Republic of Rwanda
Ministry of Education

RTB | RWANDA TVET BOARD

BUILDING SET OUT

BDCBS301

Set out a building

Competence

RQF Level: 3

Learning Hours 50

Credits: 5

Sector: Construction and Building Services

Trade: Building construction

Module Type: Specific

Curriculum: CBSBDC3001- TVET Certificate 3 in Building Construction

Issue Date: October ,2021

1200

Purpose statement	This module describes the skills, knowledge and attitude to set out the building on the site. It is intended to be pursued by learner at TVET level III for TVET Certificate III in masonry. At the end of this module, the learner will be able to select tools, equipment and materials, clear the site and set profiles as required.
Leaning assumed to be in place	Safety, Health and environment at workplace; Construction basic technical drawing

<table>
<tr><td rowspan="6">Delivery modality</td><td colspan="2">Training delivery</td><td>100%</td><td colspan="2">Assessment</td><td>Total 100%</td></tr>
<tr><td colspan="2">Theoretical content</td><td>30%</td><td rowspan="4">Formative assessment</td><td>30%</td><td rowspan="4">50%</td></tr>
<tr><td colspan="2">Practical work:</td><td rowspan="3">70%</td><td rowspan="3">70%</td></tr>
<tr><td>• Group project and presentation</td><td>20%</td></tr>
<tr><td>• Individual project /Work</td><td>50%</td></tr>
<tr><td colspan="2"></td><td colspan="3">Summative Assessment</td><td>50%</td></tr>
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Elements of Competency and Performance Criteria

Elements of competency	**Performance criteria**
1. **Select tools materials and equipment.**	1.1. Appropriate tools are selected according to the work to be performed
	1.2. Appropriate equipment is selected according to the work to be performed
	1.3. Adequate materials are selected according to the standard
2. **Clear the site.**	2.1. Systematic assessment of the site is done according to the level needed.
	2.2. Systematic assessment of the site is done according to the level needed.
	2.3. Systematic assessment of the site is done according to the level needed.
3. **Set profiles**	3.1 Relevant levelling tools are used according to the work to be performed.
	3.2 Drawing is correctly interpretated in accordance with standards signs and symbols.
	3.3 Surveying instruments are accurately used based on drawing dimensions.
	3.4 Methodical demarcation of building lines is done as per drawing dimensions of

	trenches, foundation and walls.
	3.5 Dimensions and angles are accurately verified according to the provided drawing.

Course content

Learning outcomes	**At the end of the module the learner will be able to:** 1. **Prepare tools, materials and equipment** 2. **Clear the site** 3. **Set profile**
Learning outcome 1: Prepare tools, materials and equipment	**Learning hours: 5**

Indicative content

- **Identification of tools used for setting out**
  - Hand tools
  - Calibrated measuring tools
  - Power tools
  - Cutting tools
  - Levelling tools
  - Miscellaneous tools
- **Identification of equipment for setting out**
  - Safety equipment
  - Site work equipment
  - PPE
- **Identification of materials used for setting out**
  - Identification of materials used in building set out
  - Use of materials for building set out
  - Quality and sizes of materials for building set out
  - Quantification of required materials

Resources required for the learning outcome

Equipment	– PPEs, Cutting equipment, Mechanical excavation plants
Materials	Timber, Mason line, Nails, RS 435: Timber in joinery — General requirements, RS

	EAS 23: Timber — Dimensions for coniferous sawn timber (cypress and pine) — Sizes of sawn and planed timber — Specification"
Tools	Levelling instruments, RS 175: Wheelbarrow specifications, RS ISO 45001:2018 Occupational Health and Safety Management system— Requirements, RS ISO 13688: 2013/AMD 1:2021 Protective clothing — General requirements, RS ISO 20347: 2012 Personal protective equipment — Occupational footwear, RS ISO 4007: Personal protective equipment — Eye and face protection — Vocabulary RS ISO 14001: Environmental Management System - Requirements for use ISO7010: Graphical Symbols-Safety colours and safety Signs-Registered safety signs.
Facilitation techniques	• Group discussion • Trainer guided • Matching questions • Multiple choice • Sentence completion • Short questions • Open ended questions
Formative assessment methods	• Written assessment • Performance assessment

Learning outcome 2: **Clear the site**	**Learning hours: 5**

Indicative content

- **Assessment of the site condition**
  - The types of soil
  - Types of vegetation
  - Natural features and built environment
  - Topographic characteristics
- **Clearing the site from trees, roots, bushes, grasses and all wastes**
  - Identification Purpose of clearing the site
  - Identification of objects to be cleared
  - Techniques of clearing the site according to the requirements of Environmental management systems standard
- **Levelling of the site from uneven top soil**
  - Removing top soil technics
  - Technics of levelling the ground
  - Categories of mechanical levelling plants

Resources required for the indicative content	
Equipment	– PPEs, Cutting equipment, Mechanical excavation plants
Materials	Timber, Mason line, Nails, RS 435: Timber in joinery — General requirements, RS EAS 23: Timber — Dimensions for coniferous sawn timber (cypress and pine) — Sizes of sawn and planed timber — Specification"
Tools	Levelling instruments, RS 175: Wheelbarrow specifications, RS ISO 45001:2018 Occupational Health and Safety Management system— Requirements, RS ISO 13688: 2013/AMD 1:2021 Protective clothing — General requirements, RS ISO 20347: 2012 Personal protective equipment — Occupational footwear, RS ISO 4007: Personal protective equipment — Eye and face protection — Vocabulary RS ISO 14001: Environmental Management System - Requirements for use ISO7010: Graphical Symbols-Safety colours and safety Signs-Registered safety signs.
Facilitation techniques	• Group discussion • Trainer guided • Matching questions • Multiple choice • Sentence completion • Short questions • Essay • Practical exercises • Open ended questions
Formative assessment methods	• Written assessment • Performance assessment • Product based assessment

Learning outcome 3: Set profiles	Learning hours: 40

Indicative content

- **Use of levelling tools for building set out**
  - Identification of levelling hand tools
  - Use levelling tools
- **Interpretation of drawing for building set out**
  - Identification of drawing signs and symbols
  - Interpret drawing elements
- **Use surveying instruments for setting out**
  - Identification of surveying calibrated instruments Parts of dumpy level, theodolite, Total station, GPS and Professional line-laser

- Terms used in levelling
- Procedures of setting up leveling instrument
- Read data from surveying instruments
- Fill levelling book

- **Demarcation of the dimensions of trenches, foundation and walls using building lines**
  - Identification of setting out methods
  - Application of setting out methods
- **Verification of the accuracy of dimensions and angles**
  - Checking the width
  - Checking the length
  - Verification of angles

Resources required for the indicative content	
Equipment	PPEs, Cutting equipment, Mechanical cutting equipment
Materials	Timber, Mason line, Nails, RS 435: Timber in joinery — General requirements, RS EAS 23: Timber — Dimensions for coniferous sawn timber (cypress and pine) — Sizes of sawn and planed timber — Specification"
Tools	Trowel, Spirit level, Squares, building line, Tape measure, Wheelbarrow, Roller brush, Hand brush, Scrapper, Tray, Steel float, Sand paper, Pan/bucket, Extension pole, mixing stick, Strings (Road marking line), Brushes, Paint Scrapper, Roller, Roller tray and Bucket/pan.
Facilitation techniques	• Lectures • Demonstration and simulation • Individual and group work • Practical exercise • Individualized • Trainer guided • Group discussion • Practical exercises
Formative assessment methods	• Written assessment • Performance assessment • Product based assessment • Project based assessment

Integrated/Summative assessment (For specific module)

Integrated situation

Bwiza TVET school is located in Muhanga district Nyamabuye sector. The quality audit ranked the school poorly due to ineffective management of trainees' portfolios and provided the recommendation to the school to improve trainees' portfolios storage for effective records keeping. The school management committee decided to construct a store in its compound. MTC engineering Ltd won the construction tender of above said store and is undertaking implementation activities. As a mason hired by the above company you are given technical drawing to set out the building of rectangular shape with 5m of width and 7m of length within 4 hours.

- The thickness of the trench, foundation and walls is 60cm, 40cm and 20cm respectively.
- The method to be used is 3-4-5.
- After setting out the building you are also requested to verify the work done using a theodolite.

Resources

Tools	Claw hammer, Club hammer, Calibrated tape measures, Calibrated spirit level, Hand saw, Machete,
Equipment	Wheelbarrow, Theodolite and accessories, PPE
Materials/ Consumables	Nails, Timbers, String, Pegs

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
Learning outcome 1: 1. **Select tools, materials and equipment (20%)**	1.1. Appropriate tools are selected according to the work to be performed	Tools are properly selected			5
	1.2. Equipment is selected according to the work to be performed	Equipment are properly selected			7
	1.3. Adequate materials are selected according to the standard	Materials are properly selected			8
Learning outcome 2: **Clear the site** **(30%)**	2.1. Systematic assessment of the site is done according to the level needed.	Site is assessed systematically			10
	2.2. Working area is properly cleared from trees, roots, bushes, grasses and other unnecessary waste.	Working area is cleared properly			10
	2.3. Working area is leveled from uneven top soil according to the design specifications.	Working area is leveled			10
Learning	3.1. Relevant levelling tools are used	Tools are selected			5

outcome 3: **Set profiles** **(50%)**	according to the work to be performed..				
	3.2. Drawing is correctly interpreted in accordance with standards signs and symbols.	signs and symbols are correctly interpreted			15
	3.3. Surveying instruments are accurately used based on drawing dimensions.	Surveying instruments are accurately used			15
	3.4.Methodical demarcation of building lines is done as per drawing dimensions of trenches, foundation and walls.	demarcation of building lines is done as per drawing dimensions of trenches, foundation and walls.			15
Total marks					**100**
Percentage Weightage					**100%**
Minimum Passing line % (Aggregate): 70%					

References:

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2. Brighty, S. (1998). Setting Out: A Guide for site Engineers. Chicago: Blackwell Science Inc; 2nd edition.

3. Grant, S. (2019). Setting out for construction: Apractical Guide to site surveying. Costello: Costello house.

4. Morgan, C. O. (2003). Excavation Safety. Government Institutes.

5. Williams, J. (27 Apr 2009). Surveying&Field work: A practical Text-book on Surveying, Leveling & Setting out Intended for the use of Students in Technical schools and for surveyors, Engineers and Architect, Paperback.

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7. Jim Smith.(1997).The management of sitting out in construction: ICE Design and Practice Guide

8. C. Twort (1972). Civil Engineering Supervision and Management. London.

9. Frank Bell (1993). Surveying and Setting Out Procedures. Avebury

10. Barry Martin Sadgrove (2006). Setting-Out Procedures 2nd Edition

11. http://engineeringbasic.com/steps-in-setting-out-a-building-plan/(Accessed on 7/10/2021)