NATURAL RESOURCES MONITORING

ISCED UNIT CODE: 0521 451 14A

TVETCDACC UNIT CODE: ENV/CU/ENT/CR/05/5/MA

UNIT DURATION: 150Hours

Relationship to Occupational Standards

This unit addresses the Unit of Competency: **Monitor natural resources**

Unit Description

This unit covers the competencies required to monitor natural resources; it involves carrying out environmental landscaping techniques, carrying out environmental trail management, maintaining forestry resources, performing wildlife management, performing range land management and performing water resource stewardship

Summary of Learning Outcomes

By the end of this unit the trainee should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Carry out environmental landscaping techniques,	25
2.	Carry out environmental trail management,	25
3.	Maintain forestry resources,	25
4.	Perform wildlife management,	25
5.	Perform range land management	25
6.	Perform water resource stewardship	25
Total		**150**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Carry out environmental landscaping techniques	**Theory** 1.1 Environmental Landscaping 1.1.1 Definition and importance of environmental landscaping 1.1.2 Benefits of landscaping to the environment and community 1.1.3 Landscaping areas 1.2 Mapping Designated Landscaping Areas 1.2.1 Criteria for selecting areas for landscaping 1.2.2 Types of Landscaping Tools 2.1 Hand tools: shovels, rakes, pruners 2.2 Power tools: lawn mowers, trimmers 1.3 Landscaping procedure 1.4 Maintaining landscaped areas 1.4.1 Maintenance Practices 1.4.2 Monitoring and Evaluation: 2.1 Regular inspection of landscaped area 2.2 Adaptive maintenance strategies	• Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	2.3 Education and awareness programs **Practice** **1.5** Carry Out Landscaping Activities **1.6** Assemble Landscaping Tools	
2. Carry out environmental trail management	**Theory** 2.10 Environmental Trail Management 2.3.1 Definition and significance 2.3.2 Benefits of managing ecosystems for biodiversity and conservation 2.3.3 Relevant laws and guidelines for ecological management 2.2 Sensitive ecosystem 2.2.1 Types of sensitive ecosystem 2.2.2 Criteria for identifying sensitive ecosystems 2.2.3 Importance of sensitive ecosystems 2.3 Ecological Trails Areas 2.3.1 Identification ecological trail area 2.3.2 Tools for carrying out ecological trail 2.3.3 Procedure of creating ecological trails 2.3.4 Importance of ecological trails 2.3.5 Challenges facing ecological trails 2.4 Maintenance of ecological trails **Practice** 2.5 Create ecological trails 2.6 Maintain ecological trial	• Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

3. Maintain forestry resources,	**Theory** 3.1 Forest Conservation and Management 3.1.1 Types of forest resources 3.2 Benefits of Forest Conservation 3.2.1 Environmental 3.2.2 Social 3.2.3 Economic 3.3 Tools for collecting data on forest resources 3.3.1 Types of Data Collection Tools 3.3.2 Digital tools: GPS devices, data loggers, tablets 3.3.3 Manual tools: notebooks, measuring tapes, calipers 3.4 Forest Resources Inventor 3.4.1 Inventory Techniques 3.4.2 Data Collection 3.4.3 Safety Protocols 3.4.4 Documentation 3.5 Implementing Inventory Recommendations 3.5.1 Analysis and Reporting 3.5.2 Implementation Strategies 3.5.3 Monitoring and Evaluation 3.6 Monitoring Forest Resources	• Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	3.6.1 Monitoring Techniques 3.6.2 Regular inspections 3.6.3 Field surveys 3.7 Data Analysis 3.7.1 Analysing monitoring data to assess forest health 3.7.2 Identifying signs of degradation or improvement **Practice** 3.8 Conduct mock forest inventories	
4. Perform wildlife management	**Theory** 4.1 Wildlife Management 4.1.1 Types of wildlife resources 4.1.2 Importance of wildlife resources 4.2 Mapping Wildlife Resources 4.2.1 Mapping Techniques 4.2.2 GIS tools 4.2.3 Field mapping methods 4.3 Data Collection 4.4 Conducting Wildlife Inventory 4.4.1 Inventory Techniques 4.4.2 Safety Protocols 4.4.3 Analysis and Reporting	• Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	4.4.4 Implementation Strategies 4.5 Monitoring Wildlife resources 4.5.1 Monitoring Techniques on Wildlife resources **Practice** 4.6 wildlife resources using GIS tools	
5.perform range land management	**Theory** 5.1 Range land Management 1.1.1 Definition and characteristics of rangelands 1.1.2 Types of rangelands (grasslands, shrublands, savannas) 1.1.3 Importance of rangelands for biodiversity, ecosystem services, and livelihood 1.2 Rangeland Inventory 1.2.1 Rangeland Inventory Methods 1.2.2 Transect surveys 1.2.3 Remote sensing techniques (aerial photography, satellite imagery) 1.2.4 Ground-based measurements (vegetation cover, soil erosion) 1.3 Rangeland Management	• Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	5.3.1 Practices in rangeland management 5.3.2 Benefits of rangeland management 5.3.3 Challenges in rangeland management 5.4 Rangeland management techniques 5.4.1 Rangeland monitoring 5.4.2 Rangeland evaluation 5.5 Range governance and policy **Practice** **5.6** Conduct a transect survey to measure vegetation cover and soil erosion.	
6.Perform water resource stewardship	**Theory** 6.1 Water resources 6.1.1 Types of water resources 6.1.2 Challenges facing water resources 6.1.3 Water governance policy 6.2 Water resource mapping 6.2.1 GIS 6.2.2 Remote sensing 6.3 Water Resource Conservation 6.3.1 Water conservation strategies 6.3.2 Water pollution control 6.4 Water resource monitoring 6.4.1 Water quality monitoring	• Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	6.4.2 Water quantity monitoring 6.5 Water Resource Management Planning 6.5.1 Integrated Water Resource Management (IWRM) 6.5.2 Community-Based Water Management 6.6 Water conservation awareness 6.6.1 Water Conservation Campaigns 6.6.2 Water Education Programs 6.6.3 Community engagement **Practice** 6.7 Map water resources 6.8 Design and execute mock awareness campaigns	

Suggested Methods of Instruction

- Demonstration
- Role playing
- Group discussion
- Direct instruction

Recommended Resources for 25 trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	**Learning Facilities & infrastructure**			
1.)	Lecture/theory room		15	1:25
B	**Tools and Equipment**			
1.)	Shovel		10 pcs	1:3
2.)	Rakes		10 pcs	1:3
3.)	Pruning Shear		5 pcs	1:5
4.)	Lawn mower		5 pcs	1:5
5.)	Grass trimmer		5 pcs	1:5
6.)	Wheelbarrow		5 pcs	1:5
7.)	Lawn aerator		5 pcs	1:5