

**REPUBLIC OF KENYA**

**COMPETENCY-BASED MODULAR CURRICULUM**

**FOR**

**ANIMAL HEALTH AND PRODUCTION**

**LEVEL 5**

**PROGRAMME ISCED CODE: 0841 454 A**

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# FOREWORD

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

Reforms in the education sector are necessary to achieve Kenya Vision 2030 and meet the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution, and this resulted in the formulation of the Policy Framework for Reforming Education and Training in Kenya (Sessional Paper No. 14 of 2012). 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 the mode of delivery allow 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 this curriculum has been developed. For trainees to build their skills on foundational hands-on activities of the occupation, units of learning are grouped in modules. This has eliminated duplication of content and streamlined exemptions based on skills acquired as a trainee progresses in the up-skilling process, while at the same time allowing trainees to be employable in the shortest time possible through the acquisition of part qualifications.

It is my conviction that this curriculum will play a great role in developing competent human resources for the animal health and production Sector’s growth and development.

**PRINCIPAL SECRETARY**

**STATE DEPARTMENT FOR TVET**

**MINISTRY OF EDUCATION**

**PREFACE**

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

TVET ACT, CAP 210A and Sessional Paper No. 1 of 2019 on Reforming Education and Training in Kenya for Sustainable Development 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 the Kenyan labour force.

This curriculum has been developed in adherence to the Kenya National Qualifications Framework and CBETA standards and guidelines. The curriculum is designed and organized into Units of Learning with Learning Outcomes, suggested delivery methods, learning resources, and methods of assessing the trainee’s achievement. In addition, the units of learning have been grouped in modules to concretize the skills acquisition process and streamline upskilling.

I am grateful to all expert trainers and everyone who played a role in translating the Occupational Standards into this competency-based modular curriculum.

# ACKNOWLEDGEMENT

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support were received from expert trainers, institutions and organizations.

I recognize with appreciation the role of the Agriculture National Sector Skills Committee (NSSC) in ensuring that competencies required by the industry are addressed in the curriculum. I also thank all stakeholders in the animal health sector for their valuable input and everyone who participated in developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that individuals aspiring to work in the animal health and production Sector acquire competencies to perform their work more efficiently and effectively.

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# ABBREVIATIONS AND ACRONYMS

|  |  |
| --- | --- |
| PPEs | Personal Protective Equipment |
| ISCED | International Standard Classification of Education |
| TVET | Technical and vocational education and training |
| TVETA | Technical and Vocational Education Training Authority |
| ELISA | Enzyme-Linked Immunosorbent Assay |
| FMD | Foot and Mouth Disease |
| ICT | Information Communication and Technology |
| NNP | The Nyeri National Polytechnic |
| KVB | Kenya Veterinary Board |
| LSD | Lumpy Skin Disease |
| NCD | New Castle disease |

# KEY TO ISCED UNIT CODE

Sector / Industry

Sub Sector

Occupational Area

Version Control

Unit of Competence Number

ISCED level, Programme Orientation and Level of Completion

xx

x

xxx

x

x

x

# CURRICULUM OVERVIEW

Animal health and production level 5 curriculum consists of competencies required by a person to enable him/her perform duties of an animal health and production technician. The competencies managing parasitic, microbial, metabolic, nutritional and reproductive diseases and disorders. It also involves managing livestock parasites and veterinary pharmaceuticals and toxins, applying animal health skills, performing animal routine practices and conducting animal health extension services.

The curriculum consists of the following basic, common and core units of learning

# SUMMARY OF UNITS OF COMPENTENCY

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit Factor** |
| **MODULE 1** | | | |
| 0841 441 04A | Basic animal Anatomy and physiology | 90 | 9 |
| 0512 441 06A | Basic biochemistry | 50 | 5 |
| 0511 441 07A | Basic microbiology | 50 | 5 |
| 0314 441 20A | Rural sociology | 40 | 4 |
| 0511 441 21A | Botany and zoology | 60 | 6 |
| 0811 441 08A | Basic genetics in animal breeding | 50 | 5 |
| 0542 441 26A | Biostatistics and Computer application. | 50 | 5 |
| 0031 441 02A | Communication skills | 40 | 4 |
| 0413 441 03A | Apply entrepreneurial skills | 40 | 4 |
| **SUB TOTAL 1** | | **470** | **43** |
| **MODULE 2** | | | |
| 0811 441 09A | Farm structures and mechanization | 50 | 5 |
| 0841 451 33A | Parasitology | 50 | 5 |
| 0521 441 24A | Ecology and environmental science | 50 | 5 |
| 0811 441 10A | Animal nutrition | 60 | 6 |
| 0841 441 13A | Basic epidemiology | 50 | 5 |
| 0841 441 15A | Basic immunology and vaccines | 50 | 5 |
| 0611 451 01A | Apply digital literacy | 40 | 4 |
| 0811 441 16A | Ruminant livestock production systems | 60 | 6 |
| 0811 441 17A | Non-ruminant livestock production systems | 60 | 6 |
| **SUB TOTAL 2** | | **470** | **47** |
| **MODULE 3** | | | |
| 0811 441 12A | Animal welfare, ethics and law | 40 | 4 |
| 0841 451 29A | Parasitic diseases | 60 | 6 |
| 0841 451 30A | Microbial diseases | 50 | 5 |
| 0841 451 32A | Veterinary pharmacology and toxicology | 60 | 6 |
| 0811 441 11A | Basic general pathology | 40 | 4 |
| 0811 451 18A | Manage companion and draught animals | 50 | 5 |
| 0811 441 25A | Pasture and fodder production and conservation | 60 | 6 |
| 0841 451 31A | Metabolic, nutritional and reproductive diseases and disorders | 50 | 5 |
| 0913 441 19A | HIV/AIDS | 30 | 3 |
| 0811 441 23A | Marketing and value addition of animal products | 30 | 3 |
| **SUB TOTAL 1** | | **470** | **47** |
| **MODULE 4** | | | |
| 0841 441 14A | Zoonosis and one health concept | 80 | 8 |
| 0811 441 22A | Agribusiness management | 80 | 8 |
| 0831 441 27A | Apiculture and aquaculture | 70 | 5 |
| 0811 441 28A | Animal Health Extension services | 50 | 5 |
| 0841 441 34A | Animal health applied skills | 90 | 9 |
| 0811 451 35A | Livestock routine practices | 90 | 9 |
| 0811 441 05A | Soil science | 30 | 3 |
| **Sub Total 4** | | **490** | **49** |
| **Industrial attachment** | | **480** | **48** |
| **Grand Total** | | **2380** | **238** |

**Entry Requirements**

Admission requirement into the programme shall be based on KVB admission requirements

All candidates must satisfy the following minimum requirements:

1. Kenya Certificate of Secondary School Education (KSCE) with an average mean grade of C minus (C-) and minimum of a C- in Biology or Biological Sciences or equivalent as determined by the KVB

OR

1. Minimum of one-year certificate with a credit pass in Range Management/Wildlife Health/Dairy Management/Animal Science/Animal Husbandry/Animal Production/Leather Technology/Agriculture or equivalent as determined by the KVB
2. Any other qualification equivalent to the above from an institution recognized by Kenya Veterinary Board.

**Trainer qualification**

A trainer for any of the Units of Competency in this course must:

1. Have a higher qualification than level 6 in animal health and production
2. be veterinary surgeon/paravet technologist
3. Be licensed by TVETA.
4. Be registered by Kenya Veterinary Board (KVB)

**Industry Training**

An individual enrolled in this course will be required to undergo Industry training for a minimum period of 480 hours in veterinary sector. The industrial training may be taken after completion of all units for those pursuing the full qualification or be distributed equally in each unit for those pursuing part qualification. In the case of dual training model, industrial training shall be as guided by the dual training policy.

**Assessment**

The course shall be assessed formatively and summative:

1. During formative assessment all performance criteria shall be assessed based on performance criteria weighting.
2. Number of formative assessments shall minimally be equal to the number of elements in a unit of competency.
3. During summative assessment basic and common units may be integrated in the core units or assessed as discrete units.
4. Theoretical and practical weight shall be 30:70 for each unit of learning.
5. Formative and summative assessments shall be weighted at 60% and 40% respectively in the overall unit of learning score

For a candidate to be declared competent in a unit of competency, the candidate must meet the following conditions:

1. Obtained at least 40% in theory assessment in formative and summative assessments.
2. Obtained at least 60% in practical assessment in formative and summative assessment where applicable.
3. Obtained at least 50% in the weighted results between formative assessment and summative assessment where the former constitutes 60% and the latter 40% of the overall score.
4. Assessment performance rating for each unit of competency shall be as follows:

|  |  |
| --- | --- |
| **MARKS** | **COMPETENCE RATING** |
| 80 -100 | Attained Mastery |
| 65 - 79 | Proficient |
| 50 - 64 | Competent |
| 49 and below | Not Yet Competent |
| Y | Assessment Malpractice/irregularities |

1. Assessment for Recognition of Prior Learning (RPL) may lead to award of part and/or full qualification.

**Certification**

A candidate will be issued with a Certificate of Competency upon demonstration of competence in a Unit of Competency. To be issued with Kenya National TVET Certificate in Animal Health and Production Level 5, the candidate must demonstrate competence in all the Units of Competency as given in the qualification pack. Statement of Attainment certificate may be awarded upon demonstration of competence in certifiable element within a unit.

These certificates will be issued by Qualification Awarding Institution.

# MODULE 1

# ANIMAL ANATOMY AND PHYSIOLOGY

**UNIT CODE: 0841 441 04A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of animal anatomy and physiology.

**Unit Duration: 90 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of animal anatomy and physiology. It involves applying knowledge of anatomical and physiological principles, apply knowledge of animal’s body system, apply knowledge of domestic fowl anatomy and physiology and apply knowledge of environmental physiology.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of anatomical and physiological principles | 20 |
|  | Apply knowledge of animal’s body system | 40 |
|  | Apply knowledge of domestic fowl anatomy and physiology | 20 |
|  | Apply knowledge of environmental physiology | 10 |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods:**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of anatomical and physiological principles | * 1. Introduction to anatomy & physiology      1. Definitions * Anatomy * Physiology * Gross anatomy * Microscopic anatomy   1. Animal anatomical principles   2. Animal cell physiology   3. Branches of anatomy      1. Gross anatomy      2. Embryology      3. Comparative anatomy   4. Mammalian cell | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of animal’s body systems | * 1. Animal tissue      1. Epithelial      2. Connective      3. Nervous      4. Muscle   2. Animal organs      1. Brain      2. Heart      3. Lungs      4. Kidneys      5. Liver   3. Animal organs system      1. Digestive      2. Skeletal      3. Muscular      4. Integument      5. Reproductive      6. Respiratory      7. Circulatory      8. Lymphatic      9. Endocrine      10. Nervous      11. Excretory | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of domestic fowl anatomy and physiology | * 1. Domestic fowl digestive system   2. Domestic fowl reproductive system   3. Domestic fowl respiratory system | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of environmental physiology | * 1. Environmental effects on animal physiology   2. Animal adaptive responses to environment   3. Animal behavior to the environment | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instruction

**Training resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| A | Learning materials |  |  |  |
| 1 | Projector | EPSOM | 1 | 1:25 |
| 2 | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
| 3 | Desktop/computer |  |  |  |
| 4 | Charts of various skeletons |  | 5 | 1:5 |
| B | Learning Facilities & Infrastructure |  |  |  |
| 1 | Lecture/Theory room |  | 1 | 1:25 |
| 2 | Anatomy Laboratory |  | 1 | 1:25 |
| 3 | Functional farm | As by KVB guidelines | - | - |
| 4 | Library | Equipped with animal anatomy and physiology books and E-Library section | 1 | 1:25 |
| C | Consumable Materials |  |  |  |
| 1. | Charts of various animal skeletons |  | 1 | 1:25 |
| D | Tools and Equipment |  |  |  |

# BIOCHEMISTRY

**UNIT CODE: 0512 441 06A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of biochemistry

**Unit Duration: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of biochemistry in animal health and production. It involves applying the knowledge of macromolecules, enzymes in managing animal health, molecular genetics and biomolecule metabolism in animal health.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of macromolecules in animal health | 10 |
|  | Apply knowledge of enzymes in managing animal health | 10 |
|  | Apply knowledge of molecular genetics | 15 |
|  | Apply knowledge of the biomolecule metabolism in animal health | 15 |
| **Total** | | **50** |

**Learning Outcomes, Content, and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply knowledge of macromolecules in animal health | 1.1 Introduction to biochemistry   * + 1. Define biochemistry     2. Basic structure of a living cell and how it is organized to conduct its characteristic chemical function   1. Types of macromolecules      1. Carbohydrates      2. Proteins      3. Vitamins      4. Minerals      5. Lipids   2. Biochemistry of carbohydrates Structure      1. Properties and classification of carbohydrates      2. Carbohydrate metabolism      3. Energy pathways and metabolic disorders of carbohydrate metabolism   3. Biochemistry of proteins      1. Structure      2. Properties and classification of proteins      3. Protein metabolism      4. Metabolic pathways and metabolic disorders of protein metabolism   4. Biochemistry of lipids      1. Structure, properties and classification of lipids      2. Lipid metabolism      3. Metabolic pathways and metabolic disorders of lipid metabolism   5. Biochemistry of vitamins:      1. Structure      2. Properties      3. Classification, biochemical role      4. Metabolism, and metabolic disorders of lipid metabolism | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of enzymes in managing animal health | * 1. Basic concepts of enzymes      1. Isoenzymes      2. Holoenzymes      3. Coenzymes      4. Apoenzymes   2. Management of catalytic reactions   3. Enzyme metabolism | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of molecular genetics | * 1. Principles of molecular genetics   2. Classification of Nucleic acids   3. Nucleic acid metabolism   4. Pentose sugars in nucleic acid      1. DNA replication      2. DNA transcription | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of the biomolecule metabolism in animal health | * 1. Biomolecule metabolism   2. Types of biomolecules      1. Carbohydrates      2. Proteins      3. Vitamins      4. Minerals      5. Lipids   3. Metabolic pathways      1. Glycolytic pathway      2. Krebs cycle   4. Management of effects of biomolecule metabolism. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Training resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| A | Learning materials |  |  |  |
| 1 | Projector |  | 1 | 1:25 |
| 2 | Whiteboard/Smartboard | EPSOM | 1 | 1:25 |
| 3 | Desktop/computer |  | 1 | 1:25 |
| B | Learning Facilities & Infrastructure |  |  |  |
| 1 | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
| 2 | Biochemistry laboratory |  | 1 | 1:25 |
| 3 | Animal farm | As guided by KVB | 1 | 1:25 |
| 4 | Library | Equipped with biochemistry books and E- section | 1 |  |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |
|  | Centrifuges |  | 1 | 1:25 |
|  | Autoclaves |  | 1 | 1:25 |
|  | Incubators |  | 1 | 1:25 |
|  | Microscopes |  | 5 | 1:5 |
|  | Electrophoresis |  | 1 | 1:25 |
|  | Beaakers | 200 pcs | - | - |
|  | Calorimeter |  | 5 | 1:5 |
|  | Graduated cylinder | 200 pcs | - | - |
|  | Water bath | Enough |  |  |
|  | Funnel |  | 25 | 1:1 |
|  | pH Meter |  | 5 | 1:5 |
|  | Bunsen burner |  | 25 | 1:1 |
|  | Analytical balance |  | 5 | 1:5 |
|  | Test tubes | 200 pcs | - | - |

# MICROBIOLOGY

**UNIT CODE: 0511 441 07A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of microbiology.

**Unit duration: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of microbiology in animal health. It involves Perform basic laboratory techniques, knowledge of physiology and nutrition of microorganisms, knowledge of microbial genetics and identify microbes of veterinary importance.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Perform basic laboratory techniques | 10 |
|  | Apply knowledge of physiology and nutrition of microorganisms | 10 |
|  | Apply knowledge of microbial genetics | 10 |
|  | Apply knowledge of microbes of veterinary importance | 20 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Perform basic laboratory techniques | * 1. Laboratory equipment      1. Microscope      2. Slides      3. Bunsen burner      4. Centrifuge      5. Spatula      6. Cover slip      7. Beakers      8. Petri dishes      9. Inoculating wire      10. Test tubes   2. Microbiological specimen      1. Blood      2. Swabs from wounds, the nose, or the mouth      3. Urine      4. Feces      5. Sputum      6. Surgical biopsies      7. Cerebrospinal fluid (CSF)   3. Staining and processing techniques      1. Gram staining      2. Giemsa staining      3. Methylene blue staining      4. Eosin staining | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of physiology and nutrition of microorganisms | * 1. Physiology and nutrition of microorganisms   2. Bacterial cell   3. Bacterial growth   4. Staining technique      1. gram staining      2. Giemsa staining      3. Methylene blue staining      4. Eosin staining   5. Microbe physiology and nutrition | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of microbial genetics | * 1. Introduction to microbial genetics   2. Microbes reproduction      1. Bacteria      2. Fungi      3. Viruses      4. Mycoplasma      5. Rickettsia      6. Chlamydia   3. Sensitivity tests of microbes   4. Microbial resistance | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 4. Apply knowledge of microbes of veterinary importance | * 1. Microbes of veterinary importance      1. Bacteria      2. Fungi      3. Viruses      4. Mycoplasma      5. Rickettsia      6. Chlamydia   2. Pathogen-host relationships   3. Microscopy of the microbes   4. Microbes culture      1. Blood sugar      2. Mackonkey agar      3. Mannitol salt agar      4. Dextrose broth      5. Glucose agar   5. Unique characteristics of organisms | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with microbiology and E- section | 1 | 1:25 |
|  | Animal farm | As by KVB guidelines | - | - |
|  | Microscope |  | 5 | 1:5 |
|  | Autoclave |  | 5 | 1:5 |
|  | Hot air hooven |  | 1 | 1:25 |
|  | Spectrophotometer |  | 5 | 1:5 |
|  | pH meter |  | 25 | 1:1 |
|  | Analytical balance |  | 25 | 1:1 |
|  | Slides | 1000 | - | - |
|  | Bunsen burner |  | 25 | 1:1 |
|  | Centrifuge |  | 1 | 1:25 |
|  | Spatula |  | 25 | 1:1 |
|  | Cover slip | 1000 | - | - |
|  | Beakers | 200 | - | - |
|  | Petri dishes | 100 | - | - |
|  | Inoculating wire | 100 | - | - |
|  | Test tubes | 500 | - | - |
|  | Gram stains | 1 Litre | - | - |
|  | Giemsa stains | 1 Litre | - | - |
|  | Methylene blue stains | 1 Litre | - | - |
|  | Eosin stains | 1 Litre | - | - |

# RURAL SOCIOLOGY

**ISCED UNIT CODE:** 0314 551 22A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of rural sociology

**UNIT DURATION:** 80Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply knowledge of rural sociology. It involves applying concepts of rural sociology, knowledge of rural communities and social systems, gender relation and social constructions, culture and agricultural extension, and cross cutting issues.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply concepts of rural sociology | 30 |
|  | Apply knowledge of rural communities and social systems | 15 |
|  | Apply knowledge of gender relation and social constructions | 10 |
|  | Apply knowledge of culture and agricultural extension | 15 |
|  | Apply knowledge of cross cutting issues | 10 |
| **Total** | | **80** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply concepts of rural sociology | * 1. Rural sociology concept   2. Definition of rural sociology and society      1. Paradigm      2. Rural change      3. Social change      4. Social stratification.   3. Functionalism of rural sociology   4. Branches of rural sociology | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of rural communities and social systems | * 1. Social systems in rural sociology   2. Social groups in rural sociology      1. Primary groups      2. Secondary groups      3. In-groups      4. Reference groups   3. Rural social change | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of gender relation and social constructions | * 1. Gender relations   2. Gender concepts roles   3. Social construction | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of culture and agricultural extension | * 1. Cultural factors influencing animal health extension   2. Role of culture in extension   3. Social factors affecting animal health | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of cross cutting issues | * 1. Cross cutting issues   2. Drug and substance abuse   3. Effects of drug abuse   4. Social problems of drug abuse | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**Suggested Methods of delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
|  | **Learning materials** |  |  |  |
| 1. | Projector |  | 1 | 1:25 |
| 2. | Whiteboard/Smart board |  | 1 | 1:25 |
| 3. | Desktop/computer |  | 1 | 1:25 |
| 4. | Lecture/Theory room |  | 1 | 1:25 |
| 5. | Animal farm | As guided by KVB | 1 | 1:25 |
| 6. | Library |  | 1 | 1:25 |
| 7. | E-Library |  | 1 | 1:25 |

# BOTANY AND ZOOLOGY

**UNIT CODE: 0511 441 21A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of botany and zoology.

**UNIT DURATION: 60 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of botany and zoology in animal health and production. It involves applying knowledge of botany and zoology, plant morphology and plant and animal classification.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of botany and zoology | 20 |
|  | Apply knowledge of plant morphology | 20 |
|  | Apply knowledge of plant and animal classification in animal production | 20 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge botany and zoology | * 1. Basic concept of botany and zoology   2. Stages of cell division in botany   3. Stages of cell division in animal cell   4. Plant organization | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of plant morphology | * 1. Plant morphology      1. Leaf structure      2. Flower structure   2.2 Fruits and seeds formation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of plant and animal classification in animal production | * 1. Plant and animal classification   2. Hierarchical groupings of animals and plants   3. Phyla of veterinary importance      1. Chordata      2. Nematoda      3. Platyhelminthes      4. Arthropoda      5. Mollusca | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with botany and zoology books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |

# ANIMAL GENETICS AND BREEDING

**UNIT CODE: 0811 441 08A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of animal genetics and breeding.

**Unit Duration: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of genetics in animal breeding. It involves applying knowledge of basic concepts of animal genetics, identifying tools of animal breeding, applying knowledge of growth and development in animal breeding, and keeping of breeding records.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of basic concepts in animal genetics | 20 |
|  | Tools for animal breeding | 10 |
|  | Apply knowledge of growth and development in animal breeding | 10 |
|  | Keep breeding records | 10 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply knowledge of basic concepts of animal genetics | * 1. Basic concepts of animal genetics   2. Introduction to animal genetics   3. Definitions      1. Qualitative genetics      2. Genetic material      3. Mutations and Chromosomal aberrations      4. Quantitative Genetics   4. Animal cell physiology   5. Qualitative and quantitative genetics traits      1. Coat colour      2. Udder      3. Egg production      4. Height      5. Weight      6. Milk production   6. Chromosomal aberrations      1. Deletion      2. Translocation      3. Insertion      4. Inversion   7. Management of mutation and chromosomal aberration. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 2.Tools for animal breeding | * 1. Theory of selection      1. Natural      2. Artificial   2. Livestock breeding programs   3. Animal breeding tools      1. Selection      2. Breeding   4. Breeding systems and methods | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 3.Apply knowledge of growth and development in animal breeding | * 1. Definitions      1. Prenatal growth      2. Postnatal growth   2. Factors affecting postnatal growth and development   3. Compensatory growth   4. Maturity and body composition | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 4. Keep breeding records | * 1. Definition breeding records   2. Report on breeding records   3. Importance of breeding records   4. Dissemination of breeding records | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with genetics and breeding books and E- section | 1 | 1:25 |
|  | Animal farm | AS guided by KVB | - | - |
|  | Artificial insemination kit |  | 5 | 1:5 |

# BIOSTATISTICS AND COMPUTER APPLICATION

**ISCED UNIT CODE:** 0611 551 32A

**Relationship to Occupational Standards**

**This unit addresses the Unit of Competency:** Apply knowledge of biostatistics and computer application

**UNIT DURATION:** 50 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply knowledge biostatistics and computer applications. It involves applying concept of statistical population and samples, knowledge of descriptive statistics, probability, normal distribution curves and computer applications.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply concept of statistical population and samples | 20 |
|  | Apply knowledge of descriptive statistics | 10 |
|  | Apply knowledge of probability | 10 |
|  | Apply knowledge of normal distribution | 15 |
| **Total** | | **80** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply concept of statistical population and samples | * 1. Definition of terms      1. Statistics      2. Population      3. Samples   2. Types of population   3. Sampling methods      1. Stratified      2. Random      3. Snow bowling      4. Convenient   4. Types of Variables   5. Methods of data collection | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of descriptive statistics | * 1. Descriptive statistics   2. Measures of central tendencies   3. Dispersion measures | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of probability | * 1. Probability terminologies   2. Types of probabilities   3. Statistical probabilities | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of normal distribution | * 1. Normal distribution terminologies   2. Normal distribution curves   3. Normal distribution curves variables | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply computer application | * 1. Computer hardware      1. Hard disc      2. keyboard      3. C.p.u   2. Computer software   3. Computer software | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**Suggested Methods of delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
|  | **Learning materials** |  |  |  |
|  | Projector |  | 1 | 1:25 |
|  | Whiteboard/Smart board |  | 1 | 1:25 |
|  | Desktop/computer |  | 25 | 1:1 |
|  | Lecture/Theory room |  | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |

# COMMUNICATION SKILLS

**UNIT CODE:** 0031 441 10 A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply Communication Skills

**Duration of Unit:** 40 hours

**Unit Description**

This unit covers the competencies required to apply communication skills. It involves applying communication channels, written, non-verbal, oral, and group communication skills.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply communication channels | **10** |
|  | Apply written communication skills | **12** |
|  | Apply non-verbal skills | **4** |
|  | Apply oral communication skills | **4** |
|  | Apply group communication skills | **10** |
| **Total** | | **40** |

**Learning Outcomes, Content, and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Apply communication channels | * 1. Communication process   2. Principles of effective communication   3. Channels/medium/modes of communication   4. Factors to consider when selecting a channel of communication   5. Barriers to effective communication   6. Flow/patterns of communication   7. Sources of information   8. Organizational policies | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply written communication skills | * 1. Types of written communication   2. Elements of communication   3. Organization requirements for written communication | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply non-verbal communication skills | * 1. Utilize body language and   2. gestures   3. Apply body posture   4. Apply workplace dressing code | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply oral communication skills | * 1. Types of oral communication pathways   2. Effective questioning techniques   3. Workplace etiquette   4. Active listening | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply group discussion skills | * 1. Establishing rapport   2. Facilitating resolution of issues   3. Developing action plans   4. Group organization techniques   5. Turn-taking techniques   6. Conflict resolution techniques   7. Team-work | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Discussion
* Roleplaying
* Simulation
* Direct instruction
* Demonstration
* Field trips

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** | | | |
|  | Charts | * Flip Charts * Rules and Regulations | 5 | 1:5 |
|  | Report Writing Templates | Printed copies and softcopies | 25 | 1:1 |
|  | Assorted Markers | whiteboard markers and permanent | 5 | 1:5 |
|  | Samples Of CVS | Printed copies and softcopies | 5 | 1:5 |
|  | External Storage Media | Flash disks, Compass Disks; Re-Writable | 1 | 1:25 |
|  | Smartboard/Smart TV (Where Applicable) | LCD or projector | 20 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** | | | |
|  | Lecture/Theory Room | (9\* 8 sq. metres) | 1 | 1:25 |
|  | Workshop | (10\* 15 sq. metres) | 1 | 1:25 |
|  | Internet Connection | WI-FI, Dial-Up, Cable, Fixed-wireless, | 1 | 1:25 |
| **C** | **Consumable Materials** | | | |
|  | Flashcards | Alphabet, Numbers, Math | 25 | 1:1 |
|  | Printing Papers | Sizes A4, A3, A2 etc | 5 reams | 1:5 |
| **D** | **Tools And Equipment** | | | |
|  | Computers/Laptops | Any model | 1 | 1:25 |
|  | Projector | LED.LCD, Laser | 1 | 1:25 |
|  | Printer | Inkjet, LaserJet | 1 | :25 |
|  | Computers Software: | •Windows/Linux/Macintosh Operating System  •Microsoft Office Software  •Google Workspace Account  Antivirus Software | 1 | 1:1 |
|  | Whiteboard | Glass, melamine, porcelain | 1 | 1:25 |
|  | Mobile Phones | Smartphones | 5 | 1:5 |

# ENTREPRENEURIAL SKILLS

**UNIT CODE:** 0413 441 15 A

**Relationship to occupational standards**

This unit addresses the unit of competency: Apply Entrepreneurial skills.

**Duration of unit:** 40 hours

**Unit Description:**

This unit covers the competencies required to demonstrate an understanding of entrepreneurship. It involves demonstrating an understanding of financial literacy, applying entrepreneurial concepts identifying entrepreneurship opportunities, applying business legal aspects, and developing business innovative strategies and business plans.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply financial literacy | **6** |
|  | Apply the entrepreneurial concept | **4** |
|  | Identify entrepreneurship opportunities | **6** |
|  | Apply business legal aspects | **6** |
|  | Innovate business strategies | **6** |
|  | Develop a business plan | **12** |
| **Total** | | **40** |

**Learning Outcomes, Content and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Apply financial literacy | * 1. Personal finance management   2. Balancing between needs and wants   3. Budget preparation   4. Saving management   5. Factors to consider when deciding where to save   6. Debt management   7. Factors to consider before taking a loan   8. Investment decisions   9. Types of investments   10. Factors to consider when investing money   11. Insurance services   12. Insurance products available in the market   13. Insurable risks | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply entrepreneurial concept | * 1. Difference between entrepreneurs and business persons   2. Types of entrepreneurs   3. Ways of becoming an entrepreneur   4. Characteristics of entrepreneurs   5. Salaried employment and self-employment   6. Requirements for entry into self-employment   7. Roles of an entrepreneur in an enterprise   8. Contributions of entrepreneurship | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Identify entrepreneurship opportunities | * 1. Sources of business ideas   2. Factors to consider when evaluating business opportunity   3. Business life cycle | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply business legal aspects | * 1. Forms of business ownership   2. Business registration and licensing processing   3. Types of contracts and agreements   4. Employment laws   5. Taxation laws | pWritten assessment   * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Innovate business strategies | * 1. Creativity in business   2. Innovative business strategies   3. Entrepreneurial linkages   4. Ict in business growth and development | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Develop business plan | * 1. Business description   2. Marketing plan   3. Organizational/management   4. Plan   5. Production/operation plan   6. Financial plan   7. Executive summary   8. Business plan presentation   9. Business idea incubation | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Project (Business plan)
* Case studies
* Field trips
* Group Discussions
* Demonstrations

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** | | | |
|  | Charts | * Flip Charts * Rules and Regulations | 5 | 1:5 |
|  | Markers | whiteboard markers and permanent markers | 5 | 1:5 |
|  | Video clips  Audio tapes | MP4, MP3 | 5 | 1:5 |
|  | Newspapers and Handouts | Daily | 25 | 1:1 |
|  | Business Journals | Annual, Monthly, Daily | 25 | 1:1 |
| **B** | **Learning Facilities & Infrastructure** | | | |
|  | Lecture/Theory Room | (9\* 8 sq. metres) | 1 | 1:25 |
|  | Internet Connection | WI-FI, Dial-Up, Cable, Fixed-wireless, | 1 | 1:25 |
| **C** | **Consumable Materials** | | | |
|  | Flashcards | Alphabet, Numbers, Math | 25 | 1:1 |
|  | Stationery | Printing Papers, and Exercise Books Sizes A4, A3, A2 etc | 5 reams | 1:5 |
| **D** | **Tools And Equipment** | | | |
|  | Computers/Laptops | Any model | 1 | 1:25 |
|  | Projector | LED.LCD, Laser | 1 | 1:25 |
|  | Whiteboard | Glass, melamine, porcelain | 1 | 1:25 |

**MODULE II**

# FARM STRUCTURES AND MECHANIZATION

**UNIT CODE: 0811 441 09A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of farm structures and mechanization.

**UNIT DURATION: 50 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician in order to apply knowledge of farm structures and mechanization in animal farms. It involves applying knowledge of farm structures, farm power, and knowledge of farm mechanization.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of farm structures | 20 |
|  | Apply knowledge on farm power | 15 |
|  | Apply knowledge of farm mechanization | 15 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of farm structures | * 1. Farm planning   2. Construction materials * Timber * Stone * Metal * Iron sheets * Sand * Ballast * Cement * Nails   1. Livestock Housing structures      1. Zero grazing unit      2. Piggery      3. Rabbitry      4. Poultry unit      5. Sheep and goats pen   2. Livestock restraining structures   3. Dips and spray races | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 2. Apply knowledge on farm power | * 1. Farm power      1. Animal power      2. Solar power      3. Tractor power      4. Human power   2. Farm power selection   3. Tractor/animal power operations | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 3. Apply knowledge of farm mechanization | * 1. Farm mechanization   2. Challenges of farm mechanization   3. Farm machinery and equipment      1. Silage chopper      2. Chaff cutter      3. Hay Bailing machine      4. Knapsack sprayer | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with farm structures books and E- section | 1 | 1:25 |
|  | Silage chopper |  | 5 | 1:5 |
|  | Chaff cutter |  | 5 | 1:5 |
|  | Hay Bailing machine |  | 1 | 1:25 |
|  | Knapsack sprayer |  | 5 | 1:5 |
|  | Tractor |  | 1 | 1:5 |
|  | Solar power |  | - | - |
|  | Zero grazing unit | As guided by KVB | 1 | 1:25 |
|  | Piggery | As guided by KVB | 1 | 1:25 |
|  | Rabbitry | As guided by KVB | 1 | 1:25 |
|  | Poultry unit | As guided by KVB | 1 | 1:25 |
|  | Timber | As by the structure requirement | - | - |
|  | Stone | As by the structure requirement | - | - |
|  | Metal | As by the structure requirement | - | - |
|  | Iron sheets | As by the structure requirement | - | - |
|  | Sand | As by the structure requirement | -- | - |
|  | Ballast | As by the structure requirement | - | - |
|  | Cement | As by the structure requirement | - | - |
|  | Nails | As by the structure requirement | - | - |

# PARASITOLOGY

**UNIT CODE: 0841 451 33A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage livestock parasites.

**Unit Duration: 50 hours**

**Unit Description**

This unit describes competencies required by animal health and production technician to manage livestock parasites. It involves managing livestock nematodes, livestock trematodes, livestock cestodes, arthropods and livestock protozoa.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage livestock nematodes | 10 |
|  | Manage livestock trematodes | 10 |
|  | Manage livestock cestodes | 10 |
|  | Manage livestock arthropods | 10 |
|  | Manage livestock protozoa | 10 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Manage livestock nematodes | 1.1 PPEs   * + 1. Glove     2. Overall     3. Dust coat     4. Gum boots     5. Face masks   1. Tools and equipment      1. Microscope      2. Centrifuge      3. Microscope slides      4. Forceps      5. Magnifying glass      6. Incubator      7. Refrigerator      8. Autoclave      9. Air oven      10. Cover slips      11. McMaster Chamber   2. Livestock samples collection for lab analysis      1. Urine      2. Stool      3. Blood      4. Swabs      5. Sputum      6. Aspirates and Biopsies   3. Livestock nematode      1. Ascarids      2. Haemonchus      3. Ostertagia      4. Trychostrongylus      5. Cooperia      6. Trichuris      7. Oesophagostomum      8. Bunostomum   4. Treatment of affected livestock   5. Nematode prevention and control | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage livestock trematodes | * 1. Livestock trematodes      1. Fasciola      2. Paraphistosomes      3. Schistosomes   2. Livestock trematode treatment   3. Trematode prevention and control | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage livestock cestodes | * 1. Livestock cestodes      1. Taenia      2. Echinococcus      3. Hymenolepis   2. Livestock cestodes treatment.   3. Cestodes is prevention and control | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage livestock arthropods | * 1. Livestock arthropods      1. Insects      2. Arachnids      3. Myriapods      4. Crustaceans   2. Livestock arthropods treatment.   3. Prevention and control of arthropods | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage livestock protozoa | * 1. Livestock protozoa      1. Theileria      2. Eimeria      3. Trypanosomes      4. Anaplasma      5. Toxoplasma   2. Livestock protozoon treatment   3. Prevention and control of protozoa | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Practical
* Field training
* Projects
* Discussions
* Direct instruction

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Functional livestock farm |  | 1 | 1:25 |
|  | Fully equipped Microbiology laboratory |  | 1 | 1:25 |
|  | Library | Equipped with parasitology books and E- section | 1 | 1:25 |
|  | Microscope |  | 5 | 1:5 |
|  | Centrifuge |  | 5 | 1:5 |
|  | Microscope slides |  | Enough | - |
|  | Forceps |  | Enough | - |
|  | Magnifying glass |  | Enough |  |
|  | Incubator |  | 1 | 1:25 |
|  | Refrigerator |  | 1 | 1:25 |
|  | Autoclave |  | 1 | 1:25 |
|  | Air oven |  | 1 | 1:25 |
|  | Cover slips |  | Enough | - |
|  | McMaster Chamber |  | 1 | 1:25 |
|  | Microscope |  | 5 | 1:5 |
|  | Centrifuge |  | 1 | 1:25 |

# ECOLOGY AND ENVIRONMENTAL SCIENCE

**UNIT CODE: 0521 441 24A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of ecology and environmental science.

**Unit Duration: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production to apply knowledge of ecology. It involves applying knowledge of community in ecology, ecosystem in animal health, energy flow in an ecosystem, nutrient cycling in an ecosystem, plant ecology in an ecosystem, principles of ecosystem in the environment, knowledge of environmental health and management and knowledge of sustainable environmental management.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of community in ecology | 5 |
|  | Apply knowledge of ecosystem in animal health | 5 |
|  | Apply knowledge of energy flow in an ecosystem | 5 |
|  | Apply knowledge of nutrient cycling in an ecosystem | 5 |
|  | Apply knowledge of plant ecology in an ecosystem | 10 |
|  | Apply principles of ecosystem in the environment | 5 |
|  | Apply knowledge of environmental health and management | 10 |
|  | Apply knowledge of sustainable environmental management | 5 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply knowledge of community in ecology | * 1. Introduction to ecology   2. Association between organism      1. Parasitism      2. Mutualism      3. Symbiosis      4. Commensalism   3. Adaptation of dryland plants   4. Animal adaptation to dryland conditions | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of ecosystem in animal health | 1. Ecosystem in animal health 2. Biotic system 3. Abiotic system | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of energy flow in an ecosystem | * 1. Energy flow terminologies      1. Ecosystem      2. stocking rate      3. Ecology      4. Biodiversity      5. Habitat      6. Biome   2. Ecological pyramids in ecosystem   3. Energy flow in an ecosystem   4. Ecological efficiencies of tansfer of energy in an ecosystem   3.6 Biological production in energy flow | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of nutrient cycling in an ecosystem | 1. Nutrient cycling in an ecosystem 2. Watercycle in ecosystem 3. Nitrogen cycle in ecosystem 4. Carbon and Phosphorus cycle in ecosystem | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of plant ecology in an ecosystem | 1. Plant ecology in an ecosystem 2. Forms of plant growth 3. Classification of plant communities   5.3.1 Monocotyledons  5.3.2 Dicotyledons  5.3.3 Bryophytes  5.3.4 Pterydophytes   1. Stages of retrogression in plants 2. Ecoclimatic and agro-ecological zones | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply principles ecosystem in the environment | * 1. Destructive activities of animals in an ecosystem   2. Beneficial activities of animals in an ecosystem   3. Effects of man activities in an ecosystem | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of environmental health and management | * 1. Environmental health and management   2. Terminologies in environmental health and management      1. Contamination      2. Conservation      3. Environmental degradation      4. Pollution   3. Management of environmental pollution   4. Biodegradable and non-biodegradable items used in the farm | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of sustainable environmental management | * 1. Sustainable environmental management   2. Causes of climate change   3. Effects of climate change   4. Mitigation of climate change | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specificatiosn** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| A | Learning materials |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| B | Learning Facilities & Infrastructure |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with ecology and environmental science books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |

ANIMAL NUTRITION

**UNIT CODE: 0811 441 10A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of animal nutrition in animal feeding.

**Unit Duration: 60 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of animal nutrition in animal feeding. It involves applying principles of nutrition, knowledge of types of digestive systems, animal feed requirements, and formulating animal feed.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of principles of nutrition | 10 |
|  | Apply knowledge of types of digestive systems | 20 |
|  | Apply knowledge of animal feed requirements | 10 |
|  | Formulate animal feed | 20 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply knowledge of principles of nutrition | * 1. Principles of nutrition   2. Composition of feeds      1. Proteins      2. Carbohydrates      3. Vitamins      4. Lipids      5. Minerals      6. Water   3. Types of feed      1. Pastures      2. Forages      3. Concentrate***.***   4. Functions of feed components | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of types of digestive systems | * 1. Types of digestive systems      1. Ruminant * Cattle * Sheep * Goats   + 1. Non ruminant * Pigs * Poultry * Donkeys * Camels   1. Factors affecting feed digestibility   2. Factors affecting bioavailability of feed | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of animal feed requirements | * 1. Animal feed requirements   2. Evaluation of feed intake   3. Factors affecting animal feed requirements   4. Feed conversion efficiency | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Formulate animal feed | * 1. Principles of rations formulation   2. Ration formulation techniques      1. Pearson’s square      2. Trial and error      3. Algebraic Linear programming      4. Least Cost formulation   3. Feed conversion efficiency   4. Feed presentation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Feed analysis laboratory | As guided by Kenya Bureau of Standards | 1 | 1:25 |
|  | Library | Equipped with animal nutrition books and E- section | 1 | 1:25 |
|  | Pastures |  |  |  |
|  | Forages |  |  |  |
|  | Concentrates |  |  |  |
|  | Forage chopper |  | 1 | 1:25 |
|  | Feed grinders |  | 1 | 1:25 |
|  | Feed packing woven bag |  | 100 | 4:1 |
|  | Weight tape |  | 25 | 1:1 |
|  | Animal farm | As guided by KVB | - | - |
|  | Cattle | As guided by KVB | - | - |
|  | Sheep | As guided by KVB | - | - |
|  | Goats | As guided by KVB | - | - |
|  | Pigs | As guided by KVB | - | - |
|  | Poultry | As guided by KVB | - | - |
|  | Donkeys | As guided by KVB | - | - |
|  | Camels | As guided by KVB | - | - |

# BASIC EPIDEMIOLOGY

**UNIT CODE: 0841 441 13A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: To apply knowledge of basic epidemiology.

**Unit Duration: 50 hours**

**Unit Description**

This unit specifies the competencies required by animal health and production technician in order to apply knowledge of basic principles of epidemiology. It involves applying principles of epidemiology, knowledge of disease occurrence, carrying out disease surveillance, developing and applying disease prevention programme.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply principles of epidemiology | 5 |
|  | Apply knowledge of disease occurrence | 5 |
|  | Apply knowledge of disease surveillance | 20 |
|  | Apply develop and disease prevention programme | 20 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply principles of epidemiology | * 1. Introduction to principles of epidemiology   2. The distribution and determinants of disease.   3. The scope of epidemiology   4. Importance of epidemiology   5. Epidemiological study designs      1. Descriptive      2. Analytic      3. Clinical epidemiology   6. Measures of association | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of disease occurrence | * 1. Determinants of diseases      1. Primary determinants      2. Secondary      3. Intrinsic      4. Extrinsic   2. Measures of disease occurrence   3. Disease transmission and agent’s factors   4. Factors of maintenance of infections   5. Factors influencing disease patterns | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply disease surveillance | * 1. Introduction to disease surveillance   2. Study designs      1. Incidence studies      2. Incidence cases      3. Prevalence studies      4. Prevalence cases   3. Disease monitoring and surveillance   4. Sources of surveillance data      1. Department of veterinary services.      2. Veterinary Laboratories      3. Private veterinary practitioners      4. Non-governmental organizations involved in livestock activities      5. Livestock research organizations such as the International Livestock Research Institute (ILRI) | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply develop and disease prevention programme | * 1. Disease prevention programs      1. Vaccinations      2. Quarantine      3. Vector control      4. Adequate nutrition      5. Good husbandry management practices   2. Notifiable diseases      1. East coast fever      2. Rabies      3. Rift valley fever      4. Rinderpest      5. Newcastle      6. Trypanosomiasis      7. Anthrax      8. Cattle plague (rinderpest)      9. Contagious bovine pleuro-pneumonia      10. Tuberculosis      11. Epizootic or ulcerative lymphangitis      12. Foot-and-mouth disease      13. Sheep-pox      14. Scab      15. Swine-fever      16. Swine erysipelas      17. Glanders      18. Farcy      19. Surra      20. Heartwater      21. Mange (scabies) in horses and mules,      22. Bacillary white diarrhoea and pullorum disease      23. Fowl pest      24. Lumpy skin disease      25. paratuberulosis (Johnes disease)      26. Atrophic rhinitis      27. Scrapie   4.3 Notifiable disease reporting | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Projects
* Demonstrations
* Group discussion
* Direct instructions
* Practical

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S/NO | Category/Item | Description/specification | Qty | Recommended ratio (item: trainee) |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with epidemiology books and E- section | 1 | 1:25 |
|  | Animal farm | As per KVB guidelines | - | - |

# BASIC IMMUNOLOGY AND VACCINES

**UNIT CODE: 0841 441 15A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of Immunology in animal vaccination.

**Duration of Unit: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of immunology in animal vaccination. It involves applying knowledge of

immunology, knowledge of serology in disease diagnosis, and applying knowledge of vaccines and immunization.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of immunology | 15 |
|  | Apply knowledge of serology in disease diagnosis | 15 |
|  | Apply knowledge of vaccinology and immunization | 20 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of immunology | * 1. Immunological principles   2. Immunity   3. Immunology | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of serology in disease diagnosis | * 1. Serological principles   2. Serological tests      1. ELISA      2. PCR      3. CFT   2.3 Serology | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of vaccinology and immunization | * 1. Principles of vaccinology   2. Adjuvants knowledge in vaccines   3. Types of vaccines      1. Live      2. Killed      3. Attenuated      4. Toxoids      5. Antisera   4. Veterinary vaccines      1. Rabies      2. LSD      3. FMD      4. RVF      5. NCD      6. Fowl Pox      7. Fowl Typhoid      8. ASF | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with immunology books and E- section | 1 | 1:25 |
|  | Rabies vaccines |  |  |  |
|  | LSD vaccines |  |  |  |
|  | FMD vaccines |  |  |  |
|  | RVF vaccines |  |  |  |
|  | NCD vaccines |  |  |  |
|  | Fowl Pox vaccines |  |  |  |
|  | Fowl Typhoid vaccines |  |  |  |
|  | ASF vaccines |  |  |  |
|  | Automatic syringes | 1oml syringe, 30ml syringe and 50ml syringe | 25 | 1:1 |
|  | Cool box |  | 1 | 1:25 |

# DIGITAL LITERACY

**UNIT CODE:** 0611 441 09 A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply Digital Literacy

**Duration of Unit: 4**0 Hours

**Unit Description**

This unit covers the competencies required to demonstrate digital literacy. It involves operating computer devices, solving tasks using the osffice suite, managing data and information, performing online communication and collaboration, applying cybersecurity skills, and performing jobs online.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Operate Computer Devices | **6** |
|  | Solve Tasks Using Office Suite | **14** |
|  | Manage Data and Information | **6** |
|  | Perform Online Communication and Collaboration | **4** |
|  | Apply Cybersecurity Skills | **4** |
|  | Perform Online Jobs | **4** |
|  | Apply job entry techniques | **2** |
| **Total** | | **40** |

**Learning Outcomes, Content, and Suggested Assessment Methods**

| **Learning Outcome** | **Content** | **Suggested**  **Assessment Methods** |
| --- | --- | --- |
| 1. Operate computer devices | * 1. Meaning and importance of digital literacy   2. Functions and Uses of Computers   3. Classification of computers   4. Components of a computer system   5. Computer Hardware      1. The System Unit E.g. Motherboard, CPU, casing      2. Input Devices e.g. Pointing, keying, scanning, voice/speech recognition, direct data capture devices.      3. Output Devices e.g. hardcopy output and softcopy output      4. Storage Devices e.g. main memory e.g. RAM, secondary storage (Solid state devices, Hard Drives, CDs & DVDs, Memory cards, Flash drives      5. Computer Ports e.g. HDMI, DVI, VGA, USB type C etc.   6. Classification of computer software   7. Operating system functions   8. Procedure for turning/off a computer   9. Mouse use techniques   10. Keyboard Parts and Use Techniques   11. Desktop Customization   12. File and Files Management using an operating system   13. Computer Internet Connection Options       1. Mobile Networks/Data Plans       2. Wireless Hotspots       3. Cabled (Ethernet/Fiber)       4. Dial-Up       5. Satellite   14. Computer external devices management       1. Device connections       2. Device controls (volume controls and display properties) | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Solve tasks using Office suite | * 1. Meaning and Importance of Word Processing   2. Examples of Word Processors   3. Working with word documents      1. Open and close word processor      2. Create a new document      3. Save a document      4. Switch between open documents   4. Enhancing productivity      1. Set basic options/preferences      2. Help resources      3. Use magnification/zoom tools      4. Display, hide built-in tool bar      5. Using navigation tools   5. Typing Text   6. Document editing (copy, cut, paste commands, spelling and Grammar check)   7. Document formatting      1. Formatting text      2. Formatting paragraph      3. Formatting styles      4. Alignment      5. Creating tables      6. Formatting tables   8. Graphical objects      1. Insert object (picture, drawn object)      2. Select an object      3. Edit an object      4. Format an object   9. Document Print setup      1. Page layout,      2. Margins set up      3. Orientation.   10. Word Document Printing   11. Meaning & Importance of electronic spreadsheets   12. Components of Spreadsheets   13. Application areas of spreadsheets   14. Using spreadsheet application       1. Parts of Excel screen: ribbon, formula bar, active cell, name box, column letter,row number, Quick Access Toolbar.       2. Cell Data Types       3. Block operations       4. Arithmetic operators (formula bar (-, +, \*, /).       5. Cell Referencing   15. Data Manipulation       1. Using Functions (Sum, Average, SumIF, Count, Max, Max, IF, Rank, Product, mode etc)       2. Using Formulae       3. Sorting data       4. Filtering data       5. Visual representation using charts   16. Worksheet printing   17. Electronic Presentations   18. Meaning and Importance of electronic presentations   19. Examples of Presentation Software   20. Using the electronic presentation application       1. Parts of the PowerPoint screen (slide navigation pane, slide pane, notes, the ribbon, quick access toolbar, and scroll bars).       2. Open and close presentations       3. Creating Slides (Insert new slides, duplicate, or reuse slides.)       4. Text Management (insert, delete, copy, cut and paste, drag and drop, format, and use spell check).       5. Use magnification/zoom tools       6. Apply or change a theme.       7. Save a presentations       8. Switch between open presentations   21. Developing a presentation       1. Presentation views       2. Slides       3. Master slide   22. Text       1. Editing text       2. Formatting       3. Tables   23. Charts       1. Using charts       2. Organization charts   24. Graphical objects       1. Insert, manipulate       2. Drawings   25. Prepare outputs       1. Applying slide effects and transitions       2. Check and deliver       + Spell check a presentation       + Slide orientation       + Slide shows, navigation   26. Print presentations (slides and handouts) | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage Data and Information | * 1. Meaning of Data and information   2. Importance and Uses of data and information   3. Types of internet services      1. Communication Services      2. Information Retrieval Services      3. File Transfer      4. World Wide Web Services      5. Web Services      6. Automatic Network Address Configuration      7. NewsGroup      8. Ecommerce   4. Types of Internet Access Applications   5. Web browsing concepts      1. Key concepts      2. Security and safety   6. Web browsing      1. Using the web browser      2. Tools and settings      3. Clearing Cache and cookies      4. URIs      5. Bookmarks      6. Web outputs   7. Web based information      1. Search      2. Critical evaluation of information      3. Copyright, data protection   8. Downloads Management   9. Performing Digital Data Backup (Online and Offline)   10. Emerging issues in internet | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Perform online communication and collaboration | * 1. Netiquette principles   2. Communication concepts      1. Online communities      2. Communication tools      3. Email concepts   3. Using email      1. Sending email      2. Receiving email      3. Tools and settings      4. Organizing email   4. Digital content copyright and licenses   5. Online collaboration tools      1. Online Storage (Google Drive)      2. Online productivity applications (Google Docs & Forms)      3. Online meetings (Google Meet/Zoom)      4. Online learning environments      5. Online calendars (Google Calendars)      6. Social networks (Facebook/Twitter - Settings & Privacy)   6. Preparation for online collaboration      1. Common setup features      2. Setup   7. Mobile collaboration      1. Key concepts      2. Using mobile devices      3. Applications      4. Synchronization | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply cybersecurity skills | * 1. Data protection and privacy      1. Confidentiality of data/information      2. Integrity of data/information      3. Availability of data/information   2. Internet security threats      1. Malware attacks      2. Social engineering attacks      3. Distributed denial of service (DDoS)      4. Man-in-the-middle attack (MitM)      5. Password attacks      6. IoT Attacks  * + 1. [Phishing Attacks](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/" \l "phishing-attacks)  * + 1. [Ransomware](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/" \l "ransomware)   1. Computer threats and crimes   2. Cybersecurity control measures      1. Physical Controls      2. Technical/Logical Controls (Passwords,PINs, Biometrics)      3. Operational Controls   3. Laws governing protection of ICT in Kenya      1. The Computer Misuse and Cybercrimes Act No. 5 of 2018      2. The Data Protection Act No. 24 Of 2019 | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Perform Online Jobs | * 1. Introduction to online working   2. Types of online Jobs   3. Online job platforms      1. Remotask      2. Data annotation tech      3. Cloud worker      4. Upwork      5. Oneforma      6. Appen   4. Online account and profile management   5. Identifying online jobs/job bidding   6. Online digital identity   7. Executing online tasks   8. Management of online payment accounts | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply job entry techniques | * 1. Types of job opportunities      1. Self employment      2. Service provision      3. product development      4. salaried employment   2. Sources of job opportunities   3. Resume/ curriculum vitae      1. What is a CV      2. How long should a CV be      3. What to include in a AC      4. Format of CV      5. How to write a good CV      6. Don’ts of writing a CV   4. Job application letter      1. What to include      2. Addressing a cover letter      3. Signing off a cover letter   5. Portfolio of Evidence      1. Academic credentials      2. Letters of commendations      3. Certification of participations      4. Awards and decorations   6. Interview skills      1. Listening skills      2. Grooming      3. Language command      4. Articulation of issues      5. Body language      6. Time management      7. Honesty      8. Generally knowledgeable in current affairs and technical area | * Written assessment * Practical * Projects * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods Instruction**

* + Demonstration
  + Practical
  + Viewing of related videos
  + Group discussions
  + Project
  + Role play
  + Case study

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category** | **Resource Description/Specifications** | **Quantity** | **Recommended Ratio (Item:Trainee)** |
| 1 | Computers | Computers with OS (Windows/Linux/Mac), MS Office, Google Workspace, Antivirus | 25 | 1:1 |
| 2 | External Storage | External storage media (e.g., flash drives, external HDDs) | 25 | 1:1 |
| 3 | Printers | High-speed, multifunction printers (print, scan, copy) | 2 | 1:12.5 |
| 4 | Printing Papers | Standard A4 printing paper | As required | - |
| 5 | Projectors | HD projectors for presentations | 1 | 1:25 |
| 6 | Whiteboards | Standard-sized whiteboards | 1 | 1:25 |
| 7 | Smartboards/Smart TV | Interactive smartboards or Smart TVs | 1 | 1:25 |
| 8 | Whiteboard Markers | Assorted colors for visual presentations | Assorted | - |
| 9 | Internet Connection | High-speed internet for online resources and software | 1 network | 1:25 |
| 10 | Sample CVs | Professional CV samples | 3 | 1:1 |
| 11 | Sample Job Applications | Templates or examples of job application letters | 3 | 1:1 |

# RUMINANT LIVESTOCK PRODUCTION SYSTEMS

**UNIT CODE: 0811 441 16A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of ruminant livestock production systems.

**UNIT DURATION: 60 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician in order to apply knowledge of livestock production systems for ruminants. It involves managing ruminant production systems, carrying out routine ruminant practices and determining the economic implications of keeping ruminants.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage ruminant production systems | 30 |
|  | Carry out routine ruminant practices | 20 |
|  | Determine economic implications of ruminant keeping | 10 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |

|  |  |  |
| --- | --- | --- |
| 1. Manage ruminant production systems | * 1. Ruminant production systems      1. Extensive      2. Intensive      3. Semi-intensive   2. Ruminant structures      1. Zero grazing      2. Dip      3. Calf pen      4. Stalls   3. Application of ruminant production systems | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out routine ruminant practices | * 1. Ruminants feeding   2. Ruminants health practices   3. Ruminant records      1. Breeding records      2. Feeding records      3. Health records | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Determine economic implications of ruminant keeping | * 1. Economic implications of ruminant keeping/Opportunities in ruminant productions   2. Ruminant production constraints   3. Economic roles of ruminants in Kenya’s economy | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
| 1 | Projector | EPSOM | 1 | 1:25 |
| 2 | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
| 3 | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
| 1 | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
| 2 | Animal farm | With ruminant animals | 1 | 1:25 |
| 3 | Ruminant structures | Zero grazing, Dip, Calf pen, Stalls | 1 | 1:25 |
| 4 | Library | Equipped with ruminant livestock books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |

# NON-RUMINANT LIVESTOCK PRODUCTION SYSTEMS

**UNIT CODE: 0811 441 17A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of non-ruminant livestock production systems.

**UNIT DURATION: 60 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician in order to apply knowledge of livestock production systems for non-ruminants. It involves managing non-ruminant production systems, performing various routine practices on non-ruminants and determining the economic implications of keeping non ruminants.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage non ruminant production systems | 30 |
|  | Carry out routine non ruminant practices | 20 |
|  | Determine economic implications of non-ruminant keeping | 10 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |

|  |  |  |
| --- | --- | --- |
| 1. Manage non ruminant production systems | * 1. Introduction to non-ruminants      1. Poultry      2. Pigs      3. Donkeys      4. Cats      5. Dogs   2. Non ruminant production systems      1. Extensive      2. Intensive      3. Semi-intensive   3. Non ruminant structures      1. Poutry unit      2. Piggery unit      3. Rabbitry unit      4. Kennel unit      5. Catios unit | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 2. Carry out routine non ruminant practices | * 1. Non ruminants feeding   2. Non ruminant’s health practices   3. Non ruminant records      1. Breeding records      2. Feeding records      3. Health records      4. Production records | * Written tests * Third party report * Interviews/ Oral questions |
| 3. Determine economic implications of non. ruminant keeping | 1. Economic implications of non-ruminant keeping 2. Non-ruminant production constraints 3. Economic roles of non-ruminants in Kenya’s economy | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Animal farm | With non-ruminant animals | 1 | 1:25 |
|  | Ruminant structures | Piggery, poultry house, rabbitry,  Kennel unit, catios unit | 1 | 1:25 |
|  | Library | Equipped with non-ruminant livestock books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
|  | Non-ruminants’ feeds | Pigs feed, poultry feeds, rabbit feeds, dog feed, cat feed |  |  |
| **D** | **Tools and Equipment** |  |  |  |

# 

# MODULE III

# ANIMAL WELFARE, ETHICS AND LAW

**UNIT CODE: 0811 441 12A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of animal welfare, ethics and law.

**UNIT DURATION: 50 Hours**

**Unit Description**

This unit specifies the competencies required by an Animal Health and Production Technician in order to promote animal welfare, observe ethics and law. It involves applying knowledge of animal welfare, applying veterinary ethics and livestock development policies.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of animal welfare | 20 |
|  | Apply veterinary ethics | 20 |
|  | Livestock development policies | 10 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of animal welfare | * 1. Animal welfare   2. Principles of animal welfare      1. Freedom from hunger and thirst      2. Freedom from pain, injury and disease      3. Freedom from fear and distress      4. Freedom from discomfort      5. Freedom to express normal behavior   3. Animal handling      1. During transportation      2. During slaughter      3. During sports   4. Draught animals      1. Horses      2. Donkeys      3. Mules      4. Camels      5. Ilamas | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

|  |  |  |
| --- | --- | --- |
| 1. Apply veterinary ethics | * 1. Application of Veterinary ethics   2. Application of Veterinary services      1. extension services * Field days * Farm visits * Livestock exhibit shows * Field demonstrations * Farmer field schools   1. Application of Kenya's Vision 2030 | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply livestock development policies | * 1. Animal welfare policy      1. Kenya veterinary policy      2. National livestock policy   2. Animal health and production legislation   3. Institutions mandated with livestock policy development | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Field training
* Group discussion
* Practical
* Direct instruction
* Demonstration
* Projects

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with animal welfare, ethics and law books and E- section | 1 | 1:25 |
|  | Horses | As by KVB guidelines | - | - |
|  | Donkeys | As by KVB guidelines | - | - |
|  | Mules | As by KVB guidelines | - | - |
|  | Camels | As by KVB guidelines | - | - |
|  | Ilamas | As by KVB guidelines | - | - |

# PARASITIC DISEASES

**UNIT CODE: 0841 451 29A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage parasitic diseases

**Unit Duration: 60 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to manage parasitic diseases. It involves managing protozoal diseases, rickettsial diseases and mange.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage protozoal diseases | 15 |
|  | Manage rickettsial diseases | 15 |
|  | Manage helminthosis | 15 |
|  | Manage livestock mange | 15 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Manage protozoal diseases | * 1. Introduction to parasitic disease      1. Haemonchosis      2. Ostertagiasis      3. Fascioliasis      4. Trychostrongylosis      5. East Coast Fever      6. Trypanosomiasis      7. Babesiosis      8. Anaplasmosis      9. Ascariasis   2. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes and needles      5. Drenching gun      6. Scalpel blades      7. Surgical spirits      8. Swabs   3. PPEs      1. Gloves      2. Overall      3. Dust Coats      4. Gumboots      5. Face masks   4. Diagnosis of protozoan diseases   5. Treatment of protozoal diseases      1. Antiprotozoals      2. Antiinflamatories   6. Prevention and control of protozoal diseases   7. Control measures      1. Spraying      2. Dipping      3. Dusting      4. Pour on | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage rickettsial diseases | * 1. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes and needles      5. Drenching gun      6. Scalpel blades      7. Surgical spirits      8. Swabs   2. PPEs      1. Gloves      2. Overall      3. Dust Coats      4. Gumboots      5. Face masks   3. Rickettsial diseases      1. Ehrlichiosis      2. Q fever   4. Diagnosis of rickettsial diseases   5. Treatment of rickettsial diseases      1. Antibiotics   6. Prevention and control of reckettsial diseases   7. Control measures      1. Spraying      2. Dipping      3. Dusting      4. Pour on | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage helminthosis | * 1. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes and needles      5. Drenching gun      6. Scalpel blades      7. Surgical spirits      8. Swabs   2. PPEs      1. Gloves      2. Overall      3. Dust Coats      4. Gumboots      5. Face masks   3. Diagnosis of helminthiasis   4. Treatment of helmithiasis      1. Anthelmintics   5. Prevention and control of helminthiasis   6. Control measures      1. Drenching | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage livestock mange | * 1. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes and needles      5. Drenching gun      6. Scalpel blades      7. Surgical spirits      8. Swabs   2. PPEs      1. Gloves      2. Overall      3. Dust Coats      4. Gumboots      5. Face masks   3. Diagnosis of mange   4. Treatment of mange      1. Acaricides      2. Copper sulphate   5. Prevention and control of mange   6. Control measures      1. Spraying      2. Dipping      3. Dusting      4. Pour on | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Practical
* projects
* Field training
* Group discussions
* Direct instruction

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| B | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with parasitic diseases books and E- section | 1 | 1:25 |
|  | Microbiology laboratory |  | 1 | 1:25 |
| C | **Consumable Materials** |  |  |  |
|  | Syringes & Needles |  | Enough | - |
|  | Scalpel blades |  | Enough | - |
|  | Surgical spirit |  | Enough | - |
|  | Swabs |  | Enough | - |
|  | Dewormer |  | Enough | - |
| D | **Tools and Equipment** |  |  |  |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |
|  | Microscope |  | 5 | 1:5 |
|  | Drenching gun |  | 25 | 1:1 |
|  | Knapsack sprayer |  | 5 | 1:5 |

# MICROBIAL DISEASES

**UNIT CODE: 0841 451 30A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage microbial diseases.

**Unit duration: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production to manage microbial diseases. It involves managing bacterial, viral and fungal livestock diseases.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage bacterial diseases | 20 |
|  | Manage viral diseases | 15 |
|  | Manage fungal diseases | 15 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Manage bacterial diseases | * 1. Introduction to bacterial diseases      1. Anthrax      2. Black-quarter      3. Brucellosis      4. Tuberculosis      5. CCPP      6. CBPP      7. Pasteurellosis   2. Manage bacterial diseases      1. Epidemiology      2. Pathogenesis      3. Aetiology      4. Diagnosis.      5. Treatment.   3. Prevention and control   4. Laboratory equipment * Microscope * Slides * Bunsen burner * Centrifuge * Spatula * Cover slip * Beakers * Petri dishes * Inoculating wire * Test tubes * Microbiological specimen   1. PPEs * Gloves * Dust coat * Closed shoes * Face mask | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage viral diseases | * 1. Introduction to viral diseases      1. Rabies      2. Lumpy skin disease      3. Rift Valley Fever      4. Foot and Mouth Disease      5. Swine Influenza      6. New Castle Disease      7. Infectious Bronchitis      8. Fowl pox   2. Manage viral diseases      1. Epidemiology      2. Pathogenesis      3. Aetiology      4. Diagnosis.      5. Treatment.   3. Prevention and control   4. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes & Needles      5. Automatic Syringes      6. Cool boxes      7. Scalpel blades      8. Surgical spirit   5. PPEs      1. Gloves      2. Overall      3. Dustcoats      4. Gum boots      5. Face masks | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage fungal diseases | * 1. Introduction to fungal diseases      1. Candidiasis      2. Aspergillosis      3. Dermatophylosis      4. Manage fungal diseases      5. Epidemiology      6. Pathogenesis      7. Aetiology      8. Diagnosis.      9. Treatment.   2. Prevention and control.   3. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes & Needles      5. Automatic Syringes      6. Cool boxes      7. Scalpel blades      8. Surgical spirit   4. PPEs * Gloves * Overall/Dustcoats * Gum boots * Face masks | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Practical
* Field training
* Discussions
* Direct instruction
* Projects

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with microbial diseases books and E- section | 1 | 1:25 |
|  | Microbiology laboratory |  | 1 | 1:25 |
|  | Holding crush |  | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
|  | Syringes & Needles |  | Enough | - |
|  | Scalpel blades |  | Enough | - |
|  | Surgical spirit |  | Enough | - |
|  | Swabs |  | Enough | - |
| **D** | **Tools and Equipment** |  |  |  |
|  | Microscope |  | 5 | 1:5 |
|  | Slides |  | 25 | 1:1 |
|  | Bunsen burner |  | 5 | 1:5 |
|  | Centrifuge |  | 25 | 1:1 |
|  | Spatula |  | Enough | - |
|  | Coverslip |  | Enough | - |
|  | Beakers |  | Enough | - |
|  | Petri dishes |  | Enough | - |
|  | Inoculating wire |  | 25 | 1:1 |
|  | Test tubes |  | Enough |  |
|  | Microbiological specimen |  | 25 | 1:1 |
|  | Sample collection tool |  | 25 | 1:1 |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |
|  | Automatic Syringes |  | 25 | 1:1 |
|  | Cool boxes |  | 1 | 1:25 |

# VETERINARY PHARMACOLOGY AND TOXICOLOGY

**UNIT CODE: 0512 451 32A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage veterinary pharmaceuticals and toxins.

**UNIT DURATION: 60 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to manage veterinary pharmaceuticals and toxins. It involves dispensing and administering veterinary drugs, managing drug toxicities and toxins in animals.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Dispense veterinary drugs | 20 |
|  | Administer veterinary drugs | 15 |
|  | Manage drug toxicities | 10 |
|  | Manage drug toxins in animals | 15 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Dispense veterinary drugs | * 1. Introduction to dispense veterinary drugs   2. Tools, equipment and materials for dispensing veterinary drugs      1. Cool boxes      2. Syringes and needles      3. Weight tape      4. Scalpel blades      5. Surgical spirit   3. Personal protective equipment for dispensing veterinary drugs      1. Gloves      2. Overall      3. Dust coats      4. Gumboots      5. Face masks   4. Veterinary drugs      1. Anesthetics      2. Anti-inflammatory      3. Antibiotics      4. Anthelmintics      5. Antifungal      6. Antihistamines      7. Antidiuretics   5. Prescription and dispensing of veterinary drugs | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Administer veterinary drugs | * 1. Administer veterinary drugs   2. Veterinary drugs dosage rates      1. Calculation of drugs dosage | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage drug toxicities | 1. Diagnosis of drug toxicities 2. Management of drug toxicities 3. Prevention and control of drug toxicities | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage toxins in animals | 1. Diagnosis of toxins    * 1. Paints      2. Poisonous plants      3. Pesticides      4. Aflatoxins      5. Batteries      6. Poisonous animals    1. Management of toxicities in animals    2. Prevention and control of toxicities in animals | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Practical
* Projects
* Field training
* Discussions
* Direct instruction

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with veterinary pharmaceuticals and toxins books and E- section | 1 | 1:25 |
|  | Microbiology laboratory |  | 1 | 1:25 |
|  | Holding crush |  | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
|  | Syringes & Needles |  | Enough | - |
|  | Drenching gun |  | Enough | - |
|  | Cool boxes |  |  |  |
|  | Surgical spirit |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |
|  | Thermometer |  | 25 | 1:1 |
|  | Ropes | Number 10 (sisal) | 5 | 1:5 |
|  | Drenching guns | Complete unit-50ml | 5 | 1:5 |
|  | Stomach tube | Plastic | 5 | 1:5 |
|  | Vaginal specula | Plastic | 5 | 1:5 |
|  | Weighing band |  | 5 | 1:5 |
|  | Disinfectants |  | Enough | - |

# GENERAL PATHOLOGY

**UNIT CODE: 0811 441 11A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of basic general pathology.

**Unit Duration: 40 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of basic general pathology. It involves applying principles of pathology, knowledge of cell injury, tissue inflammation, tissue healing and repair, hemodynamic disorder, cellular adaptation and neoplasia.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply principles of pathology | 10 |
|  | Apply knowledge of cell injury | 5 |
|  | Apply knowledge of tissue inflammation | 5 |
|  | Apply knowledge of tissue healing and repair | 5 |
|  | Apply knowledge of hemodynamic disorders | 5 |
|  | Apply knowledge of cellular adaptations | 5 |
|  | Apply knowledge of neoplasia | 5 |
| **Total** | | **40** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply principles of pathology | * 1. Introduction to general pathology.   2. Branches of pathology      1. Anatomical      2. Clinical      3. Forensic      4. Histopathology      5. Surgical      6. Dermatopathology   3. Pathology terms      1. Etiology      2. Biopsy      3. Edema | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 2. Apply knowledge of cell injury | 2.1 Introduction to cell Injury  2.2 Causes of cell injury  2.3 Management of cell injury | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 3. Apply knowledge of tissue inflammation | 3.1 Tissue Inflammation   * 1. Define inflammation   2. Cardinal signs of inflammation   3. Types of inflammation   4. Management of inflammation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 4. Apply knowledge of tissue healing and repair | * 1. Define tissue healing and repair.   2. Classification of wound.   3. Wound healing by first intention.   4. Wound healing by second intention   5. Factors affecting wound healing | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of hemodynamic disorders | * 1. Define terminologies      1. Hyperemia      2. Congestion      3. Hemorrhage      4. Thrombosis      5. Embolism      6. Oedema      7. Infarction      8. Shock   2. Management of hemodynamic disorders | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of cellular adaptations | * 1. Define cellular adaptation   2. Types of cellular adaptation      1. Hyperplasia      2. Hypertrophy      3. Atrophy      4. Metaplasia   3. Causes of cellular adaptation   4. Differentiation disturbance of cellular adaptation. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of neoplasia | 7.1 Define Neoplasia  7.2 Types of neoplasia  7.2.1 Carcinoma  7.2.2 Sarcoma  7.2.3 Adenoma  7.2.4 Lymphoma  7.3 Causes of neoplasia  7.4 Management of neoplasia | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Projects
* Demonstrations
* Group discussion
* Direct instructions
* Practical

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Pathology laboratory | As by KVB guidelines | 1 | 1:25 |
|  | Library | Equipped with pathology books and E- section | 1 | 1:25 |
|  | Animal farm | As per KVB guidelines | - | - |

# COMPANION AND DRAUGHT ANIMALS

**UNIT CODE: 0811 441 18A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage companion and draught animals.

**UNIT DURATION: 50 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to manage companion and draught animals. It involves managing companion and draught animals, managing companion and draught animals housing & feeding and applying knowledge of camel production.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage companion and draught animals | 10 |
|  | Manage housing & feeding of companion and draught animals | 20 |
|  | Apply knowledge of camel production | 20 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Manage companion and draught animals | * 1. Introduction to companion and draught animals   2. Companion animal      1. Dogs      2. Cats      3. Horses   3. Draught animals      1. Donkey      2. Water Buffalo      3. Camels   4. Socio-economic effect of companion animal   5. Socio-economic effect of draught animals. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

|  |  |  |
| --- | --- | --- |
| 1. Manage housing & feeding of companion and draught animals | 1. Draught animal housing 2. Draught animals feeding 3. Companion animal housing 4. Companion animal feeding | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of camel production | 1. Camel production 2. Camel geographical distribution 3. Camel handling 4. Camel management | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| A | Learning materials |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| B | Learning Facilities & Infrastructure |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Animal farm | With companion and draught animals |  |  |
|  | Companion and draught animals structures | Kennel unit, catios unit | 1 | 1:25 |
|  | Library | Equipped with companion and draught animals books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
|  | Companion and draught animals feeds | dog feed, cat feed, horse feeds |  |  |
| **D** | **Tools and Equipment** |  |  |  |

# PASTURE AND FODDER PRODUCTION

**UNIT CODE: 0811 441 25A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of pasture and fodder production.

**UNIT DURATION: 60 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician in order to apply knowledge of pasture and fodder production. It involves classification, establishment and conservation of pasture and fodder.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Classify pasture and fodder | 15 |
|  | Establish pasture and fodder | 25 |
|  | Conserve pasture and fodder | 20 |
| **Total** | | **60** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Learning Outcomes** | **Content** | | **Suggested Assessment Methods** | |
| 1. Classify pasture and fodder | | * 1. Agro-ecological zones      1. Upper Highland      2. Upper Midland      3. Lower highland      4. Lower midland   2. Pasture classification      1. Annual      2. Perennial.   3. Classes of forage plants      1. Legumes      2. Grasses      3. Cereals   4. Pastures      1. Rhodes grass      2. Brachiaria      3. Napier grass      4. Guatemala grass      5. Kikuyu grass      6. Sudan grass      7. Lucerne      8. Desmodium      9. Calliandra      10. White clover   5. Factors for selecting forage species | | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Establish pasture and fodder | | 1. Method of pasture establishment 2. Seeding methods and rates 3. Methods of weed control and management 4. Methods of natural pasture management 5. Grazing systems    * 1. Zero grazing      2. Herding      3. Rotational grazing      4. Paddocking | | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Conserve pasture and fodder | | * 1. Methods of forage conservation      1. Silage      2. Hay making   2. Emerging trends in pasture establishment and conservation | | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with pasture and fodder production  books and E- section | 1 | 1:25 |
|  | Silos |  | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
|  | Legumes | Enough | - | - |
|  | Grasses | Enough | - | - |
|  | Cereals | Enough | - | - |
|  | Silage ensiling bags |  | 5 | 1:5 |
|  | Feed packing wooven bag |  | 100 | 4:1 |
|  | Mollasses | 20 Litres | - | - |
| **D** | **Tools and Equipment** |  |  |  |
|  | Chaff cutter |  |  |  |
|  | Manual operated hay baler |  | 5 | 1:5 |
|  | Shovel |  | 25 | 1:1 |
|  | Watering gun |  | 5 | 1:5 |

# METABOLIC, NUTRITIONAL AND REPRODUCTIVE DISEASES AND DISORDERS

**UNIT CODE: 0841 451 31A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Manage metabolic, nutritional and reproduction diseases and disorders.

**Duration of Unit: 50 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to manage metabolic, nutritional and reproductive diseases and disorders. It involves managing metabolic disease, manage nutritional disorders and manage reproductive disease disorders.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage Metabolic Diseases | 20 |
|  | Manage nutritional disorders | 15 |
|  | Manage reproductive diseases and disorders | 15 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Manage metabolic diseases | * 1. Introduction to metabolic diseases      1. Ketosis      2. Milk fever      3. Fat cow syndrome      4. Hypomagnesaemia      5. Hardware disease (TRP)   2. Manage metabolic diseases      1. Diagnosis      2. Treatment      3. Prevention and control   3. Tools and equipment      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes & Needles      5. Drenching gun      6. Scalpel blades      7. Surgical spirit   4. PPEs * Gloves * Overall * Dustcoats * Gum boots * Face masks | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage nutritional disorders | * 1. Introduction to nutritional disorders      1. Vitamin E/Selenium deficiency      2. Grain overload      3. Bloat   2. Manage nutritional disorders      1. Diagnosis      2. Treatment      3. Prevention and control   2.3 Tools and equipment   * Thermometer * Stethoscope * Microscope * Syringes & Needles * Drenching gun * Scalpel blades * Surgical spirit   2.4 PPEs   * Gloves * Overall * Dustcoats * Gum boots * Face mask | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Manage reproductive diseases and disorders | * 1. Introduction to reproductive diseases and disorders      1. Trichomoniasis      2. Brucellosis      3. Leptospirosis   2. Manage reproductive diseases and disorders      1. Diagnosis      2. Treatment      3. Prevention and control   3.3 Tools and equipment   * Thermometer * Stethoscope * Microscope * Syringes & Needles * Drenching gun * Scalpel blades * Surgical spirit   3.4 PPEs   * Gloves * Overall * Dustcoats * Gum boots * Face masks | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Practical
* Field training
* Projects
* Group discussions
* Direct instruction

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with metabolic, nutritional and reproduction diseases and disorders books and E- section | 1 | 1:25 |
|  | Microbiology laboratory |  | 1 | 1:25 |
|  | Holding crush |  | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
|  | Syringes & Needles |  | Enough | - |
|  | Drenching gun |  | Enough | - |
|  | Scalpel blades |  | Enough | - |
|  | Surgical spirit |  | Enough | - |
| **D** | **Tools and Equipment** |  |  |  |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |
|  | Microscope |  | 5 | 1:5 |

# HIV/AIDS

**UNIT CODE: 0913 441 19A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of HIV/AIDS

**Unit Duration: 30 hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of HIV & AIDS. It involves applying concepts of HIV& AIDS, knowledge of human sexuality, common STIs and knowledge of prevention, control and management of HIV & AIDS and STI.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply concepts of HIV& AIDS | 5 |
|  | Apply knowledge of human sexuality | 10 |
|  | Apply knowledge of common STIs | 5 |
|  | Apply knowledge of prevention, control and management of HIV & AIDS and STIs | 10 |
| **Total** | | **30** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply concepts of HIV& AIDS | * 1. Concepts of HIV& AIDS      1. Socio economic impact of HIV AIDS      2. Epidemiology of HIV/AIDS      3. Infection phases of HIV & AIDS | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of human sexuality | * 1. Human sexuality   2. Reasons for engaging in sex   3. Consequences of irresponsible sex   4. Sexual myths, beliefs and attitudes | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of common STIs | * 1. Common STIs      1. Gonorrhea      2. Syphilis      3. Herpes zoster      4. Genital warts      5. Trichomoniasis      6. Chlamydia   2. Relationship between HIV AIDS and STIs   3. STIs treatment and control of HIV/AIDS | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of prevention, control and management of HIV & AIDS and STI | * 1. Prevention, control and management of HIV & AIDS and STI      1. Use of condoms.      2. Abstinence      3. Faithfulness      4. ARV use   2. Testing HIV/AIDS and STIs   3. Sensitization of HIV & AIDS | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Group discussions
* Direct instruction
* Practical
* Projects

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| A | Learning materials |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| B | Learning Facilities & Infrastructure |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with HIV& AIDS books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |

# MARKETING AND VALUE ADDITION OF ANIMAL PRODUCTS

**UNIT CODE: 0811 441 23A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of marketing and value addition of animal products.

**UNIT DURATION: 30 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of marketing and value addition of animal products. It involves applying knowledge of marketing and value addition of animal products, analyzing agricultural marketing information systems, identifying principles of value addition of animal products, maintaining farm inventory and determining cost estimation and tendering.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of marketing and value addition of animal products | 5 |
|  | Analyze agricultural marketing information systems | 5 |
|  | Identify principles of value addition of animal products | 10 |
|  | Maintain farm inventory | 5 |
|  | Determine cost estimation and tendering | 5 |
| **Total** | | **30** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of marketing and value addition of animal products | 1. Marketing and value addition of animal products 2. Factors of production   1.2.1 Land  1.2.2 Labour  1.2.3 Capital   1. Risks in production   1.3.1 Market risk  1.3.2 Financial risk  1.3.3 Human risk  1.3.4 Management risk   1. Marketing structures. 2. Characteristics of animal products    * 1. Meat      2. Milk      3. Wool   1.6 Value addition of animal products | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Agricultural marketing information systems | 1. Agricultural marketing information systems 2. Group marketing approach 3. Analysis of livestock value chain 4. Measures of improvement of AMIS | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Principles of value addition of animal products | 1. Principles of Value addition of animal products 2. Principles of handling animal product 3. Grading, processing and packaging of animal products | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Maintain farm inventory | 1. Introduction to farm inventories 2. Types of farm inventories 3. Farm valuation 4. Importance of farm inventory and valuation. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Determine cost estimation and tendering | 1. Cost estimation in farm 2. Types of farm contracts 3. Importance of farm tendering | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | With at least 25 seats | 1 | 1:25 |
|  | Library | Equipped with marketing and value addition of animal products books and E- section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |

**MODULE IV**

# ZOONOSES AND ONE HEALTH CONCEPT

**UNIT CODE: 0841 441 14A**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Apply knowledge of zoonoses and One health concept.

**Duration of Unit: 80 hours**

**Unit Description**

This unit specifies the competencies required by an Animal Health and Production technician in order to apply knowledge on zoonoses and one health concept. It involves applying knowledge of zoonoses, diagnosing zoonoses in animals, treating and preventing zoonoses in animals; and applying knowledge of one's health.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of zoonosis | 20 |
|  | Diagnose zoonosis in animals | 30 |
|  | Prevent and treat zoonosis in animals | 20 |
|  | Apply knowledge of one health | 10 |
| **Total** | | **80** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of zoonosis | * 1. Introduction to zoonosis   2. Classification of zoonoses      1. Rabies      2. Anthrax      3. Brucellosis      4. Listeriosis      5. Dermatophytosis      6. Rift valley fever      7. Toxoplasmosis   3. Zoonoses transmission      1. Direct contact      2. Inoculation      3. Aerosol      4. Ingestion   1.4 Zoonotic risk to humans | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Diagnose zoonosis in animals | * 1. Clinical findings of zoonoses      1. Rabies      2. Anthrax      3. Brucellosis      4. Listeriosis      5. Dermatophytosis      6. Rift valley fever      7. Toxoplasmosis   2. Collection and analysis of laboratory samples      1. Blood      2. Tissue      3. Serum      4. Milk   2.3 Post-mortem examination | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Prevent and treat zoonosis in animals | * 1. Identification of intervention of zoonoses   2. Treatment of zoonoses      1. Biosecurity measures      2. Cleaning and sanitizing      3. Disinfection and sterilization      4. Isolation      5. Quarantine      6. Testing and slaughter   3.3 Vaccination programs | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of one health | * 1. One health concept   2. Components of One health triad   3. One health principles | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with zoonoses and one concept books and E- section | 1 | 1:25 |
|  | Animal farm |  |  |  |
|  | Scapel |  | 100 | 4:1 |
|  | Blood collection tubes |  | 100 | 4:1 |
|  | Swabs |  | 100 | 4:1 |
|  | Vacutainer |  | 100 | 4:1 |
|  | Vacutainer test tubes with EDTA |  | 100 | 4:1 |
|  | Sample container |  | 100 | 4:1 |
|  | Centrifuge |  | 5 | 1:5 |
|  | Brain punch kit |  | 25 | 1:1 |

# AGRIBUSINESS MANAGEMENT

**ISCED UNIT CODE:** 0811 551 24A

**Relationship to Occupational Standards**

**This unit addresses the Unit of Competency:** Apply knowledge of agribusiness management.

**UNIT DURATION:** 90 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production to apply knowledge of agribusiness. It involves applying knowledge of agribusiness, farm planning and budgeting, evaluating farm records and accounting cycle, preparing trial balance, income statement, maintaining farm inventory, and determining cost estimation and tendering knowledge.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply knowledge of agribusiness | 15 |
|  | Apply knowledge of farm planning and budgeting | 15 |
|  | Evaluate farm records and accounting cycle | 15 |
|  | Prepare trial balance, income statement | 15 |
|  | Maintain farm inventory | 15 |
|  | Determine cost estimation and tendering knowledge | 15 |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of agribusiness | * 1. Introduction to agribusiness   2. Economic principles of agribusiness in animal production   3. Factors of production   4. Risks in production | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of farm planning and budgeting | * 1. Farm resource planning      1. Land      2. Capital      3. Labor   2. Farm budgeting   3. Steps in farm planning | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Evaluate farm records and accounting cycle | * 1. Types of farm records   2. Steps in accounting cycle   3. Journal entry | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Prepare trial balance, income statement | * 1. Trial balance   2. Income statement   3. Balance sheet | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Maintain farm inventory | * 1. Introduction to farm inventory   2. Types of farm inventories   3. Farm valuation   4. Importance of farm inventory and valuation | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Determine cost estimation and tendering knowledge | * 1. Cost estimation   2. Types of farm contracts   3. Importance of farm tendering | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**Suggested Methods of delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
|  | **Learning materials** |  |  |  |
|  | Projector |  | 1 | 1:25 |
|  | Whiteboard/Smart board |  | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Lecture/Theory room |  | 1 | 1:25 |
|  | Animal farm | As guided by KVB | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |

# APICULTURE AND AQUACULTURE

**UNIT CODE: 0831 441 27A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of apiculture and aquaculture.

**UNIT DURATION: 50 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to apply knowledge of apiculture and aquaculture. It involves selecting and establishing an apiary site, preparing hive equipment, monitoring and managing swarming, rearing queen bees, performing apiary maintenance, conducting bee feeding, preparing and maintaining bee records, carrying out harvesting, grading, processing, packaging, and marketing, selecting and establishing fish pond, monitoring and managing fish health, conducting fish feeding and rearing fingerlings.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Select and establish an apiary site | 5 |
|  | Prepare hive equipment | 2.5 |
|  | Monitor and manage swarming | 5 |
|  | Rear queen bee | 2.5 |
|  | Perform apiary maintenance | 5 |
|  | Conduct bee feeding | 2.5 |
|  | Prepare and maintain bee record | 2.5 |
|  | Carry out harvesting, grading, processing, packaging and marketing | 5 |
|  | Select and establish fish pond | 5 |
|  | Monitor and manage fish health | 5 |
|  | Conduct fish feeding | 5 |
|  | Rear fingerlings | 5 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |

|  |  |  |
| --- | --- | --- |
| 1. Select and establish Apiary site | * 1. Apiary site selection   2. Apiary set up   3. Types of hive      1. Log hive      2. Langstroth hive      3. Kenya top bar hive   4. Bee species * *Apis mellifera yemenitica* * *Apis mellifera scutellata* * *Apis mellifera littorea* * *Apis mellifera monticolla* * Hybrid species (of A.m. littorea and monticolla)   1. PPEs * Bee gloves * Veils * Bee suit * Gum boots * Aprons   1. Tools used in apiary * Hammer * Pliers * Cutting tools * Uncapping knife * Comb cutter | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Prepare hive equipment | 1. Types of bee colony 2. Hive equipment  * Hive equiBee brush * Catcher box * Bee propolis trap collector * Honey warmer * Clearer board * Double sieve * Refractometer * Uncapping tray * Wax melter * Dip tank/ vat * Roller/ mold * Hives (log, top bar, box, pot, langstroth)pment preparation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Monitor and manage swarming | * 1. Colony management      1. Swarming      2. Nuptial flight      3. Migration      4. Absconding      5. Supercedure   2. Swarm prevention   3. Swarm bees capturing | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Rear queen bee | 1. Parent colony selection 2. Method of queen rearing 3. Queen rearing equipment 4. Queen rearing program 5. Queen transportation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Perform apiary maintenance | * 1. Apiary maintenance during the dearth period      1. Supplementation      2. Disease control      3. Pest control   2. Bee diseases and pests * Bee paralysis virus * Sacbrood virus * Deformed wing virus * Slow bee paralysis virus * Tobacco ringspot virus * Colony collapse disorder * Stonebrood * Chalk brood * Nosema * PESTS (small hive beetles SHB, tracheal mite, wax moths, mice, toad/ frogs, ants, humans, varroa mites, lizard, birds, honey badger, wax moth, pirate wasp, bee louse   1. Apiary maintenance during pre-season   2. Apiary maintenance during main season   3. Apiary maintenance during post season | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Conduct bee feeding | * 1. Feed ration preparation   2. Feeding method selection   3. Bee is feeding | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Prepare and maintain bee record | * 1. Bee records   2. Inventory of apiary and equipment   3. Work schedule preparation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out harvesting, grading, processing, packaging and marketing | 8.1 Hive products harvesting   * + 1. Propolis harvesting     2. Wax harvesting     3. Bee venom     4. Royal jelly     5. Bee pollen   1. Bee products post-harvest processing | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Select and establish fish pond | * 1. Fish pond site selection   2. Pond size determination   3. PPEs * Gloves * Gum boots * Aprons   1. Equipment selection and pond set up   2. Equipment used in fish pond establishment * Pond liner * Pond filter * Pond plant * Pond pump and fish elevator * Fish grader   1. Tools used in fish pond establishment * Digging tool * Leveling tool * Desilting tool * Net and traps (fingerling seine, fingerling suspension net, gillnet seine) * Screens on water control * Harvesting bag net * Analysis kit   1. Fish species selection * Nile perch * Common carp * Nile tilapia * Black bass * Omena   1. Stocking rate   2. Water quality      1. Water temperature      2. Oxygen      3. P.H.   3. Fingerlings sourcing and transportation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Monitor and manage fish health | * 1. Feeding habit   2. Reproduction behavior in fish   3. Diseases affecting fish * Viral esocid * Lymphosarcoma * Lymph virus * Common mouth rot, tail rot * Colunaris * Swim bladder infection * Environmental dropsy   1. Diseases and parasites management      1. Sanitation      2. Use of chemicals | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Conduct fish feeding | * 1. Feeding method in fish pond   2. Feed ration preparation   3. Fish feeding based on nutritional need, age and purpose of production | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Rear fingerlings | * 1. Method of rearing   2. Species selection   3. Fingerlings transportation   4. Feeding regime   5. Fingerlings harvesting and processing | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
| B | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room | Well-lit with 25 seats | 1 | 1:25 |
|  | Library | Equipped with soil science books and E- section | 1 |  |
|  | Bee hives |  | 25 | 1:1 |
|  | Fish pond |  | 5 | 1:5 |
| C | **Consumable Materials** |  |  |  |
|  | Fish species |  | Enough | - |
|  | Bee species |  | Enough | - |
| D | **Tools and Equipment** |  |  |  |
|  | Bee suits |  | 25 | 1:1 |
|  | Honey extractor |  | 25 | 1:5 |
|  | Bee smokers |  | 25 | 1:1 |
|  | Bee brush |  | 25 | 1:1 |
|  | Bee venom collector |  | 25 | 1:1 |
|  | Double sieve honey strainer |  | 25 | 1:1 |
|  | Propolis trap collector |  | 25 | 1:1 |
|  | Hive knife |  | 25 | 1:1 |
|  | Digging tool |  | 25 | 1:1 |
|  | Leveling tool |  | 25 | 1:1 |
|  | Desilting tool |  | 25 | 1:1 |
|  | Net and traps |  | 5 | 1:5 |
|  | Screens on water control |  | 5 | 1:5 |
|  | Harvesting bag net |  | 25 | 1:1 |
|  | Analysis kit |  | 5 | 1:5 |
|  | Pond liner |  | 5 | 1:5 |
|  | Pond filter |  | 5 | 1:5 |
|  | Pond plant |  | 5 | 1:5 |
|  | Pond pump and fish elevator |  | 5 | 1:5 |
|  | Fish grader |  | 5 | 1:5 |

# ANIMAL HEALTH EXTENSION SERVICES

**Unit code: 0811 441 28A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Conduct animal health extension services.

**Unit Duration: 50 hours**

**Unit Description:**

This unit specifies the competencies required by an animal health and production technician in order to conduct animal health extension services. It involves organizing extension services, conducting extension services and evaluation of extension services.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Organize extension services | 20 |
|  | Conduct extension services | 15 |
|  | Evaluate extension services | 15 |
| **Total** | | **50** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Organize extension services | 1.1 Extension services   * + 1. Field day     2. Farm visit     3. Livestock exhibit shows     4. Field demonstrations     5. Farmer field schools   1. Resources identification      1. Brochures      2. Posters      3. Drama      4. Videos   2. Extension service program preparation | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Conduct extension services | * 1. Rules of engagement in conducting extension services   2. Dissemination of technologies.   3. Audience engagement | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Evaluate extension services | * 1. Evaluation of extension services   2. Extension service monitoring and evaluation   3. Challenge identification, reporting and rectification.   4. Identification of extension services opportunities. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Field training
* Demonstration
* Projects
* Practical
* Discussions
* Direct instruction

**Training resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/Smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  |  |  |
|  | Brochures |  | Enough | - |
|  | Posters |  | Enough | - |
|  | Drama |  | - | - |
|  | Videos |  | - | - |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
|  | Lecture/Theory room |  | 1 | 1:25 |
|  | Anatomy Laboratory |  | 1 | 1:25 |
|  | Functional farm | As by KVB guidelines | - | - |
|  | Library | Equipped with animal health extension services books and E-Library section | 1 | 1:25 |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |

# ANIMAL HEALTH APPLIED SKILLS

**UNIT CODE: 0841 441 34A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply animal health skills at workplace.

**Unit Duration: 90 hours**

**Unit Description:**

This unit specifies the competencies required by animal health and production technician to be able to apply animal health skills at the workplace. It involves carrying out animal identification, dehorning, hoof trimming, tail docking, poultry debeaking, performing teeth clipping, conducting animal grooming, performing animal castration and carrying out wool shearing.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Carry out animal identification | 10 |
|  | Carry out dehorning | 10 |
|  | Carry out hoof trimming | 10 |
|  | Carry out tail docking | 10 |
|  | Perform poultry debeaking | 10 |
|  | Perform teeth clipping | 10 |
|  | Conduct animal grooming | 10 |
|  | Perform animal castration | 10 |
|  | Carry out wool shearing | 10 |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Carry out animal identification | * 1. PPEs      1. Disposable gloves      2. Overall      3. Gumboot   2. Identification marks * Ear tag * Ear notch * Tattooing * Branding * Microchiping   1. Tools and equipment for identification      1. Ear Tag applicators      2. Ear notchers      3. Ear tags      4. Branding iron      5. Tattoo applicator      6. Microchip | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out dehorning | * 1. Dehorning      1. Dehorning tools-dehorning wire, disbudding rod      2. Dehorning procedure | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out hoof trimming | * 1. Hoof trimming      1. Hoof trimming tools-hoof trimmer, rasp, hoof knife      2. Carry out hoof trimming | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out tail docking | * 1. Tail docking      1. Tail docking tools-rubber ring and rubber ring applicator      2. Carry out tail docking | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Perform poultry debeaking | * 1. Poultry debeaking      1. Debeaking tools- debeaker      2. Carry out poultry debeaking. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Perform teeth clipping | * 1. Teeth clipping      1. Importance and procedure of teeth clipping | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Conduct animal grooming | * 1. Animal grooming      1. Carry out animal grooming | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Perform animal castration | * 1. Animal castration      1. Tools for castration-burdizzo, scapel, rubber ring and rubber ring applicator      2. Methods of castration –open and close | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out wool shearing | * 1. Animal shearing      1. Wool shearing tool-wool shear      2. Carry out wool shearing | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Delivery**

* Demonstration
* Practical
* Projects
* Field training
* Discussions
* Direct instruction

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
|  | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Elastrator |  | 5 | 1:5 |
|  | Rubber ring |  | 5 | 1:5 |
|  | Burdizzo |  | 5 | 1:5 |
|  | Wool shear |  | 5 | 1:5 |
|  | Disbudding iron |  | 5 | 1:5 |
|  | Holding crush |  | 1 | 1:25 |
|  | Dust bins |  | 3 | 1:8 |
|  | Hoof trimmer |  | 5 | 1:5 |
|  | Ropes |  | 13 | 1:2 |
|  | Wheelbarrow |  | 5 | 1:5 |
|  | Rasp file |  | 5 | 1:5 |
|  | Weigh band | cased | 5 | 1:5 |
|  | Tooth clipper |  | 5 | 1:5 |
|  | Library | Equipped with immunology books and E- section | 1 | 1:25 |

# LIVESTOCK ROUTINE PRACTICES

**UNIT CODE: 0811 451 35A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Perform livestock routine practices.

**Unit Duration: 90 hours**

**Unit Description:**

This unit specifies the competency required by animal health and production technician to be able to perform livestock routine practices. It involves carrying out animal feeding, milking and maintaining farm hygiene.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Carry out animal feeding | 30 |
|  | Carry out animal milking | 30 |
|  | Maintain farm hygiene | 30 |
| **Total** | | **90** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Carry out animal feeding | * 1. PPEs      1. Apron      2. Overall      3. Gloves      4. Gumboots      5. Face mask   2. Tools and equipment      1. Weigh scale      2. Weigh band      3. Feed trough      4. Fork shovel      5. Water trough      6. Feeding bucket   3. Animal feeding      1. Steaming up      2. Flushing      3. Challenges in feeding      4. Compensatory feeding | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Carry out animal milking | * 1. PPEs * Overall * Gumboots * Face mask   1. Tools and materials for milking      1. Milking machines      2. Milking buckets      3. Milking salve      4. Teat dips      5. CMT kit      6. Cleaning brushes      7. Cleaning towels   2. Methods of Animal milking      1. Machine milking      2. Hand milking   3. Pre - milking activities      1. CMT – subclinical      2. Strip cup – clinical mastitis   4. Maintenance of milking machines | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Maintain farm hygiene | * 1. Farm structure and equipment      1. Milking parlour      2. Calf pen      3. Milking machine      4. milk churns      5. Buckets      6. Strip cup   2. Cleaning and disinfection of milking equipment | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Demonstration
* Practical
* Field training
* Projects
* Discussions
* Direct instruction

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/NO** | **Category/Item** | **Description/specification** | **Qty** | **Recommended ratio (item: trainee)** |
| 1. | Projector | EPSOM | 1 | 1:25 |
|  | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
|  | Desktop/computer |  | 1 | 1:25 |
|  | Classroom | Well-lit with 25 seats | 1 | 1:25 |
|  | Milking bucket | Stainless steel | 5 | 1:5 |
|  | Fork shovel |  | 5 | 1:5 |
|  | Strip cups |  | 5 | 1:5 |
|  | CMT kits |  | 5 | 1:5 |
|  | Hard brooms |  | 14 | 1:2 |
|  | Holding crush |  | 1 | 1:25 |
|  | Dust bins |  | 3 | 1:8 |
|  | Weigh balance |  | 5 | 1:5 |
|  | Milking churn | Stainless steel- 50ltrs | 1 | 1:5 |
|  | Wheelbarrow |  | 5 | 1:5 |
|  | Milking machine |  | 1 | 1:25 |
|  | Feeding bottles | plastic | 5 | 1:5 |
|  | Weigh band | cased | 5 | 1:5 |
|  | Teat dip cup |  | 5 | 1:5 |
|  | Library | Equipped with immunology books and E- section | 1 | 1:25 |

# SOIL SCIENCE

**UNIT CODE: 0811 441 05A**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply Knowledge of soil science

**UNIT DURATION: 30 Hours**

**Unit Description**

This unit specifies the competencies required by an animal health and production technician to demonstrate knowledge of soil science. It involves applying knowledge of principles of soil science, apply knowledge of soil organisms and organic matter; and applying knowledge of soil fertility in fodder production.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply principles of soil science | 10 |
|  | Apply knowledge of soil organisms and organic matter | 10 |
|  | Apply knowledge of soil fertility in fodder production | 10 |
| **Total** | | **30** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply principles of soil science | * 1. Introduction to soil science   2. Soil formation - broad categories of soil forming rocks,   3. Soil pysical properties      1. Soil texture      2. Soil aggregation      3. Soil consistency      4. Soil colour      5. Soil moisture      6. Soil air      7. Soil bulk density      8. Water holding capacity   4. Soil chemical properties      1. Soil pH      2. Soil EC      3. Cation exchange capacity      4. Percent base saturation      5. Salt index   5. Soil biological properties      1. Microbial activity      2. CN ratio   6. Factors influencing soil formation      1. Parent material      2. Climate      3. Topography      4. Biota      5. Time   7. Soil sampling methods      1. Grid sampling      2. Zone sampling      3. Conventional sampling | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

|  |  |  |
| --- | --- | --- |
| 1. Apply knowledge of soil organisms and organic matter | * 1. Introduction to Soil organisms   2. Effect of soil organisms   3. Organic matter. | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |
| 1. Apply knowledge of soil fertility in fodder production | * 1. Soil fertility in fodder production   2. Organic farming   3. Fertilizers | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of delivery**

* Practical
* Projects
* Demonstrations
* Group discussion
* Direct instructions

**Training resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/Specification** | **Quantity** | **Recommended Ratio**  **(Item: Trainee)** |
| **A** | **Learning materials** |  |  |  |
| 1 | Projector | EPSOM | 1 | 1:25 |
| 2 | Whiteboard/smartboard | 2.5 By 1.5.M | 1 | 1:25 |
| 3 | Desktop/computer |  | 1 | 1:25 |
| **B** | **Learning Facilities & Infrastructure** |  |  |  |
| 1 | Lecture/Theory room | Well-lit with 25 seats | 1 | 1:25 |
| 2 | Laboratory |  | 1 | 1:25 |
| 3 | Animal farm |  | 1 | 1:25 |
| 4 | Library | Equipped with soil science books and E- section | 1 |  |
| **C** | **Consumable Materials** |  |  |  |
| **D** | **Tools and Equipment** |  |  |  |
| 1 | Soil Auger |  | 5 | 1:5 |
| 2 | Khaki bags |  | 25 | 1:1 |
| 3 | Buckets |  | 5 | 1:5 |
| 4 | Hoes |  | 5 | 1:5 |
| 5 | Machetes |  | 5 | 1:5 |
| 6 | Shovels |  | 5 | 1:5 |
| 7 | Digestion block |  | 2 |  |
| 8 | UV-VIS Spectrophotometer |  | 2 |  |
| 9 | Atomic absorption spectrophotometer (AAS) |  | 2 |  |
| 10 | Flame photometer |  | 2 |  |