source of balanced diet
 - ✚ Benefits of balanced diet
 - ✚ Consequences of unbalanced diet
 - ✚ Consequences of unbalanced diet
- ✓ Prevention of food contamination
 - ✚ Main types of food contamination
 - ✚ Ways to prevent food contamination
- ✓ Healthy nutrition for adolescents and youth

- **Application of safe reproductive health practices**

- ✓ Human reproduction system
 - ✚ Female
 - ✚ Male
- ✓ Puberty and sexual development
 - ✚ Physiological changes
 - ✚ Sexual Maturation (Puberty)
- ✓ Reproductive system hygiene
- ✓ Menstrual hygiene management
 - ✚ Materials used to collect menstruation blood
 - ✚ Materials needed for menstrual waste management
- ✓ Healthy habits for safe menstruation
 - ✚ Self-counselling
 - ✚ Drinking water
 - ✚ Physical activity
 - ✚ Warm bottle/towels
 - ✚ pain killer if necessary
- ✓ Male circumcision
 - ✚ Definition of male circumcision

- ✚ Basic information on voluntary medical male circumcision (VMMC)
- ✚ Benefits of male circumcision
- ✚ When to do VMMC
- ✚ Where to get VMMC
- ✓ Prevention and treatment of HIV/AIDS and other STI's
 - ✚ Classification of STI's
 - ✚ Mode of transmission of STI's
 - ✚ STIs prevention strategies
- ✓ Prevention of unwanted pregnancy
 - ✚ Meaning of Unwanted pregnancy and abortion
 - ✚ Types of unwanted pregnancies
 - ✚ Types of acceptable abortion in Rwanda
 - ✚ Methods of birth control (description, use and side effects)
- ✓ Gender Based Violence
 - ✚ Meaning of GBV
 - ✚ Forms of GBV
 - ✚ Responses to GBV
 - ✚ Legal aspect of GBV in Rwanda
 - ✚ consequences Sexual Behaviour
 - ✚ Causes of Gender Based Violence
- ✓ Youth Friendly services
 - ✚ Girl's room (location, equipment, staffing)
 - ✚ Youth corner (location, Friendly staff, Equipment, Accessibility, Services affordability, Service delivery)
 - ✚ Youth centre (location, Friendly staff, Equipment, Accessibility, Services affordability)
 - ✚ Youth clubs (Location, Health, Size of youth club, Norms, regulations and activities in the club)
- ✓ PAC (Parent Adolescent Communication)
 - ✚ Basic information on PAC
 - ✚ Steps of PAC (5W: Who, Where, What, When and Why)
- **Prevention of the contamination and spread of pandemic diseases**
 - ✓ Description of pandemic diseases
 - ✚ Concept of "pandemic disease"
 - ✚ Types of pandemic diseases in the region
 - ✚ Causes of each of the pandemic diseases found in the region
 - ✚ Symptoms /signs
 - ✚ Mode of contamination and spread

- ✓ Guidelines for prevention of contamination and spread of pandemic diseases found in the region
- ✓ Guidelines for treatment

- **Use of work clothing and Personal Protective Equipment**

- ✓ Assessment and selection of Personal Protective Equipment as per occupation/trade
 - ✚ Breathing Protection Respirators
 - ✚ Skin & Body Protection Equipment
 - ✚ Eye Protection
 - ✚ Hearing Protection
 - ✚ Feet protection
 - ✚ Hands protection
 - ✚ Head protection
- ✓ Role of Personal Protective Equipment
- ✓ Cleaning and storage of PEEs

Resources required for the learning outcome

Equipment	Food treatment equipment, Flipcharts stand, Food storing equipment, PPEs, Projector, Computer
Materials	Markers, Water, Soaps, Soaps used for food preparation, Food items, Flipcharts, Balanced nutritional sample, Food treatment materials
Tools	First Aids kit, hygiene kit, tools for preparing food.
Facilitation techniques	Demonstration and simulation, Individual and group work, individualized, Trainer guided, Group discussion
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

Learning outcome 3: Sustain a safe and healthy environment at workplace	Learning hours: 7
Indicative content	
• Avoiding unsafe situation at workplace ✓ Meaning of unsafe situation at work place	

- ✓ Common types of unsafe working conditions
- ✓ Cause of unsafe working environment
- ✓ Technics to identify unsafe situation
- ✓ Addressing unsafe conditions at workplace

- **Controlling hazards at the workplace**
 - ✓ Key terms definition
 - ✓ Methods of identifying workplace hazards in line with occupation
 - + Interviews
 - + Brainstorming
 - + Checklists
 - + Assumption Analysis.
 - + Cause and Effect Diagrams
 - + Nominal Group Technique (NGT)
 - + Affinity Diagram
 - ✓ Types of hazards in the workplace
 - + Safety
 - + Physical
 - + Chemical
 - + Biological
 - + Other health hazards
 - ✓ Controlling hazard at the workplace
 - + Methods of hazard control
 - + SHE signs in the workplace
 - + Setting up workplace safety signs Illumination
 - + Practical Problem-Solving Model
 - ✓ Control measures to avoid hazard
 - + Basics for survival and how to maintain them in emergency
 - + Steps in Hierarchy of Hazards

- **Assessing and reporting workplace risks**
 - ✓ Types of risks at workplace
 - ✓ Steps of risk assessment
 - ✓ Elements of good quality risk statement
 - ✓ Principles for effective verbal intervention
 - ✓ Addressing risks in a workplace

- **Handling workplace emergencies**
 - ✓ Types of emergencies at workplace

- ✚ Chemical spills,
- ✚ Explosions,
- ✚ Machinery malfunction,
- ✚ Dangerous gas releases.
- ✚ Exposure to toxins
- ✚ Severe injury,
- ✚ Fire
- ✚ Earthquake,
- ✚ Severe storm,
- ✚ Violence
- ✓ Importance of emergencies identification
- ✓ Characteristics of emergency control
 - ✚ Scrambled control
 - ✚ Opportunistic control
 - ✚ Tactical control
 - ✚ Strategic control
- ✓ Different warning time for emergencies
 - ✚ Before
 - ✚ During and
 - ✚ After
- ✓ Different phases of an emergency
 - ✚ Preparedness
 - ✚ Response
 - ✚ Recovery
- ✓ Actions related to different time and phases of an emergency:
 - ✚ Prevent/Prepare
 - ✚ Control/Protect
 - ✚ Recover/Rebuild
- ✓ Categories of equipment needed in emergencies
 - ✚ Recover/Rebuild
 - ✚ Equipment for personnel;
 - ✚ Equipment for basic needs supply
 - ✚ Technical materials, tools and consumables;
 - ✚ Equipment for vector control;
 - ✚ Items used in monitoring and surveillance;
 - ✚ Laboratory equipment and materials;
 - ✚ Maps, reports and other materials for information management
 - ✚ Administrative and office items

- ✓ Possible Immediate Reactions to emergency
 - + Physical reaction (First aid treatment, Call form help, Take the patient emergently to hospital)
 - + Emotional reaction (Personal counselling, Stay close with the patient)
- ✓ Guidelines of an emergency protocol
 - + Stay calm
 - + Take command
 - + Assess the situation
 - + Provide protection
 - + Preserve the scene
 - + Follow procedure
- ✓ Emergency Command Structure
- ✓ Principles of Early Intervention
 - + Safety
 - + Calmness
 - + Efficacy
 - + Connectedness
 - + Hope
- ✓ Response to the Emergency
- ✓ Items to survey in monitoring the risk or hazard:
 - + Noise levels
 - + Lighting
 - + Air contaminants
 - + Chemicals
 - + Radiation
 - + Air quality
 - + Biohazards
 - + Air Temperature
 - + Asbestos
 - + Vibration
- ✓ Responsive Leadership Style in addressing specific problem:
 - + Attitude of Open Communication
 - + Availability
 - + Awareness of Reactions
 - + Acknowledgment of loss
 - + Appreciation of efforts

Resources required for the learning outcome	
Equipment	Computer, Projector Fire extinguishers equipment, Emergencies alarms, Disaster Blaster, game board, ambulance, Alarm signals, computer, Projector
Materials	Flip charts, Pictures, Flipcharts, paper, pen , marker pen
Tools	Visual Aids, First aid kits
Facilitation techniques	Demonstration and simulation, Individual and group work, individualized, Trainer guided, Group discussion, Case study, Field study
Formative assessment methods	Written assessment ,Oral presentation , Performance assessment

Learning outcome 4: Ensure environmental sustainability	Learning hours: 8
Indicative content	
• Identifying environmental laws, standards and regulations in Rwanda ✓ Concepts of sustainable environment and development ✚ Environment ✚ Development ✚ Sustainable environment ✚ Sustainable development ✚ Economic and social development vs environment development ✓ Types of environments ✓ Rwanda's environmental features ✚ Natural environment ✚ Geophysical features ✚ Natural resources and biodiversity ✚ Human environment ✚ Environmental ecosystem ✓ Environmental problems ✚ Degradation of natural resources and biodiversity ✚ Energy crisis ✚ Various types of pollutions disasters ✚ Poor consideration of environmental dimension by socio-economic sectors ✓ Fundamental principles of protection, conservation and promotion of the environment in Rwanda	

- **Applying the best practices to keep the environment clean**
 - ✓ Definition of wastes
 - ✓ Categories of waste
 - + Based on physical state
 - + Based on source
 - + Based on the biological properties of wastes
 - + Based on environment impact
 - ✓ Principles of waste management
 - + Wastes reduction
 - + Reuse of wastes
 - + Recycling wastes
 - + Waste disposal (Methods of wastes disposal)
 - + Circular economy
 - ✓ Provisions of waste management in environmental law
- **Description of climate change adaptation and mitigation measures**
 - ✓ Basic concepts of geography climate
 - + Climate change
 - + Global warming
 - + Weather
 - + climate
 - ✓ Geographical climate elements
 - + Radiation
 - + Air pressure humidity
 - + Humidity
 - + Temperature
 - + Wind speed and direction
 - + Precipitation
 - + Cloud cover
 - + Sun shine
 - ✓ Climate system elements
 - + Atmosphere
 - + Hydrosphere
 - + Cryosphere
 - + Biosphere
 - ✓ Basics of hydro-geography
 - + Hydrological cycle
 - + Water balance equation

✚ Virtual water

✓ Climate factors:

✚ Geographic latitude

✚ Altitude

✚ Land and water pattern

✚ Relief

✚ Vegetation cover (land use)

✚ Exposition

✓ Climate Change Causes:

✚ Greenhouse Gases

✚ Nature Contributions

✚ Human Contributions

✓ Effects of climate change

✓ Climate change hazards and their impacts

✚ Causes of climate hazards

✚ Types of climate hazards

✚ Impacts of climate change related hazards

✓ Measures for mitigation and adaptation

✚ Concepts

○ Mitigation

○ Adaptation

✚ Mitigation and adaptation measures to climate change

✓ Environment and climate change policy

Resources required for the indicative content

Equipment	Pictures, Climate and Weather measuring devices, World Map, Computer, Projector, Flipchart stand
Materials	Flipcharts, paper, cards, map, pen, marker pen
Tools	Climate and Weather measuring devices, Climate and Weather measuring devices, isual Aids, environmental regulations, Rwanda Environmental Policy
Facilitation techniques	Demonstration and simulation, Individual and group work Individualized, Trainer guided, Group discussion
Formative assessment methods	Written assessment, Oral presentation, Performance assessment

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Republic of Rwanda
Ministry of Education



AUTOMOTIVE ENGINE REPAIRING

AUTER001

Competence: REPAIR AUTOMOTIVE ENGINE

RQF Level: N/A

Learning Hours



Credits: 12

Sector: Transport and Logistics Services

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT0001- Short course in Automobile Mechanic

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Issue Date: March, 2026

Purpose statement	This module describes the skills, knowledge and attitude required to repair automotive engine under minimum supervision. At the end of this module, learners will be able to describe engine components, to maintain engine systems and to overhaul engines based on their types.						
Learning assumed to be in place	SHE, Technical drawing, Bench work						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment			50%

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Describe automotive engine	1.1. The engines are properly identified based on their types
	1.2. Engine systems are properly identified based on types of engines
	1.3. The engines are correctly classified based on engine categories
	1.4. The engine mechanical components are properly identified based on engine types
	1.5. The engine components are properly described based on repair manual
2. Maintain engine systems	2.1. Tools, materials, and equipment are properly selected based on type of maintenance
	2.2. Engine systems components periodic services are properly conducted according to manufacturer's instructions
	2.3. Engine performance is properly tested based on engine functionality
3. Overhaul engine	3.1. Tools, materials, and equipment are properly selected based on the work to be done
	3.2. Starter battery and engine accessories are properly disconnected from the engine according to the manual instructions
	3.3. Transmission unit is properly disconnected from the engine according to the manual instructions
	3.4. Engine is completely dismounted from the vehicle based to the repair procedures
	3.5. Engine components is completely disassembled according to the repair manual
	3.6. Engine components are properly inspected based on diagnosis procedures

	3.7. Engine damaged components are properly corrected based on repair manual
	3.8. Engine components are methodically re-assembled according to the general repairing procedures
	3.9. Engine is correctly re-mounted to the vehicle according to the repair manual
	3.10. Engine accessories and starter battery are properly connected to the engine according to user manual
	3.11. Vehicle engine performance in idle speed is properly tested based on functionality
	3.12. Engine road test is properly done based on functionality

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Describe automotive engine 2. Maintain engine systems 3. Overhaul engine
Learning outcome 1: Describe automotive engine	Learning hours: 20
Indicative content	
• Identification of engine types ✓ Petrol engine ✓ Diesel engine • Identification of engine systems ✓ Intake system ✓ Exhaust system ✓ Cooling system ✓ Lubrication system ✓ Supercharging system ✓ Fuel supply system ✓ Starting system ✓ Charging system ✓ Ignition system • Classification of the engines • Identification of engine mechanical components ✓ Engine case ✓ Engine timing ✓ Crankshaft drive • Description of engine mechanical components ✓ Engine case ✓ Engine timing	

✓ Crankshaft drive	
Resources required for the learning outcome	
Equipment	Projector, computer, jack, car lift, jack stand, engine hoist, PPE.
Materials	Engine oil, coolant, fuel, seal, cylinder head gasket, Engine mechanical components, vehicle, white board, pen markers, duster, black board, chalks.
Tools	Set of screw drivers, Set of pliers, hummer, complete automotive toolbox
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Brainstorming • Simulation • Demonstration • Research on internet
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Maintain engine systems	Learning hours: 40
Indicative content	
• Selection of Tools, materials, and equipment ✓ Materials ✓ Tools ✓ Equipment • Servicing of engine ✓ Changing engine oil and filter ✓ Changing coolant ✓ Changing air filter • Testing of engine performance ✓ Static testing ✓ Dynamic testing	
Resources required for the indicative content	
Equipment	Personal protective equipment (PPE), Multimeter, Oil pan Valve grinding machine, Connecting rod aligner, Hydraulic press, Engine hoist, Air compressor, Timing light, Engine compression tester, Spark plugs cleaner and tester, Injector cleaner and tester, Engine stand, work bench.
Materials	Bolts and nuts, Rags, Wire brushes, soft brushes, Sanding paper, Air filter, Oil filter, Fuel filter, auto data, Engine oil, Anti-rust, Exhaust gaskets, Solvents, Grinding paste,

	Silicon, Gasket kit, Piston rings, Con bearing, Main bearing, Trust washer, Piston pin bushing, Camshaft bushing, Cylinder liner, Air hose, Crankshaft oil seals, Timing belt, Spark plugs, Injectors nozzle, injectors, Glow plugs, engine and repair manuals.
Tools	Spanners, set of screw drivers, Chisels, Scriber, Ruler, Hammer, Torque wrench, Cylinder bore gauge, Circlips plier, Punches, Core plugs remover, Oil gun, Blow gun, Puller, Filler gauge
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Practical exercise • Practical work • Group work
Formative assessment methods	• Performance assessment • Product based assessment

Learning outcome 3: Overhaul engine**Learning hours: 60****Indicative content**

- **Selection of Tools, materials, and equipment**
 - ✓ Tools
 - ✓ Materials
 - ✓ Equipment
- **Disconnection of starter battery and engine accessories from the engine**
- **Disconnection of transmission unit from the engine**
- **Dismounting of engine from the vehicle**
- **Disassembling of engine mechanical components**
 - ✓ Engine case
 - ✓ Engine timing
 - ✓ Crankshaft drive
- **Inspection and diagnosis of engine mechanical components**
 - ✓ Engine case
 - ✓ Engine timing
 - ✓ Crankshaft drive
- **Correction of damaged engine mechanical components**
 - ✓ Engine case
 - ✓ Engine timing
 - ✓ Crankshaft drive
- **Re-assembling engine mechanical components**
 - ✓ Engine case
 - ✓ Engine timing
 - ✓ Crankshaft drive
- **Re-mounting of engine to the vehicle**
- **Connecting of engine accessories and starter battery**
- **Testing of vehicle engine performance in idle speed.**
- **Testing of vehicle engine performance in road.**

Resources required for the indicative content**Equipment**

Personal protective equipment (PPE), Multimeter, Oil pan
Valve grinding machine, Connecting rod aligner, Hydraulic press, Engine hoist, Air compressor, Timing light, Engine compression tester, Spark plugs cleaner and tester, Injector cleaner and tester, Engine stand, work bench.

Materials

Bolts and nuts, Rags, Wire brushes, soft brushes, Sanding paper, Air filter, Oil filter, Fuel filter, auto data, Engine oil, Anti-rust, Exhaust gaskets, Solvents, Grinding paste,

	Silicon, Gasket kit, Piston rings, Con bearing, Main bearing, Trust washer, Piston pin bushing, Camshaft bushing, Cylinder liner, Air hose, Crankshaft oil seals, Timing belt, Spark plugs, Injectors nozzle, injectors, Glow plugs, engine and repair manuals.
Tools	Screw drivers, Tire lever, Chisels, Scriber, Ruler, Hammer, Vernier caliper, Torque wrench, Circlips plier, Punches, Core plugs remover, Oil gun, Puller, Filler gauge, Dial gauge, Straightedge, Piston ring compressor, Piston ring expander, Valve spring compressor, Valve grinder, Blow gun, Puller.
Facilitation techniques / learning activities	• Trainer guided • Brainstorming • Simulation • Demonstration • Practical work • Group work
Formative assessment methods	• Written assessment • Oral questions • Product based assessment • Performance assessment

Integrated/Summative assessment

Integrated situation

KALISA is a driver of Gorrilla Company, he brought the car Toyota Prius with electronic petrol fuel injection system at TUMECO Garage located in KICUKIRO District, Niboye sector for intervention. He told a receptionist that the car has the following problem: The lack of engine power, blue smoke, and consumption of engine oil. As an automotive engine mechanic, the head of garage requested you to solve the above-mentioned problems within 8 hours.

Tools	Spanners, Screw drivers, Tire lever, Chisels, Scriber, Ruler, Hammer, Vernier caliper, Micrometer, Torque wrench, Cylinder bore gauge, Dial gauge, Straightedge, Piston ring compressor, Piston ring expander, Valve spring compressor, Circlips plier, Punches, Core plugs remover, Valve grinder, Oil gun, Blow gun, Puller, Filler gauge			
Equipment	Personal protective equipment (PPE), Multimeter, Valve grinding machine, Hydraulic press, Oil pan, Connecting rod aligner, Engine hoist, Air compressor, Timing light, Engine compression tester, Spark plugs cleaner and tester, Injector cleaner and tester, Engine stand, Table.			
Materials/ Consumables	Exhaust gaskets, Bolts and nuts, Rags, Wire brushes, cleaning brush, Solvents, Grinding paste, Sanding paper, Silicon, Gasket kit, Piston rings, Con bearing, Main bearing, Trust washer, Piston pin bushing, Camshaft bushing, Cylinder liner, Air filter, Oil filter, Fuel filter, Engine oil, Air hose, Crankshaft oil seals, Timing belt, Spark plugs, Injectors nozzle, injectors, Glow plugs, Anti-rust			
Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation	

			Yes	No	Marks allocation
Learning outcome 1: Identify automotive engine (20%)	1.1. The engines are properly identified based on their types	The types of engines are identified			4
	1.2. Engine systems are properly identified based on types of engines	Engine systems are properly identified			4
	1.3. The engine components are properly identified based on engine types	The engine components are properly identified			4
	1.4. The engine components are properly described based on repair manual	The engine components are properly described			4
	1.5. The engines are correctly classified based on engine categories	The engines are correctly classified			4
Learning outcome 2: Maintain engine systems (30%)	2.1. Tools, materials, and equipment are properly selected based on type of maintenance	Tools, materials, and equipment are properly selected			10
	2.2. Engine systems components periodic services are properly conducted according to manufacturer's instructions	Engine systems components periodic services are properly conducted			10
	2.3. Engine performance is properly tested based on engine functionality	Engine performance is properly tested			10
Learning outcome 3: Overhaul engine (50%)	3.1. Tools, materials, and equipment are properly selected based on the work to be done	Tools, materials, and equipment are properly selected			4
	3.2. Starter battery and engine accessories are properly disconnected from the engine according to the manual instructions	Starter battery and engine accessories are properly disconnected			4

	3.3. Transmission unit is properly disconnected from the engine according to the manual instructions	Transmission unit is properly disconnected			4
	3.4. Engine is completely dismounted from the vehicle based to the repair procedures	Engine is completely dismounted			4
	3.5. Engine components is completely disassembled according to the repair manual	Engine components is completely disassembled			4
	3.6. Engine components are properly inspected based on diagnosis procedures	Engine components are properly inspected			4
	3.7. Engine components faults are properly corrected based on repair manual	Engine components faults are properly corrected			5
	3.8. Engine components are methodically re-assembled according to the general repairing procedures	Engine components are methodically re-assembled			5
	3.9. Engine is correctly re-mounted to the vehicle according to the repair manual	Engine is correctly re-mounted to the vehicle			4
	3.10. Engine accessories and starter battery are properly connected to the engine according to user manual	Engine accessories and starter battery are properly connected to the engine			4
	3.11. Vehicle engine performance in idle speed is properly tested based on functionality	Vehicle engine performance in idle speed is properly tested			4
	3.12. Engine road test is properly done based on functionality	Engine road test is properly done			4
Total marks		100			

Percentage Weightage	100%
Minimum Passing line % (Aggregate): 70%	

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Republic of Rwanda
Ministry of Education



ENGINE FUEL SUPPLY SYSTEM REPAIRING

AUTFS001

Competence: REPAIR ENGINE FUEL SUPPLY SYSTEM

RQF Level: N/A

Learning Hours



Credits: 5

Sector: Transport and logistics

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT3001- TVET Shortcourse in Automobile mechanic

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Issue Date: March, 2026

Purpose statement	This particular module describes the performance outcomes, skills, attitude and knowledge required to repair fuel supply system of motor vehicle. It is very core to every mechanic to demonstrate the understanding of the operation of fuel supply system, to diagnose and repair the fuel supply system components in order to keep fuel supply system in good condition under minimum supervision.						
Learning assumed to be in place	Physics, Bench work, Welding						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Describe engine fuel supply system	1.1. Fuel supply systems are appropriately identified according to the types of engines
	1.2. Petrol fuel supply system is appropriately identified according to the types of engine injection system
	1.3. Petrol fuel supply system components are properly described based on the types of engine injection system
2. Diagnose petrol engine Fuel Supply System	2.1. Tools, materials and equipment are properly selected according to the type of fuel supply system
	2.2. Fuel supply system is properly inspected according to diagnosing procedures
	2.3. Petrol fuel supply system is appropriately dismantled according to the repair manual
	2.4. Petrol fuel supply system components are appropriately disassembled according to the manufacturer's instructions
	2.5. Petrol fuel supply system faults are exactly detected according to the manufacturer instructions

3. Repair engine fuel supply system	3.1. Fuel supply system damaged components are properly corrected according diagnosis procedures
	3.2. Fuel supply system components are properly re-assembled based on manufacturer instructions
	3.3. Fuel supply system is properly re-installed according to the repair manual
	3.4. Dynamic and static tests are correctly performed according to the system functionality

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Describe engine fuel supply system 2. Diagnose petrol engine Fuel Supply System 3. Repair engine fuel supply system
Learning outcome 1: Describe engine fuel supply system	Learning hours: 10
Indicative content	
• Identification of fuel supply systems ✓ Petrol fuel supply system ✓ Diesel fuel supply system • Identification of petrol fuel supply system ✓ Purpose of petrol fuel supply system ✓ Mixture formation in petrol fuel supply system ✓ Types of petrol fuel supply • Description of Petrol fuel supply system components ✓ Fuel tank ✓ Delivery pump/ electrical pump ✓ Fuel filter ✓ Fuel lines ✓ Injector ✓ Accumulator ✓ Pressure regulator ✓ Rail ✓ Sensors ✓ Actuators	

Resources required for the learning outcome	
Equipment	Projector, computer
Materials	Engine, fuel, fuel supply system components, handout, manuals, white board, marker pen, black board, chalks.
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers,
Facilitation techniques / learning activities	• Group discussion • Trainer guidance • Brainstorming • Research on internet • Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Diagnose petrol engine Fuel Supply System	Learning hours: 15
Indicative content	
• Selection of tools, materials and equipment ✓ Tools ✓ Material ✓ Equipment • Inspection of fuel supply system ✓ Checking of petrol fuel supply system components ✓ Testing of petrol fuel supply system components • Dismounting of Petrol fuel supply system components ✓ Dismounting of petrol fuel tank ✓ Disconnecting of petrol fuel lines ✓ Dismounting of petrol fuel injectors ✓ Disconnecting of petrol fuel filter • Disassembling of Petrol fuel supply components ✓ Disassembling combination of electric fuel pump and sending unit ✓ Disconnecting of fuel pressure regulator • Detection of Petrol fuel supply system faults ✓ Troubleshooting of petrol fuel supply system components ✓ Troubleshooting of petrol fuel supply system electronic control	
Resources required for the indicative content	
Equipment	Hand scanner machine, multimeter, projector, PPE, computer

	repair manual, PPE
Materials	Manuals, Wires, cables, fuel supply system components, auto-data software, marker pens, flips chart Wires, cables, fuel supply system components, auto-data
Tools	Set of screw drivers, set of pliers, Hack saw, Spanners, allen keys, hammers
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Practical exercise • Practical work • Group work
Formative assessment methods	• Performance assessment • Product based assessment

Learning outcome 3: Repair engine fuel supply		Learning hours: 25
Indicative content		
• Correction of petrol fuel supply system damaged components ✓ Repairing of leakage of fuel supply system ✓ Replacement of damaged fuel supply system components • Re-assembling of petrol fuel supply system components ✓ Re-assembling combination of electric fuel pump and sending unit ✓ Disconnection fuel pressure regulator • Re-installing of petrol fuel supply system ✓ Re-mounting of petrol fuel tank ✓ Connection of petrol fuel lines ✓ Re-mounting petrol fuel injectors ✓ Connection of petrol fuel filter • Testing of fuel supply system performance ✓ Static testing ✓ Dynamic testing		
Resources required for the indicative content		
Equipment	Hand scanner machine, multimeter, projector, PPE, oxyacetylene gas welding equipment,	
Materials	Wires, cables, fuel supply system components, welding electrode ,repair manual	
Tools	Set of screw drivers, Set of pliers, Hack saw, Spanners, Allen keys, hammers	
Facilitation techniques / learning activities	• Demonstration • Practical work • Practical exercises • Demonstration	
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment	

Integrated/Summative assessment

Integrated situation

CoCar Ltd company located at Kigali sector in Nyarugenge District has a new model Toyota Rav4; which has a problem in fuel supply system. Where it has hard starting, unstable idle, loss of power and vibration when is running. The hired company for repair is ATECAR located at Muhima; the mechanic is requested to repair it within 5 hours.

As an engine repair mechanic; you are requested to:

1. Perform engine fuel supply repair

Tasks:

2. Diagnose the engine fuel supply system
3. Repair the engine fuel supply system
4. Replace damaged parts of engine fuel supply system
5. Test fuel supply system performance
6. All needed tools, materials and equipment are available
7. The task above must be done within 4 hours

Tools	Set of screw drivers, Set of pliers, spanners, allen keys, hammers,
Equipment	Multimeter, Hand scanner machine, auto-data, repair manual, internet, PPE, oxyacetylene cylinder gas,
Materials/ Consumables	Wires, Cables, fuel, fuel supply system spare parts, clamps, welding electrode

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Identify engine fuel supply system (20%)	1.1. Fuel supply systems are appropriately identified according to the types of engines	Fuel supply systems are properly identified			10
	1.2. Petrol fuel supply system is appropriately identified according to the types of engine injection system	Petrol Fuel supply system is properly identified			5
	1.3. Petrol fuel supply system components are properly described based on the types of engine injection system	Fuel supply system components are properly described			5

Learning outcome 2: Diagnose petrol engine Fuel Supply System (50%)	2.1. Tools, materials and equipment are properly selected according to the type of fuel supply system	Tools are correctly selected			4
		Materials are correctly selected			3
		Equipment are correctly selected			3
	2.2. Fuel supply system is properly inspected according to diagnosing procedures	Fuel supply system is appropriately inspected			5
	2.3. Petrol fuel supply system are appropriately dismantled according to the repair manual	Petrol fuel tank is correctly dismantled			5
		Petrol fuel lines is correctly disconnected			5
		Petrol fuel injectors are correctly dismantled			5
		Petrol fuel filter is correctly disconnected			5
	2.4. Petrol fuel supply system components are appropriately disassembled according to the manufacturer's instructions	Disassemble combination of electric fuel pump and sending unit			5
		Disconnect fuel pressure regulator			5
	2.5. Petrol fuel supply system faults are exactly detected according to the manufacturer instructions	Petrol fuel supply system faults are exactly detected			5
Learning outcome 3:	3.1. Fuel supply system damaged components are properly corrected according diagnosis procedures	Fuel supply system damaged components are properly corrected			5
	3.2. Fuel supply system components are properly reassembled	Fuel supply system components are properly re-assembled			10

Repair engine fuel supply system (30%)	based on manufacturer instructions.				
	3.3. Fuel supply system is properly reinstalled according to the repair manual	Fuel supply system is correctly re-installed			10
	3.4. Dynamic and static tests are correctly performed according to the system functionality	Dynamic and static tests are perfectly performed			5
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. Automotive technology volume principles diagnosis and services fourth edition James D.Haldman,
2. Automotive technology volume a systems approach 5th edition Jack Erjavec
3. Technology of automotive trade volume 2 , H.Girschler
4. Modern automotive technology Europa Lehmetel 2nd edition

AUTCS001

ENGINE COOLING SYSTEM REPAIRING

Competence: REPAIR ENGINE COOLING SYSTEM

RQF Level: N/A

Learning Hours



Credits: 4

Sector: Transport and logistics

Program: Automobile Mechanics

Module Type: Specific

Curriculum: TRLAUT0001- TVET Short course in Automobile mechanics

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Issue Date: March, 2026

Purpose statement	This module describes the skills, knowledge and attitude required to repair engine cooling system. At the end of this module, learners will be able to identify, describe, repair and test engine cooling system components and test engine cooling system under minimum supervision.					
Learning assumed to be in place	SHE, Bench work, physics					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	50%
	Practical work:		70%		70%	
	• Demonstration and practice	30%				
	• Individual project /Independent Work	50%				
			Summative Assessment			50%

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Prepare the workplace and apply safety	1.1. PPE are properly selected and worn as per safety measures
	1.2. Safety precautions of working area are appropriately applied before the work
	1.3. Workplace is properly cleaned and arranged according to the standard
2. Describe engine cooling systems	2.1 engine Cooling system components are adequately identified according to the specifications
	2.2 engine cooling system are properly classified according to the types of cooling system
	2.3 engine Cooling system components are adequately described according to the specifications
3. Repair engine cooling system components	3.1 Tools, materials and equipment are properly selected based on their function
	3.2 Engine cooling system components faults are properly detected according to the diagnosis procedure.
	3.3 Engine cooling system components faults are conveniently corrected according to the faults detected.

	3.4 Coolant is properly drained /filled according to the manufacturer's recommendations
	3.5 engine cooling performance is properly tested according service manual

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Prepare the workplace and apply safety 2. Describe engine cooling systems 3. Repair engine cooling system components
Learning outcome 1: Prepare the workplace and apply safety	Learning hours: 8
Indicative content	
• Selection of PPE and worn ✓ Identification of PPE ✓ Selection of PPE ✓ Wearing PPE • Application of safety precautions in working area ✓ Work area safety ✓ Tool and equipment safety ✓ Personal safety • Cleaning and arrangement of the workplace ✓ Identify types of cleaning ✓ Clean workplace, tools, materials, and equipment ✓ Arrange workplace layout ✓ Arrange first aid tool kit ✓ Arrange fire extinguishers ✓ Arrange fire blanket	
Resources required for the learning outcome	
Equipment	Book, Notebook, Black board, Projector, Computer and Air compressor
Materials	Soap solution, Solvent, Broom, Mops, Clothes rugs, Markerpen and Chalks.
Tools	Soft brushes
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Brainstorming • Demonstration

Formative assessment methods	• Written assessment • Oral based assessment
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Learning outcome 2: Describe engine cooling systems Repair cooling system components		Learning hours: 13
Indicative content		
• Identification of engine cooling system components ✓ Radiator ✓ Fan ✓ Thermostat ✓ Coolant pump/water pump ✓ Hoses ✓ Water jacket ✓ Radiator Cap/pressure cap ✓ Reservoir tanks/expansion tank ✓ Fan belt ✓ Core plugs • Classification of engine cooling system ✓ Air cooled system ✓ Water cooled system • Description of engine cooling system components ✓ Radiator ✓ Fan ✓ Thermostat ✓ Coolant pump/water pump ✓ Hoses ✓ Water jacket ✓ Radiator Cap/pressure cap ✓ Reservoir tanks/expansion tank ✓ Fan belt ✓ Core plugs		
Resources required for the indicative content		
Equipment	Projector, Computer, Air compressor, Multimeter, water heater, PPE, hydrometer, Refractometer	

Materials	Cooling system components, Soap solution, Solvent, Broom, Mops, Clothes rugs, Marker pen and Chalks, car white board, blackboard, Flip chart, Repair manual, Metallic brush, Water container, Water, Antifreeze, Recipient, Funnel.
Tools	Screw drivers, Set of pliers, hummers, pressure tester tool kit, and tool box spanners.
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Brainstorming • Demonstration • Simulation • Individual work
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 3: Repair engine cooling system components

Learning hours: 19

Indicative content

- **Selection of Tools, materials and equipment**
- **Detection of engine cooling system components faults**
 - ✓ Water pump
 - ✓ Hoses
 - ✓ Radiator
 - ✓ Thermostat
 - ✓ Fan
 - ✓ Pressure cap
 - ✓ Core plugs
 - ✓ Expansion tank
- **Correction of engine cooling system components faults**
 - ✓ Water pump
 - ✓ Hoses
 - ✓ Radiator
 - ✓ Thermostat
 - ✓ Fan
 - ✓ Pressure cap
 - ✓ Core plugs
 - ✓ Expansion tank
- **Changing of engine coolant**
- **Testing of engine performance**
 - ✓ Static testing
 - ✓ Dynamic testing

Resources required for the indicative content

Equipment	Air compressor, Multimeter, water heater, computer, projector.
Materials	Engine cooling system components, Marker pen and Chalks, white board, blackboard, Flip chart, Repair manual, Handout notes. Soap solution, Solvent, Broom, Mops, Clothes rugs, Repair manual, Metallic brush, Water container, Water, Antifreeze, Recipient, Funnel, radiator leak stop.
Tools	Screwdrivers Set of pliers, hammers, pressure tester tool kit, and tool box spanners. Screwdrivers Set of pliers, hammers, pressure tester tool kit, and tool box spanners.

Facilitation techniques / learning activities	• Simulation • Brainstorming • Individual work • Demonstration • Group discussion • Practical exercises • Individual work
Formative assessment methods	• Written assessment • Oral based assessment • Performance assessment • Product based assessment

Integrated/Summative assessment

Integrated situation

A driver of Action Company Ltd located in Gasabo District, Remera Sector was driving Pick up car Hilux 4*4 Heading to Rwamagana District. During the travel arriving at Rugende, he met the engine overheating problem He parked and realized that cooling system failed to work and He contacted the head of EBENEZEL garage located at Rusororo sector in Gasabo district to send a mechanic for intervention. The head of garage requested you as mechanic to solve the aforementioned problem within 6 hours.

Tools	Screwdrivers Set of pliers, hummers, pressure tester tool kit, and tool box spanners.
Equipment	Air compressor, Multimeter, water heater.
Materials/ Consumables	Soap solution, Solvent, Broom, Mops, Clothes rugs, Repair manual, Metallic brush, Water container, Water, Antifreeze, Recipient, Funnel, radiator leak stop.

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1:	1.1. PPE are properly selected and worn as per safety measures	PPE are correctly selected			6
Prepare the workplace and apply safety (15%)	1.2. Safety precautions of working area are appropriately applied before the work	Safety precautions of working area are properly applied			5

	1.3. Workplace is properly cleaned and arranged according to the standard	Workplace is correctly cleaned			4
Learning outcome 2: Describe cooling systems (35%)	2.1. engine cooling systems are properly classified according to the types of cooling system	engine cooling systems are properly classified			10
	2.2. engine Cooling system components are adequately identified according to the specifications	engine Cooling system components are correctly identified			10
	2.3. engine Cooling system components are adequately described according to the specifications	engine Cooling system components are appropriately described.			15
Learning outcome 3: Repair cooling system components (50%)	3.1. Tools, materials, and equipment are properly selected based on their function	Tools, materials and equipment are correctly selected			5
	3.2. Engine Cooling system components faults are properly detected according to the diagnosis procedure.	engine Cooling system components faults are adequately detected			15
	3.3. Engine Cooling system components faults are conveniently corrected according to the faults detected.	engine Cooling system components faults are correctly corrected			10
	3.4. Coolant is properly drained /filled according to the manufacturer's recommendations	coolant is methodically drained/filled			10
	3.5 Test engine cooling performance is properly	Engine cooling performance is tested			10

	tested according to service manuals				
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. Automotive technology volume principles diagnosis and services fourth edition James D.Haldman,
2. Automotive technology volume a systems approach 5th edition Jack Erjavec
3. Technology of automotive trade volume 2 , H.Girschler
4. Modern automotive technology Europa Lehmetel 2nd edition
5. Medium heavy duty truck engines, fuel and computerized management systems 4th edition by Sean bennet



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AUT3001

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STARTING SYSTEM REPAIRING

Competence: REPAIR STARTING SYSTEM OF ENGINE

RQF Level: N/A

Learning Hours



Credits: 4

Sector: Transport and logistics

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT3001- TVET Short-course in Automobile mechanic

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Issue Date: March, 2026

Purpose statement	This module will allow the learner to describe vehicle starting system, conduct diagnosis of starting system. Its results will enable the learner to repair or replace starter motor components and starter motor control circuit. The knowledge gained from this module will enable the learner to perform testing activities of starting system while responding to work needs.						
Learning assumed to be in place	Physics, Bench work, Welding						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Describe starting system	1.1. Starting system components are properly identified by on manufacture's manual
	1.2. Starter motor components are properly described by on their type
	1.3. Starting system control are properly described based on its functions
2. Repair starter motor components and control circuit	2.1. Tools, materials and equipment are properly selected according to the type of starting system components
	2.2. Starting system is properly diagnosed by on repair manual
	2.3. Starter motor is appropriately dismount and disassembled according to the repair manual
	2.4. Starter motor is appropriately tested according to the repair manual
	2.5. Damaged components are properly repaired according to the manufacturer instructions

	2.6. Starter motor control circuit is correctly repaired according to the manufacturer instruction.
3. Test starting system	3.1. Battery is properly tested according to manufacturer's instruction
	3.2. Starter motor is properly tested according to manufacturer's instructions
	3.3. Starting system control circuit is properly checked based on manufacturer's instructions

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Describe starting system 2. Repair starter motor components and control circuit 3. Test starting system
Learning outcome 1: Describe starting system	Learning hours: 8
Indicative content	
• Identification of starting system ✓ Starting system definition ✓ Starting system components ✓ Battery circuit - Single battery circuit - Double battery circuit • Description of starter motor components ✓ Types of starter motor - Pre engaged stater motor - Inertia starter - Gear reduction starter ✓ Armature ✓ Commutator ✓ Brushers ✓ Pinion ✓ Level folk ✓ Coils • Description of starting system control ✓ Starting system control circuit	

- ✓ Function of starting system control circuit
- ✓ Ignition switch
- ✓ Starter relay
- ✓ Starter solenoid
- ✓ Wires connection
- ✓ Starting fuse
- **Damaged components reparation**
 - ✓ Faulty checking
 - ✓ Replacing and repairing procedures
 - ✚ Starter removal
 - ✚ Stripping starter
 - ✚ Assess the damage
 - ✚ Repair the armature and field winding
 - ✚ Repair solenoid
 - ✚ Lubricating the new brushes
 - ✚ Fitting the new brushes
 - ✚ Checking brush and pinion
 - ✚ Assembling the starter
 - ✚ Testing
 - ✚ Mount starter motor in the vehicle
- **Reparation of starter motor control circuit**
 - ✓ Test starting system control circuit components
 - ✓ Repair or replace damaged starter control circuit components

Resources required for the learning outcome

Equipment	Projector, computer, battery charger, bench vice, Auto data
Materials	Battery, starter motor, relays, ignition switches, fuses,
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables
Facilitation techniques / learning activities	• Group discussion • Trainer guidance • Brainstorming • Research on internet • Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Repair starter motor components and control circuit

Learning hours: 16

Indicative content

- **Selection of tools, materials and equipment**
 - ✓ Tools
 - + Power tools
 - + Measuring tools
 - + Hand tools
 - ✓ Material
 - + Grease
 - + Lubricants
 - + Brushed
 - ✓ Equipment
 - + Battery capacity load tester
 - + Diagnostic machine
 - + Armature tester
- **Stater motor diagnosis**
 - ✓ Common problems of starting systems
 - + Faults
 - + Symptoms
 - + Causes
 - ✓ Starter motor diagnosis procedures
 - ✓ Diagnosis report
- **Dismounting and disassembling starter motor**
 - ✓ Dismounting procedures
 - + Disconnect battery
 - + Disconnect wires
 - + Unbolt starter
 - + Remove starter motor
 - ✓ Disassembling procedures
 - + Remove solenoid
 - + Tape off the end frame
 - + Remove the brushes holder
 - ✓ Separation of meshing driver and electrical motor
- **Testing starter motor components**
 - ✓ Starter motor Bench testing
 - ✓ Armature testing
 - + Short circuit testing
 - + Grounded testing
 - + Open circuit testing
 - ✓ Coil field testing
 - + Short circuit testing
 - + Grounded testing
 - + Open circuit testing
 - ✓ Brush holders / carbon brush plate

- ✚ Open circuit testing
- ✚ Short circuit
- ✓ Solenoid testing
- ✓ Visual inspection
 - ✚ Brushes inspection
 - ✚ O-ring visual inspection
- ✓ One way clutch operation testing

Resources required for the indicative content

Equipment	Projector, computer, battery charger, bench vice, Battery capacity load tester, Armature tester, PPE, car lift
Materials	Battery, starter motor, relays, ignition switches, fuses, wires, pulley
Tools	Set of screw drivers, set of pliers, Hack saw, Spanners, allen keys, hammers, cutter, Hydraulic jack, stand
Facilitation techniques / learning activities	- Group discussion - Trainer guided - Practical exercise - Practical work - Group work
Formative assessment methods	- Performance assessment - Product based assessment

Learning outcome 3: Test starting system		Learning hours: 16
Indicative content		
• Battery testing ✓ Check electrode ✓ Visual checking ✓ Battery voltage testing • Starter motor testing ✓ Test starter motor pinion ✓ Test starter motor short circuit • Starter circuit control ✓ Testing for starting parameters ✚ Voltage drop ✚ Current draw ✚ Continuity ✚ Short circuit ✓ Testing of system performance		
Resources required for the indicative content		
Equipment	Projector, computer, battery charger, bench vice, Battery capacity load tester, Armature tester, PPE, car lift	
Materials	Battery, starter motor, relays, ignition switches, fuses, wires, pulley	
Tools	Set of screw drivers, set of pliers, Hack saw, Spanners, allen keys, hammers, cutter, Hydraulic jack, stand	
Facilitation techniques / learning activities	• Demonstration • Practical work • Practical exercises • Demonstration	
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment	

Integrated/Summative assessment

Integrated situation

Mr. HABIMANA of Europcar Tour Company brought one vehicle TOYOTA RAV4 with starting system problems. Mr. HABIMANA arrived at TUMECO at 8AM and he said that he needed it at 2PM. As an auto electricity technician, the Service manager requested you to solve those problems within 6 hours.

Tools	computer, battery charger, bench vice, Battery capacity load tester, Armature tester, PPE, car lift, oscilloscope, scanner tool,
Equipment	Battery, starter motor, relays, ignition switches, fuses, wires, pulley
Materials/ Consumables	Set of screw drivers, set of pliers, Hack saw, Spanners, allen keys, hammers, cutter, Hydraulic jack, stand, Toolbox kit

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: 1. Describe starting system (20%)	1.1. Starting system components are properly identified by on manufacture's manual	Starting system components are properly identified			10
	1.2. Starter motor components are properly described by on their type	Starter motor components are properly described			5
	1.3. Starting system control are properly described based on its functions	Starting system control are properly described			5
Learning outcome 2: 2. Repair starter motor components and control circuit (50%)	2.1. Tools, materials and equipment are properly selected according to the type of starting system components	Tools are correctly selected			5
		Materials are correctly selected			5
		Equipment's are correctly selected			5
	2.2. Starting system is properly diagnosed by on repair manual	Starting system is properly diagnosed			5
	2.3. Starter motor is appropriately dismount and disassembled according to the repair manual	Starter motor is appropriately dismount and disassembled			10

	2.4. Starter motor is appropriately tested according to the repair manual	Starter motor is appropriately tested			5
	2.5. Damaged components are properly repaired according to the manufacturer instructions	Damaged components are properly repaired			10
	2.6. Starter motor control circuit is correctly repaired according to the manufacturer instruction.	Starter motor control circuit is correctly repaired			10
Learning outcome 3: Test starting system (30%)	3.1. Battery is properly tested according to manufacturer’s instruction	Battery is properly tested			10
	3.2. Starter motor is properly tested according to manufacturer’s instructions	Starter motor is properly tested			10
	3.3. Starting system control circuit is properly checked based on manufacturer’s instructions	Starting system control circuit is properly checked			5
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. Automotive technology volume principles diagnosis and services fourth edition James D.Haldman,
2. Automotive technology volume a systems approach 5th edition Jack Erjavec
3. Technology of automotive trade volume 2, H.Girschler
4. Modern automotive technology Europa Lehmetel 2nd edition
5. Tom D. (2004). Automobile Electrical and Electronic Systems 3rd edition, Elsevier ButterworthHeinemann, Linacre House, Jordan Hill, Oxford

6. Gscheider R. (2006). Modern Automotive Technology Fundamentals, Service, Diagnostics ; Verlag Europa-Lehrmittel ,Germany
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IGNITION SYSTEM REPAIRING

Competence: REPAIR IGNITION SYSTEM

RQF Level: N/A

Learning Hours



Credits: 4

Sector: Transport and logistics

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT0001- TVET Short-course in Automobile mechanic

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Issue Date: March, 2026

Purpose statement	This module will allow the learner to describe vehicle ignition system, conduct diagnosis of ignition system and its results will enable the learner to repair or replace ignition system components. The knowledge gained from this module will enable the trainee to perform testing activities of ignition system while responding to work needs						
Learning assumed to be in place	Basic of electricity, Basic of electronic						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Describe ignition system	1.1. Ignition systems are properly identified based on the system types
	1.2. Ignition systems are properly described by on their types
	1.3. Ignition components are properly tested based on its functions
2. Repair ignition system components	2.1. Tools, materials and equipment are properly selected according to the type of ignition
	2.2. Ignition components are properly dismount based on repair manual
	2.3. Ignition systems components are methodically repaired according to repair manuals
	2.4. Ignition timing is properly performed according to manufacturer's manuals
3. Test ignition system	3.1. Materials, tools and equipment are adequately selected according to the test procedures
	3.2. Ignition delivery is properly tested according to manufacturer's instructions
	3.3. General states of cables are properly checked based on manufacturer's instructions

Course content

Learning outcomes	At the end of the module the learner will be able to:
	1. Describe ignition system 2. Repair ignition system components 3. Test ignition system
Learning outcome 1: Describe ignition system	Learning hours: 8
Indicative content	
• Identification of ignition system ✓ Ignition system definition ✓ Ignition system types • Description of ignition system components ✓ Ignition system design  Ignition distributor  Battery  Ignition coil  Ignition control module  Control circuits ✓ Conventional ignition ✓ Electronic ignition ✓ Spark plug • Ignition system testing ✓ Sparks strength test ✓ Ignition coil test  Open circuit  Control circuit ✓ Visual inspection ✓ Air gap measuring	
Resources required for the learning outcome	
Equipment	Projector, computer, battery charger, bench vice, Auto data , Multimeter, Vehicle, Oscilloscope
Materials	Battery, starter motor, relays, ignition switches, fuses, ECU, Sensors,
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge,
Facilitation techniques / learning activities	• Group discussion • Trainer guidance

	• Brainstorming • Research on internet • Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Repair ignition system components	Learning hours: 13
Indicative content	
• Selection of tools, materials and equipment ✓ Tools ✚ Power tools ✚ Measuring tools ✚ Hand tools ✓ Material ✚ Grease ✚ Lubricants ✚ Brushed ✓ Equipment ✚ Stroboscopic lamp ✚ Diagnostic machine ✚ Armature tester • Dismounting and disassembling of ignition system components ✓ Dismounting procedures ✚ Disconnect battery ✚ Disconnect wires ✚ Remove ignition coil ✚ Remove ignition control module ✚ Remove ignition distributor ✚ Remove spark plugs ✓ Distributor disassembling procedures ✚ Remove protective cover ✚ Remove the rotor ✚ Remove contact breaker • Ignition system components repairing ✓ Fault checking ✚ Visual check ✚ Smelling check ✚ Testing ✚ Noisy check ✓ Repair high tension cable	

- ✓ Adjust the gap
 - ✚ Contact breaker
 - ✚ Spark plug
- ✓ Spark plug replacement
- ✓ Distributor repairing/replacement
- **Ignition timing performance**
 - ✓ Ignition timing
 - ✚ Firing order
 - ✚ Timing marks
 - ✚ Ignition cycle
 - ✓ Check ignition timing
 - ✚ Use of stroboscopic
 - ✚ Visual check
 - ✓ Adjust distributor
 - ✚ Advance
 - ✚ Retard

Resources required for the indicative content

Equipment	Projector, computer, battery charger, bench vice, Auto data, Multimeter, Vehicle, Oscilloscope, Stroboscopic lamp, scanner tool
Materials	Battery, starter motor, relays, ignition switches, fuses, ECU, Sensors,
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge, air gun
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Practical exercise • Practical work • Group work
Formative assessment methods	• Performance assessment • Product based assessment

Indicative content

- **Selection of tools, materials and equipment**

- ✓ Tools

- ✚ Power tools
 - ✚ Measuring tools
 - ✚ Hand tools

- ✓ Material

- ✚ Grease
 - ✚ Lubricants
 - ✚ Brushed

- ✓ Equipment

- ✚ Stroboscopic lamp
 - ✚ Diagnostic machine
 - ✚ Armature tester

- **Ignition delivery test**

- ✓ Test sparks

- ✚ Weak
 - ✚ Strong
 - ✚ Leakage

- ✓ Visual check

- ✚ Broken
 - ✚ Loosen

- ✓ Voltage drop test

- ✓ Short circuit

- **General states of cables checking**

- ✓ Visual check

- ✚ Broken
 - ✚ Loosen

- ✓ Physical testing

- ✚ Continuity
 - ✚ Short circuit
 - ✚ Voltage drop

Resources required for the indicative content

Equipment	Projector, computer, battery charger, bench vice, Auto data, Multimeter, Vehicle, Oscilloscope, Stroboscopic lamp, scanner tool
Materials	Battery, starter motor, relays, ignition switches, fuses, ECU, Sensors, WD40
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge, air gun

Facilitation techniques / learning activities	• Demonstration • Practical work • Practical exercises • Demonstration
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment

Integrated/Summative assessment

Integrated situation

Mr. Andre, a Workshop Manager of Motor Vehicle Electronic Garage (MVEG) receives one car HYUNDAI SANTAFE from UNESCO. That car has the problem of engine power loss due to engine misfire. As an automobile electrical and electronic technician, you are requested to repair its ignition system within 5 hours.

Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge, air gun
Equipment	Computer, battery charger, bench vice, Auto data, Multimeter, Vehicle, Oscilloscope, Stroboscopic lamp, scanner tool, soldering gun, PPE, Car hoist
Materials/ Consumables	Battery, starter motor, relays, ignition switches, fuses, ECU, Sensors, WD40, wires, grease sand paper

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: 1. Describe ignition system (20%)	1.1. Ignition systems are properly identified based on the system types	Ignition systems are properly identified			10
	1.2. Ignition systems are properly described by on their types	Ignition systems are properly described			10
	1.3. Ignition components are properly tested based on its functions	Ignition components are properly tested			10
Learning outcome 2: 2. Repair ignition system components	2.1. Tools, materials and equipment are properly selected according to the type of ignition	Tools are correctly selected			5
		Materials are correctly selected			5
		Equipment's are correctly selected			5
	2.2. Ignition components are properly dismount based on repair manual	Ignition components are properly dismount			10

(50%)	2.3. Ignition systems components are methodically repaired according to repair manuals	Ignition systems components are methodically repaired			10
	2.4. Ignition timing is properly performed according to manufacturer’s manuals	Ignition timing is properly performed			10
Learning outcome 3: Test ignition system (30%)	3.1. Materials, tools and equipment are adequately selected according to the test procedures	Materials, tools and equipment are adequately selected			5
	3.2. Ignition delivery is properly tested according to manufacturer’s instructions	Ignition delivery is properly tested			10
	3.3. General states of cables are properly checked based on manufacturer’s instructions	General states of cables are properly checked			10
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. Tom D. (2004). Automobile Electrical and Electronic Systems 3 rd edition, Elsevier ButterworthHeinemann, Linacre House, Jordan Hill, Oxford.
2. Gscheilder R. (2006). Modern Automotive Technology Fundamentals, Service, Diagnostics ; Verlag Europa-Lehrmittel ; Germany.
3. Tom D. Advanced Automotive Fault Diagnosis, 2nd edition.
4. NATEF (1999). Automotive excellence student Text Student Edition ; Glencoe McGraw-Hill.



Republic of Rwanda
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AUT DR 001

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VEHICLE DRIVELINE SYSTEM REPAIRING

Competence: REPAIR VEHICLE DRIVELINE SYSTEMS

RQF Level: N/A

Learning Hours



120

Credits: 12

Sector: Transport and logistics

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT0001- TVET Short-course in Automobile mechanic

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Issue Date: March, 2026

Purpose statement	This particular module describes the performance outcomes, skills, knowledge and attitudes required to repair Transmission line system of vehicle. It is very core to every mechanic to apply safety precautions and to understand the operating principle of transmission line system component parts, to disassemble, inspect and assemble the transmission line system component parts.						
Learning assumed to be in place	Basic of electricity, technical drawing						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Describe transmission line system	1.1. Transmission line systems are properly identified based on their types
	1.2. Clutch is properly described based on its functionality
	1.3. Gearbox is properly described based on type
	1.4. Propeller shaft, joints and half shafts are properly described based on their functionality
	1.5. Final drive and differential are properly described based on their functionality
	1.6. Wheel and tyre are properly described based on manufacturer's manual
2. Dismantle of transmission line components	2.1. Tools, materials and equipment are properly selected according to the type of transmission line components
	2.2. Clutch system is properly removed from the vehicle based on repair manual
	2.3. Gearbox is methodical removed from the vehicle based on manufacturer's instructions
	2.4. Propeller shaft, joints and half shaft are properly removed from the vehicle based on repair manuals

	2.5. Final drive and differential are properly removed from the vehicle based on manufacturer's manual
	2.6. Wheel are removed on the vehicle based on manufacturer's manual
3. Maintain transmission line system	3.1. Transmission line components are properly cleaned based on service manual
	3.2. Transmission line components are properly greased based on service manual
	3.3. Damaged components are correctly repaired based on repair manual

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Describe transmission line system 2. Dismantle transmission line components 3. Maintain transmission line system
Learning outcome 1: Describe transmission line system	Learning hours: 20
Indicative content	
• Description of transmission line components ✓ Clutch ✓ Gear box ✓ Propeller shaft/half shaft and joint ✓ Final drive and differential ✓ Wheels • Description clutches ✓ Mechanical clutch ✚ Friction clutch ✚ Magnetic clutch • Description of Mechanical Gearbox ✓ Sliding ✓ Constant mesh gearbox ✓ Synchromesh Description of propeller shaft, joints and half shaft ✓ Propeller shaft ✓ Joints ✓ Drive shaft • Description of final drive and differential	

✓ Types of final drive ✓ Types of differentials • Description of wheel and tyre ✓ Function ✓ Tyre ✓ Wheel	
Resources required for the learning outcome	
Equipment	Projector, computer, vehicle
Materials	Clutch, gearbox, propeller shaft, joint, differentials, drive shaft
Tools	teaching aids, user manuals, flip charts
Facilitation techniques / learning activities	• Group discussion • Trainer guidance • Brainstorming • Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Dismantle transmission line components	Learning hours: 50
Indicative content	
• Steering system ✓ Tools  Power tools  Measuring tools  Hand tools ✓ Material  Grease  Lubricants  Brushed ✓ Equipment  Car lift  Driveline fluid refiller  Transmission jack  Air compressor  Hydraulic press • Dismounting of clutch:	

- ✓ Unbolt pressure plate
- ✓ Remove pressure plate and clutch disc
- ✓ Unbolt and remove master cylinder
- ✓ Unbolt and remove slave cylinder
- ✓ Remove clutch pedal
- **Reassembling of clutch:**
 - ✓ Fix clutch pedal
 - ✓ Fix master cylinder
 - ✓ Fix pressure plate and clutch disc
 - ✓ Bolt pressure plate on Engine
 - ✓ Fix slave cylinder
- **Dismantling of Gearbox:**
 - ✓ Lift up the vehicle
 - ✓ Unscrew bolt and remove of wheel and tire
 - ✓ Remove halfshaft
 - ✓ Unscrew and remove propeller shaft
 - ✓ Remove clutch linkage
 - ✓ Unscrew and remove gear box.
- **Mantling of Gear:**
 - ✓ Fix and screw gear box
 - ✓ Fix clutch linkage
 - ✓ Fix and screw propeller shaft
 - ✓ Fix and screw half shaft
 - ✓ Fix and screw wheel and tire
 - ✓ Lift off vehicle
- **Dismantling and mantle propeller shaft, joint shaft and half shaft**
 - ✓ Raise and suitably support the vehicle
 - ✓ Remove the front propeller shaft-to-front axle assembly bolts
 - ✓ Remove the front propeller shaft-to-transfer case bolts.
 - ✓ Remove the rear propeller shaft-to-rear axle assembly bolts
- **Dismantling of drive shaft and joints**
 - ✓ Lift up the vehicle
 - ✓ Remove wheel and tire
 - ✓ Remove drive half shaft
 - ✓ Remove CV joint
- **Dismantling of final drive and differentials**
 - ✓ Remove Wheels and hubs
 - ✓ Drain the gear oil
 - ✓ Remove Steering knuckles (front)
 - ✓ Remove Rear knuckles (rear)
- **Dismantling of differential**
 - ✓ Remove components
 - ✓ (Front rack, side cover, fuel tank, mudguards, front fender, front wheels, front A-arm, drive shaft, drain the gear oil).

- ✓ Unplug the 2WD/4WD shifting motor connector
- ✓ Disconnect the front propeller shaft from differential
- ✓ Removing of differential from the frame

Resources required for the indicative content

Equipment	Hydraulic press, Drilling machine , Grinding machine , Air compressor , Car lifter Driveline fluid refiller, Bench vice, Dust bin, Repair bench, Hydraulic jack, Stand Drain pan, Hoists, Sucking pump, PPE, Multimeter, Scan tool
Materials	Water, Solvents, Sand papers , Silicon, Rags , Grease, Gear oil
Tools	Complete toolbox, Screw driver, Hammer , Pliers , Files, Cutters, Punches and chisels, Bolts extractors, Threads restore kit or taper, Air impact spanners, Vernier caliper, Dial gauge, Gear puller, U-joint removal tools, 4WD wheel bearing lock nut wrench, Bearing Race & Seal Driver Tools , Axle Nut Deep Impact Sockets, Grease gun, Front wheel drive bearing adapter kit , Axle poppet kit, Gearwrench universal ball joint separator, Feeler gauge
Facilitation techniques / learning activities	- Group discussion - Trainer guided - Practical exercise - Practical work - Group work
Formative assessment methods	- Performance assessment - Product based assessment

Learning outcome 3: Maintain transmission line system		Learning hours: 50
Indicative content		
• Cleaning of Transmission line components ✓ Wet cleaning ✓ Abrasive cleaning ✓ Thermal cleaning ✓ Master cylinder cleaning ✓ Slave cylinder cleaning ✓ Release bearing ✓ Flyweel cleaning • Greasing of transmission line components ✓ Grease propeller shaft ✓ Grease drive shaft components • Damaged components repairing/ replaced ✓ Clutch ✓ Gear box ✓ Propeller shaft/half shaft and joint ✓ Final drive and differential ✓ Wheels		
Resources required for the indicative content		
Equipment	Hydraulic press, drilling machine, grinding machine, Air compressor, Car lifter Driveline fluid refiller, Bench vice, Dust bin, Repair bench, Hydraulic jack, Stand Drain pan, Hoists, Sucking pump, PPE, Multimeter, Scan tool	
Materials	Water, Solvents, Sand papers, Silicon, Rags, Grease, Gear oil	
Tools	Complete toolbox, Screw driver, Hammer, Pliers, Files, Cutters, Punches and chisels, Bolts extractors, Threads restore kit or taper, Air impact spanners, Vernier caliper, Dial gauge, Gear puller, U-joint removal tools, 4WD wheel bearing lock nut wrench, Bearing Race & Seal Driver Tools, Axle Nut Deep Impact Sockets, Grease gun, Front wheel drive bearing adapter kit, Axle poppet kit, Gearwrench universal ball joint separator, Feeler gauge	
Facilitation techniques / learning activities	• Demonstration • Practical work • Practical exercises • Demonstration	
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment	

Integrated/Summative assessment

Integrated situation

Mr GAHIMBARE have the vehicle of TOYOTA hilux. The engine is running normal but the gear box has a hard gear shifting and when gear shifted hardly the vehicle do not move, he decide to use the breakdown for carrying it to the GATSATA GARAGE for repairing as transmission mechanic you are requested to repair this faults within 7 hours

Tools	Complete toolbox, Screw driver, Hammer, Pliers, Files, Cutters, Punches and chisels, Bolts extractors, Threads restore kit or taper, Air impact spanners, Vernier caliper, Dial gauge, Gear puller, U-joint removal tools, 4WD wheel bearing lock nut wrench, Bearing Race & Seal Driver Tools, Axle Nut Deep Impact Sockets, Grease gun, Front wheel drive bearing adapter kit, Axle poppet kit, Gearwrench universal ball joint separator, Feeler gauge
Equipment	Hydraulic press, Drilling machine, grinding machine, Air compressor, Car lifter Driveline fluid refiller, Bench vice, Dust bin, Repair bench, Hydraulic jack, Stand Drain pan, Hoists, Sucking pump, PPE, Multimeter, Scan tool
Materials/ Consumables	Water, Solvents, Sand papers, Silicon, Rags, Grease, Gear oil, clutch, gears, propeller shaft

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Describe transmission line system (20%)	1.1. Transmission line systems are properly identified based on their types	Transmission line systems are properly identified			5
	1.2. Clutch is properly described based on its functionality	Clutch is properly described			5
	1.3. Gearbox is properly described based on type	Gearbox is properly described			5
	1.4. Propeller shaft, joints and half shafts are properly described based on their functionality	Propeller shaft, joints and half shafts are properly described			10

	1.5. Final drive and differential are properly described based on their functionality	Final drive and differential are properly described			5
	1.6. Wheel and tyre are properly described based on manufacturer's manual	Wheel and tyre are properly described			5
Learning outcome 2: Dismantle transmission line components (30%)	2.1. Tools, materials and equipment are properly selected according to transmission line	Tools are correctly selected			5
		Materials are correctly selected			5
		Equipment's are correctly selected			5
	2.2. Clutch system is properly removed from the vehicle based on repair manual	Clutch system is properly removed			5
	2.3. Gearbox is methodical removed from the vehicle based on manufacturer's instructions	Gearbox is methodical removed			10
	2.4. Propeller shaft, joints and half shaft are properly removed from the vehicle based on repair manuals	Propeller shaft, joints and half shaft are properly removed			5
	2.5. Final drive and differential are properly removed from the vehicle based on manufacturer's manual	Final drive and differential are properly removed			5
	2.6. Wheel are removed on the vehicle based on manufacturer's manual	Wheel are removed			5
Learning outcome 3: Maintain transmission line system	3.1. Transmission line components are properly cleaned based on service manual	Transmission line components are properly cleaned			5
	3.2. Transmission line components are properly greased based on service manual	Transmission line components are properly greased			5

(20%)	3.3. Damaged components are correctly repaired based on repair manual	Damaged components are correctly repaired			10
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. R. Gscheidle, (1997). *Modern automotive technology: fundamentals, service, diagnostics*. VERLAG Europa – LehrmittelNorneyVolmer GmbH & Co.KG; Germany
2. Halderman J.D., (2012). *Automotive Technology: Principles, diagnosis and service, 4th ed.* Pearson education, 1 Lake Street, Upper Saddle River, New Jersey 07458. USA ISBN-13: 978-0-13-254261-6
3. Erjavec J., Delmar, (2009). *Automotive Technology: A systems approach, 5th ed.* 5 Maxwell Drive, Clifton Park, NY12065-2919, USA. ISBN-13:978-1428311497
4. Gerschler H., (1989). *Technology for Automotive Trade, 20th ed.* VERLAG Europa – LehrmittelNorneyVolmer GmbH & Co., Wuppertal; Germany



Republic of Rwanda
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AUTBR002

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BRAKE SYSTEM REPAIRING

Competence: REPAIR BRAKE SYSTEM

RQF Level: N/A

Learning Hours



50

Credits: 5

Sector: Transport and logistics

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT0001- TVET Short-course in Automobile mechanic

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Issue Date: March, 2026

Purpose statement	This module will allow the trainees to identify, describe, maintain and repair mechanical brake system. The learner will be able to disassemble, inspect, clean, replace, reassemble and adjust mechanical brake system components. Nevertheless, the learner should be able to test a mechanical brake system.						
Learning assumed to be in place	Basic of electricity, Basic of electronic						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Identify mechanical brake system	1.1. Brake types are properly identified based on their functions
	1.2. Mechanical brake systems are properly identified by on their function
	1.3. Mechanical brake systems are properly described by on their function
2. Disassemble and inspect brake system components	2.1. Tools, materials and equipment are properly selected according to the type of ignition
	2.2. Brake components are properly disassembled based on manufacturer's manual
	2.3. Brake components are methodically inspected according to manufacturer's manual
3. Maintain brake system components	3.1. Brake system faults are correctly detected based on service manuals
	3.2. Brake components are adequately cleaned according to manufacturer's instructions
	3.3. Damaged parts are properly replaced or repaired according to manufacturer's instructions
	3.4. Brake system components are appropriately assembled based on manufacturer's instruction

4. Test brake systems	4.1. Brake system components are adjusted based on manufacturer's manual
	4.2. Road test is performed to check the functionality of brake components

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Identify mechanical brake system 2. Disassemble and inspect brake components 3. Maintain brake system components 4. Test brake systems
Learning outcome 1: Identify mechanical brake system	Learning hours: 8
Indicative content	
• Identification of brake types ✓ Parking brake ✓ Service brake ✓ Exhaust brake • Identification of mechanical brake system components ✓ Brake pedal ✓ Brake cables ✓ Brake drum and shoes ✓ Brake disc and pads ✓ Rubber booster ✓ Outer cap ✓ Spring ✓ Protector ✓ Screw cap ✓ Inner end ✓ Equalizer ✓ Parking brake struct • Description of mechanical brake system components ✓ Brake pedal ✓ Brake cables ✓ Brake drum and shoes ✓ Brake disc and pads ✓ Rubber booster ✓ Outer cap	

- ✓ Spring
- ✓ Protector
- ✓ Screw cap
- ✓ Inner end
- ✓ Equalizer
- ✓ Parking brake struct

Resources required for the learning outcome

Equipment	Projector, computer
Materials	Brake components,
Tools	teaching aids, user manuals, flip charts
Facilitation techniques / learning activities	• Group discussion • Trainer guidance • Brainstorming • Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Disassemble and inspect brake system components

Learning hours: 17

Indicative content

- **Brake systems**
 - ✓ Tools
 - ✚ Power tools
 - ✚ Measuring tools
 - ✚ Hand tools
 - ✓ Material
 - ✚ Grease
 - ✚ Lubricants
 - ✚ Brushed
 - ✓ Equipment
 - ✚ Car lift
 - ✚ Air compressor
 - ✚ Service pit

Disassembling of brake system components

- ✓ Wheels and tyres removal
- ✓ Disc brake
- ✓ Drum brake

- ✓ Exhaust brake
- ✓ Wheel cylinder
- ✓ Master cylinder
- ✓ Plate
- ✓ Brake booster
- **Inspection of brake system components**
 - ✓ Cable movement
 - ✓ Rubber booster
 - ✓ Brake pads wear
 - ✓ Brake shoes wear
 - ✓ Spring tension

Resources required for the indicative content

Equipment	Projector, computer, vehicle with brake system, air compressor
Materials	Brake pads, brake shoes, drum, equalizer nut
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, auto data
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Practical exercise • Practical work • Group work
Formative assessment methods	• Performance assessment • Product based assessment

Indicative content

- **Brake system fault detection**
 - ✓ Fault detection methods
 - ✚ Visual inspection
 - ✚ Physical inspection (Measurement)
 - ✓ Brake components testing
 - ✚ Master cylinder
 - ✚ Wheel cylinder
 - ✚ Drum
 - ✚ Disc
 - ✚ Spring
 - ✚ Cables
 - ✚ Shoes
 - ✚ Pads
 - ✚ Rubber booster
- **Cleaning of brake components**
 - ✓ Dry cleaning
 - ✓ Air blowing
 - ✓ Cleaning with solvents
 - ✓ Cleaning with rags
 - ✓ Cleaning with sand paper
- **Damaged part replacement/repairing**
 - ✓ Brake pads
 - ✓ Brake shoes
 - ✓ Brakes cables
 - ✓ Springs
 - ✓ Brake booster
 - ✓ Master cylinder
 - ✓ Brake line
 - ✓ Wheel cylinder
 - ✓ Drum
 - ✓ Caliper
 - ✓ Brake fluid line
- **Brake components reassembling**
 - ✓ Drum brake
 - ✓ Disk brake
 - ✓ Exhaust brake
 - ✓ Wheel and tyre remounting

Resources required for the indicative content

Equipment	Projector, computer, air compressor, Piston compressor, car lifter, PPE, Brake bleeding vacuum pump, brake fluid tester
Materials	Brake shoes, pads, brake oil, grease, rags, brushes, WD40
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge, air gun, Jack and jack stand, vernier caliper, dial gauge, bolts extractors
Facilitation techniques / learning activities	• Demonstration • Practical work • Practical exercises • Demonstration
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment

Learning outcome 4: Test brake system		Learning hours: 10
Indicative content		
• Brake system adjustment ✓ Nut adjustment ✓ Screw adjusting • Brake test ✓ Test for brake pads ✓ Brake shoes slipping ✓ Test for noise ✓ Test for brake pedal vibration ✓ Test the brake performance		
Resources required for the indicative content		
Equipment	Projector, computer, air compressor, Piston compressor, car lifter, PPE	
Materials	Brake shoes, pads, brake oil, grease, rags, brushes, WD40	
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge, air gun, Jack and jack stand, vernier caliper, dial gauge, bolts extractors	
Facilitation techniques / learning activities	• Demonstration • Practical work • Demonstration	
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment	

Integrated/Summative assessment

Integrated situation

When HAKIZIMAMA was driving his car of Toyota DYNA from KIGALI to NYAMATA he applied on the brake pedal to reduce the vehicle speed, but the brake system do not respond, but after pumping a long of period the vehicle stop, with low brake efficiency. During parking he found that the parking brake is not working at all. KALISA decide to call at ATECAR garage in KIGALI City for intervention. As the brake system mechanic, you are requested to repair the faulty within 4 hours

Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, Jump cables, feeler gauge, air gun, Jack and jack stand, vernier caliper, dial gauge, bolts extractors
Equipment	Projector, computer, air compressor, Piston compressor, car lifter, PPE, bleeding machine
Materials/ Consumables	Brake shoes, pads, brake oil, grease, rags, brushes, WD40

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Identify mechanical brake system (20%)	1.1. Brake types are properly identified based on their functions	Brake types are properly identified			5
	1.2. Mechanical brake systems are properly identified by on their function	Mechanical brake systems are properly identified			5
	1.3. Mechanical brake systems are properly described by on their function	Mechanical brake systems are properly described			10
Learning outcome 2: Disassemble and inspect brake system components (30%)	2.1. Tools, materials and equipment are properly selected according to the type brake	Tools are correctly selected			5
		Materials are correctly selected			5
		Equipment's are correctly selected			5
	2.2. Brake components are properly disassembled based on manufacturer's manual	Brake components are properly disassembled			10
	2.3. Brake components are methodically inspected according to manufacturer's manual	Brake components are methodically inspected			10

Learning outcome 3: Maintain brake system components (30%)	3.1. Brake system faults are correctly detected based on service manuals	Brake system faults are correctly detected			5
	3.2. Brake components are adequately cleaned according to manufacturer’s instructions	Brake components are adequately cleaned			5
	3.3. Damaged parts are properly replaced or repaired according to manufacturer’s instructions	Damaged parts are properly replaced or repaired			10
	3.4. Brake system components are appropriately assembled based on manufacturer’s instruction	Brake system components are appropriately assembled			5
Learning outcome 4: Test brake systems (20%)	4.1. Brake system components are adjusted based on manufacturer’s manual	Brake system components are adjusted			5
	4.2. Road test is performed to check the functionality of brake components	Road test is performed to check brake functionality.			5
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. Tom D. (2004). Automobile Electrical and Electronic Systems 3 rd edition, Elsevier Butterworth Heinemann, Linacre House, Jordan Hill, Oxford.
2. Gscheilder R. (2006). Modern Automotive Technology Fundamentals, Service, Diagnostics ; Verlag Europa-Lehrmittel ; Germany.
3. Tom D. Advanced Automotive Fault Diagnosis, 2nd edition.
4. NATEF (1999). Automotive excellence student Text Student Edition; Glencoe McGraw-Hill.
5. R. Gscheidle, (1997). Modern automotive technology: fundamentals, service, diagnostics. VERLAG Europa – Lehrmittel Norney Volmer GmbH & Co.KG; Germany

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8. Gerschler H., (1989). Technology for Automotive Trade, 20th ed. VERLAG Europa – Lehrmittel Norney Volmer GmbH & Co., Wuppertal; Germany



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AUTSS001

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SUSPENSION AND STEERING SYSTEM REPAIRING

Competence: REPAIR SUSPENSION AND STEERING SYSTEMS

RQF Level: N/A

Learning Hours



70

Credits: 7

Sector: Transport and logistics

Program: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT0001- TVET Short-course in Automobile mechanic

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Issue Date: March, 2026

Purpose statement	This module describes the knowledge, skills and attitude required to maintain vehicle suspension and steering system. This module is intended to students pursuing diploma in automobile technology. At the end of this module, the trainees will be able to identify, describe, diagnose, dismantle, disassemble, inspect, replace, reassemble and remount vehicle suspension and steering system components and test vehicle suspension and steering system.					
Learning assumed to be in place	N/A					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	50%
	Practical work:		70%		70%	
	• Group project and presentation	20%				
	• Individual project /Work	50%				
			Summative Assessment			50%

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Identify steering systems	1.1. Steering systems are identified based on steering types
	1.2. Steering system components are described based on their function
	1.3. Steering systems are described based on their type of assistance
2. Maintain steering system	2.1. Tools, materials and equipment are properly selected according to the type of steering
	2.2. Steering system is properly diagnosed based on manufacturer's manual
	2.3. Steering fluid are correctly drained based on manufacturer's manual
	2.4. Steering system components are correctly dismantled based on manufacturer's instructions.
	2.5. Steering components are methodically disassembled based on manufacturer's instructions

	2.6. Steering system components are correctly repaired based on manufacturer's manual
	2.7. Steering system components are methodically reassembled based on manufacturer's manuals
	2.8. Steering system is correctly remounted and tested based on manufacturer's manuals
3. Identify suspension system	3.1. Suspension systems are identified based on their types
	3.2. Suspension system components are described based on their types
	3.3. Active suspension is described based on control components
4. Maintain suspension system	4.1. Tools, materials and equipment are properly selected according to the type suspension
	4.2. Suspension system is properly diagnosed based on client complains
	4.3. Suspension components are methodically dismantled based on manufacturer's instructions
	4.4. Suspension components are methodically disassembled based on manufacturer's instructions
	4.5. Suspension components are correctly repaired based on manufacturer's repair manual
	4.6. Suspension system components are methodically reassembled based on manufacturer's manuals
	4.7. Suspension system is correctly remounted and tested based on manufacturer's manual

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Identify steering systems 2. Maintain steering system 3. Identify suspension system 4. Maintain suspension system
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Learning outcome 1: Identify steering system		Learning hours: 10	
Indicative content			
• Identification of steering system types ✓ Rack and pinion ✓ Linkage steering system ✓ Power assisted steering system • Description of steering system components ✓ Description of rack and pinion ✚ Steering wheel ✚ Steering column ✚ Pinion ✚ Rack ✚ Tie rod ✚ Tie road arm ✚ Tie rod end ✓ Description of linkages steering system ✚ Pitman arm ✚ Center link ✚ Idle arm ✚ Inner tie rod ends ✚ Outer tie rod ends ✚ Steering box ✚ Track rod ✓ Description of power assisted steering ✚ Hydraulic pump ✚ Control Valve or Reaction Valve. ✚ Ram Cylinder • Description of steering system components ✓ Description of Types of steering systems ✚ Conventional/mechanical steering system ✚ Power steering system ✓ Comparison between Conventional/mechanical steering system and power steering			
Resources required for the learning outcome			
Equipment	Projector, computer, vehicle		
Materials	Brake components,		
Tools	teaching aids, user manuals, flip charts, autodata		
Facilitation techniques / learning activities	• Group discussion • Trainer guidance • Brainstorming		

	• Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Maintain steering system	Learning hours: 20
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Indicative content

- **Steering system**
 - ✓ Tools
 - ✚ Power tools
 - ✚ Measuring tools
 - ✚ Hand tools
 - ✓ Material
 - ✚ Grease
 - ✚ Lubricants
 - ✚ Brushed
 - ✓ Equipment
 - ✚ Car lift
 - ✚ Wheel alignment
 - ✚ Sucking pump
 - ✚ Hydraulic press
- **Diagnostic of steering system**
 - ✓ Loose steering
 - ✓ Steering wheel shakes
 - ✓ Clunking noise
 - ✓ Wheels don't return to center
 - ✓ Excess slack
 - ✓ Looseness in the steering wheel
 - ✓ Vehicle unstable on highway
- **Checking of steering system**
 - ✓ Check for play at the steering rack and at the track-rod ends
 - ✓ Grinding noise
 - ✓ Very tight steering
 - ✓ Wheel
 - ✓ Intermediate shaft bending
- **Inspection of assisted steering system**
 - ✓ Check fluid level
 - ✓ Leaking power steering fluid
 - ✓ Burning oil smell
 - ✓ Gear pump
 - ✓ Hoses damaged
 - ✓ Inter

- ✓ EPS warning lamp
- ✓ Tire pressure,
- ✓ Tires, tie-rod ends

- **Steering system components disassembling**

- ✓ Locate the side panels on the left and right side of the steering wheel
- ✓ Remove the side panel
- ✓ Remove steering wheel
- ✓ Remove steering column
- ✓ Remove steering gearbox
- ✓ Remove steering linkage
- ✓ Disconnect Tie rod ball joint
- ✓ Remove power steering gear
- ✓ Disconnect Hose clip
- ✓ Boot
- ✓ Remove Bushing
- ✓ Remove Rubber
- ✓ Remove mounting
- ✓ repair steering system components
- ✓ Check dust caps are seated correctly and not damaged
- ✓ Always replace Hose clip, o ring clip
- ✓ Check Boot for damage and replaced
- ✓ Check Rubber for damage and replaced
- ✓ Check Bushing for damage and replace
- ✓ Check mounting for damage and replace

- **Reassembling of steering system**

- ✓ Fix mounting
- ✓ Fix Rubber
- ✓ Fix Bushing
- ✓ Disconnect Hose clip and Boot
- ✓ Fix power steering gear
- ✓ Connect Tie rod ball joint
- ✓ Fix steering linkage
- ✓ Fix steering column
- ✓ Fix the side panel

- **Remounting of steering system components**

- ✓ Remount steering gearbox
- ✓ Remount and adjust steering wheel

- **Refilling and bleeding steering system components**

- ✓ Top up the oil to the maximum level
- ✓ Check hydraulic oil level and top-off if necessary.
- ✓ Raise vehicle until front wheels are free.

- ✓ Turn steering wheel from lock to lock 10 times, with engine switched off.
- ✓ Check hydraulic oil level and top-off if necessary.
- ✓ Lower vehicle.
- ✓ Start engine.
- ✓ Turn steering wheel from lock to lock 10 times.
- ✓ Check hydraulic oil level and top-off if necessary.
- ✓ Any remaining air in steering system will
- ✓ Dissipate when driving over the next 10 - 20 km

- **Steering system disassembling**

- ✓ Locate the side panels on the left and right side of the steering wheel
- ✓ Remove the side panel
- ✓ Remove steering wheel
- ✓ Remove steering column
- ✓ Remove steering gearbox
- ✓ Remove steering linkage
- ✓ Disconnect Tie rod ball joint
- ✓ Remove power steering gear
- ✓ Disconnect Hose clip
- ✓ Boot
- ✓ Remove Bushing
- ✓ Remove Rubber
- ✓ Remove mounting
- ✓ repair steering system components
- ✓ Check dust caps are seated correctly and not damaged
- ✓ Always replace Hose clip, o ring clip
- ✓ Check Boot for damage and replaced
- ✓ Check Rubber for damage and replaced
- ✓ Check Bushing for damage and replace
- ✓ Check mounting for damage and replace

- **Testing of steering system**

- ✓ Test for Looseness steering
- ✓ Test for Steering wheel shakes
- ✓ Test for Clunking noise
- ✓ Test for Wheels return to center
- ✓ Test for Excess slack
- ✓ Test for Vehicle unstable on highway

Resources required for the indicative content

Resources required for the indicative content	
Equipment	Projector, computer, vehicle with brake system, air compressor, Drilling machines, Grinding machine, hoist, Hydraulic Jack, chisels, Bench vise, Multimeter

Materials	Brake pads, brake shoes, drum, steering wheel, universal ball separator, rags, Flipchart
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, auto data, coil spring compressor, axle poppet kit, cutters, files, air blow gun, Air impact spanner
Facilitation techniques / learning activities	• Group discussion • Trainer guided • Practical exercise • Practical work • Group work
Formative assessment methods	• Performance assessment • Product based assessment

Learning outcome 3: Identify suspension system		Learning hours: 15
Indicative content		
• Identification of suspension types system ✓ Rigid axles ✓ Semi rigid axles ✓ Independent suspension • Description suspension system components ✓ Coil spring ✓ Leaf spring ✓ Torsion bar ✓ Rubber spring ✓ Gas-filled spring ✓ Vibration damper • Description of types of active suspension ✓ Passive suspension ✓ Semi-active suspensions ✓ Hydraulic or pneumatic active suspensions ✓ Electromagnetic active suspensions		
Resources required for the indicative content		
Equipment	Projector, computer, air compressor, Piston compressor, car lifter, PPE, hydraulic press, drain pan, wheel alignment machine, sucking pump, repair bench, hydraulic jack, multimeter, grinding machine, drilling machine, coil spring compressor	
Materials	Brake shoes, pads, brake oil, grease, rags, brushes, WD40, silicon, rivet, Power steering belts, solvents	
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, air gun, Jack and jack stand, vernier caliper, dial gauge, bolts extractors, brushes, axle poppet kit, Gear Wrench,	
Facilitation techniques / learning activities	• Demonstration • Practical work • Practical exercises • Demonstration	
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment	

Indicative content

- **Selection of tools materials and equipment**
 - ✓ Tools
 -  Power tools
 -  Measuring tools
 -  Hand tools
 - ✓ Material
 -  Grease
 -  Lubricants
 -  Brushed
 - ✓ Equipment
 -  Car lift
 -  Wheel alignment
 -  Sucking pump
 -  Hydraulic press
- **Suspension system diagnosis**
 - ✓ Checking of suspension systems
 -  Rocking back and fourth
 -  Steering wheel judder
 -  Suspension noise
 -  Suspension leaks
 -  Wheel wobble
 -  Excessive weight transfer
 -  Abdominal tyre wear
 -  Rusted/pittedRods
- **Suspension components dismantling**
 - ✓ Dismantling of coil spring
 - ✓ Dismantling of leaf suspension
 - ✓ Dismantling of torsion bar
 - ✓ Dismantling of vibration damper/shock absorber
- **Suspension components disassembling**
 - ✓ Disassemble of coil spring
 - ✓ Disassemble of leaf suspension
 - ✓ Disassemble of torsion bar
 - ✓ Disassemble of vibration damper/shock absorber
- **Repairing suspension components**
 - ✓ Check damper spring for leaks and replace
 - ✓ Replace colil spring
 - ✓ Replace broken leaf spring

- **Reassembling suspension system components**
 - ✓ Reassemble of coil spring
 - ✓ Reassemble of leaf suspension
 - ✓ Reassemble of torsion bar
 - ✓ Reassemble of vibration damper/shock absorber
- **Suspension system testing**
 - ✓ Physical test
 - ✓ Road testing

Resources required for the indicative content

Equipment	Projector, computer, air compressor, Piston compressor, car lifter, PPE, hydraulic press, drain pan, wheel alignment machine, sucking pump, repair bench, hydraulic jack, multimeter, grinding machine, drilling machine, coil spring compressor
Materials	Brake shoes, pads, brake oil, grease, rags, brushes, WD40, silicon, rivet, Power steering belts, solvents
Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, air gun, Jack and jack stand, vernier caliper, dial gauge, bolts extractors, brushes, axle poppet kit, Gear Wrench,
Facilitation techniques / learning activities	• Demonstration • Practical work • Demonstration
Formative assessment methods	• Product based assessment • performance assessment • Oral based assessment

Integrated/Summative assessment

Integrated situation

Mr SILASJAY-Z 's car TOYOTA SEQUOIA SR5 has a fault of pulling on one side in straight ahead driving state and the steering require more force to turn the wheels during cornering, while he was driving from KIGALI to KIBUYE, after reaching at NYABARONGO bridge. those spoken defaults above appears, he decide to park it on side in orther to be safe, he called at nearest GARAGE DE NYANGE, the head of GARAGE requested you as technician of suspension and steering to correct all requirements for repairing that car,down there at NYABARONGO BRIDGE within 8 hours

Tools	Spanners, set of pliers, set of screw drivers, Allen keys, hammers, punches, chisels, air gun, Jack and jack stand, vernier caliper, dial gauge, bolts extractors, brushes, axle poppet kit, Gear Wrench
Equipment	Air compressor, Piston compressor, car lifter, PPE, hydraulic press, drain pan, wheel alignment machine, sucking pump, repair bench, hydraulic jack, multimeter, grinding machine, drilling machine, coil spring compressor
Materials/ Consumables	Brake shoes, pads, brake oil, grease, rags, brushes, WD40, silicon, rivet, Power steering belts, solvents, seal

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: Identify steering systems (20%)	1.1. Steering systems are identified based on steering types	Steering systems are identified			3
	1.2. Steering system components are described based on their function	Steering system components are described			3
	1.3. Steering systems are described based on their type of assistance	Steering systems are described			3
Learning outcome 2: Maintain steering system (30%)	2.1. Tools, materials and equipment are properly selected according to the type of steering	Tools are correctly selected			3
		Materials are correctly selected			3
		Equipment's are correctly selected			3
	2.2. Suspension system is properly diagnosed based on client complains	Suspension system is properly diagnosed			4
	2.3. Brake components are methodically inspected according to manufacturer's manual	Brake components are methodically inspected			4
	2.4. Steering system components are correctly dismantled based on manufacturer's instructions.	Steering system components are correctly dismantled			4
	2.5. Steering components are methodically disassembled based on manufacturer's instructions	Steering components are methodically disassembled			4
	2.6. Steering system components are correctly repaired based	Steering system components are correctly repaired			5

	on manufacturer's manual				
	2.7. Steering system components are methodically reassembled based on manufacturer's manuals	Steering system components are methodically reassembled			5
	2.8. Steering system is correctly remounted and tested based on manufacturer's manuals	Steering system is correctly remounted			4
Learning outcome 3:	3.1. Suspension systems are identified based on their types	Suspension systems are identified			3
Identify suspension system (20%)	3.2. Suspension system components are described based on their types	Suspension system components are described			3
	3.3. Active suspension is described based on control components	Active suspension is described			3
Learning outcome 4: Maintain suspension system (30%)	4.1. Tools, materials and equipment are properly selected according to the type suspension	Tools, materials and equipment are properly selected			4
	4.2. Suspension system is properly diagnosed based on client complains	Suspension system is properly diagnosed			4
	4.3. Suspension components are methodically dismantled based on manufacturer's instructions	Suspension components are methodically dismantled			5
	4.4. Suspension components are methodically disassembled based on manufacturer's instructions	Suspension components are methodically disassembled			4

	4.5. Suspension components are correctly repaired based on manufacturer's repair manual	Suspension components are correctly repaired			5
	4.6. Suspension system components are methodically reassembled based on manufacturer's manuals	Suspension system components are methodically reassembled			3
	4.7. Suspension system is correctly remounted and tested based on manufacturer's manual	Suspension system is correctly remounted and tested			3
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

1. D. Knowles, Automotive suspension and steering systems : Cengage Learning, 2002.
2. M. Schnubel, Today's Technician : Automotive Suspension & Steering Classroom Manual and Shop Manual : Cengage Learning, 2014.
3. J. D. Halderman and C. D. Mitchell, Automotive technology : Pearson, 2014.
4. J. D. Halderman, "Automotive Steering, Suspension & Alignment," Pearson, 2017.
5. M. Harrer and P. Pfeffer, Steering handbook : Springer, 2017.



Republic of Rwanda
Ministry of Education



WHEEL AND TYRE REPAIRING

AUTWT001

Competence: REPAIR WHEEL AND TYRE, PERFORM WHEEL BALANCING

RQF Level: N/A

Learning Hours



Credits: 4

Sector: Transport and logistics

Trade: Automobile Mechanic

Module Type: Specific

Curriculum: TRLAUT0001- TVET Short course in Automobile Mechanics

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Issue Date: March, 2026

Purpose statement	This particular module describes the performance outcomes, skills, attitude and knowledge required to repair wheel and tyre of motor vehicle, change, repair and balance wheel in order to keep the good state of car wheel and tyre under minimum supervision.						
Learning assumed to be in place	Physics, Bench work						
Delivery modality	Training delivery			100%	Assessment		Total 100%
	Theoretical content			30%	Formative assessment	30%	50%
	Practical work:			70%		70%	
	• Group project and presentation	20%					
	• Individual project /Work	50%					
				Summative Assessment		50%	

Elements of Competency and Performance Criteria	
Elements of competency	Performance criteria
1. Prepare the workplace and apply safety	1.1. PPE are properly selected and worn as per safety measures
	1.2. Safety precautions of working area are appropriately applied before the work
	1.3. Workplace is properly cleaned and arranged according to the standard
2. Describe wheel and tyre	2.1. Tyres are properly identified according to their types
	2.2. Wheels are properly identified according to their types
	2.3. Wheel and tyre components are properly described according to the manufacturer's manual
3.Repair wheel and tyre	3.1. wheel and tyre are properly inspected according to their status
	3.2. Tools, materials and equipment are properly Selected according to their use
	3.3. Wheel and tyre are correctly dismantled from the vehicle based on manufacturing instructions.
	3.4. Wheel and tyre are correctly disassembled according to the vehicle repair manual.

	3.5. Wheel and tyre are properly checked according to diagnosing procedures
	3.6. Wheel and tyre faults are correctly handled according to the faults detected
	3.7. Wheel and tyre are properly tested according to their functionality
	3.8. Wheel and tyre are correctly re-assembled and inflated according to the tyre designation

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Prepare the workplace and apply safety 2. Describe wheel and tyre 3. Repair wheel and tyre
Learning outcome 1: Prepare the workplace and apply safety	Learning hours: 8
Indicative content	
• Selection of PPE and worn ✓ Identification of PPE ✓ Selection of PPE ✓ Wearing PPE • Application of safety precautions in working area ✓ Work area safety ✓ Tool and equipment safety ✓ Personal safety • Cleaning and arrangement of the workplace ✓ Identify types of cleaning ✓ Clean workplace, tools, materials, and equipment ✓ Arrange workplace layout ✓ Arrange first aid tool kit ✓ Arrange fire extinguishers ✓ Arrange fire blanket	
Resources required for the learning outcome	
Equipment	Book, Notebook, Black board, Projector, Computer and Air compressor
Materials	Soap solution, Solvent, Broom, Mops, Clothes rugs, Markerpen and Chalks.
Tools	Soft brushes

Facilitation techniques / learning activities	• Group discussion • Trainer guided • Brainstorming • Demonstration
Formative assessment methods	• Written assessment • Oral based assessment

Learning outcome 2: Describe wheel and tyre		Learning hours: 13
Indicative content		
• Identification of tyres ✓ Types of tyre ✓ Tyre designation ✓ Tyre inflation and pressure monitoring • Identification of wheels ✓ Types of wheel ✓ Wheel designation • Description of wheel and tyre components ✓ Tyre ✓ Wheel ✓ Rim ✓ Air tube		
Resources required for the indicative content		
Equipment	Computer, projector, PPE, tyre changer, air compressor, car	
Materials	handout, manuals, white board, markers pen, black board, chalks, flip charts, valve steam, tube, tyres, solvent, lubrication oil, tyre seals, solution	
Tools	Set of screw drivers, set of pliers, Hack saw, Spanners, allen keys, hammers, jacks, jack stand, tyre inflation gauge, valve remover, tyre repair tool kit,	
Facilitation techniques / learning activities	• Demonstration • Trainer guided • Research on internet • practical work • Practical exercise	
Formative assessment methods	• Written assessment • Performance assessment	

Learning outcome 3: Repair wheel and tyre		Learning hours: 19
Indicative content		
• Inspection of wheel and tyre • Selection of tools, materials and equipment ✓ Tools selection ✓ Material selection ✓ Equipment selection • Dismounting wheel and tyre • Disassembling wheel and tyre ✓ Operating tyre changer machine ✓ Disconnection of valve stem/tube ✓ Disassembling of tyre on wheel assembly • Checking of wheel and tyre ✓ Wheel faults ✓ Tyre faults ✓ Valve stem faults ✓ Tube faults • Correction of wheel and tyre faults ✓ Repairing of tyre ✓ Replacement of tyre ✓ Repairing tube ✓ Repairing wheel ✓ Replacement of wheel ✓ Replacement of valve core ✓ Tyre rotation • Re-assembling of wheel and tyre ✓ Connection of valve stem/tube ✓ Re-assembling of tyre on wheel assembly • Testing of wheel and tyre • Re-mounting of wheel and tyre		
Resources required for the indicative content		
Equipment	PPE, Computer, projector, tyre changer, air compressor PPE, tyre changer, air compressor	
Materials	Car, markers, repair manual, valve stem, tube, tyres, solvent, lubrication oil, tyre seals, solution, water, metallic brush	
Tools	Screwdrivers Set of pliers, hammers, pressure tester tool kit, and tool box spanners.	

	Screwdrivers Set of pliers, hummers, pressure tester tool kit, and tool box spanners.
Facilitation techniques / learning activities	• Simulation • Brainstorming • Individual work • Demonstration • Group discussion • Practical exercises • Individual work
Formative assessment methods	• Written assessment • Oral based assessment • Performance assessment • Product based assessment

Integrated/Summative assessment

Integrated situation

MANASE who works in City of Kigali was driving his car Toyota Prado from job to EBENEZER tyre service station to change his car's front left tyre that was worn and has the dynamic imbalance. When reaching to the Garage, he found out flat tyre on his car's rear right. The head of EBENEZER Service station requested you as wheel and tyre maintainer to solve above mentioned problem within 2hours.

Tools	Set of screw drivers, Set of pliers, jacks, jack stand, tyre inflation gauge, valve remover, tyre repair tool kit
Equipment	PPE, tyre changer, wheel balancer, air compressor, car
Materials/ Consumables	Repair manual, valve steam, tube, tyres, solvent, lubrication oil, tyre seals, solution, water, metallic brush

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1. Prepare the workplace and apply safety (20%)	1.1. PPE are properly selected and worn as per safety measures	PPE are properly selected			4
	1.2. Safety precautions of working area are appropriately applied before the work	Safety precautions of working area are appropriately applied			3

	1.3. Workplace is properly cleaned and arranged according to the standard	Workplace is properly cleaned			3
Learning outcome 2. Describe wheel and tyre (30%)	2.1. Tyres are properly identified according to their types	Tyres are properly identified			5
	2.2. Wheels are properly identified according to their types	Wheels are properly identified			5
	2.3. Wheel and tyre components are properly described according to the manufacturer's user manual	Wheel and tyre components are properly described			10
Learning outcome 3. Repair wheel and tyre (50%)	3.1. wheel and tyre are properly inspected according to their status	wheel and tyre are properly inspected			5
	3.2. Tools, materials and equipment are properly Selected according to their use	Tools, materials, and equipment are Selected.			5
	3.3. Wheel and tyre are correctly dismantled from the vehicle based on manufacturing instructions.	Wheel and tyre are correctly dismantled			5
	3.4. Wheel and tyre are correctly disassembled according to the vehicle repair manual.	Wheel and tyre are correctly disassembled			5
	3.5. Wheel and tyre are properly checked according to diagnosing procedures	Wheel and tyre are properly checked			5
	3.6. Wheel and tyre faults are correctly handled according to the faults detected	Wheel and tyre faults are correctly handled			5
	3.7. Wheel and tyre are correctly re-assembled	Wheel and tyre are correctly re-assembled and inflated			5

	and inflated according to the tyre designation				
	3.8. Wheel and tyre are properly tested according to their functionality	Wheel and tyre are properly tested			5
Total marks		100			
Percentage Weightage		100%			
Minimum Passing line % (Aggregate): 70%					

References:

- Automotive technology volume principles diagnosis and services fourth edition James D.Haldman,
- Automotive technology volume a systems approach 5th edition Jack Erjavec
- Technology of automotive trade volume 2,H.Girschler
- Modern automotive technology Europa Lehmetel 2nd edition



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CCMRM001

ENTREPRENEURSHIP

Run Micro-Business

Competence:

RQF Level: N/A

Learning Hours
 30

Credits: 3

Sector: All

Program: All

Module Type: Complementary

Curriculum: **ELTFKR0001- Short course training program in Fridge and Kitchen appliances Repair**

Issue Date: October, 2025

Purpose statement	This module covers the knowledge, skills and attitudes needed to create business. It describes the necessary knowledge, skills and right attitudes required to determine the basic aspects of entrepreneurship, generate a business idea, prepare a business plan and perform core business operations.					
Learning assumed to be in place	N/A					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	100%
	Practical work:		70%		70%	
	• Group project and presentation	20%				
	• Individual project /Work	50%				
			Summative Assessment		N/A	

Elements of Competency and Performance Criteria		
Elements of competency	Performance criteria	
1. Describe basic aspects of Entrepreneurship	1.1.	Concepts associated with Entrepreneurship are properly explained in accordance to the business context
	1.2.	Entrepreneurial characteristics are properly described with regards to building a successful and sustainable business
	1.3.	Importance of Entrepreneurship is appropriately explained in line with economic development, job creation, and societal progress
	1.4.	Entrepreneurial cycle is clearly described referring to the various stages and processes that entrepreneurs go through in the creation, development, and

	growth of a new venture
2. Generate business idea	2.1. Business environment is effectively assessed according to business environment trends
	2.2. Business idea proposal is properly developed in terms of identified needs and requirements
	2.3. Business idea feasibility is correctly analysed according to market demand, potential competition, financial feasibility, and other environmental relevant factors /trends
3. Prepare a business plan	3.1. Business plan elements are correctly identified according to the updated business plan format
	3.2. A business plan is adequately written in line with a business idea
	3.3. Business contingency plan is properly established in line with the business plan
	3.4. Business plan is clearly presented according to the purpose of presentation
4. Perform core business operations	4.1. Core business operations are correctly described in line with the business type
	4.2. Activities to be accomplished before business operations are clearly identified according to the form of business
	4.3. Conducive working environment is effectively created in workplace context
	4.4. Business operations are effectively monitored and evaluated according to the business plan

Course content	
Learning outcomes	At the end of the module the learner will be able to: 1. Describe basic aspects of Entrepreneurship 2. Generate a business idea 3. Prepare a business plan 4. Perform core business operations
Learning outcome 1: Describe basic aspects of Entrepreneurship	Learning hours: 3
Indicative content	
• Concepts associated with Entrepreneurship ✓ Business ✓ Entrepreneurship ✓ Intrapreneurship ✓ Entrepreneur ✓ Intrapreneur ✓ Enterprise ✓ Invention ✓ Innovation ✓ Creativity • Characteristics of good entrepreneurs ✓ Creativity ✓ Responsibility ✓ Curious ✓ Goal oriented	

- ✓ Independent
- ✓ Risk taker
- ✓ Action oriented
- ✓ Positive attitude
- **Importance of Entrepreneurship**
 - ✓ Acceleration of economic growth
 - ✓ Promoting innovation
 - ✓ Promoting social changes
 - ✓ Promoting research and development
 - ✓ Developing and improving existing enterprises
- **Entrepreneurial cycle**
 - ✓ Idea generation
 - ✓ Opportunity evaluation
 - ✓ Planning
 - ✓ Company information/Launch
 - ✓ Growth

Resources required for the learning outcome

Equipment	✓ Projector, Computer
Materials	✓ Flip Chart, Markers, Notebooks
Tools	✓ Reference books
Facilitation techniques	✓ Brainstorming ✓ Small group discussion on the characteristics of entrepreneur ✓ Case studies of successful entrepreneurs
Formative assessment methods	✓ Written assessment

Learning outcome 2: Generate business idea

Learning hours: 9 hours

Indicative content

- **Business environment analysis**

- ✓ Business environment analysis tools

- ✚SWOT analysis (Strengths, Weakness, Opportunity and Threats)

- ✚PESTEL (Political, Economic, Social, Technological, Environmental and Legal)

- **Development of business idea proposal**

- ✓ Definition of concepts business idea generation

- ✓ Methods of business idea generation

- ✚Focus groups

- ✚Brainstorming

- ✚Creative problem-solving

- ✚The SCAMPER (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, and Reverse) technique

- ✚Role-playing

- ✚Saving discussions for later

- ✚Storyboarding

- ✚Questioning assumptions and

- ✚Building on theory

- ✓ Process of business idea generation to implementation

- ✚Defining the problem/opportunity

- ✚Research and inspiration

- ✚Idea screening

- ✚Developing a prototype/testing

- ✚Idea optimization

- **Business idea feasibility analysis**

- ✓ Meaning of business feasibility study

- ✓ The purpose of business feasibility study

- ✓ Components of business feasibility study:

- ✚Product feasibility

- ✚Market feasibility

- ✚Organizational feasibility

- ✚ Financial feasibility
- ✚ Recommendations and conclusion
- ✓ Analysing steps involved in feasibility analysis:
 - ✚ Step 1. Conduct a preliminary analysis
 - ✚ Step 2. Prepare a projected income statement
 - ✚ Step 3. Conduct a market survey
 - ✚ Step 4. Plan business organization and operations
 - ✚ Step 5. Prepare balance sheet
 - ✚ Step 6. Review and analyse all data
 - ✚ Step 7. Make "go/no go" decision

Resources required for the indicative content

Equipment	✓ Projector, Computer
Materials	✓ Flip Chart, Markers
Tools	✓ Reference book, Internet
Facilitation techniques	✓ Brainstorming on entrepreneurs' competences ✓ Large group discussion on entrepreneur competences ✓ Guest speaker listening
Formative assessment methods	✓ Written assessment ✓ Oral presentation

Learning outcome 3: Prepare a business plan

Learning hours: 13 hours

Indicative content

- **Elements of a business plan**
 - ✓ Definition of the business plan concepts
 - ✚ Meaning of the term business plan
 - ✚ Importance of the business plan
 - ✓ The needs of the business plan:
 - ✚ Internal use
 - ✚ External use

- **Description of the elements of a business plan**

- ✓ Title/cover page

- ✚ Logo

- ✚ Name of the business

- ✚ Business owner and contact

- ✚ Location of the business

- ✓ Executive summary (summary of a business)

- ✓ Description of the business

- ✚ History of the business

- ✚ Structure of the business

- ✚ Type of the business

- ✚ Mission, vision, goals and objectives of the business

- ✚ Business competitive advantage

- ✚ Needs of the market the business intends to satisfy

- ✚ SWOT analysis of the business

- ✓ Production of a business plan

- ✚ Premises and plant location

- ✚ Equipment and machinery required

- ✚ Production process planning

- ✚ Raw materials

- ✚ Competing technologies

- ✚ Manufacturing and operations

- ✚ Quality control and ongoing service

- ✚ Labour requirements

- ✚ Utilities and office consumables

- ✚ Packaging equipment required

- ✚ Suppliers

✓ Marketing plan

- ✚ Market research (Customer description)
- ✚ Market analysis
- ✚ Competition analysis
- ✚ Description of target market
- ✚ Defining marketing objectives
- ✚ Market intermediaries
- ✚ 5ps of marketing mix
- ✚ Developing market strategies
- ✚ Ongoing market evaluation
- ✚ Elaborating marketing budget

✓ Business staff plan

- ✚ Job analysis
- ✚ Job description
- ✚ Job specifications
- ✚ Organizational structure

✓ Financial plan

- ✚ Estimating total cost (start-up costs, operating costs, administrative costs)
- ✚ Source of funds
- ✚ Projected cash flow statement for the first three years
- ✚ Projected income: profit and loss statement for the first three years
- ✚ Projected balance sheet for the first three years
- ✚ Calculating payback period
- ✚ Projected sales plan
- ✚ Loan payment plan

✓ Implementation plan

- ✚ Meaning of implementation plan
- ✚ Elements of implementation plan

✓ Appendices (supporting documents)

• **Writing a business plan**

- ✓ Design of business plan introductory part
- ✓ Design of business production plan
- ✓ Design of marketing plan
- ✓ Development of business staffing requirement plan
- ✓ Design of business financial plan
- ✓ Design implementation plan
- **Establish business contingency plan**
 - ✓ Definition of business contingency plan
 - ✓ Purpose of contingency plan
 - ✓ Importance of contingency plan:
 - ✚ Reduces the risk of uncertainty
 - ✚ Helps the continuity of work
 - ✚ Increases credit availability
 - ✚ Prevents panic
 - ✓ Identification of business risks
 - ✚ Meaning of business risk
 - ✚ Types of business risk
 - ✚ Risk control
- **Development of contingency plan**
 - ✓ Steps of contingency planning
 - ✚ Make list of risks
 - ✚ Weigh risks based on severity and likelihood
 - ✚ Identify important risks
 - ✚ Create contingency plan for the biggest risk
 - ✚ Get approval for your contingency plan
 - ✚ Distribute contingency plan
 - ✚ Monitor contingency plan
 - ✚ Create new contingency plan if necessary
- **Business plan presentation**
 - ✓ Purpose of business plan presentation

- ✚ Financing support
- ✚ Strategic orientation
- ✚ Attracting investors
- ✓ Parties to present the business plan:
 - ✚ Shareholders
 - ✚ Stakeholders
- ✓ Strategies to prepare business plan presentation
 - ✚ Connect with your audience
 - ✚ Paint a picture in your audience' minds
 - ✚ Put credibly content
 - ✚ Use statistics and data
- ✓ Techniques to present your business plan
 - ✚ Only write key points
 - ✚ Don't read them, speak about them
 - ✚ Use visualization, pictures, symbols, colors, tables
 - ✚ Make it short, concise, not more than 10 min
 - ✚ React positively to questions
 - ✚ Use body language, voice, appearance
 - ✚ Try to convince
 - ✚ Integrating comments, suggestions and remarks in the business plan
 - ✚ Planning to maintain and enforce relationship with stakeholders (audience) for further collaboration.

Resources required for the indicative content

Equipment	✓ White board, case study
Materials	✓ Markers, flip chart, pens
Tools	✓ Reference books, feasibility study template
Facilitation techniques	✓ Case study on successful entrepreneurs ✓ Group work to discuss case scenarios ✓ Brainstorming on the competences lacking in unsuccessful entrepreneur

Formative assessment methods	✓ Written assessment ✓ Oral presentation
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Learning outcome 4: Perform core business operations	Learning hours: 5 hours
Indicative content	
• Description of core business operations ✓ Decide the business legal structure + Sole proprietorship + Partnership (General or Limited) + Corporation (C and S) + Limited Liability Company (LLC) ✓ Business physical operations + Location and facility + Operational / production equipment and maintenance + Employees + Professional assistance ✓ Business regulations and guidelines + Business formation + Taxes + Intellectual property + Legal documents + Insurance ✓ Business financial operations + Accounting system (Income statement, balance sheet and cash flow statement) + Bookkeeping & Bookkeeping Records (Gross receipts, purchase receipts, expense receipts, tax, employment, sales) ✓ Day-to-day operations management + Production process + Production standards	

-  Product fulfillment process
-  Inventory management
-  Billing and collection process

- **Activities to be accomplished before starting business operations**

- ✓ Legalize the business
- ✓ Identify business location requirements
- ✓ Working place layout
- ✓ Workplace equipment, materials and tools
- ✓ Determine raw materials for initial storage
- ✓ Production equipment and machinery
- ✓ Production consumables
- ✓ Estimate start-up finances
- ✓ Quantity of financial needs
- ✓ Sources finances
- ✓ Allocation of financial resources

- **Creation of conducive working environment**

- ✓ Set of business ethical conduct
 -  Objectives of ethical conduct in a business
 -  Rules and regulations of the business
 -  Positive attitude required to business members
 -  Sanctions proposed by the law in business
- ✓ Types of unethical behaviour in a business
 -  Mistreating employees
 -  Financial misconduct
 -  Misrepresentation
- ✓ Techniques of encouraging a positive ethical behaviour in business
 -  Rewards
 -  Expectations

- + Training
- + Policies
- + Assignment of responsibilities to employees
- + Motivation
- + Matching personal characteristics with business requirements

✓ Methods of handling unethical conduct in business

- + Set of conventional principles
- + Set clear and transparent policies
- + Keep the code updated
- + Ethics should be involved in day- to -day activities
- + Document the dishonest behaviour
- + Endow company's employees
- + Deal with payment fraud

✓ Ways to address unethical behaviour at the workplace

- + Create a code of conduct
- + Lead by example
- + Reinforce consequences for unethical behaviour
- + Show employees appreciation
- + Welcome an ethics speaker
- + Create checks and balances
- + Hire for values

✓ Importance of positive ethical conduct in the business

- + Increase the overall morale
- + Enhance the performance of an organization

✓ Responsibility assignment matrix

- + Responsible, Accountable, Consulted and Informed (RACI)

• **Maintenance of good relationship with customers and suppliers**

Methods used to maintain good relationship with Customers and Suppliers:

- + Communicate
- + Exceed expectation

- + Ask for feedback
- + Connect
- + Show appreciation
- + Understand the needs of your suppliers
- + Be a great customer
- + Communication
- + Timely feedback
- + Choose suppliers that align to your values
- + Loyalty

✓ Importance of maintaining good customers and suppliers' relationship to the business:

- + Increase customer life time value
- + Reduce customer churn
- + Improve customer loyalty

- **Monitoring and evaluation of the business**

- **Preparation of a daily report of business activities**

- ✓ Meaning of business daily report
- ✓ Purpose of business daily report
- ✓ Format of daily report of business activities
- ✓ Importance of business daily report to the business

- **Organization of employees' meeting**

- ✓ Meaning of effective employees' meeting
- ✓ Purpose of employees' meeting
- ✓ Meaning of customer inquiries and needs
- ✓ Ways of gathering customer's inquiries and needs
- ✓ Elements of preparing effective employees' meeting
 - + Setting meeting objectives
 - + Preparing meeting requirements
 - + Running employees' meeting
- ✓ Ways to make employee meeting successful
 - + Facilitate brainstorming session

- + Stand up
- + Set meeting goals together
- + Offer incentives and rewards
- + Set a clear framework in advance

- **Consultation of business plan**

- ✓ Purpose of consulting business plan during a business operation
 - + Create an effective strategy for growth
 - + Determine the future financial needs
 - + Attract investors and leaders
- ✓ Critical parts of the business plan to be considered while running business
 - + Executive summary
 - + Business description
 - + Market analysis and strategy
 - + Marketing and sales plan
 - + Competitive analysis
 - + Management and organization
 - + Description of product and services description
 - + Operating plan
- ✓ Using business plan as tool
 - + Internal communication
 - + Communication with partners
 - + Communication with financial institutions

Resources required for the indicative content

Equipment	✓ White board, Case study
Materials	✓ Markers, Flip chart, Pens
Tools	✓ Reference books, Feasibility study template
Facilitation techniques	✓ Case study on successful entrepreneurs ✓ Group work to discuss case scenarios ✓ Brainstorming on the competences lacking in unsuccessful entrepreneur

Formative assessment methods	✓ Written assessment ✓ Oral presentation
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Republic of Rwanda
Ministry of Education



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INDUSTRIAL ATTACHMENT PROGRAM

DEIIA001

Integrate the workplace

Competence

RQF Level: Short course

Learning Hours

160

Credits: 16

Sector: ALL

Trade: ALL

Module Type: Specific

Curriculum: Short course

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Issue Date: October,2025

Purpose statement	This module describe knowledge, skills and attitudes required for a trainee to integrate the workplace. It is intended to be learnt by a trainee pursuing short course training in Rwanda TVET schools. Upon completion, the trainee will be able to investigate and secure IAP place, apply and prepare for IAP, develop his/her competences at the workplace as well as transferring IAP skills in real life situations.					
Learning assumed to be in place	All competences related to the short course					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	50%
	Practical work:		70%		70%	
	• Group work and presentation	30%				
	• Individual work	40%				
			Summative Assessment		50%	

Elements of Competency and Performance Criteria

Elements of competency	Performance criteria
1. Investigate and secure IAP place	1.1. Importance of industrial attachment is properly identified in line with one's occupation
	1.2. Resources in the community or nationwide are appropriately used to find IAP information.
	1.3. Industrial attachment place is properly selected based on training package
	1.4. IAP Application documents are correctly developed and submitted following guidelines and deadlines set by the host organization.
2. Prepare for IAP	2.1. Communication skills are effectively worked on to get ready for selection activities, such as interviews, assessments, or presentations.
	2.2. Communication is regularly maintained with the IAP host company to confirm the attachment details such as start date, duration, and any specific requirements.

	2.3. The roles, responsibilities, and expectations during the attachment period are properly reviewed in order to maximize the attachment experience.
3. Develop one's competences at the workplace	3.1. One's skills gaps are appropriately identified based on labour market/workplace demand.
	3.2. Strategies to fill professional gaps are properly established in line with labour market opportunities
	3.3. Effective workplace behaviours are properly demonstrated based on Industrial attachment agreement
	3.4. Workplace experience is regularly documented based on IAP logbooks completeness

Knowledge, Skills, and Attitude

Knowledge	Skills	Attitude
✓ Identify importance of industrial attachment ✓ Describe industries that match with one's trade and aspirations ✓ Distinguish relevant documents needed for IAP application ✓ Describe ways for IAP document submission ✓ Enumerate roles and responsibilities during IAP period ✓ Identify self-assessment techniques ✓ Differentiate elements of a competency development plan ✓ Distinguish IAP logbooks ✓ Identify transferable competences aligned to his future roles and career path ✓ Identify application areas for IAP gained experience	✓ Use possible resources to gather IAP information ✓ Select IAP place based on training package ✓ Compose application letter and CV for IAP application ✓ Submit IAP application document ✓ Prepare for and perform interview ✓ Apply effective communication skills ✓ Apply self-assessment techniques for skills gap identification ✓ Develop a competency Development Plan ✓ Carry out IAP tasks ✓ Identify opportunities for learning and growing during IAP	✓ Demonstrate professional conduct, time management, and workplace etiquette. ✓ Enhance adaptability to new situations and environments. ✓ Develop problem-solving skills, critical thinking, and decision-making abilities while solving IAP challenges ✓ Collaborate, work in teams, while fulfilling IAP tasks ✓ Being more motivated, dedicated, and passionate about the future career ✓ Being self-confidence towards successful

	✓ Document IAP activities ✓ Build a portfolio for gained experience from IAP ✓ Showcase and apply IAP skills	completion of the industrial attachment ✓ Network with others
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Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Investigate and secure IAP place 2. Prepare for IAP 3. Develop one's competences at the workplace
Learning outcome 1: Investigate and secure IAP place	Learning hours: 10
Indicative content	
• Explanation of the importance of industrial attachment ✓ Benefits of IAP ✚ Practical experience ✚ Skills development ✚ Career exploration ✚ Networking and connection ✚ Employability and competitive advantage • Using resources in the community or nationwide to find IAP information ✓ Resources to find internship in the community and at national level ✚ Job announcements ✚ Newspapers ✚ Advertisements ✚ Recruitment agencies ✚ Internet websites ✓ Identification of contact persons	

- **Selection of industrial attachment place based on training package**

- ✓ Key terms definitions
 - + Firm
 - + Sector
 - + Industry
 - + Company
 - + Organization
 - + Factory
 - + Enterprise
 - + Business
- ✓ Industry classification
- ✓ Industry sectors
- ✓ Industries/companies organizational structure
 - + Purpose of organizational structure
 - + Benefits to use organizational chart
- ✓ Factors influencing industry selection
 - + Geographical location
 - + Non geographical factors
 - + Industry size
 - + Mean of industrial size
 - + Industrial size determination
- ✓ Industrial attachment place selection criteria
 - + Training package
 - + Tasks related to the field.
 - + Working hours

- **Development of application document**

- ✓ Writing an IAP Application letter
 - + Formats of application letter
 - + Content/highlights of IAP application letter

- ✓ Writing a CV for IAP application
 - + CV format
 - + IAP CV content
 - + Attachments
 - Academic transcripts or certificates
 - Reference letters from instructors or previous employers (if available)
- ✓ Submission of Application documents
 - + Online application/submission
 - + Email submission
 - + Postal/Courier Submission
 - + In-Person Submission

Resources required for the learning outcome

Equipment	Computer, Projector, chalk board, flipchart stand
Materials	Papers, flipcharts, chalks, pens, marker pens,
Tools	Reference books, Pictures, sample of newspapers, Power Point presentations on mapping the industries related to own career
Facilitation techniques	- Individual and group work - Group discussion and presentation - Learning through interaction of guest speakers (Practitioners) - Learning through field visits on the relevant institutions - Case study
Formative assessment methods /(CAT)	- Written assessment - Oral presentation

Learning outcomes	At the end of the module the learner will be able to: 1. Investigate and secure IAP place
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	2. Prepare for IAP 3. Develop one's competences at the workplace
Learning outcome 2: Prepare for IAP	Learning hours: 10
Indicative content	
• Getting ready for IAP selection activities, ✓ Interview preparation 📌 Interviewing tips: ○ what to do before ○ what to do during interview ○ what to do after the interview ✓ Typical questions asked during an interview ✓ Presentation skills • Maintaining Communication with the IAP ✓ Confirmation email ✓ Polite follow up ✓ Next step inquiry ✓ Additional information/updates provision 📌 Start date 📌 Duration 📌 Any specific requirements ✓ Continued interest expression • Review of roles, responsibilities and expectations during the attachment period ✓ Key parties involved in IAP and their roles 📌 Training institution 📌 Industry/company ✓ Key roles involved in running IAP 📌 Company Supervisor roles	

 School supervisor/Trainer roles  Trainee roles ✓ Trainee's expectations from IAP	
Resources required for the learning outcome	
Equipment	Computer, Projector, chalk board, flipchart stand
Materials	Papers, flipcharts, chalks, pens, marker pens, internet
Tools	Reference books, Pictures, Power Point presentations
Facilitation techniques	Group discussion and presentation, Individual work, guided practice
Formative assessment methods /(CAT)	- Written assessment - Oral assessment

Learning outcomes	At the end of the module the learner will be able to: 1. Investigate and secure IAP place 2. Prepare for IAP 3. Develop one's competences at the workplace
Learning outcome 3: Develop one's competences at the workplace	Learning hours: 140
Indicative content	
• Identification of One's skills gaps ✓ Key terms definition  Skills gap  Professional gaps  Labor market ✓ Techniques for identifying professional gaps  SWOT analysis  Benchmarking competences ✓ Identifications of workplace challenges	

- **Establishment of strategies to fill professional gaps at the workplace**
 - ✓ Developing a competency Development Plan
 - + Elements of a Competency Development Plan
 - + Sample of a format for a Competency Development Plan
 - + Implementation of a competency Development Plan
 - ✓ Labor market opportunities for learning and growth
 - + On-job-training/workshops/seminars
 - + Volunteering projects/tasks
 - + Job shadowing
 - ✓ Strategies to overcome workplace challenges
- **Demonstration of effective workplace behaviors**
 - ✓ Workplace behaviors/attitudes
 - ✓ Workplace habits
 - ✓ Managing personal life at workplace
 - + Common situations to balance work and personal life
 - + Tips to manage personal and work lives
 - ✓ Performing workplace tasks
- **Documentation of Workplace experience**
 - ✓ IAP logbook completeness
 - ✓ Transferring competences gained from IAP
 - + Assessment of IAP achievement/experience
 - Description of the work carried out during IAP
 - Description of competences acquired during IAP
 - Description of challenges encountered during IAP period
 - Explanation of approaches used to address challenges
 - + Evaluation and recommendations from IAP supervisors
 - + Self -evaluation vis-à-vis developed goals and Competency development plan
 - ✓ Creation and organization of a personal portfolio
 - + Definition of IAP portfolio

- ✚ Elements of an IAP portfolio
- ✚ IAP portfolio arrangement
 - Methods of documents arrangement
 - Ways for keeping safe storage
- ✓ Identification of opportunities to showcase and apply new competences gained from IAP
 - ✚ IAP portfolio sharing
 - ✚ Job application and interviews
 - ✚ Entrepreneurial-ventures
 - ✚ Continuous Learning and Professional Development
 - ✚ Community Engagement and Volunteering
 - ✚ Mentoring and Knowledge Sharing
 - ✚ Maintaining Relationship with IAP hosting organization

Resources required for the learning outcome

Equipment	▪ Computer, Projector, chalk board, flipchart stand
Materials	▪ Papers, flipcharts, chalks, pens, marker pens, internet
Tools	▪ Reference books, Pictures, Power Point presentations, copies of logbooks
Facilitation techniques	▪ Group discussion and presentation, Individual work, guided practice
Formative assessment methods /(CAT)	▪ Written assessment ▪ Oral assessment

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