

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**AN APIARIST**

**LEVEL 5**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

First published 2019

Copyright ©TVET CDACC

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

**Council Secretary/CEO**

**TVET Curriculum Development, Assessment and Certification Council**

**P.O. Box 15745–00100**

**Nairobi, Kenya**

**Email:** [info@tvetcdacc.go.ke](mailto:info@tvetcdacc.go.ke)

**Website:** [**www.tvetcdacc.go.ke**](http://www.tvetcdacc.go.ke)

# FOREWORD

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

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training. A key feature of this policy is the radical change in the design and delivery of TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these occupational standards have been developed for developing a competency-based curriculum for Apiculture Management Level 5.

It is my conviction that these occupational standards will play a great role towards development of competent human resource for the Apiculture Sector’s growth and development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

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

The Technical and Vocational Education and Training Act No. 29 of 2013 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labor force.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Apiculture Sector Skills Advisory Committee (SSAC) have developed these occupational standards for an Apiarist. These standards will be the basis for development of competency-based curriculum for Apiculture Management certificate Level 5.

The occupational standards are designed and organized with clear performance criteria for each element of a unit of competency. These standards also outline the required knowledge and skills as well as evidence guide.

I am grateful to the Council Members, Council Secretariat, Apiculture SSAC, expert workers and all those who participated in the development of this occupational standards.

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

These occupational standards have been designed for competency-based training and has independent competencies of learning that allow the trainee flexibility in entry and exit. In developing the occupational standards, significant involvement and support was received from various organizations.

I recognize with appreciation the role of the Apiculture Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in the standards. I also thank all stakeholders in the Apiculture sector for their valuable input and all those who participated in the process of developing these occupational standards.

I also recognize the support of the Netherlands’ funded NICHE project “Integrated Capacity Development for Sustainable Agriculture and Rural Development” which is jointly implemented by Baraka Agricultural College in Kenya and CINOP Global in the Netherlands.

I am convinced that these occupational standards will go a long way in ensuring that workers in Apiculture Sector acquire competencies that will enable them to perform their work more efficiently.

**CHAIRPERSON**

**APICULTURE SECTOR SKILLS ADVISORY COMMITTEE**

# ACRONYMS

CDACC : Curriculum Development Assessment and Certification Council

CU : Curriculum

BC : Basic Competency

CC : Core Competency

CO : Common Units

KCSE : Kenya Certificate of Secondary Education

KNQA : Kenya National Qualifications Authority

OSHA : Occupation Safety and Health Act

PPE : Personal Protective Equipment

SSAC : Sector Skills Advisory Committee

TVET : Technical and Vocational Education and Training

# KEY TO UNIT CODE

**AGR / OS/MC/ BC/CO/ CR /01/ 5/A**

Industry or sector

Curriculum

Occupational area

Type of competency

Type of competency

Type of competency

Competency number

Competence level

Version control

Contents

[FOREWORD ii](#_Toc64537545)

[PREFACE iii](#_Toc64537546)

[ACKNOWLEDGMENT iv](#_Toc64537547)

[ACRONYMS i](#_Toc64537548)

[KEY TO UNIT CODE 1](#_Toc64537549)

[OVERVIEW 3](#_Toc64537550)

[BASIC UNITS OF COMPETENCY 4](#_Toc64537551)

[DEMONSTRATE COMMUNICATION SKILLS 5](#_Toc64537552)

[DEMONSTRATE NUMERACY SKILLS 9](#_Toc64537553)

[DEMONSTRATE DIGITAL LITERACY 15](#_Toc64537554)

[DEMONSTRATE ENTREPRENEURIAL SKILLS 20](#_Toc64537555)

[DEMONSTRATE EMPLOYABILITY SKILLS 25](#_Toc64537556)

[DEMONSTRATE ENVIRONMENTAL LITERACY 34](#_Toc64537557)

[DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES 41](#_Toc64537558)

[CORE UNITS OF COMPETENCY 48](#_Toc64537559)

[DEMONSTRATE BEE BIOLOGY AND BEHAVIOR 49](#_Toc64537560)

[ESTABLISH AN APIARY 54](#_Toc64537561)

[CONSTRUCT BEE HIVES AND BEE EQUIPMENT 59](#_Toc64537562)

[MANAGE BEE FACILITIES, TOOLS AND EQUIPMENT 63](#_Toc64537563)

[MANAGE BEE FORAGE RESOURCES 68](#_Toc64537564)

[MANAGE HONEY BEE SWARMS 74](#_Toc64537565)

[MANAGE HONEY BEE COLONY 78](#_Toc64537566)

[CONTROL HONEY BEE PESTS AND DISEASES 84](#_Toc64537567)

[HARVEST BEE PRODUCTS 89](#_Toc64537568)

[PROCESS BEE PRODUCTS 93](#_Toc64537569)

[MANAGE QUALITY OF BEE PRODUCTS 97](#_Toc64537570)

[PERFORM BEE PRODUCT VALUE ADDITION 102](#_Toc64537571)

[PROVIDE BEE KEEPING TRAINING AND EXTENSION SERVICES 106](#_Toc64537572)

# OVERVIEW

**Description**

The **Apiculture management level Five qualification** consists of competencies that a person must achieve to demonstrate bee biology and behaviour, establish an apiary, construct bee hives and bee equipment, manage bee facilities, tools and equipment, manage bee forage resources, manage honey bee swarms, manage honey bee colony, control honey bee pests and diseases, harvest bee products, process bee products, manage quality of bee products and perform bee product value addition within the institution’s/organizations acceptable standard operating procedures (SOPs).

**Units of Competency**

This course consists of basic, core competencies as indicated below:

**Basic Competency**

|  |  |
| --- | --- |
| **Unit of competency code** | **Unit of competency title** |
| AGR/OS/API/BC/01/5 | Demonstrate communication skills |
| AGR/OS/API/BC/02/5 | Demonstrate numeracy skills |
| AGR/OS/API/BC/03/5 | Demonstrate entrepreneurial skills |
| AGR/OS/API/BC/04/5 | Demonstrate employability skills |
| AGR/OS/API/BC/05/5 | Demonstrate environmental literacy |
| AGR/OS/API/BC/06/5 | Demonstrate occupational safety and health practices |

**Core Competency**

|  |  |
| --- | --- |
| **Unit of competency code** | **Unit of competency title** |
| AGR/OS/API/CR/01/5 | Demonstrate bee biology and behaviour |
| AGR/OS/API/CR/02/5 | Establish an apiary |
| AGR/OS/API/CR/03/5 | Construct bee hives and bee equipment |
| AGR/OS/API/CR/04/5 | Manage bee facilities, tools and equipment |
| AGR/OS/API/CR/05/5 | Manage bee forage resources |
| AGR/OS/API/CR/06/5 | Manage honey bee swarms |
| AGR/OS/API/CR/07/5 | Manage honey bee colony |
| AGR/OS/API/CR/08/5 | Control honey bee pests and diseases |
| AGR/OS/API/CR/09/5 | Harvest bee products |
| AGR/OS/API/CR/10/5 | Process bee products |
| AGR/OS/API/CR/11/5 | Manage quality of bee products |
| AGR/OS/API/CR/12/5 | Perform bee product value addition |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE: AGR/OS/API/BC/01/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate discussion with groups and contribute to the development of communication strategies.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Meet communication needs of clients and colleagues | 1. Specific communication needs of clients and colleagues are identified and met 2. Different approaches are used to meet communication needs of clients and colleagues 3. Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization |
| 1. Contribute to the development of communication strategies | * 1. Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as required   2. Channels of communication are established and reviewed regularly   3. Coaching ineffective communication is provided   4. Work related network and relationship are maintained as necessary   5. Negotiation and conflict resolution strategies are used where required   6. Communication with clients and colleagues is appropriate to individual needs and organizational objectives |
| 1. Conduct interviews | 1. A range of appropriate communication strategies are employed in ***interview situations*** 2. Records of interviews are made and maintained in accordance with organizational procedures 3. Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated |
| 1. Facilitate group discussions | 1. Mechanisms which enhance effective group interaction is defined and implemented 2. Strategies which encourage all group members to participate are used routinely 3. Objectives and agenda for meetings and discussions are routinely set and followed 4. Relevant information is provided to group to facilitate outcomes 5. Evaluation of group communication strategies is undertaken to promote participation of all parties 6. Specific communication needs of individuals are identified and addressed |
| 1. Represent the organization | 1. When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization 2. Presentation is clear and sequential and delivered within a predetermined time 3. Utilize appropriate media to enhance presentation 4. Differences in views are respected 5. Written communication is consistent with organizational standards 6. Inquiries are responded in a manner consistent with organizational standard |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| ***Communication strategies***  include but not limited to: | * Language switch * Comprehension check * Repetition * Asking confirmation * Paraphrase * Clarification request * Translation * Restructuring * Approximation * Generalization |
| ***Effective group interaction*** includes but not limited to: | * Identifying and evaluating what is occurring within an interaction in a non-judgmental way * Using active listening * Making decision about appropriate words, behavior * Putting together response which is culturally appropriate * Expressing an individual perspective * Expressing own philosophy, ideology and background and exploring impact with relevance to communication * Openness and flexibility in communication |
| ***Situations*** include but not limited to: | * Establishing rapport * Eliciting facts and information * Facilitating resolution of issues * Developing action plans * Diffusing potentially difficult situations |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Effective communication process
* Active listening
* Giving/receiving feedback
* Interpretation of information
* Role boundaries setting
* Negotiation
* Establishing empathy
* Openness and flexibility in communication
* Communication skills required to fulfill job roles as specified by the organization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups and different styles of group leadership
* Communication skills relevant to client groups
* Flexibility in communication
* Communication skills relevant to client groups

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Met communication needs of clients and colleagues 2. Contributed to the development of communication strategies 3. Conducted interviews 4. Facilitated group discussions 5. Represented the organization |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Direct Observation/Demonstration with Oral Questioning 2. Written Examination |
| 1. Context of Assessment | Competency may be assessed individually in the actual workplace or through accredited institution |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE NUMERACY SKILLS

**UNIT CODE: AGR/OS/API/BC/02/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to perform numerical functions. The person who is competent in this unit shall be able to: Calculate with whole numbers and familiar fractions, decimals and percentages for work; Estimate, measure, and calculate with routine metric measurements for work; Use routine maps and plans for work; Interpret, draw and construct 2D and 3D shapes for work; Interpret routine tables, graphs and charts for work; Collect data and construct routine tables and graphs for work; and Use basic functions of calculator

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range.*** |
| 1. Calculate with whole numbers and familiar fractions, decimals and percentages for work | 1. Mathematical information that may be partly embedded in routine workplace tasks and texts is selected and interpreted 2. Whole numbers and routine or familiar fractions, decimals and percentages including familiar rates are interpreted and comprehended 3. Calculations which may involve a number of steps are perform 4. Calculations done with whole numbers and routine or familiar fractions, decimals and percentages 5. Conversion between equivalent forms of fractions, decimals and percentages is done 6. Order of operations is applied to solve multi-step calculations 7. Problem solving strategies are appropriately applied 8. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task 9. Formal and informal mathematical language and symbolism are used to communicate the result of the task |
| 2. Estimate, measure, and calculate with routine metric measurements for work | 1. Measurement information in workplace tasks and texts are selected and interpreted in accordance with workplace requirements 2. Appropriate routine measuring equipment are identified and selected in accordance with workplace requirements 3. Measurements are estimated and made using correct units 4. Estimations and calculations done using routine measurements 5. Conversions performed between routinely used metric units 6. Problem solving processes are used to undertake the tasks 7. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task 8. Information is recorded using mathematical language and symbols appropriate to discuss the task |
| 3. Use routine maps and plans for work | 1. Features are identified in routine maps and plans 2. Symbols and keys in routine maps and plans are clearly explained 3. Orientation of map to North is identified and interpreted 4. Understanding of direction and location is clearly demonstrated 5. Simple scale is applied to estimate length of objects, or distance to location or object 6. Directions are given and received using both formal and informal language |
| 4. Interpret, draw and construct 2D and 3D shapes for work | 1. Two dimensional shapes and routine three dimensional shapes identified in everyday objects and in different orientations 2. The use and application of shapes elaborately explained 3. Formal and informal mathematical language and symbols used to describe and compare the features of two dimensional shapes and routine three dimensional shapes 4. Common angles identified 5. Common angles in everyday objects are appropriately estimated 6. Formal and informal mathematical language are used to describe and compare common angles 7. Common geometric instruments used to draw two dimensional shapes 8. Routine three dimensional objects constructed from given nets |
| 5. Interpret routine tables, graphs and charts for work | 1. Routine tables, graphs and charts identified in predominately familiar texts and contexts 2. common types of graphs and their different uses identified 3. features of tables, graphs and charts identified 4. Information in routine tables, graphs and charts located and interpreted 5. Calculations are perform to interpret information 6. How statistics can inform and persuade interpretations is explained 7. misleading statistical information is identified 8. Information relevant to the workplace is discussed |
| 6. Collect data and construct routine tables and graphs for work | 1. Features of common tables and graphs identified 2. uses of **different tables and graphs** identified 3. Data and variables to be collected are determined 4. The audience is determined 5. Method of data collection is select 6. Data is collected 7. Information is collated in a table 8. Suitable scale and axes determined 9. Graph to present information is drafted and drawn 10. Data checked to ensure that it meets the expected results and context 11. Information is reported or discussed using formal and informal mathematical language |
| 7. Use basic functions of calculator | 1. Keys are identified and used for **basic functions on a calculator** 2. Calculation done using whole numbers, money and routine decimals and percentages 3. Calculation done with routine fractions and percentages 4. Order of operations is applied to solve multi-step calculations 5. Results are interpreted, displayed and recorded 6. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task 7. Formal and informal mathematical language and appropriate symbolism and conventions used to communicate the result of the task |

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Simple fractions, decimals and percentages | May include but not limited to:   * 1. Fraction   2. Decimals   3. Percentages |
| 1. Common 2D shapes and common 3D shapes | May include but not limited to:   1. Round 2. Square 3. Rectangular 4. Triangle 5. Sphere 6. Cylinder 7. Cube 8. Polygons 9. Cuboids |
| 1. Symbols and keys in routine maps and plans | May include but not limited to:   1. Charts 2. Maps 3. Graphs |
| 1. Use basic functions of calculator | May include but not limited to:  4.1 Addition  4.2 Multiplication  4.3 Calculate ratios  4.4 Conversion of ratios into percentages |
| 1. Routine tables, graphs and charts for work | May include but not limited to:  5.1 Bar Graphs  5.2 Flow Charts  5.3 Pie Charts  5.4 Pictograph  5.5 Line Graphs  5.6 Time Series Graphs  5.7 Stem and Leaf Plot  5.8 Histogram  5.9 Dot Plot  5.10 Scatter plot |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Applying Fundamental operations (addition, subtraction, division, multiplication)
* Using calculator
* Using different measuring tools

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Types of common shapes
* Differentiation between two dimensional shapes / objects
* Formulae for calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Fundamental operations (addition, subtraction, division, multiplication)
* Rounding techniques
* Types of fractions
* Different types of tables and graphs
* Meaning of graphs, such as increasing, decreasing, and constant value
* Preparation of basic data, tables & graphs

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Calculated correctly with whole numbers and routine or familiar fractions, decimals and percentages 2. Estimated, measured and calculated with routine metric measurements 3. Applied simple scale to estimate length of objects or distance to location or object 4. Used formal and informal mathematical language to describe and compare common angles 5. Used common geometric instruments to draw two dimensional shapes 6. Collected data and constructed routine tables and graphs 7. Used basic functions of calculator correctly |
| 2. Resource Implications | 2.1 Calculator  2.2 Basic measuring instruments |
| 3. Methods of Assessment | Competency may be assessed through:  3.1 Written Test  3.2 Interview/Oral Questioning   * 1. Demonstration |
| 4. Context of Assessment | Competency may be assessed in an off the job setting |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE DIGITAL LITERACY

**UNIT CODE: AGR/OS/API/BC/03/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to effectively use digital devices such as smartphones, tablets, laptops and desktop PCs. It entails identifying and using digital devices such as smartphones, tablets, laptops and desktop computers for purposes of communication, work performance and management at the work place.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify appropriate computer software and hardware | * 1. Concepts of ICT are determined in accordance with computer equipment   2. Classifications of computers are determined in accordance with manufacturers specification   3. ***Appropriate computer software*** is identified according to manufacturer’s specification   4. ***Appropriate computer hardware*** is identified according to manufacturer’s specification   5. Functions and commands ofoperating system are determined in accordance withmanufacturer’s specification |
| 1. Apply security measures to data, hardware, software in automated environment | * 1. ***Data security and privacy are classified*** in accordance with the prevailing technology   2. ***Security threats*** areidentified, **and *control measures*** are applied in accordance with laws governing protection of ICT   3. Computer threats and crimes are detected.   4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 1. Apply computer software in solving tasks | * 1. ***Word processing concepts***are applied in resolving workplace tasks, report writing and documentation   2. ***Word processing utilities*** are applied in accordance with workplace procedures   3. Worksheet layout is prepared in accordance with work procedures   4. Worksheet is build and data manipulated in the worksheet in accordance with workplace procedures   5. Continuous data manipulated on worksheet is undertaken in accordance with work requirements   6. Database design and manipulation is undertaken in accordance with office procedures   7. Data sorting, indexing, storage, retrieval and security is provided in accordance with workplace procedures |
| 1. Apply internet and email in communication at workplace | * 1. Electronic mail addresses are opened and applied in workplace communication in accordance with office policy   2. Office internet functions are defined and executed in accordance with office procedures   3. ***Network configuration*** is determined in accordance with office operations procedures   4. Official World Wide Web is installed and managed according to workplace procedures |
| 1. Apply desktop publishing in official assignments | * 1. Desktop publishing functions and tools are identified in accordance with manufactures specifications   2. Desktop publishing tools are developed in accordance with work requirements   3. Desktop publishing tools are applied in accordance with workplace requirements   4. Typeset work is enhanced in accordance with workplace standards |
| 1. Prepare presentation packages | * 1. Types of presentation packages are identified in accordance with office requirements   2. Slides are created and formulated in accordance with workplace procedures   3. Slides are edited and run in accordance with work procedures   4. Slides and handouts are printed according to work requirements |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| ***Appropriate computer software*** may include but not limited to: | A collection of instructions or computer tools that enable the user to interact with a computer, its hardware, or perform tasks. |
| ***Appropriate computer hardware*** may include but not limited to: | Collection of physical parts of a computer system such as;   * Computer case, monitor, keyboard, and mouse * All the parts inside the computer case, such as the hard disk drive, motherboard and video card |
| ***Data security and privacy*** may include but not limited to: | * Confidentiality of data * Cloud computing * Integrity -but-curious data surfing |
| ***Security and control measures*** may include but not limited to: | * Counter measures against cyber terrorism * Risk reduction * Cyber threat issues * Risk management * Pass wording |
| ***Security threats*** may include but not limited to: | * Cyber terrorism * Hacking |
| ***Word processing concepts*** may include but not limited to: | Using a special program to create, edit and print documents |
| ***Network configuration*** may include but not limited to: | Organizing and maintaining information on the components of a computer network |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical skills
* Interpretation
* Typing
* Communication
* Computing (applying fundamental operations such as addition, subtraction, division and multiplication)
* Using calculator
* Basic ICT skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Software concept
* Functions of computer software and hardware
* Data security and privacy
* Computer security threats and control measures
* Technology underlying cyber-attacks and networks
* Cyber terrorism
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Word processing;
* Functions and concepts of word processing.
* Documents and tables creation and manipulations
* Mail merging
* Word processing utilities
* Spread sheets;
* Meaning, formulae, function and charts, uses and layout
* Data formulation, manipulation and application to cells
* Database;
* Database design, data manipulation, sorting, indexing, storage retrieval and security
* Desktop publishing;
* Designing and developing desktop publishing tools
* Manipulation of desktop publishing tools
* Enhancement of typeset work and printing documents
* Presentation Packages;
* Types of presentation Packages
* Creating, formulating, running, editing, printing and presenting slides and handouts
* Networking and Internet;
* Computer networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and integrate emerging trends and issues in ICT
* Challenges posed by emerging trends and issues

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified and controlled security threats   2. Detected and protected computer crimes   3. Applied word processing in office tasks   4. Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures   5. Opened electronic mail for office communication as per workplace procedure   6. Installed internet and World Wide Web for office tasks in accordance with office procedures   7. Integrated emerging issues in computer ICT applications   8. Applied laws governing protection of ICT |
| 1. Resource Implications | * 1. Tablets   2. Laptops   3. Desktop computers   4. Calculators   5. Internet   6. Smart phones   7. Operation Manuals |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written Test   2. Demonstration   3. Practical assignment   4. Interview/Oral Questioning   5. Demonstration |
| 1. Context of Assessment | Competency may be assessed in an off and on the job setting |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE ENTREPRENEURIAL SKILLS

**UNIT CODE : AGR/OS/API/BC/04/5/A**

**UNIT DESCRIPTION**

This unit covers the outcomes required to build and develop the enterprise to be more competitive within a changing business environment, specifically responding to consumer demands while maintaining product quality and accessibility, building a customer base and employee motivation.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** | **PERFORMANCE CRITERIA** |
| 1. Develop business Innovative strategies | 1. Business innovation strategies are determined in accordance with the organization strategies 2. Business innovative strategies are implemented for the purpose of business growth 3. Track record and normative capability profile of enterprise and similar businesses are reviewed and considered in setting ***strategic directions***. 4. Strengths, weaknesses, opportunities and threats are considered when developing new ideas, approaches, goals and directions 5. Decisions about enterprise strategies/directions are made after careful consideration of all relevant information 6. ***Business/corporate plan*** is developed that sets out tactics, resource implications, timeframes, production and sales target |
| 1. Develop new products/ markets | 2.1 Alternative product/service offerings are canvassed and studied for feasibility  2.2 Potential and new sources/sellers of supplies and raw materials are identified and canvassed.  2.3 Target markets and buyers are identified and surveyed as to their preferences and brand loyalties. |
| 1. Expand customers and product lines | 3.1 Enterprise is built up and sustained through responsiveness to market demands and the regulatory environment.  3.2 Competitive advantage of existing products and services is maintained/enhanced through responsive advocacies and strategies.  3.3 Constant listening to stakeholder/client feedback is ensured to maintain loyal client base. |
| 1. Motivate staff/workers | 4.1 Regular dialogue is established and maintained in all levels and relevant sections of the enterprise  4.2 Flow of communications in both directions is encouraged  4.3 Helpful mechanisms and benefits are implemented  4.4 Issues/problems are proactively resolved through win-win solutions wherever practicable |
| 1. Expand employed capital base | 5.1 Capital employed in business is continuously reviewed as per the strategic plan  5.2 Business share holdings are reviewed in accordance with the type of business  5.3 Capital employed is expanded according to organization procedures  5.3 Types of shares are determined according to strategic plan  5.4 Shares diversification process is undertaken as per office procedures  5.5 Role of shareholders is determined and implemented in accordance organization procedures |
| 1. Undertake county/ regional business expansion | 6.1 Regions for expansion are continuously reviewed in accordance with strategic plan and company’s expansion plan  6.2 County business regulations are reviewed and adhered to in accordance with set procedures  6.3 Regional laws and regulations are adhered to in accordance with set procedures  6.4 County/regional business expansion is undertaken in accordance with organization’s growth/ expansion plan |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Strategic directions include but not limited to: | 1.1 Business continuity and succession  1.2 Resource access security  1.3 Core competencies development  1.4 New developments e.g. technological change, new products |
| 2. Business/Corporate plan  include but not limited to: | 2.1 Action steps and responsibilities of departments and individual workers  2.2 Resource requirements and budget  2.3 Tactics and strategies to achieve objectives |
| 3. Helpful mechanisms include but not limited to: | 3.1 Wage and non-wage benefits  3.2 Employee awards and recognition systems  3.3 Employee rights and welfare policies  3.4 Full-disclosure/transparency policies |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Assessing a range of alternative products and strategies
* Critically analyzing information, summarizing and making sense of previous and current market trends
* Identifying changing consumer preferences and demographics
* Thinking “outside the box”
* Ensuring quality consistency
* Reducing lead time to product/service delivery
* Managing operations/ production
* Using formal problem-solving procedures, e. g., root-cause analysis, six sigmas
* Communication skills
* Applying motivational principles, e. g., positive stroking, behavior modification
* Assessing range of alternatives rather than choosing the easiest option
* Achieving ownership and credibility for the enterprise vision
* Critically analyzing information, summarizing and making sense of previous and current market trends
* Developing solutions and practical strategies which are “outside the box”

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
* Conflict resolution
* Health, safety and environment (HSE) principles and requirements
* Public-relations strategies
* Basic cost-benefit analysis
* Basic financial management
* Business strategic planning
* Impact of change on individuals, groups and industries
* Employee assistance
* Government and regulatory processes
* Local and international market trends
* Product promotion strategies
* Mechanisms in the enterprise
* Market and feasibility studies
* Local and global supply chains Business models and strategies
* Government and regulatory processes
* Local and international business environment
* Concepts of change management
* Relevant developments in other industries
* Capital employed
* Regional/ County business expansion
* Innovation in business

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Demonstrated ability to maintain a profitable and stable enterprise as shown by stakeholder feedback, employee testimonies and company financial statements  1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise  1.3 Demonstrated ability to manage/operate a micro/small-scale business  1.4 Demonstrated basic marketing skills |
| 2. Resource Implications | The following resources should be provided:  2.1 Interview guide for entrepreneurs  2.2 Enterprise workers and third parties  2.3 Materials and location relevant to the proposed activity and tasks |
| 3. Methods of Assessment | 3.1 Case problems  3.2 Interview  3.3 Portfolio  3.4 Third part reports |
| 4. Context of Assessment | 4.1 Competency may be assessed in workplace or in a simulated workplace setting  4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE EMPLOYABILITY SKILLS

**UNIT CODE: AGR/OS/API/BC/05/5/A**

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating interpersonal communication, critical safe work habits, leading small teams, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and workplace ethics.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Conduct self-management | 1. Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 2. Emotions are managed as per workplace requirements 3. Individual performance is evaluated and monitored according to the agreed targets. 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for own actions are demonstrated. 6. Self-esteem and a positive self-image are developed and maintained. 7. Time management, attendance and punctuality are observed as per the organization policy. 8. Goals are managed as per the organization’s objective 9. Self-strengths and weaknesses are identified as per ***personal objectives*** 10. Critics are managed as per personal objectives |
| 1. Demonstrate interpersonal communication | 1. Listening and understanding is demonstrated as per communication policy 2. Writing to the needs of the audience is demonstrated as per communication policy 3. Speaking, reading and writing is demonstrated as per communication policy 4. Empathising is demonstrated as per the communication policy 5. Internal and external customers’ needs are identified and interpreted as per the communication policy 6. Persuasion is demonstrated as per the communication policy 7. Communication nnetworks are established as per the SOPs 8. Information is shared as per communication structure |
| 1. Demonstrate critical safe work habits | * 1. Stress is managed in accordance with workplace procedures.   2. Punctuality and time consciousness is demonstrated in line with workplace policy.   3. Personal objectives are integrated with organization goals based on organization’s strategic plan.   4. Work priorities are set in accordance to workplace procedures.   5. Leisure time is recognized in line with organization policy.   6. Abstinence from ***drug and substance abuse*** is observed as per workplace policy.   7. Awareness of HIV and AIDS is demonstrated in line with workplace requirements.   8. Safety consciousness is demonstrated in the workplace based on organization safety policy.   9. ***Emerging issues*** are dealt with in accordance with organization policy. |
| 1. Lead small teams | 1. Performance expectations for the ***team*** are set as per the organization objectives 2. Tasks are assigned in accordance with the organization policy. 3. Team performance indicators are identified according to set rules and regulations. 4. ***Forms of communication*** in a team are established according to office policy. 5. Communication is carried out as per workplace place policy and requirements of the job. 6. ***Feedback*** on performance is collected and analyzed based on established team learning process 7. ***Gender mainstreaming*** is undertaken in accordance with set regulations. |
| 1. Plan and organize work | 1. Task requirements are identified as per the workplace objectives 2. Task is interpreted in accordance with safety (OHS ), environmental requirements and quality requirements 3. Work activity is organized with other involved personnel as per the SOPs 4. Resources are mobilized, allocated and utilized to meet project goals and deliverables. 5. Work activities are monitored and evaluated in line with organization procedures. 6. Job planning is documented in accordance with workplace requirements. 7. Time is managed achieve workplace set goals and objectives. |
| 1. Maintain professional growth and development | * 1. Personal training needs are identified and assessed in line with the requirements of the job.   2. ***Training and career opportunities*** are identified and availed based on job requirements.   3. Licensees and certifications relevant to job and career are obtained and renewed.   4. ***Personal growth*** is pursued towards improving the qualifications set for the profession.   5. Work priorities are identified based on requirement of the job and workplace policy.   6. Recognitions are sought as proof of career advancement in line with professional requirements. |
| 1. Demonstrate workplace learning | * 1. Own learning is managed as per workplace policy.   2. Learning opportunities are sought and allocated based on job requirement and in line with organization policy.   3. Contribution to the learning community at the workplace is carried out.   4. ***Range of media for learning*** are identified as per the training need   5. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job   6. Enthusiasm for ongoing learning is demonstrated   7. Time and effort is invested in learning new skills-based job requirements   8. Willingness to learn in different context is demonstrated based on available learning opportunities arising in the workplace.   9. Opportunities for performance improvement are identified proactively in area of work.   10. Awareness of personal role in workplace ***innovation*** is demonstrated. |
| 1. Demonstrate problem solving skills | * 1. Problems are identified as per the context of data and circumstances   2. Problem solutions are sought based on the problem   3. Independence and initiative in identifying and solving problems is demonstrated.   4. Team problems are solved as per the workplace guidelines   5. Problem solving strategies are applied as per the workplace guidelines |
| 1. Demonstrate workplace ethics | * 1. Policies and guidelines are observed as per the workplace requirements   2. Self-worth and profession is exercised in line with personal goals and organizational policies   3. Code of conduct is observed as per the workplace requirements   4. Personal and professional integrity is demonstrated as per the personal goals   5. Commitment to jurisdictional laws is demonstrated as per the workplace requirements |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| ***Drug and substance abuse*** include but not limited to: | Commonly abused   * Alcohol * Tobacco * Miraa * Over-the-counter drugs * Cocaine * Bhang * Glue |
| ***Feedback*** includes but not limited to: | * Verbal * Written * Informal * Formal |
| ***Relationships*** includes but not limited to: | * Man/Woman * Trainer/trainee * Employee/employer * Client/service provider * Husband/wife * Boy/girl * Parent/child * Sibling relationships |
| ***Forms of communication*** include but not limited to: | * Written * Visual * Verbal * Non verbal * Formal and informal |
| ***Team*** includes but not limited to: | * Small work group * Staff in a section/department * Inter-agency group |
| ***Personal growth*** includes but not limited to: | |  | | --- | | * Growth in the job * Career mobility * Gains and exposure the job gives * Net workings * Benefits that accrue to the individual as a result of noteworthy performance | |
| ***Personal objectives*** include but not limited to: | * Long term * Short term * Broad * Specific |
| ***Trainings and career opportunities*** includes but not limited to | * Participation in training programs * Technical * Supervisory * Managerial * Continuing Education * Serving as Resource Persons in conferences and workshops |
| ***Resource*** include but not limited to: | * Human * Financial * Technology * Hardware * Software |
| ***Innovation*** include but not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |
| ***Emerging issues*** include but not limited to: | * Terrorism * Social media * National cohesion * Open offices |
| ***Range of media for learning*** include but not limited to: | * Mentoring * peer support and networking * IT and courses |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Personal hygiene practices
* Intra and Interpersonal skills
* Communication skills
* Knowledge management
* Interpersonal skills
* Critical thinking skills
* Observation skills
* Organizing skills
* Negotiation skills
* Monitoring skills
* Evaluation skills
* Record keeping skills
* Problem solving skills
* Decision Making skills
* Resource utilization skills
* Resource mobilization skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies
* Company operations, procedures and standards
* Occupational Health and safety procedures
* Fundamental rights at work
* Personal hygiene practices
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Resources and allocating resources
* Organizing work
* Monitoring and evaluation
* Record keeping
* Workplace problems and how to deal with them
* Negotiation
* Assertiveness
* Team work
* Gender mainstreaming
* HIV and AIDS
* Drug and substance abuse
* Leadership
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Learning
* Creativity
* Innovation
* Emerging issues
  + Social media
  + Terrorism
  + National cohesion

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   * 1. Conducted self-management   2. Demonstrated interpersonal communication   3. Demonstrated critical safe work habits   4. Led small teams   5. Planned and organized work   6. Maintained professional growth and development   7. Demonstrated workplace learning   8. Demonstrated problem solving skills   9. Demonstrated workplace ethics |
| 1. Resource Implications | |  | | --- | | The following resources should be provided: |  * 1. Case studies/scenarios |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * Oral Interview * Observation * Third Party Reports * Written |
| 1. Context of Assessment | * 1. Competency may be assessed in workplace or in a simulated workplace setting   2. Assessment shall be observed while tasks are being undertaken whether individually or in-group |
| 1. Guidance information for assessment | | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE: AGR/OS/API/BC/06/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to follow procedures for environmental hazard control, follow procedures for environmental pollution control, comply with workplace sustainable resource use, evaluate current practices in relation to resource usage, develop and adhere to environmental protection principles/strategies/guidelines.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Control environmental hazard | * 1. ***Storage methods*** for environmentally***hazardous*** materials are strictly followed according to environmental regulations and OSHS.   2. ***Disposal methods*** of hazardous wastes are followed always according to environmental regulations and OSHS.   3. ***PPE*** is used according to OSHS. |
| 1. Control environmental Pollution control | * 1. Environmental pollution ***control measures*** are compiled following standard protocol.   2. Procedures for solid waste management are observed according to Environmental Management and Coordination Act 1999   3. Methods for minimizing ***noise pollution*** complied following environmental regulations. |
| 1. Demonstrate sustainable resource use | * 1. Methods for minimizing wastage are complied with.   2. Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle)   3. Methods for economizing or reducing resource consumption are practiced. |
| 1. Evaluate current practices in relation to resource usage | * 1. Information on resource efficiency **systems and procedures** are collected and provided to the work group where appropriate.   2. Current resource usage is measured and recorded by members of the work group.   3. Current purchasing strategies are analyzed and recorded according to industry procedures.   4. Current work processes to access information and data is analyzed following enterprise protocol. |
| 1. Identify Environmental legislations/conventions for environmental concerns | * 1. Environmental ***legislations/conventions*** and local ordinances are identified according to the different ***environmental aspects/impact***   2. ***Industrial standard/environmental practices*** are described according to the different environmental concerns |
| 1. Implement specific environmental programs | * 1. Programs/Activities are identified according to organizations policies and guidelines.   2. Individual roles/responsibilities are determined and performed based on the activities identified.   3. Problems/constraints encountered are resolved in accordance with organizations’ policies and guidelines   4. Stakeholders are consulted based on company guidelines |
| 1. Monitor activities on Environmental protection/Programs | * 1. Activities are periodically monitored and evaluated according to the objectives of the environmental Program   2. Feedback from stakeholders are gathered and considered in proposing enhancements to the program based on consultations   3. Data gathered are analyzed based on evaluation requirements   4. Recommendations are submitted based on the findings   5. Management support systems are set/established to sustain and enhance the program   6. Environmental incidents are monitored and reported to concerned/proper authorities |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. ***PPE*** may include but are not limited to: | 1.1 Mask  1.2 Gloves  1.3 Goggles  1.4 Safety hat  1.5 Overall   * 1. Hearing protector   2. Safety boots |
| 1. ***Environmental pollution control measures*** may include but are not limited to: | * 1. Methods for minimizing or stopping spread and ingestion of airborne particles   2. Methods for minimizing or stopping spread and ingestion of gases and fumes   3. Methods for minimizing or stopping spread and ingestion of liquid wastes |
| 1. ***Waste management procedures*** may include but are not limited to: | 3.1 Sorting  3.2 Storing of items  3.2 Recycling of items  3.3 Disposal of items |
| 1. ***Resources*** may include but are not limited to: | 4.1 Electric  4.2 Water  4.3 Fuel  4.3 Telecommunications   * 1. Supplies   4.5 Materials |
| 1. ***Workplace environmental hazards*** may include but are not limited to: | 5.1Biological hazards  5.2 Chemical and dust hazards  5.3 Physical hazards |
| 1. ***Organizational systems and procedures*** may include but are not limited to: | 6.1 Supply chain, procurement and purchasing  6.2 Quality assurance  6.3 Making recommendations and seeking approvals |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Following storage methods of environmentally hazardous materials
* Following disposal methods of hazardous wastes
* Using PPE
* Practicing OSHS
* Complying environmental pollution control
* Observing solid waste management
* Complying methods of minimizing noise Pollution
* Complying methods of minimizing wastage
* Employing waste management procedures
* Economizing resource consumption
* Listing of resources used
* Measuring current usage of resources
* Identifying and reporting workplace environmental hazards
* Conveying all environmental issues
* Following environmental regulations
* Identifying environmental regulations
* Assessing procedures for assessing compliance
* Collecting information on environmental and resource efficiency systems and procedures, and Providing information to the work group
* Measuring and recording current resource usage
* Analysing and recording current purchasing strategies.
* Analysing current work processes to access information and data and Assisting identifying areas for improvement
* Analysing resource flow
* Determining efficiency of use/conversion of resources
* Determining causes of low efficiency of use
* Developing plans for increasing the efficiency of resource use
* Checking resource use plans
* Complying to regulations/licensing requirements
* Determining benefit/cost of plans
* Ranking proposals based on benefit/cost compared to limited resources
* Checking proposals meet regulatory requirements
* Monitoring implementation
* Adjusting plan and implementation
* checking new resource usage

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Storage methods of environmentally hazardous materials
* Disposal methods of hazardous wastes
* Usage of PPE Environmental regulations
* OSHS
* Types of pollution
* Environmental pollution control measures
* Different solid wastes
* Solid waste management
* Different noise pollution
* Methods of minimizing noise pollution
* Solid Waste Act
* Methods of minimizing wastage
* Waste management procedures
* Economizing of resource consumption
* 3Rs principle
* Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Types of workplace environmental hazards
* Environmental regulations
* Environmental regulations applying to the enterprise.
* Procedures for assessing compliance with environmental regulations.
* Collection of information on environmental and resource efficiency systems and procedures,
* Measurement and recording of current resource usage
* Analysis and recording of current purchasing strategies.
* Analysis current work processes to access information and data Analysis of data and information
* Identification of areas for improvement
* Resource consuming processes
* Determination of quantity and nature of resource consumed
* Analysis of resource flow of different parts of the resource flow process
* Use/conversion of resources
* Causes of low efficiency of use
* Increasing the efficiency of resource use
* Inspection of resource use plans
* Regulations/licensing requirements
* Determine benefit/cost for alternative resource sources
* Benefit/costs for different alternatives
* Components of proposals
* Criteria on ranking proposals
* Regulatory requirements
* Proposals for improving resource efficiency
* Implementation of resource efficiency plans
* Procedures in monitor implementation
* Adjustments of implementation plan
* Inspection of new resource usage

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Controlled environmental hazard   2. Controlled environmental pollution   3. Demonstrated sustainable resource use   4. Evaluated current practices in relation to resource usage   5. Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues /concerns.   6. Described industrial standard environmental practices according to the different environmental issues/concerns.   7. Resolved problems/ constraints encountered based on management standard procedures   8. Implemented and monitored environmental practices on a periodic basis as per company guidelines   9. Recommended solutions for the improvement of the Program   10. Monitored and reported to proper authorities any environmental incidents |
| 1. Resource Implications | The following resources should be provided:   * 1. Workplace with storage facilities   2. Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.)   3. PPE   4. Manuals and references   5. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection   6. Case studies/scenarios relating to environmental Protection |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Demonstration   2. Oral questioning   3. Written examination   4. Interview/Third Party Reports   5. Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad)   6. Simulations and role-plays |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE: AGR/OS/API/BC/07/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to lead the implementation of workplace’s safety and health program, procedures and policies/guidelines.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify workplace hazards and risk | 1.1 ***Hazards*** in the workplace and/or its ***indicators*** of its presence, are identified  1.2 ***Evaluation and/or work environment*** measurements of OSH hazards/risk existing in the workplace is conducted by  Authorized personnel or agency  1.3 ***OSH issues and/or concerns*** raised by workers are  Gathered |
| 1. Identify and implement appropriate control measures | 2.1 Prevention ***and control measures***, including use of  s***afety gears / PPE (personal protective equipment)*** for specific hazards  identified and implemented  2.2 Appropriate ***risk controls*** based on result of OSH hazard evaluation is recommended.  2.3 ***Contingency measures***, including ***emergency procedures*** during workplace ***incidents and emergencies*** are recognized and established in accordance with organization procedures. |
| 1. Implement OSH programs, procedures and policies/ guidelines | 3.1 Information to work team about company OSH program, procedures and policies/guidelines are provided  3.2 Implementation of OSH procedures and policies/ guidelines are participated  3.3 Team members are trained and advised on OSH standards and procedures  3.4 Procedures for maintaining ***OSH-related records*** are implemented |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. ***Hazards may include*** but are not limited to: | 1.1. Physical hazards – impact, illumination, pressure, noise, vibration, extreme temperature, radiation  1.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects  1.3 Chemical hazards – dusts, fibers, mists, fumes, smoke,  gasses, vapors  1.4 Ergonomics  Psychological factors – over exertion/ excessive force,  awkward/static positions, fatigue, direct pressure,  varying metabolic cycles  Physiological factors – monotony, personal  relationship, work out cycle  1.6 Safety hazards (unsafe workplace condition) –  confined space, excavations, falling objects, gas  leaks, electrical, poor storage of materials and  waste, spillage, waste and debris  1.7 Unsafe workers’ act (Smoking in off-limited areas, Substance and alcohol abuse at work) |
| 1. ***Indicators may include*** but are not limited to: | 2.1 Increased of incidents of accidents, injuries  2.2 Increased occurrence of sickness or health complaints/ symptoms  2.3 Common complaints of workers related to OSH  2.4 High absenteeism for work-related reasons |
| 1. ***Evaluation and/or work environment measurements*** may include but are not limited to: | 3.1 Health Audit  3.2 Safety Audit  3.3 Work Safety and Health Evaluation  3.4 Work Environment Measurements of Physical and Chemical Hazards |
| 1. ***OSH issues and/or concerns*** may include but are not limited to: | 4.1 Workers’ experience/observance on presence of work hazards  4.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break time, constant overtime, scheduling of tasks)  4.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines |
| 1. ***Prevention and control measures*** may include but are not limited to: | 5.1 Eliminate the hazard (i.e., get rid of the dangerous machine  5.2 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off)  5.3 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one)  5.4 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule)  5.5 Use engineering controls to reduce the risk (i.e. use safety guards to machine)  5.6 Use personal protective equipment  5.7 Safety, Health and Work Environment Evaluation  5.8 Periodic and/or special medical examinations of workers |
| 1. ***Safety gears /PPE (Personal Protective Equipment’s)*** may include but are not limited to: | 6.1 Arm/Hand guard, gloves  6.2 Eye protection (goggles, shield)  6.3 Hearing protection (ear muffs, ear plugs)  6.4 Hair Net/cap/bonnet  6.5 Hard hat  6.6 Face protection (mask, shield)  6.7 Apron/Gown/coverall/jump suit  6.8 Anti-static suits   * 1. High-visibility reflective vest |
| 1. ***Appropriate risk controls*** | Appropriate risk controls in order of impact are as follows:  7.1 Eliminate the hazard altogether (i.e., get rid of the dangerous machine)  7.2 Isolate the hazard from anyone who could be harmed (i.e., keep the machine in a closed room and operate it remotely; barricade an unsafe area off)  7.3 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one)  7.4 Use administrative controls to reduce the risk (i.e., train workers how to use equipment safely; train workers about the risks of harassment; issue signage)  7.5 Use engineering controls to reduce the risk (i.e., attach guards to the machine to protect users)  7.6 Use personal protective equipment (i.e., wear  gloves and goggles when using the machine) |
| 1. ***Contingency measures*** may include but are not limited to: | 8.1 Evacuation  8.2 Isolation  8.3 Decontamination  8.4 (Calling designed) emergency personnel |
| 1. ***Emergency procedures*** may include but are not limited to: | 9.1 Fire drill  9.2 Earthquake drill  9.3 Basic life support/CPR  9.4 First aid  9.5 Spillage control  9.6 Decontamination of chemical and toxic  9.7 Disaster preparedness/management  9.8 se of fire-extinguisher |
| 1. ***Incidents and emergencies*** may include but are not limited to: | 10.1 Chemical spills  10.2 Equipment/vehicle accidents  10.3 Explosion  10.4 Fire  10.5 Gas leak  10.6 Injury to personnel  10.7 Structural collapse  10.8 Toxic and/or flammable vapors emission. |
| 1. ***OSH-related Records*** may include but are not limited to: | 11.1 Medical/Health records  11.2 Incident/accident reports  11.3 Sickness notifications/sick leave application  11.4 OSH-related trainings obtained |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Skills on preliminary identification of workplace hazards/risks
* Knowledge management
* Critical thinking skills
* Observation skills
* Coordinating skills
* Communication skills
* Interpersonal skills
* Troubleshooting skills
* Presentation skills
* Training skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* General OSH Principles
* Occupational hazards/risks recognition
* OSH organizations providing services on OSH evaluation and/or work environment measurements (WEM)
* National OSH regulations; company OSH policies and protocols
* Systematic gathering of OSH issues and concerns
* General OSH principles
* National OSH regulations
* Company OSH and recording protocols, procedures and policies/guidelines
* Training and/or counseling methodologies and strategies

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identifies hazards/risks in the workplace and/or its indicators 2. Requests for evaluation and/or work environment measurements of OSH hazards/risk in the workplace 3. Gathers OSH issues and/or concerns raised by workers 4. Identifies and implements prevention and control measures, including use of PPE (personal protective equipment) for specific hazards 5. Recommends appropriate risk controls based on result of OSH hazard evaluation and OSH issues gathered 6. Establish contingency measures, including emergency procedures in accordance with organization procedures 7. Provides information to work team about company OSH program, procedures and policies/guidelines 8. Participates in the implementation of OSH procedures and policies/guidelines 9. Trains and advises team members on OSH standards and procedures 10. Implements procedures for maintaining OSH-related records |
| 1. Resource Implications | The following resources should be provided:  2.1 Workplace or assessment location  2.2 OSH personal records  2.3 PPE  2.4 Health records |
| 1. Methods of Assessment | Competency may be assessed through:  3.1 Portfolio Assessment  3.2 Interview  3.3 Case Study/Situation  3.4 Observation/Demonstration and oral questioning |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CORE UNITS OF COMPETENCY

# DEMONSTRATE BEE BIOLOGY AND BEHAVIOR

**UNIT CODE: AGR/OS/API/CR/01/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate bee biology and behavior. It involves identifying bee species, demonstrating understanding of bee lifecycle and caste, demonstrating understanding of the physiological system of bees, determining bee nutrition and demonstrating the understanding of bee behavior.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify bee species | 1. ***Materials and equipment for identification*** are identified as per the workplace procedures. 2. Personal protective equipment is worn as per the occupational health and safety procedures. 3. ***Bee parts/external morphology*** are identified as per the workplace procedures. 4. Bee species and races are identified as per the workplace procedures. |
| 1. Demonstrate understanding of bee lifecycle and caste | 1. Knowledge on ***Life cycle and caste*** demonstrated adequately |
| 1. Demonstrate understanding of the physiological system of bees | 1. Knowledge of ***physiological systems*** in bees is demonstrated adequately |
| 1. Determine bee nutrition | 1. Knowledge of bee nutrition is demonstrated workplace procedures 2. ***Bee feed supplements/substitutes*** are formulated, packaged and stored as per the workplace procedures |
| 1. Demonstrate the understanding of bee behavior | 1. ***Types of bee behavior*** are identified appropriately 2. Knowledge of ***factors affecting bee behavior*** is demonstrated adequately 3. Bee behavior is ***controlled*** based on the identified behavior 4. Methods of controlling bee behavior are applied 5. Understanding of bee behavior demonstrated |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Materials and equipment for identification may include but not limited to/limited to: | * Hand lens * Observation hive |
| 1. Bee parts/external morphology may include but not limited to/limited to: | * Wings * Legs * Antenna * Eyes * Thorax * Abdomen * Body hair * Color * Head |
| 1. Life cycle may include but not limited to/limited to: | * Egg * Larvae * Pupa * Adult |
| 1. Caste may include but not limited to/limited to: | * Queen bees * Drawn bees * Worker bees |
| 1. Physiological systems may include but not limited to/limited to: | * Reproductive, * Respiratory excretion * Digestive * Internal and external glandular systems |
| 1. Bee feed supplements/substitutes may include but not limited to/limited to: | * Honey * Sugar syrup * Corn syrup * Soya beans * Pollen supplements and substitutes * Carbohydrate supplements |
| 1. Types of bee behavior may include but not limited to/limited to: | * Swarming * Absconding * Migration * Scouting * Supercedure * Defensiveness * Communication * Fanning * Buzzing |
| 1. Factors affecting bee behavior may include but not limited to/limited to: | * Physiological age and stage of development * Hormonal factors * Genetic make-up * Sounds * Chemical * Touch * Forage resources and nest sites * Environmental |
| 1. Controlled may include but not limited to/limited to: | * Pest management * Colony division * Natural selection * Destroying swarm cells * Caging the queen * Clipping the wings * Identification and propagation of plants which flower throughout the year * Artificial feeding |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of bees
* Types of PPE
* Lifecycle
* Caste system
* Physiological systems of bees
* Types of bee supplements and substitutes
* Formulation and packaging techniques
* Types of bee behavior
* Factors affecting bee behavior
* Methods of controlling bee behavior
* Bee behavior

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified materials and equipment for species identification as per the workplace procedures   2. Identified bee parts/external morphology as per the workplace procedures.   3. Identified bee species and races as per the workplace procedures.   4. Demonstrated knowledge on Life cycle and caste adequately   5. Demonstrated knowledge of physiological systems in bees adequately   6. Demonstrated knowledge of bee nutrition adequately   7. Formulated, packaged and stored bee feed supplements/substitutes appropriately   8. Identified types of bee behavior appropriately   9. Demonstrated knowledge of factors affecting bee behavior adequately   10. Controlled bee behavior.   11. Applied methods of controlling bee behavior. |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional apiary   2. Bees |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * Off-the–job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# ESTABLISH AN APIARY

**UNIT CODE: AGR/OS/API/CR/02/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to establish an apiary. It involves selecting apiary site, clearing the apiary site, fence apiary site, prepare bee hives, install bee hives and label the apiary.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Select apiary site | 1. Observations on ***key factors*** for an apiary site is conducted based on workplace procedures. 2. The apiary site is identified as per work place procedures |
| 1. Clear apiary site | 1. ***Materials, tools and equipment for clearing*** the apiary site are prepared as per workplace procedures. 2. The ***apiary site is cleared*** as per the workplace procedures and selected site. 3. The ground is levelled as per the site selected |
| 1. Fence apiary site | 1. ***Materials, tools and equipment for fencing*** the apiary site are prepared as per workplace procedures. 2. The apiary site is demarcated as per as per the size of the selected apiary. 3. Poles are fixed as per the workplace procedures 4. Barbed wire is fixed or live fence is planted as per the workplace procedures. 5. A lockable door/gate is fixed as per the workplace procedures. |
| 1. Prepare bee hives | 1. Bee hives are assembled as per workplace procedures 2. The bee hives are ***cleaned*** as per the workplace procedures 3. The hives are labelled as per the workplace procedures. 4. The hives are baited as per the available material. |
| 1. Install bee hives | 1. Hive stands/platforms are fixed as per the workplace procedures 2. Hives are hanged on stands/platforms or suspended between posts and trees based on the bee keeping manual. |
| 1. Construct bee house | * 1. ***Materials, tools and equipment for constructing the bee house*** are prepared as per workplace procedures, design and size of the bee house.   2. The bee house site is selected and prepared as per workplace procedures.   3. Size of the bee house determined as per the number of hives   4. The bee house constructed as per the workplace procedure or bee keeping manual   5. Post construction activities are carried out as per the workplace procedures. |
| 1. Manage apiary facilities | * 1. Bee forage and water resources are established based on the ecological zones   2. Unwanted vegetation is cleared as per workplace procedures   3. Pest control measures are applied as per the workplace procedure   4. Repair and maintenance of apiary facilitiesis conducted as per the workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Key factors may include but not limited to/limited to: | * Forage and water resources * Accessibility * Proximity to public amenities * Natural hazards * Drainage * Terrain * Shade/shelter |
| 1. Materials, tools and equipment for clearing may include but not limited to/limited to: | * Spades * tape measure * slashers * hoes * rake * PPE |
| 1. Apiary site is cleared may include but not limited to/limited to: | * Stones * Excess vegetation * Tree stumps * Post hole digger |
| 1. Materials, tools and equipment for fencing may include but not limited to/limited to: | * Barbed wire * Chain link * Poles * Seedlings and cuttings for live/hedge * Nails * Hammer * Mattock |
| 1. Cleaned may include but not limited to/limited to: | * Brushing * Burning grass inside |
| 1. Materials, tools and equipment for constructing the bee house may include but not limited to/limited to: | * Poles * Rafters, * Roofing material * Wire mesh * Nails * Timber * Mud * Blocks * Bricks |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Appropriate use of tools and equipment.
* Numeracy
* Digital literacy

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of hives
* Importance of baiting
* Materials used for baiting
* Factors considered while establishing an apiary
* Hive placement methods

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Observed key factors for an apiary site correctly 2. Identified the apiary site as per work place procedures 3. Prepared materials, tools and equipment for clearing, fencing, constructing the apiary site as per workplace procedures. 4. Cleared the apiary site as per the workplace procedures and selected site. 5. Demarcated the apiary site as per the size of the selected apiary. 6. Fixed poles, barbed, lockable door/gate wire as per the workplace procedures 7. Assembled bee hives as per workplace procedures 8. Cleaned the bee hives as per the workplace procedures 9. Labelled and baited the hives as per the workplace procedures. 10. Fixed hive stands/platforms as per the workplace procedures 11. Hanged/suspended/place hives on stands/platforms or between posts and trees based on the bee keeping manual. 12. Selected and prepared the bee house site as per workplace procedures. 13. Determined size of the bee house as per the number of hives 14. Constructed the bee house as per the workplace procedure or bee keeping manual 15. Carried out post construction activities as per the workplace procedures. |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional apiary facility |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# CONSTRUCT BEE HIVES AND BEE EQUIPMENT

**UNIT CODE: AGR/OS/API/CR/03/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to construct bee hives and bee equipment. It involves preparing to construct bee hives and bee equipment, constructing beehives and bee equipment and completing construction of hives and bee equipment.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to construct bee hives and bee equipment | 1. ***Materials and equipment for construction*** and repair of hives are identified as per the type of hive and bee equipment. 2. Personal protective equipment is worn as per the occupational health and safety procedures |
| 1. Construct beehives and bee equipment | 1. Materials and equipment for construction are assembled as per the requirements 2. Hivesand ***bee equipment*** constructed as per standard specifications 3. The quality of the hive and bee equipment is evaluated as per the standard specifications |
| 1. Complete construction of hives and bee equipment | 1. Hives and equipment are stored as per the workplace procedures 2. ***Waste is managed and disposed*** appropriately as per NEMA and workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Materials and equipment for construction may include but not limited to/limited to: | * Timber * Flat metal bar * File for sharpening * Nails, hammers * Wood plainer * Joinery equipment * Tape measure * Iron sheets * Galvanized aluminum sheets and wire * Drilling machine * Pliers * Cotton material * Goose net * Coffee wire * Leather/Rexene gloves * Sewing machine * Tailoring scissors * Tin sip * Zips and elastic material |
| 1. Bee equipment may include but not limited to/limited to: | * Smokers * Hive tools * Honey extractors * Bee brush * Honey strainers * Sisal yarn * Solar wax extractors * Observation hive * Honey press * Steam wax extractor * PPE * Pollen trap * Catcher box * Propolis collector |
| 1. Waste is managed and disposed may include but not limited to/limited to: | * Burning * Burying * Recycling * Selling |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Bee hive construction skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of hives and bee equipment
* Hive standard specifications
* Evaluation of hive and bee equipment
* Waste Disposal procedures.
* Workshop technology
* Machine operation
* Maintenance of equipment

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified materials and equipment for construction of hives as per the type of hive and bee equipment.   2. Used personal protective equipment as per the occupational health and safety procedures   3. Assembled materials and equipment for construction as per the requirements   4. Constructed and evaluated quality of hives and bee equipment as per standard specifications   5. Stored hives and equipment as per the workplace procedures   6. managed and disposed waste appropriately as per NEMA and workplace procedures |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional bee keeping equipment production unit/ workshop |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# MANAGE BEE FACILITIES, TOOLS AND EQUIPMENT

**UNIT CODE: AGR/OS/API/CR/04/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage bee facilities, equipment and tools. It involves establishing a bee facility, equipment and tools identification system, performing bee facilities, equipment and tools routine inspection, maintaining the bee facilities, equipment and tools, fumigating bee facilities, equipment and tools, storing bee facilities, equipment and tools and disposing bee facilities, equipment and tools.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Establish a bee facility, equipment and tools identification system | 1. Relevant equipment and accessories are identified as per work place procedures 2. Suitable ***identification system*** is established as per work place procedures |
| 1. Perform bee facilities, equipment and tools routine inspection | 1. Routine inspection schedule is prepared as per the workplace procedures 2. Relevant materials, tools and equipment for inspection are identified as per the workplace records 3. Personal protective equipment are worn as per the occupational health and safety procedures 4. Inspection of the tools and the equipment is carried out as per the type of the equipment and workplace guidelines/ manufacturers specification |
| 1. Maintain and repair bee facilities, equipment and tools | 1. Broken and obsolete facilities, equipment and accessories are identified as per work place procedures 2. The obsolete/broken facilities, equipment, tools and accessories are sorted according to the condition of disrepair 3. Obsolete and irreparable facilities and equipment are replaced as per work place procedures 4. Repairable facilities, equipment and tools are repaired as per work place procedures |
| 1. Fumigate bee facilities, equipment and tools | 1. Type of ***pest infestation*** is identified as per pest/disease control procedures 2. Suitable ***fumigants and pest repellants*** and ***fumigation method*** is identified as per the infestation 3. Personal protective equipment are worn as per the occupational health and safety procedures 4. Disinfection procedures is performed as per pest control procedures |
| 1. Store bee equipment and tools | 1. Suitable storage space identified as per work place procedures 2. Suitable store procedure is identified as per work place regulations 3. Equipment, tools and accessories are sorted according to use 4. Equipment, tools and accessories are stored according to use the identified storage procedure |
| 1. Dispose bee equipment and tools | * 1. Facilities and equipment are identified as per work place procedures   2. Suitable ***disposal procedure/method*** is identified as per workplace regulations   3. Disposal of obsolete and irreparable equipment and tools conducted as per the work place procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Identification system may include but not limited to/limited to: | * Coding * Inventory establishment |
| 1. Pest infestation may include but not limited to/limited to: | * Ants * Termites * Hive beetles * Pirate wasps * Birds * Wax moths * Varroa mites * Lizards * Mice * Man * Honey badger |
| 1. Fumigant and pest repellants may include but not limited to/limited to: | * Greece * Old engine oil * Chloroform * Detergents * Disinfectant |
| 1. *Fumigation method* may include but not limited to/limited to: | * Pest repellant application * Spraying * Cleaning * Disinfection |
| 1. Suitable disposal procedure/method may include but not limited to/limited to: | * Burning * Burying * Recycling * Selling |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types and use of equipment, tools and accessories.
* Record keeping
* Personal Protective Equipment
* Bee pests, diseases and predators
* Equipment’s standards
* Equipment and maintenance techniques
* Pests and diseases
* Pest control methods
* Personal/ Environmental safety
* Store keeping

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified relevant equipment and accessories as per work place procedures 2. Established suitable identification system as per work place procedures 3. Prepared routine inspection schedule as per the workplace procedures 4. identified relevant facilities, tools and equipment for inspection as per the relevant records 5. used personal protective equipment as per the occupational health and safety procedures 6. carried out inspection of the tools and the equipment as per the type of the equipment and workplace guidelines/ manufacturers specification 7. Identified, sorted, repaired and replaced broken and obsolete facilities, equipment and accessories as per work place procedures 8. Identified type of pest/disease infestation as per pest/disease control procedures 9. identified suitable disinfectant/fumigant and disinfection/fumigation method as per the infestation 10. used personal protective equipment as per the occupational health and safety procedures 11. performed disinfection procedures as per pest control procedures 12. sorted and stored Equipment, tools and accessories are according to use and identified storage procedure 13. identified suitable disposal procedure/method as per workplace regulations 14. Disposed obsolete and irreparable equipment and tools as per the work place procedures |
| 1. Resource Implications | The following resources must be provided:   * 1. Fumigant and pest repellants   2. Bees   3. Apiary |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * Off-the–job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# MANAGE BEE FORAGE RESOURCES

**UNIT CODE: AGR/OS/API/CR/05/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required manage bee forage resources. It involves identifying suitable bee forage, establishing forage resources, conserving forage resources and developing a beekeeping flowering calendar.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify suitable bee forage | 1. Suitable bee forage identified as per relevant bee keeping manuals 2. Suitable bee forage are classified as per the ecological zones 3. Suitable bee forage documented as per relevant bee keeping manuals 4. Bee forage gap identified as per the floral calendar. |
| 1. Establish bee forage resources | 1. Suitable site for establishment identified as per the available resources and ecological zones 2. Method of establishing bee forage resources is adopted. 3. Tools and equipment for establishing bee forage resources identified and assembled as per adopted method. 4. Preparation of the site conducted as per the workplace procedures 5. Forage species planted as per available manuals. 6. ***Post- forage establishment activities*** are conducted as per the workplace procedures. |
| 1. Develop a beekeeping flowering calendar | 1. ***Bee forage species*** are identified and documented as per available manuals 2. Flowering cycles identified as per the season and ecological zones 3. Floral gaps are identified as per the cycles 4. Flowering cycles documented as per the season and ecological zones 5. The flowering calendar is disseminated as per the workplace procedures |
| 1. Conserve forage resources | 1. ***Forage conservation methods*** are identified as per relevant manuals 2. Community based conservation is embraced based workplace procedures 3. Suitable forage husbandry , habitat conservation programs adopted as per the workplace procedures 4. Continuous monitoring of bee forage conservation is conducted as per the workplace procedures |
| 1. Provide water for bees | * 1. The water source is identifiedas per theworkplace procedures   2. Watering ***equipment and tools*** are identified as per the workplace procedures.   3. The watering site selected as per the workplace procedures   4. The water is placed as per the workplace procedures.   5. Routine replenishment is conducted as per workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Forage conservation methods may include but not limited to/limited to: | * Tree nursery establishment * Agroforestry * Propagation * Protection of floral reserves and habitats |
| 1. Bee forage species may include but not limited to/limited to: | * Citrus trees * Avocado * Key apple * Eucalyptus * Passion * Bananas * Acacia species * Cucumber * Pumpkin * Bottle brush * Neem tree * Calliandra spp * Coffee * Croton spp * Sisal * Maize * Sunflower * Mango tree * Leucena * Prosopis * Dombeya * Clover * Macadamia * Fuchsia spp * Angels trumpet * Guava |
| 1. Post- forage establishment activities may include but not limited to/limited to: | * Pollarding * Coppicing * Weeding * Pruning * Pest control * Thinning * Transplanting * Irrigating * Pegging * Training |
| 1. Equipment and tools may include but not limited to/limited to: | * Buckets * Watering cans * Sticks (landing boards) |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Water requirements for bees
* Bee forage resources conservation
* Pollen plants and nectar plants
* Flowering cycle
* Bee Botany
* Seed propagation
* Nursery/Seedbed Preparation

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified , classified and documented suitable bee forage as per relevant bee keeping manuals and the ecological zones   2. Suitable site for establishment identified as per the available resources and ecological zones   3. Implemented method of establishing bee forage resources depending on the ecological zones and available resources.   4. Identified and assembled tools and equipment for establishing bee forage resources as per the method.   5. conducted site preparation as per the workplace procedures   6. Planted forage species as per available manuals.   7. Performed post- forage establishment activities as per the workplace procedures.   8. identified and documented bee forage species as per available manuals   9. Identified flowering cycles as per the season and ecological zones   10. Identified floral gaps as per the cycles   11. Documented flowering cycles as per the season and ecological zones   12. identified forage conservation methods as per relevant manuals   13. Promoted community-based conservation based on workplace procedures   14. implemented Suitable forage husbandry and habitat conservation programs as per the workplace procedures   15. conducted Continuous monitoring of bee forage conservation as per the workplace procedures   16. identified the water sources as per the workplace procedures   17. Identified watering equipment and tools as per the workplace procedures.   18. selected the watering site as per the workplace procedures   19. Placed the water as per the workplace procedures.   20. Conducted routine replenishment as per workplace procedures |
| 1. Resource implications | The following resource must be provided:   * 1. Functional ecosystem |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * Off-the–job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# MANAGE HONEY BEE SWARMS

**UNIT CODE: AGR/OS/API/CR/06/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to Manage honey bee swarms. It involves preparing to catch/trap a swarm of honey bees, catching/trapping a swarm of honey bees and managing swarming behavior in a honey bee colony

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to catch/trap a swarm of honey bees | 1. The number of hives to be stocked identified as per apiary records. 2. A schedule for trapping/catching and stocking honey bee swarms is developed as per workplace procedures 3. Suitable ***trapping sites*** identified as per the relevant bee keeping manuals. 4. Relevant ***tools and equipment*** are identified and assembled as per relevant workplace procedures 5. Suitable PPE are worn as per the occupational safety and health |
| 1. Catch/trap a swarm of honey bees | 1. The catcher box is set at the relevant site 2. The new swarm is transported to the new apiary as per the relevant manuals 3. The new colony is hived as per the relevant manuals |
| 1. Perform post-trapping activities | 1. Regular colony monitoring is conducted to check the progress of the new colony 2. Suitable ***colony management measures*** are applied as per the workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Suitable swarming control measure may include but not limited to/limited to: | * Colony division * Artificial feeding * Queen cells destruction * Creating space through supering * Honey harvesting * Selection * De-queening and re-queening * Providing shade |
| 1. Trapping sites may include but not limited to/limited to: | * Bee migratory roots * Bee reserve/bulking areas |
| 1. Tools and equipment may include but not limited to/limited to: | * Smoker * Catcher * Rope * Ladder * Swarm nets * Swarm catcher |
| 1. Check signs of swarming may include but not limited to/limited to: | * Presence of queen cells along the edges of the comb * Increase of drawn bees * Crowding of the hive and hive entrance * Increased defensiveness |
| 1. Colony management measures may include but not limited to/limited to: | * Feeding * Pest control * Harvesting * Adding brood combs * Merging colonies |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Harvesting skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Honey bee behavior
* Transportation of live bees
* Feeding of bees
* Colony management
* Bee selection and multiplication
* Honey harvesting

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Developed a schedule for trapping/catching and stocking honey bee swarms as per workplace procedures 2. Identified suitable trapping sites as per the relevant bee keeping manuals. 3. Identified and assembled relevant tools and equipment as per relevant workplace procedures 4. Identified the number of hives to be stocked as per apiary records. 5. Set the catcher box at the relevant site appropriately 6. Transported the new swarm to the new apiary as per the relevant manuals 7. Hived the new colony as per the relevant manuals 8. Conducted regular colony monitoring to check the progress of the new colony 9. Applied suitable colony management measures as per the workplace procedures |
| 1. Resource implications | The following resources must be provided:   * 1. Functional apiary   2. Trapping sites |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# MANAGE HONEY BEE COLONY

**UNIT CODE: AGR/OS/API/CR/07/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to manipulate honey bee colony. It involves preparing for honey bee colony manipulation, handling honey bee combs, handling honey bee colony manipulation, raising queen bees and performing post-manipulation practices bee colony manipulation.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare for honey bee colony manipulation | 1. Manipulation schedule is prepared based on ***apiary records*** 2. ***Materials and equipment*** for manipulation are identified as per the workplace procedures/standards. 3. ***Personal protective equipment*** is worn as per the occupational health and safety procedures |
| 1. Handle honey bee combs | 1. The ***bee hive*** is opened as per workplace procedures 2. ***Combs*** are identified as per the workplace procedures 3. Combs are removed in planned sequence and placed in suitable position. 4. Combs are replaced in same or new sequence/positions or removed to another hive according to the purpose of comb rearrangement |
| 1. Handle honey bee colony | 1. Strong colonies with ***desired characteristics*** are identified based on colony records. 2. ***Tools and equipment for dividing the colony*** are identified and used as per the workplace procedure 3. Honey bee colony is divided as per the workplace procedures 4. Brood nest is renewed as per the workplace procedure and the apiary records 5. The new colony is transferred as per the workplace procedures 6. The honey bee colonies are merged as per the workplace procedures 7. The honey bee colonies are fed as per workplace procedures 8. Bee ***colony strengthened*** as per workplace procedures 9. Colonies are selected as per the desirable characteristics |
| 1. Raise queen bees | 1. ***Colonies*** are identified as per the desirables characteristics 2. ***Tools and equipment*** for colony selection and propagation are prepared as per workplace procedures 3. The colony is de-queened as per the workplace procedures. 4. Queen bees are raised as per the objectives |
| 1. Perform post-manipulation practices | 1. Honey bee manipulation records are prepared 2. Honey bee manipulation reports are prepared 3. Honey bee colony is monitored as per the records and purpose of manipulation. 4. ***Interventions*** taken depending on the observation. 5. ***Disposable materials*** is ***disposed*** as per the workplace procedures. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Apiary records **may include but not limited to/limited to:** | * Hive records * Colony performance records * Queen records * Production records * Colony behavior records * Forage records |
| 1. Materialsand equipmentmay include but not limited to/limited to: | * Smoker * Smoker fuel * Match box * PPE * Hive tool * Bee brush * Catcher box * Honey super * Feeder box * Feed supplements |
| 1. Personal protective equipment may include but not limited to/limited to: | * Veil * Gloves * Gumboots * Hat/cap |
| 1. Bee hive may include but not limited to/limited to: | * Langstroth * Kenya top bar hive * Frame hive * Box hive * Mud hive * Bark hive * Bamboo * Basket * Log hive * Observation hive * Floor hive |
| 1. Combs may include but not limited to/limited to: | * Brood combs * Honey combs * Pollen combs * Old combs * New combs |
| 1. Desired characteristics may include but not limited to/limited to: | * Defensiveness * Less tendency to swarming, * Productivity, prolific, * Egg laying rate of the queen * Pest and disease resistance |
| 1. Tools and equipment for dividing the colony may include but not limited to/limited to: | * Catcher box * Hives * Hive tools * PPE * Bee brush * Smoker * Smoker fuel |
| 1. Colony strengthened may include but not limited to/limited to: | * Merge * Feed * Adding brood combs * Re-queen |
| 1. Tools and equipment may include but not limited to/limited to: | * Queen cage * Catcher box * Feeder box |
| 1. Interventions may include but not limited to/limited to: | * Quarantine * Feeding * Colony transfer * Pest and disease control |
| 1. Disposable materials may include but not limited to/limited to: | * Infected combs * Broken combs * Damaged combs * Old combs * Damaged top bars or frames * Dilapidated hives |
| 1. Disposal methods may include but not limited to/limited to: | * Recycling * Burning * Burying |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Use of tools and accessories
* Type of smoker fuel
* Types of smokers
* Purpose of manipulation
* Types of hives
* Colony behavior
* Weather conditions
* Types of combs and uses
* Desirable characteristics for colony selection and propagation
* Type of hive
* Selection objectives
* Colony multiplication techniques

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Prepared Manipulation schedule based on apiary records   2. Identified materials and equipment for manipulation correctly   3. Used Personal protective equipment appropriately.   4. Opened the bee hive as per the workplace procedures.   5. Identified and rearranged the combs appropriately.   6. manipulated combs as per the purpose   7. Identified colonies with desired characteristics based on colony records.   8. Identified and used tools and equipment for dividing the colony as per the workplace procedure   9. Divided honey bee colony as per the workplace procedures.   10. Renewed brood nest as per the workplace procedure and the apiary records   11. Transferred the new colony as per the workplace procedures   12. Strengthened bee colony as per workplace procedures   13. Selected colonies as per the desirable characteristics   14. Propagated colonies as per the workplace procedures   15. Prepared honey bee colony records and reports   16. Monitored honey bee colony as per the records and purpose of manipulation.   17. Took appropriate action depending on the observation.   18. Disposed waste according to workplace procedures |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional apiary |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# CONTROL HONEY BEE PESTS AND DISEASES

**UNIT CODE: AGR/OS/API/CR/08/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to control pests and disease within a honey bee colony. It involves inspecting the bee colony, assessing health and condition of bee brood, assessing health and condition of adult bees and managing bee pests and diseases.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to inspect the bee colony | 1. ***Tools and materials for colony inspection*** identified according to work place procedures 2. Protective gears are worn as per the workplace procedures 3. Hive is smoked and opened according to workplace procedures 4. Colonies to be inspected are identified based on apiary records |
| 1. Assess health and condition of bee brood | 1. Brood combs are identified according to the workplace procedures 2. Observation of ***signs and symptoms of pests and diseases*** evidence is doneaccording to bee brood health guidelines 3. Samples for testing and evidence to support a diagnosis are collected as per the workplace procedure. 4. The brood diseases is identified as per bee brood health guidelines |
| 1. Assess health and condition of adult bees | 1. Bee castes are identified in the colony according to the procedure 2. Observation of signs of pests and diseases in the colony according to bee health guidelines 3. Samples for testing and gathering evidence to support a diagnosis collected based on workplace procedures 4. Biosafety measures implemented as per workplace procedures   3.5 Results of inspections recorded and any remedial action taken as per the workplace procedures |
| 1. Manage bee pests and diseases | 1. Affected colonies are identified according to work place procedure 2. Weak colonies are strengthened according to the workplace procedure 3. ***Remedial measures*** implemented as per the workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Signs of pests and diseases may include but not limited to/limited to: | * Weak and inactive colonies, * Irregular queen laying patterns * Buzzing, * Deformations * Crawling and dead bees at the hive entrance * Dying colonies * Fallen hives * Poles * Chalky mummified |
| 1. Tools and materials for colony inspection may include but not limited to/limited to: | * Smokers * Bee brush * Hive tool * PPE * Smoker fuel * Sample bottles/vials * Cotton wool * Preservatives * Chloroform |
| 1. Remedial measures may include but not limited to/limited to: | * Isolated * Destroyed * Treated * Burned * Buried * Maintained * Recycled |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Use of tools and accessories
* Use of the right fuel material for the smoker
* Right approach to the hive
* Hive opening procedure
* Appearance of healthy and unhealthy brood
* Brood pests and diseases
* Castes differentiation
* Bee communication
* Bee pests and disease identification
* Pest infestation
* Differentiation of strong/ weak colonies
* Different pests/ disease control measures

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified tools and materials for colony inspection according to work place procedures   2. Wore protective gears as per the workplace procedures   3. Smoked and opened the hive according to workplace procedures   4. Identified colonies to be inspected based on apiary records   5. Identified brood combs according to the workplace procedure   6. Observed signs and symptoms of pests and diseases evidence according to bee brood health guidelines   7. Collected samples for testing as per the workplace procedures   8. Identified infected brood as per bee brood diseases guidelines.   9. Observed signs of pests and diseases in the colony according to bee health guidelines   10. Recorded results of inspections and took remedial action   11. Implemented biosafety measures.   12. Identified affected colonies according to work place procedure   13. Implemented remedial measures as per the workplace procedures |
| 1. Resource implications | The following resources must be provided:   * 1. Functional apiary   2. Bee health investigation unit |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * Off-the–job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# HARVEST BEE PRODUCTS

**UNIT CODE: AGR/OS/API/CR/09/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to harvest bee products. It involves preparing to harvest bee products, conducting bee product harvesting, extracting bee products and performing post-harvest practices.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare to harvest bee products | 1. Colonies to be harvested are identified as per workplace procedures. 2. ***Materials and equipment*** are identified as per workplace procedures. 3. materials and equipment’s are assembled as per workplace procedures 4. Personal protective equipment are worn as per the occupational health and safety procedures |
| 1. Conduct bee product Harvesting | 1. Hive is opened as per the workplace procedures 2. Ripe honey is harvested as per the workplace procedures 3. Propolis is harvested as per workplace procedures 4. Pollen is trapped and collected as per workplace procedures 5. Bee broods are harvested as per workplace procedures 6. Royal jelly harvested as per workplace procedures |
| 1. Extract bee products | 1. Bee venom is extracted as per workplace procedures 2. Honey is extracted as per workplace procedures 3. Bees wax extracted as per workplace procedures |
| 1. Perform post-harvest practices | 1. Bee products are weighed based on the workplace procedures 2. Graded as per the workplace procedures 3. ***Bee products production records*** are prepared as per the workplace procedures 4. Bee products transported(where necessary) as per the workplace procedures 5. ***Bee products*** are stored as per health and storage specifications |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Materials and equipment **may include but not limited to/limited to:** | * Harvesting and storage containers * Smokers * PPE kit * Bee brush * Bee escape |
| 1. Bee production records may include but not limited to/limited to: | * Quality * Classification * Quantity per hive records |
| 1. Bee products may include but not limited to/limited to: | * Bees wax * Pollen * Royal jelly * Bee venom * Bee broods * Honey |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Numeracy
* Digital literacy
* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Harvesting techniques
* Extraction techniques
* Appropriate use of tools and equipment.
* Bee products handling

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of bee products
* Equipment and techniques in bee product harvesting
* Types of PPE
* Safe use of tools and equipment
* Bee behavior
* Equipment for extraction
* Bee products harvesting, grading and storage.
* Bee products uses

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified colonies to be harvested as per workplace procedures. 2. Identified and assembled Materials and equipment 3. Used personal protective equipment as per the occupational health and safety procedures 4. Opened hive as per the workplace procedures 5. Harvested ripe honey , propolis, pollen, bee broods and royal jelly as per the workplace procedures 6. Extracted bee venom , honey, bees wax and pollen as per workplace procedures 7. Weighed and graded bee products based on the workplace procedures 8. Prepared bee products production records as per the workplace procedures 9. Stored bee products as per health and storage specifications |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional apiary   2. Functional bee products processing unit. |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# PROCESS BEE PRODUCTS

**UNIT CODE: AGR/OS/API/CR/10/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to provide bee extension services. It involves separating different bee products, preparing processing equipment, processing bee honey and processing bee wax.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare bee products for processing | 1. Bee products identified as per the workplace procedures 2. Products put in appropriate containers as per the workplace procedures |
| 1. Prepare processing equipment | 1. Processing equipment identified as per the workplace procedures 2. Processing equipment assembled as per the workplace procedures 3. Processing equipment Set up as per the workplace procedures 4. Hygienic and safety measures considered as per the workplace procedures |
| 1. Process honey | 1. ***State/form of honey*** identified based on as per the workplace procedures 2. Right processing steps initiated as per guidelines 3. Processed honey is stored in appropriate containers/materials |
| 1. Process bees wax | 1. Combs selected and assembled as per the workplace procedures 2. Right processing steps initiated as per workplace guidelines 3. Wax allowed to settle and stored appropriately as per the workplace procedures |
| 1. Process propolis | 1. Raw propolis is collected as per the workplace procedures 2. Foreign materials removed as per the workplace procedures 3. Right processing steps initiated as per workplace guidelines 4. Propolis is stored as per the workplace procedures |
| 1. Process pollen | 1. Pollen removed from pollen traps or combs as per the workplace procedures 2. Pollen sorted as per the workplace procedures 3. Pollen dried as per the workplace procedures 4. Pollen stored as per the workplace procedures |
| 1. Process bee venom | * 1. Right processing steps initiated as per guidelines   2. Bee venom is stored as per as per the workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. State/form of honey may include but not limited to/limited to: | * Raw honey * Semi processed * Decanted * Comb honey * Granulated |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Bee products
* Processing equipment
* Food grade materials
* Work place safety precautions
* Public heath
* Different forms of honey
* Honey processing methods
* Differentiation of Honey bee combs
* Processing methods
* Wax processing
* Wax storage materials

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified bee products   2. Identified processing methods   3. Identified processing equipment   4. Assembled processing equipment   5. Considered Hygienic and safety measures   6. Identified state of honey based on   7. Initiated right processing steps as per guidelines   8. Stored Processed honey in appropriate containers/materials   9. Selected and assembled combs   10. Cooled and stored wax appropriately   11. Collected raw propolis   12. Removed foreign materials from propolis   13. Stored propolis as per the workplace procedures   14. Removed pollen from pollen traps or combs   15. Dried pollen as per the workplace procedures   16. Stored pollen as per the workplace procedures   17. Initiated Right processing steps as per workplace guidelines |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional bee products processing unit |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# MANAGE QUALITY OF BEE PRODUCTS

**UNIT CODE: AGR/OS/API/CR/11/5/A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required to manage quality of bee products. It involves establishing food safety and quality systems, managing quality operations, preparing for raw material and product analyses and carrying out raw material and product analyses.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| --- | --- |
| 1. Establish food safety and quality systems | * 1. ***Food safety and quality systems*** are designed and established as per legal and regulatory requirements and workplace quality manual   2. Food safetyand quality systemsare implemented and maintained as per legal and regulatory requirements and workplace quality manual   3. Food safety and quality records are developed and maintained according to legal and regulatory requirements |
| 1. Manage quality operations | * 1. Quality operations are planned and executed as per overall workplace plan   2. Quality operations resources are allocated and controlled as per workplace policy.   3. Quality operations are organized as per workplace policy.   4. Quality operations are coordinated as per workplace policy.   5. Audit of quality operations is carried out based on workplace policy.   6. Leadership is provided based on workplace policy |
| 1. Prepare for bee product analyses | * 1. ***Laboratory standards*** are established as per Codex/ AOAC/KEBS and workplace quality manual.   2. Laboratory standards are implemented based on Codex/ AOAC (International laboratory standards) and workplace quality manual.   3. Laboratory status is confirmed according to laboratory code of practice.   4. ***Regulatory and statutory requirements*** for food laboratory practices are adhered to |
| 1. Carry out bee products analyses | * 1. ***Sampling procedures*** are adhered to as per workplace quality manual   2. Samples are prepared and analyzed based on specific ***test*** procedure   3. Testing reagents are prepared and equipment calibrated according to specifications   4. Bee products analysis carried out as per the workplace procedures   5. Analyses results are interpreted, reported and appropriate decisions made based on test outcomes and workplace standards. |

**Range**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

| Variable | Range |
| --- | --- |
| 1. Laboratory standards may include but not limited to/limited to: | * AOAC/CODEX * National laboratory standards * Workplace laboratory standards * KEBS |
| 1. Regulatory and statutory requirements may include but not limited to/limited to: | * Cap 242 (public health act) * Cap 254 (food, drugs and chemical substances act) * NEMA regulations * OSH Act 2007 |
| 1. Sampling procedures may include but not limited to/limited to: | * General-Random, Stratified * Workplace * KEBS standards |
| 1. Tests may include but not limited to/limited to: | * Micro-biological * Physical * Chemical * Organic * Organoleptic |
| 1. Food safety and quality systems may include but not limited to/limited to: | * International standards e.g. FSSC, ISO GFSI PRC, HACCP * National standards e.g. KEBS * Workplace standards * East African standards |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Interpersonal
* Leadership
* Planning
* Problem solving
* Route cause analysis
* Negotiation
* Interpretation
* Trouble shooting
* Apparatus handling
* Analytical
* Sampling
* Training/facilitation
* Computer
* Evaluation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food chemistry
* Food Analysis
* Food microbiology
* Quality/Safety management Systems
* Quality management
* Pest and rodent control
* Emerging Issues
* Principles of food technology
* Environmental safety
* Laboratory techniques

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Demonstrated knowledge of laboratory standards   2. Demonstrated knowledge of relevant legal, statutory and regulatory requirements.   3. Adhered to lab code of practice.   4. Demonstrated knowledge of various sampling techniques.   5. Demonstrated ability to carry out food lab test/analyses.   6. Reported and interpreted test results correctly and objectively.   7. Demonstrated knowledge of various quality and food safety systems. |
| 1. Resource Implications | The following resources **MUST** be provided:   1. Workplace or assessment location with a functional food laboratory. |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency **MAY** be assessed on the job, off the job or a combination of these.  Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PERFORM BEE PRODUCT VALUE ADDITION

**UNIT CODE: AGR/OS/API/CR/12/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform bee product value addition. It involves preparing the equipment, materials and supplies for value addition, processing wax-based value-added products, processing honey-based value-added products, processing propolis based value added products, processing royal jelly-based value-added products, processing bee venom-based value-added products, packaging, branding and marketing value added bee products.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Prepare the equipment, materials and supplies for value addition | 1. ***Equipment’s and materials for value addition*** are prepared as per the workplace policy. 2. PPE are worn according to Occupational Health and Safety procedures. 3. ***Value added products*** are identified based on workplace procedures and demand. |
| 1. Process wax-based value-added products | 1. ***Wax based value added products*** processed as per KEBS standards |
| 1. Process honey-based value-added products | 1. ***Honey based value added products*** are processed as per KEBS standards |
| 1. Process propolis based value added products | 1. ***Propolis based value added products*** are processed as per KEBS standards |
| 1. Royal jelly-based value-added products | 1. ***Royal jelly-based value-added products*** are processed as per KEBS standards |
| 1. Process bee venom-based value-added products | * 1. ***Bee venom-based value-added products*** are processed as per KEBS standards |
| 1. Package, brand and market value added bee products | * 1. Bee products packaged as per industry standards   2. Bee products labelled and branded as per industry standards   3. Bee products marketed as per industry regulations |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Equipment’s and materials for value addition may include but not limited to/limited to: | * Honey extractor * Uncapping knife * Processing, straining and settling tanks * Packaging materials * Bottles and jars * Labels * Weighing scales * Perfumes * Buckets * Ginger * Hibiscus * Medicinal plants * Propolis capsules * Vegetable oils |
| 1. Value added products may include but not limited to/limited to: | * Wax based * Honey based * Propolis * Royal jelly * Bee venom |
| 1. Wax based value added products may include but not limited to/limited to: | * Candles * Body cream * Soaps * Sandal cream * Cosmetics * Pharmaceutical capsule covers |
| 1. Honey based value added products may include but not limited to/limited to: | * Honey juice * Concussion * Honey cakes and bread * Peanuts * Cough syrups |
| 1. Propolis based value added products may include but not limited to/limited to: | * Propolis tincture * Propolis ointments * Propolis cream * Propolis capsules |
| 1. Royal jelly-based value-added products may include but not limited to/limited to: | * Royal jelly syrup * Cream capsules * Ointment * Jelly * Lotion |
| 1. Bee venom-based value-added products may include but not limited to/limited to: | * Bee venom capsules * Anti-wrinkle cream * Mask/ anti-ageing * Cleansing balm |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food quality materials.
* Design of processing premises
* Recipes for value added bee products.
* Processing of bee products
* Consumer behavior
* Marketing of consumer products

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Prepared equipment’s and materials for value addition as per the workplace policy.   2. Used PPE according to Occupational Health and Safety procedures.   3. Processed wax based, honey based, propolis based, royal jelly-based, bee venom-based value added products as per workplace guidelines   4. Packaged, labelled, branded and marketed bee products as per industry standards |
| 1. Resource Implications | The following resources must be provided:   * 1. Functional equipped bee product processing unit |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# PROVIDE BEE KEEPING TRAINING AND EXTENSION SERVICES

**UNIT CODE: AGR/OS/API/CR/13/5/A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to provide bee keeping training and extension services. It involves conducting community mobilization, carrying out surveys, forming community groups and leadership structures, building capacity to bee stakeholders, developing community action plans and creating awareness on bee keeping opportunities

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Conduct community mobilization | 1. Target area/groups identified based on production data. 2. Need assessment conducted based on the workplace procedures. 3. Prioritization of the needs is conducted according to the resources available 4. Interventions developed based on the needs assessment. 5. Interventions are implemented based on the work plan. 6. Monitoring and evaluation is conducted based on the workplace procedure. |
| 1. Form community groups and leadership structures | 1. Areas of common interests identified based on the need assessment report. 2. Capacity building of stakeholders is conducted based on the identified knowledge gaps. 3. Election conducted based on the existing legal guidelines. 4. Group norms established based on existing legal guidelines |
| 1. Create awareness on bee keeping opportunities | * 1. Beekeeping information publication developed as per the workplace procedures.   2. Sensitization meetings conducted as per the workplace procedures   3. Field exposure visits organized as per the workplace procedures |
| 1. Develop extension packages | * 1. ***Training materials*** identified based on workplace procedures   2. ***Training methods*** identified based on workplace procedures   3. Training of trainers is conducted based on trainingmanuals |
| 1. Carry out community training | 1. Training needs assessment conducted as per the industry guidelines 2. Training tools and materials/aids identified and assembled as per the workplace procedures. 3. Training venue identified based on workplace procedures. 4. Community training program/ schedule developed as per the training needs report 5. Community training is conducted as per the schedule. |
| 1. Develop community action plans | 1. Community needs prioritized according to the resources available 2. Interventions developed based on the group interest. 3. Interventions are implemented based on the work plan. 4. Monitoring and evaluation conducted based on the workplace procedure. |
| 1. Establish research extension linkages | * 1. Technologies / innovations are identified based documented research findings   2. Service providers and research institutions are identified based on the identified technologies and innovations   3. Collaborative research is conducted based workplace procedures and terms of reference   4. Public private partnerships are developed based existing policies and workplace procedures. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| Variables | Range |
| 1. Training materials may include but not limited to/limited to: | * Brochures * Flip charts * Videos * Handbooks * Manuals * Speakers |
| 1. Training methods may include but not limited to/limited to: | * Demonstrations * Seminars and workshops * Field days * Farmers exchange programs * Farm visits * Agricultural shows * Radio |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Extension communication skills
* Data collection and analysis
* Report writing and compiling
* Group dynamics
* Community dynamics
* Transparency and accountability
* Monitoring and evaluation
* Publication technologies
* Net-works and linkages

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified target area/groups based on production data. 2. Conducted needs assessment based on the workplace procedures. 3. Prioritized the needs in line with the resources available 4. Developed and implemented interventions based on the needs assessment. 5. Conducted monitoring and evaluation based on the workplace procedure. 6. Identified areas of common interests based on the need assessment report. 7. Conducted capacity building of stakeholders based on the identified knowledge gaps. 8. Established group norms based on existing legal guidelines 9. Conducted sensitization meetings as per the workplace procedures 10. Organized field exposure visits as per the workplace procedures 11. Identified training materials 12. Identified training methods 13. Conducted training of trainers based on training manuals 14. Identified and assembled training tools and materials/aids as per the workplace procedures. 15. Identified training venue based on workplace procedures. 16. Developed community training program/ schedule as per the training needs report 17. Conducted community training as per the schedule. 18. Prioritized community needs according to the resources available 19. Identified technologies / innovations based documented research findings 20. Identified service providers and research institutions based on the identified technologies and innovations 21. Participated collaborative research based on workplace procedures and terms of reference 22. Developed public private partnerships based on existing policies and workplace procedures. |
| 1. Resource implications | The following resources must be provided:   * 1. Community |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Assessment could be conducted:   * On-the-job * Off-the–job * During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |