



Republic of Rwanda  
Ministry of Education



**RTB** | RWANDA  
TVET BOARD

**CURRICULUM STRUCTURE**

**RQF LEVEL**

**4**



**TVET CERTIFICATE IV  
in  
WOOD TECHNOLOGY**

**AFPWOT4001**

**Kigali, June 2023**

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**TVET CERTIFICATE IV**  
**in**  
**Wood Technology**

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**Supported by**



Implemented by  
**giz** Deutsche Gesellschaft  
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# Table of contents

Copyright.....	ii
Table of contents .....	iii
List of Abbreviations .....	iv
Acknowledgement.....	v
Production team .....	vi
Foreword (to be reviewed).....	vii
1. GENERAL INTRODUCTION .....	1
2. QUALIFICATION DETAILS .....	2
2.1. Description .....	2
2.2. Graduate profile .....	2
2.3. Minimum entry requirements and pathways .....	3
2.4. Rationale of the Qualification .....	3
2.5. Job related information.....	4
2.6. Information about competencies.....	5
2.7. Allocation of Learning Hours .....	6
3. TRAINING PACKAGE.....	7
3.1. Course structure .....	7
3.2. Flowchart.....	7
4. ASSESSMENT GUIDELINES .....	9
4.1. Assessment Methodology .....	9
4.2. Formative Assessment .....	9
4.3. Summative Assessment.....	10
5. GLOSSARY.....	11

## List of Abbreviations

<b>CBA</b>	: Competency-Based Assessment
<b>IAP</b>	: Industrial Attachment Program
<b>IPRC</b>	: Integrated Polytechnic Regional College
<b>NST1</b>	: National Strategic Transformation 1
<b>RP</b>	: Rwanda Polytechnic High Learning Institution
<b>RPL</b>	: Recognition of prior learning
<b>RQF</b>	: Rwandan Education Qualification Framework
<b>RTB</b>	: Rwanda Technical and Vocational Education and Training Board
<b>SHE</b>	: Safety, Health and Environment
<b>TQUM</b>	: TVET Quality Management
<b>TVET</b>	: Technical and Vocational Education and Training

## Acknowledgement

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## Foreword

The global rapid changes in the labour market tends do 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 existing curricula were limited and narrowed in terms of acquired skills and knowledge and were not meeting the requirements of the current labour market at both national and regional level. In addition there were barriers in vertical mobility and pathways in TVET which resulted in negative TVET perception. Furthermore, there were barriers to admission of TVET graduates of certain programs into higher learning institutions.

The TVET modernization process has begun with a clear picture of the programs focusing on sector with the high employment potential like Wood Technology among others. In this respect, Rwanda TVET Board, in collaboration with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, is honoured to avail the revised curriculum of Wood Technology 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.

**Eng.\_ Dipl. Paul UMUKUNZI**

**Director General/ RTB**

## 1. GENERAL INTRODUCTION

The curriculum presents a coherent and significant set of competencies to acquire in order to perform the occupations of a **Wood kiln & boiler operator, Wood artist, Moulder operator, and an Engineered wood products technician**. It is designed with an approach that takes into account the training needs, the work situation, as well as the goals and the means to implement the training.

The modules of the curriculum include a description of the expected results at the end of training. They have a direct influence on the choice of the theoretical and practical learning activities. The competencies are the targets of training and the acquisition of each is required for certification.

The curriculum is the reference to carry out the assessment of learning. Assessment tools of learning are developed based on this document.

The curriculum consists of three parts. The first part is of general interest and shows the nature and goals of the program and the key concepts and definitions used in the document. 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. It includes the sequencing of module learning, the description of each module and the course structure.

The pages describing the modules are the heart of a curriculum. They present the title of the module, the length of training, the amount of credits, the context in which the competency is performed, the prerequisite competencies, the learning units and the performance criteria.

In each module, a course structure is provided. The course structure describes the learning outcomes (knowledge, skills and attitudes) and the learning contents related to each learning unit. Also, the learning activities and resources for learning are suggested.

Finally, the assessment specifications and guidelines are included in each module.

## 2. QUALIFICATION DETAILS

### 2.1. Description

<b>Title:</b>	TVET Certificate 4 in Wood Technology
<b>Level:</b>	RQF Level 4
<b>Credits:</b>	120
<b>Sector:</b>	Agriculture and Food Processing
<b>Sub-sector:</b>	Wood Technology
<b>Revised date:</b>	June, 2023

**Note:** The 120 credits are corresponding to the total of notional learning hours (1,200 hours make 37 weeks of effective teaching and learning in TVET setting and company). Notional learning hours include direct contact time with trainers and workplace learning facilitators ('directed learning'), time spent in studying, doing assignments, and undertaking practical tasks ('self-directed'). It is included also the time of summative assessment (Workplace Comprehensive-, Integrated- and End Level Assessment) which is conducted at company in collaboration with the school.

### 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 various Wood Technology enterprises where wood kiln & boiler operations, wooden artyles creation, moulder operations, engineered wood products production and maintenance of industrial woodworking machines works, just to name a few, are carried out. Learners may work with some autonomy or in a team but usually under close supervision.

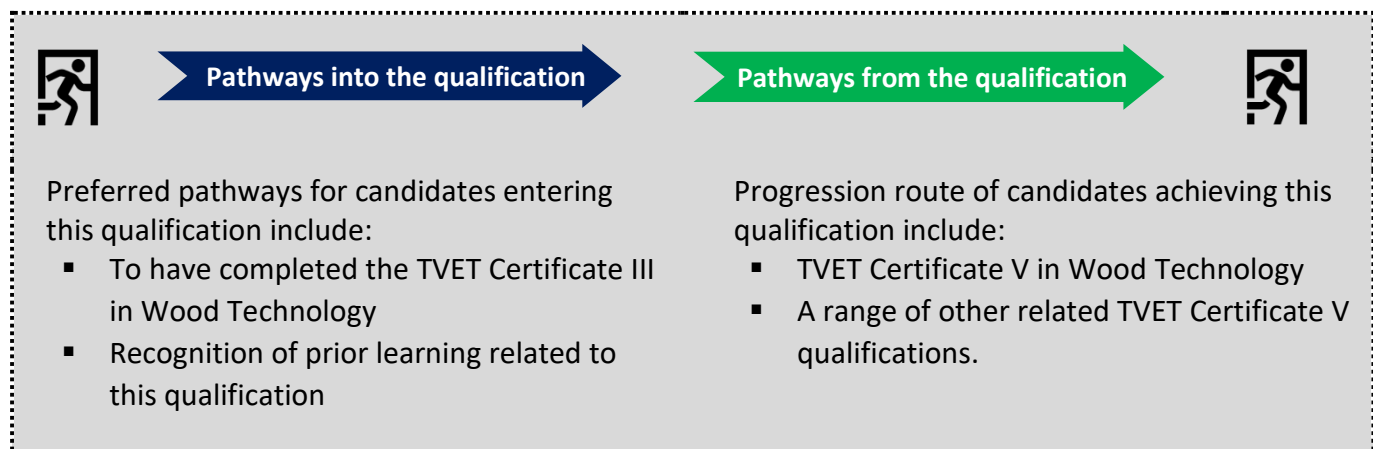
**At the end of this qualification, qualified learners will be able to:**

1. Develop a business plan
2. Use intermediate English at workplace
3. Apply computer skills
4. Gukoresha Ikinyarwanda cy'Umunyamwuga
5. Exprimer des opinions en Français élémentaire
6. Citizenship
7. Apply fundamental mathematical analysis
8. Demonstrate knowledge of organic Chemistry
9. Demonstrate knowledge of general Biology
10. Apply mechanics and properties of matter
11. Use AutoCAD software
12. Create a wooden art style

13. Maintain industrial woodworking machines
14. Operate a wood kiln
15. Operate a wood moulder machine
16. Produce engineered boards
17. Produce engineered wooden beams
18. Integrate the workplace

### 2.3. Minimum entry requirements and pathways

The minimum entry requirement to this course is to be mentally fit with an interest in Wood Technology and related areas.



### 2.4. Rationale of the Qualification

Rwanda's wood technology industry has been steadily developing over the years, driven by the country's efforts to promote sustainable economic growth and reduce reliance on traditional agriculture. The industry plays a significant role in supporting the country's economic diversification and job creation initiatives.

Rwanda possesses substantial forest resources, covering approximately 29% of the country's land area. The Rwandan government has recognized the potential of the wood technology industry and has implemented various initiatives to support its growth. These include the establishment of institutions, policies, and regulations to promote sustainable forestry management, as well as the development of training programs to enhance the skills of local artisans and woodworkers. Rwanda has placed a strong emphasis on value addition within the wood technology industry. The country aims to move beyond the export of raw timber and increase the production of value-added wood products such as furniture, flooring, doors, and other finished goods. The development of the wood technology industry has contributed to job creation and poverty reduction in Rwanda. It has provided employment opportunities for both skilled and unskilled workers, especially in rural areas where forestry resources are abundant. While the domestic market for wood products in Rwanda is growing, there is also significant potential for exporting these goods to regional and international markets. Rwanda's strategic location within the East African region provides access to a broader customer base, creating opportunities for export-oriented wood technology businesses.

It's worth noting that while the wood technology industry in Rwanda is developing, challenges such as limited access to finance, inadequate infrastructure, and the need for further skills development still exist. However, the government's commitment and ongoing efforts to address these challenges demonstrate a positive outlook for the industry's future growth and contribution to Rwanda's economy.

## 2.5. Job related information

This qualification prepares individuals to integrate the Wood Technology industry with the professionalization of wood kiln & boiler operation, wood art, moulder operation, and engineered wood products technicity. This qualification again offers the opportunity to execute the works as Wood kiln & boiler operator, Wood artist, Moulder operator, and Engineered wood products technician while ensuring that safety, security and environmental regulations are respected.



### Possible jobs related to this qualification

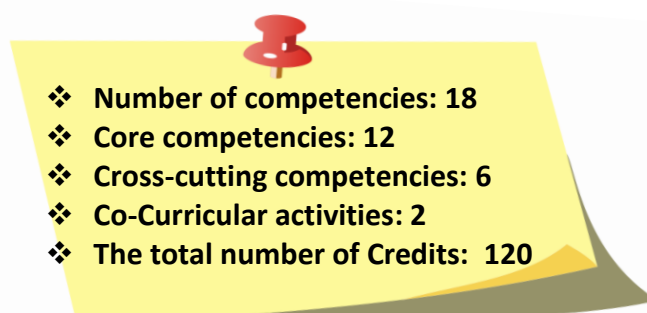
**Wood kiln & boiler operator,**  
**Wood artist,**  
**Moulder operator,**  
**Engineered wood products technician.**

## 2.6. Information about competencies

No	Code	Complementary competencies	Credit
1.	CCMBC402	Develop a business plan	3
2.	CCMEN402	Use intermediate English at workplace	3
3.	CCMCL402	Apply computer skills	3
4.	CCMKN402	Gukoresha Ikinyarwanda cy'Umunyamwuga	3
5.	CCMFT402	Exprimer des opinions en français élémentaire	3
6.	CCMCT401	Citizenship	3
<b>Total</b>			<b>18</b>

Co-Curricular activities		Credit
Sports/Clubs		1
Self-study/Library Research		1
<b>Total</b>		<b>2</b>

No	Code	Core competencies	Credit	
<b>GENERAL</b>	7.	GENFA402	Apply Fundamental Mathematical Analysis	6
	8.	GENAC402	Demonstrate knowledge of Organic Chemistry	3
	9.	GENAB402	Demonstrate knowledge of General Biology	3
	10.	GENMP402	Apply Mechanics and properties of matter	4
<b>SPECIFIC</b>	11.	WOTAS401	Use AutoCAD software	10
	12.	WOTKO401	Operate a wood kiln	7
	13.	WOTMO401	Operate a wood moulder machine	8
	14.	WOTWB401	Produce engineered wooden beams	10
	15.	WOTBP401	Produce engineered boards	10
	16.	WOTAC401	Create a wooden art style	12
	17.	WOTIM401	Maintain industrial woodworking machines	7
	18.	WOTIA401	Integrate the workplace	20
<b>Total</b>			<b>100</b>	



## 2.7. Allocation of Learning Hours

N0	Module name	Learning outcome	Theoretical hours	Practical hours	Total hours
1	AutoCAD software	LO1: Navigate AutoCAD Software	5	15	20
		LO2: Make drawing	10	60	70
		LO3: Apply Close	1	9	10
<b>Total hours</b>			<b>16</b>	<b>84</b>	<b>100</b>
2	Wood kiln operation	LO1: Inspect and store incoming timber	5	10	15
		LO2: Load and offload timber into and from the kiln	8	17	25
		LO3: Monitor drying systems	3	7	10
		LO4: Perform routine maintenance on the kiln	5	10	15
		LO5: Handle and dispose of any by-products or waste materials generated by the wood kiln	2	3	5
<b>Total hours</b>			<b>23</b>	<b>47</b>	<b>70</b>
3	Wood moulder machine operation	LO1: Select materials, tools and equipment	4	11	15
		LO2: Set and adjust wood moulder machine	7	18	25
		LO3: Rout timbers and boards	9	21	30
		LO4: Maintain records	3	7	10
<b>Total hours</b>			<b>23</b>	<b>57</b>	<b>80</b>
4	Engineered wooden beams production	LO1: Select raw materials	4	11	15
		LO2: Set and adjust the machine	9	21	30
		LO3: Make a beam	10	25	35
		LO4: Perform finishing works	6	14	20
<b>Total hours</b>			<b>29</b>	<b>71</b>	<b>100</b>
5	Engineered boards production	LO1: Prepare raw materials	6	14	20
		LO2: Set and adjust the machine	8	17	25
		LO3: Make a board.	11	24	35
		LO4: Perform finishing works.	6	14	20
<b>Total hours</b>			<b>31</b>	<b>69</b>	<b>100</b>
6		LO1: Conceptualize the idea	6	14	20

	<b>Wooden art style/piece creation</b>	LO2: Create a wooden prototype or model	6	14	20
		LO3: Measure and shape the wood	9	21	30
		LO4: Connect the pieces together	8	17	25
		LO5: Perform wooden art style finishing	8	17	25
<b>Total hours</b>			<b>37</b>	<b>83</b>	<b>120</b>
<b>7</b>	<b>Industrial woodworking machines maintenance</b>	LO1: Identify needed maintenance	6	14	20
		LO2: Identify the required materials and other necessities	6	14	20
		LO3: Perform maintenance	9	21	30
<b>Total hours</b>			<b>21</b>	<b>49</b>	<b>70</b>

### 3. TRAINING PACKAGE

The training package includes 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.

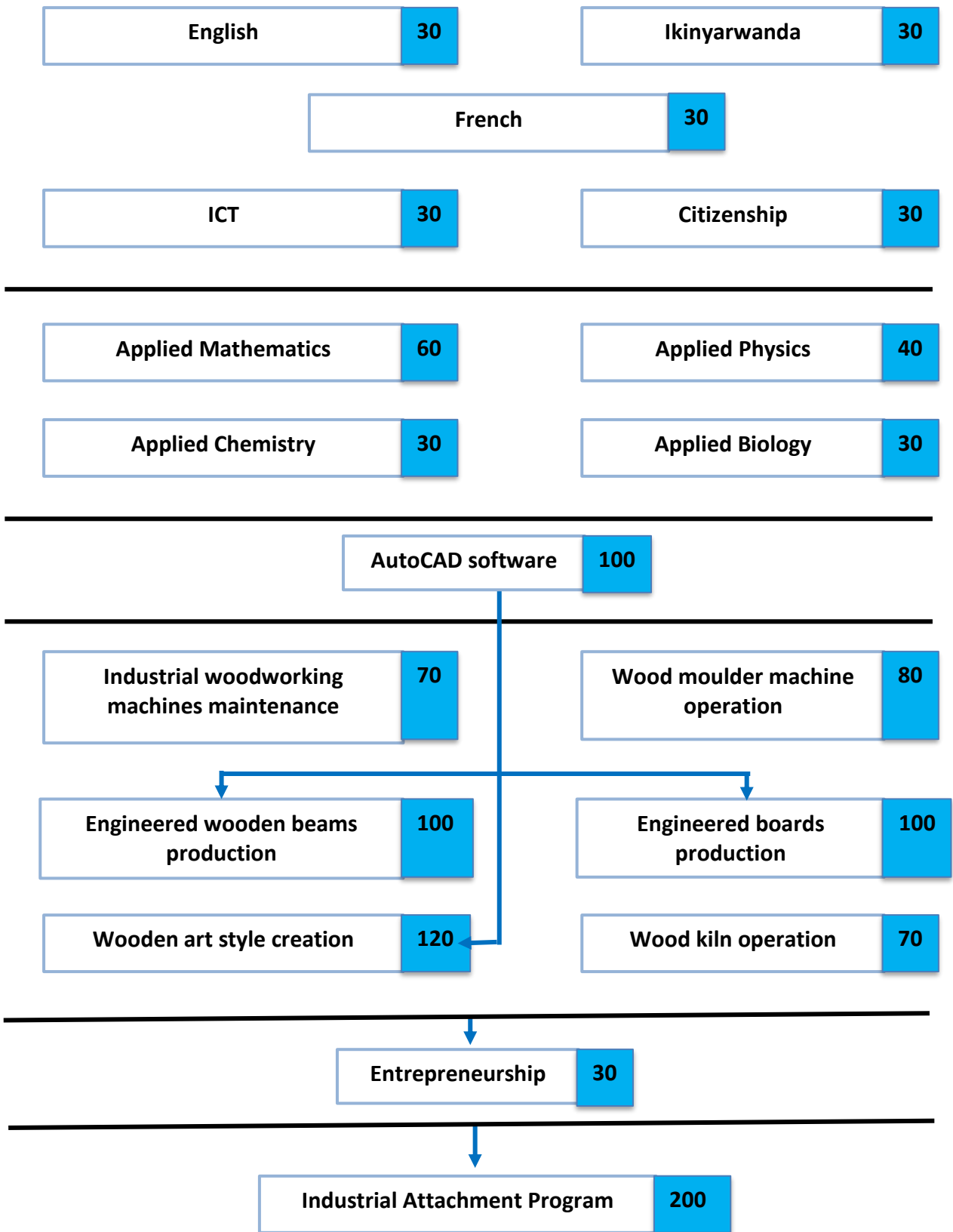


Figure 1: Flowchart

## **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:

- 50 % for general and complementary modules
- 70 % for specific modules

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%				
		<b>Summative Assessment</b>			50%

**Note:** 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.

## 5. GLOSSARY

**Assessment:** A process of gathering and judging evidence in order to decide whether a person has attained a standard of performance.

**Assessment criteria:** Statements which describe performances and place them in context with sufficient precision to allow valid and reliable assessment.

**Best practice:** Management practices and work processes that lead to outstanding or top-class performance and provide examples for others.

**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.

**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.

**Competency-based assessment (or CBA):** The gathering and judging of evidence in order to decide whether a person has achieved a standard of competency.

**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.

**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.

**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.

**Credit:** The acknowledgement that a person has satisfied the requirements of a module.

**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.

**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.**

**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.

**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.

**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.

**Generic modules:** Modules leading to the attainment of complementary competencies.

**Informal education:** The acquisition of knowledge and skills through experience, reading, social contact, etc.

**Internship:** An opportunity for a learner to integrate career related experience by participating in planned, supervised work.

**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.

**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.

**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.

**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.

**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.

**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.

**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

**Module:** A unit of training which corresponds to one competency and which can be completed on its own or linked to others.

**Occupation:** The principal business of one's life.

**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.

**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.

**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.

**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.

**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).

**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

**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.

**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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