****

**REPUBLIC OF KENYA**

**COMPETENCY-BASED MODULAR CURRICULUM**

**FOR**

**ANIMAL HEALTH AND PRODUCTION**

**KNQF LEVEL: 6**

**PROGRAMME ISCED CODE: 0841 554A**

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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).

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, CBETA standards and guidelines and guidelines by the KVB. 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**

|  |  |
| --- | --- |
| VMD | Veterinary Medicines Directorate |
| OSH | Occupational Safety and Health |
| OSHA | Occupational Safety and Health Administration |
| WHO | World Health Organization |
| PPE | Personal Protective Equipment |
| CSF | Cerebrospinal Fluid |
| ELISA | Enzyme Linked Immunosorbent Assay |
| PCR | Polymerase Chain Reaction |
| CFT | Complements Fixation Test |
| IFAT | Immunofluorescent Antibody Test |
| ICT | Information Communication and Technology |
| CBPP | Contagious Bovine Pleuropneumonia |
| CCPP | Contagious Caprine Pleuropneumonia |
| FMD | Foot and Mouth Disease |
| PPR | Peste des Petits Ruminants |
| ECF | East Coast Fever |
| RVF | Rift Valley Fever |
| LSD | Lumpy Skin Disease |
| PH | Hydrogen Potential |
| CN Ratio | Carbon Nitrogen Ratio |
| Ig | Immunoglobulin |
| Soil EC | Soil Electrical Conductivity |
| DNA | Deoxyribonucleic Acid |
| RNA | Ribonucleic Acid |
| HACCP | Hazard Analysis Critical Control Point |
| NCD | Newcastle Disease |
| ANOVA | Analysis of Variance |
| ILRI | International Livestock Research Institute |
| HIV/AIDS | Human Immunodeficiency Virus and Acquired Immune deficiency Syndrome |
| STI | Sexual Transmitted Infection |
| ARVs | Antiretrovirals |
| AMIS | Agricultural Marketing Information System |
| BOD | Biochemical Oxygen Demand |

# 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

xx

x

**COURSE OVERVIEW**

Animal health and production level 6 curriculum consists of competencies required by a person to enable him/her perform duties of an animal health and production technologist. It entails managing parasitic diseases; microbial diseases; metabolic, nutritional and reproductive diseases and disorders; livestock parasites; veterinary pharmaceuticals and toxins; applying animal health skills; performing animal routine practices; conducting animal health extension services and herd health management.

The units of learning comprising animal health and production level 6 qualification include the following basic and core units:

**SUMMARY OF UNITS OF COMPETENCY**

|  |  |  |  |
| --- | --- | --- | --- |
| **MODULE 1** | | | |
| **ISCED UNIT CODE** | **UNIT NAME** | **UNIT DURATION** | **CREDIT FACTOR** |
| 0031 541 02A | Communication Skills | 40 | 4 |
| 0912 551 04A | Animal anatomy | 90 | 9 |
| 0313 551 05A | Animal physiology | 90 | 9 |
| 0512 551 07A | Biochemistry | 90 | 9 |
| 0511 541 23A | Botany and zoology | 60 | 6 |
| 0521 541 26A | Ecology and environmental science | 50 | 5 |
| 0841 541 30A | Animal growth and development | 50 | 5 |
| **SUB TOTAL 1** | | **470** | **47** |
| **MODULE 2** | | | |
| 0413 541 03A | Entrepreneurial Skills | 40 | 4 |
| 0841 541 09A | Genetics in animal breeding | 50 | 5 |
| 0542 541 32A | Biostatistics and computer application | 50 | 5 |
| 0511 541 08A | Microbiology | 60 | 6 |
| 0912 541 16A | Immunology and vaccines | 50 | 5 |
| 0841 551 38A | Parasitology | 60 | 6 |
| 0811 541 11A | Animal nutrition | 60 | 6 |
| 0811 541 06A | Soil science | 50 | 5 |
| 0811 541 31A | Pasture and fodder production and conservation | 50 | 5 |
| **SUB TOTAL 1** | | **470** | **47** |
| **MODULE 3** | | | |
| 0912 541 12A | General pathology | 50 | 5 |
| 0413 541 03A | Entrepreneurial Skills | 40 | 4 |
| 0841 551 34A | Parasitic diseases | 80 | 8 |
| 0841 551 35A | Microbial diseases | 90 | 9 |
| 0811 541 10A/0716 541 10A | Farm structures and mechanization | 50 | 5 |
| 0811 541 17A | Ruminant livestock production systems | 60 | 6 |
| 0811 541 18A | Non-ruminant livestock production systems | 60 | 6 |
| 0912 541 14A | Basic Epidemiology | 60 | 6 |
| **SUB TOTAL 1** | | **450** | **45** |
| **MODULE 4** | | | |
| 0611 551 01A | Digital Literacy | 40 | 4 |
| 0512 551 37A | Veterinary pharmacology and toxicology | 90 | 9 |
| 0841 551 36A | Metabolic, nutritional and reproductive diseases and disorders | 80 | 8 |
| 0912 541 29A | Clinical pathology | 50 | 5 |
| 0841 551 40A | Animal health skills | 90 | 9 |
| 0841 551 41A | Animal routine practices | 110 | 11 |
| **SUB TOTAL 1** | | **460** | **46** |
| **MODULE 5** | | | |
| 0721 541 25A | Marketing and value addition of animal products | 50 | 5 |
| 0811 541 24A | Agribusiness management | 90 | 9 |
| 0841 541 15A | Zoonosis and one health concept | 60 | 6 |
| 0831 541 33A | Apiculture and aquaculture | 60 | 6 |
| 0111 541 19A | Scientific research | 150 | 15 |
| 0913 541 21A | HIV | 50 | 5 |
| 0811 541 20A | Companion and draught animals | 50 | 5 |
| **SUB TOTAL 1** | | **510** | **51** |
| **MODULE 6** | | | |
| 0841 551 42A | Herd health management | 50 | 5 |
| 0841 541 28A | Veterinary public health | 60 | 6 |
| 0522 541 27A | Rangelands | 50 | 5 |
| 0114 551 39A | Animal health extension services | 90 | 9 |
| 0314 541 22A | Rural sociology | 80 | 8 |
| 0929 541 13A | Animal welfare, ethics and law | 90 | 9 |
| **SUBTOTAL 1** | | **420** | **42** |
| **SUB TOTALS 1** | | **2780** | **278** |
| **INDUSTRIAL TRAINING** | | **480** | **48** |
| **GRAND TOTAL** | | **3260** | **326** |

**Entry Requirements**

An individual entering this course should have any of the following minimum requirements:

1. Kenya Certificate of Secondary Education (KCSE) with an aggregate of C and a grade of at least C in Biology or Biological Sciences and C- in Chemistry or Physical Science and C- in either Mathematics or Physics or Agriculture

**Or**

1. Animal Health and Production level 5 certificate

**Or**

1. Equivalent KNQF level 5 qualification as determined by relevant regulatory body

**Trainer qualifications**

Qualifications of a trainer for this course include:

1. Possession of a higher qualification than Animal Health technology level 6 or in related trade area; and
2. License by TVETA
3. License 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 for levels 6**

The course shall be assessed formatively and summatively:

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 40:60 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 6, 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**

## **COMMUNICATION SKILLS**

**UNIT CODE:** 0031 441 02A

**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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Demonstrations
* Project
* Group discussion
* Direct instruction

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** |  |  |  |
|  | Textbooks |  | 5 pcs | 1:5 |
|  | Production Manuals |  | 5 | 1;5 |
|  | PowerPoint presentations | For trainer’s use |  |  |
|  | Projector |  | 1 | 1;25 |
|  | Assorted Flash Cards |  | 5 | 1;5 |
|  | Whiteboard |  | 1 | 1;25 |
|  | Report writing templates |  |  |  |
|  | Rolls flip charts |  | 1 | 1;25 |
|  | Assorted color of whiteboard markers | For trainers Use |  |  |
| **B** | **Learning Facilities & infrastructure** |  |  |  |
|  | Lecture/theory room |  | 1 | 1:25 |
|  | Computer Laboratory |  | 1 | 1:25 |
| **C** | **Consumable materials** |  |  |  |
|  | Assorted whiteboard markers |  | 25 | 1:1 |
|  | Internet connection |  | 200 mbps | - |
|  | Antivirus Software |  |  | - |
|  | Printing Papers |  | Enough | - |
|  | External storage media |  | 1 tb | - |
| **D** | **Tools and Equipment** |  |  |  |
|  | Printers |  | 2 pcs | 2:25 |
|  | Computers | With Windows /Linux/Macintosh Operating System, Microsoft Office Software, Google Workspace Account, Antivirus Software | 25pcs | 1:1 |
|  | Mobile phones |  | 10 | 10:25 |

## **ANIMAL ANATOMY**

**ISCED UNIT CODE:** 0912 541 04A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of animal anatomy

UNIT DURATION: 90 Hours

**Unit Description**

This unit specifies the competencies required by an animal health technologist to apply animal anatomy in animal disease management. It involves applying principles of anatomy in animal handling, applying knowledge of animal tissues and organs and applying knowledge of domestic fowl anatomy.

**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 anatomy in animal handling | **30** |
|  | Apply knowledge of animal tissues and organs | **30** |
|  | Apply knowledge of domestic fowl anatomy | **30** |
| **Total** | | **90** |

Learning Outcomes, Content and Suggested Assessment Methods

|  |  |  |
| --- | --- | --- |
| Learning Outcomes | Content | Suggested Assessment Methods |
| 1. Apply principles of anatomy in animals handling | * 1. Introduction to anatomy   2. Definitions      1. Anatomy      2. Tissue      3. Histology      4. Positional terms      5. Directional terms   3. Branches of anatomy      1. Myology      2. Arthrology      3. Osteology      4. Neurology      5. Angiology      6. Splanchnology | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of animal tissues and organs systems | * 1. Animal tissues      1. Epithelia tissues      2. Muscular tissues      3. Vascular tissues      4. Nervous tissues   2. Animal Organs      1. Brain      2. Heart      3. Lungs      4. Kidneys      5. Liver   3. Animals organs systems      1. Digestive      2. Skeletal      3. Muscular      4. Integumentary      5. Reproductive      6. Respiratory      7. Circulatory      8. Urinary      9. Lymphatic      10. Endocrine      11. Nervous      12. Excretory | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of domestic fowl anatomy | * 1. Domestic fowl digestive system   2. Domestic fowl reproductive system   3. Domestic fowl respiratory system | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**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)** |
|  | **Learning materials** |  |  |  |
|  | Projector |  | 1 | 1:25 |
|  | Whiteboard/Smart board |  |  | 1:25 |
|  | Desktop/computer |  |  | 1:25 |
|  | Charts of skeletons |  | 5 | 1:5 |
|  | Lecture/Theory room |  | 1 | 1:25 |
|  | Laboratory | As per KVB guidelines | 1 | 1:25 |
|  | Animal farm | As per KVB guidelines | 1 | 1:25 |
|  | Veterinary Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |

## **ANIMAL PHYSIOLOGY**

**ISCED UNIT CODE**: 0313 541 05A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of animal physiology.

**UNIT DURATION:** 90 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to demonstrate knowledge of animal physiology in managing the health and production of animals. It involves applying knowledge of physiological principles, applying knowledge of the functioning of various body systems and 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 principles of physiological principles | **30** |
|  | Apply knowledge of animal body systems functions | **30** |
|  | Apply knowledge of environmental physiology | **30** |
| **Total** | | **90** |

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

|  |  |  |
| --- | --- | --- |
| Learning Outcomes | Content | Suggested Assessment Methods |
| 1. Apply principles of anatomy in animals handling | * 1. Introduction to animal physiology   2. Definitions      1. Animal physiology      2. Homeostasis      3. Ethology   3. Principles of animal physiology   4. Animal cell physiology   5. Mechanism of cell transport      1. Diffusion      2. Solvent drag      3. Osmosis      4. Filtration      5. Active transport      6. Exocytosis      7. Endocytosis   6. Mammalian cell and cell components      1. Mitochondria      2. Endoplasmic reticulum      3. Nuclei      4. Cell membrane      5. Cytoplasm | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of animal body systems functions | * 1. Animal tissue physiology   2. Animal organ physiology   3. Animal organ system      1. Integumentary system      2. Cardiovascular system      3. Respiratory system      4. Renal system      5. Musculoskeletal system      6. Reproductive system      7. Gastro/digestive intestinal      8. Nervous system      9. Hepatic system      10. Endocrine system      11. Lymphatic system | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of environmental physiology | * 1. Management of environmental effect   2. Management of animal adaptive response   3. Management of animal behavior | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**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)** |
|  | **Learning materials** |  |  |  |
| 1. | Projector |  | 1 | 1:25 |
| 2. | Whiteboard/Smart board |  | 1 | 1:25 |
| 3. | Desktop/computer |  | 1 | 1:25 |
| 4. | Animal organs/organ systems charts |  | 5 | 1:5 |
| 5. | Lecture/Theory room |  | 1 | 1:25 |
| 6. | Laboratory | As per KVB guidelines | 1 | 1:25 |
| 7. | Animal farm | As per KVB guidelines | 1 | 1:25 |
| 8. | Library |  | 1 | 1:25 |
| 9. | E-Library |  | 1 | 1:25 |

## **BIOCHEMISTRY**

**ISCED UNIT CODE:** 0512 541 07A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 90 Hours

**Unit Description**

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

**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 micro-molecules in animal health | **15** |
|  | Apply knowledge of enzymes in managing animal health | **15** |
|  | Apply knowledge of molecular genetics | **20** |
|  | Apply knowledge of biomolecule metabolism in animal health | **20** |
|  | Apply knowledge of biochemistry in ruminant nutrition | **20** |
| **Total** | | **90** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of macromolecules in animal health | * 1. Introduction to biochemistry   2. Definition of macromolecules   3. Types of macromolecules      1. Carbohydrates      2. Proteins      3. Vitamins      4. Minerals      5. Lipids | * Written tests * Practical * Third party report * Oral questions * Projects |

|  |  |  |
| --- | --- | --- |
| 1. Apply knowledge of enzymes in managing animal health | * 1. Basic concepts of enzymes      1. Isoenzymes      2. Holoenzymes      3. Coenzymes      4. Apoenzyme   2. Types and functions of enzymes   3. Management of catalytic reactions   4. Properties of enzymes   5. Enzyme substrate reactions   6. Enzyme metabolism | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Apply knowledge of molecular genetics | * 1. Principles of molecular genetics   2. Structural elements of chromosomes   nucleic acids   * 1. Classification of Nucleic acids      1. Heterocyclic bases present in nucleic acid      2. Pentose sugars in nucleic acid   2. Metabolism of nucleic acids   3. The process of DNA replication   4. The process of DNA transcription      1. Protein synthesis process      2. Point mutation | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Apply knowledge of 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   4. Glycolytic pathway   5. Krebs cycle   6. Management of effects of biomolecule metabolism. | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Apply knowledge of biochemistry in ruminant nutrition | * 1. Functions of the rumen   2. Feed storage   3. Fermentation   4. Environment for growth of microbes   5. Physiology of digestion in the rumen      1. Volatile fatty acids      2. Acetic acid      3. Propionic acid      4. Butyric acid | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |

**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)** |
|  | **Learning materials** |  |  |  |
|  | Projector |  | 1 | 1:25 |
|  | Whiteboard/Smart board |  | 1 | 1:25 |
|  | Desktop/computer |  | 25 | 1:1 |
|  | Lecture/Theory room |  | 1 | 1:25 |
|  | Biochemistry Laboratory | As per KVB requirement | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |

## **BOTANY AND ZOOLOGY**

**ISCED UNIT CODE:** 0511 541 23A

**Relationship to Occupational Standards**

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

**Unit Duration:** 50 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 principles of botany and zoology | **10** |
|  | Apply knowledge of plant morphology | **20** |
|  | Apply knowledge of plant and animal classification in animal production | **20** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply knowledge of botany and zoology | * 1. Definition of terms      1. Botany      2. Zoology   2. Basic concept of botany and zoology   3. Importance of botany and zoology   4. Cell structure and function of plant and animal   5. Stages of cell division      1. Prophase      2. Metaphase      3. Anaphase      4. Telophase   6. Levels of organism organization | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of plant morphology | * 1. Plant morphology   2. Root system, type, part and modifications   3. Stem parts and modification   4. Structure of a typical leaf   5. Parts of a typical flower   6. Formation and classification of fruits and seeds | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of plant and animal classification in animal production | * 1. Plant classification   2. Animal classification   3. Hierarchical groupings in animals and plants   4. Phyla of veterinary importance      1. Chordata      2. Nematoda      3. Platyhelminthes      4. Arthropoda      5. Mollusca | * 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 |

## **ECOLOGY AND ENVIRONMENTAL SCIENCE**

**ISCED UNIT CODE:** 0521 541 26A

**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 technologist to apply knowledge of ecology and environmental science. 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 | **10** |
|  | Apply knowledge of ecosystem in animal health | **5** |
|  | Apply knowledge of energy flow in an ecosystem | **10** |
|  | Apply knowledge of nutrient cycling in an ecosystem | **5** |
|  | Apply knowledge of plant ecology in an ecosystem | **5** |
|  | Apply principles ecosystem in the environment | **5** |
|  | Apply knowledge of environmental health and management | **5** |
|  | 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 community in ecology   2. Association between organism      1. Parasitism      2. Mutualism      3. Symbiosis      4. Commensalism   3. Dry land plants adaptation   4. Animal adaptation to dry land | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of ecosystem in animal health | * 1. Ecosystem in animal health   2. Ecosystem      1. Biotic      2. Abiotic | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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   3. Energy flow in an ecosystem   4. Ecological efficiencies   5. Biological production in energy flow | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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 * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of plant ecology in an ecosystem | * 1. Plant ecology in an ecosystem   2. Forms of plant growth   3. Plant communities      1. Monocotyledons DicotyledonsBryophytes      2. Pterydophytes   4. Stages of retrogression   5. Eco climatic and agro-ecological zones | * Written test * Observation * Third party report * Oral questioning |
| 1. Apply principles ecosystem in the environment | * 1. Principles of ecosystem in the environment   2. Destructive activities of animals in an ecosystem   3. Beneficial activities of animals in an ecosystem   4. Effects of man activities in an ecosystem | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of environmental health and management | * 1. Terminologies in environmental health and management      1. Contamination      2. Conservation      3. Environmental degradation      4. Pollution      5. Environmental pollution      6. Biodegradable and non-biodegradable | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of sustainable environmental management | * 1. Introduction to sustainable environmental management   2. Causes of climate change   3. Effects of climate change   4. Mitigation of climate change      1. Afforestation      2. Clean Energy         1. Biogas         2. Solar         3. Wind power   5. Agencies for climate change      1. Government agencies      2. Non – government organizations      3. Associations. | * 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 |

## **ANIMAL GROWTH AND DEVELOPMENT**

**ISCED UNIT CODE:**0841 541 30A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of animal growth and development.

**Unit duration:** 50 hours

**Unit description**

This unit covers the competencies required by an animal health and production technologist to apply knowledge of animal growth and development. It involves applying general concepts of growth and development, manipulation to growth and development, compensatory growth, maturity and body composition in animal production.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Apply general concepts of growth and development | **15** |
|  | Apply knowledge of manipulation to growth and development in animal production | **15** |
|  | Apply knowledge of compensatory growth in animal production. | **10** |
|  | Apply knowledge of maturity and body composition in animal production | **10** |
| **Total** | | **50** |

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply general concepts of growth and development | * 1. Introduction to growth and development   2. Importance of growth and development in livestock   3. Developmental stages of growth and development      1. Pre-natal phase      2. Post-natal phase   4. Factors affecting postnatal growth and development | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of manipulation to growth and development in animal production | * 1. Genetic manipulation      1. Transgenic      2. Screening of embryo      3. Embryo splitting      4. Cloning   2. Growth promoters   3. Gut-active promoters      1. Use of hormones      2. Probiotics   4. Importance of manipulation of growth and development | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of compensatory growth in animal production. | * 1. Define compensatory growth   2. Comparison of compensatory growth with normal growth   3. Economic value of compensatory growth   4. Factors that influence compensatory growth. | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of maturity and body composition in animal production | * 1. Define maturity   2. Types of maturity      1. Reproductive maturity      2. Physical maturity   3. Effects of age on fat, bone, and muscle development   4. Effects of age on meat quality | * 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 |

# **MODULE II**

## **ENTREPRENEURIAL SKILLS**

**UNIT CODE:** 0413 441 03A

**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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * 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 | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods of Instruction**

* Practical
* Demonstrations
* Project
* Group discussion
* Direct instruction
* Guest speakers

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** |  |  |  |
|  | Textbooks |  | 5 pcs | 1:5 |
|  | PowerPoint presentations | For trainer’s use |  |  |
|  | Overhead Projector | LCD | 1 | 1;25 |
|  | Case studies |  | 5 | 1;5 |
|  | Business plan templates |  | 5 | 1:5 |
|  | Newspapers and Handouts |  | 5 | 1:5 |
|  | Business Journals |  | 5 | 1:5 |
|  | Video clips | Assorted | 25 sets | 1:1 |
|  | Whiteboard |  | 1 | 1;25 |
|  | Rolls flip charts |  | 1 | 1;25 |
|  | Assorted color of whiteboard markers | For trainers Use | 1 | 1:25 |
| **B** | **Learning Facilities & infrastructure** |  |  |  |
|  | Lecture/theory room |  | 1 | 1:25 |
| **C** | **Consumable materials** |  |  |  |
|  | Printing papers |  |  | 1:5 |
|  | Stationery |  | 25 pcs | 1:1 |
|  | Printing ink cartilages |  |  |  |
|  | Internet |  | 200mbps | - |
| **D** | **Tools and Equipment** |  |  |  |
|  | Computers |  | 5 pcs | 1:5 |
|  | Printer |  | 50 pcs | 2:1 |

## **GENETICS IN ANIMAL BREEDING**

**ISCED UNIT CODE:** 0841 541 09A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of genetics in animal breeding.

**UNIT DURATION:** 50 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 principles of basic concepts of animal genetics | **15** |
|  | Identify tools for animal breeding | **15** |
|  | Apply knowledge of growth and development in animal breeding | **15** |
|  | Keeping breeding records | **5** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of basic concepts of animal genetics | * 1. Basic Concepts of Animal Genetics   2. Definitions of key terms      1. Qualitative genetics      2. Genetic material      3. Mutations and Chromosomal aberrations      4. Quantitative Genetics   3. Animal cell physiology   4. Quantitative and qualitative genetics      1. Coat color      2. Udder      3. Egg production      4. Height      5. Weight      6. Milk production   5. Chromosomal aberrations      1. Deletion      2. Translocation      3. Insertion      4. Inversion | * Written tests * Third party report * Interviews/ Oral questions * projects |

|  |  |  |
| --- | --- | --- |
| 1. Identify tools for animal breeding | * 1. Theory of selection      1. Natural selection      2. Artificial selection   2. Livestock breeding programs   3. Traits of economic importance   4. Animal breeding tools      1. Selection      2. Breeding   5. Breeding systems and methods | * Written tests * Third party report * Interviews/ Oral questions * Case Studies * Projects |
| 1. Apply knowledge of growth and development in animal breeding | * 1. Definitions of key terms      1. Prenatal growth      2. Postnatal growth   2. Importance of growth in livestock production   3. Factors affecting postnatal growth and development   4. Compensatory growth | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies |
| 1. Keep breeding records | * 1. Breeding records   2. Report on breeding records   3. Importance of breeding records | * Written tests * Third party report * Interviews/ Oral questions * Individual/group assignments * Case Studies |

**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)** |
|  | **Learning materials** |  |  |  |
| 1. | Projector |  | 1 | 1:25 |
| 2. | Whiteboard/Smart board |  | 1 | 1:25 |
| 3. | Desktop/computer |  | 25 | 1:1 |
| 4. | Lecture/Theory room |  | 1 | 1:25 |
| 5. | Laboratory |  | 1 | 1:25 |
| 6. | Animal farm | As guided by KVB | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |

## **BIOSTATISTICS AND COMPUTER APPLICATION**

**ISCED UNIT CODE:** 0542 541 32A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 90 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 | **20** |
|  | Apply knowledge of probability | **20** |
|  | Apply knowledge of normal distribution | **20** |
|  | Apply computer applications | **10** |
| **Total** | | **90** |

**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 knowledge of computer application | * 1. Computer hardware   2. Computer software   3. Computer application | * 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 |

## **MICROBIOLOGY**

**ISCED UNIT CODE:** 0511 541 08A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply Knowledge of microbiology

**UNIT DURATION:** 60 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply microbiological principles in diagnosing animal diseases. It involves performing basic laboratory techniques, applying knowledge of physiology and nutrition of microorganisms, applying knowledge of microbial genetics and identifying 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 | **20** |
|  | Apply knowledge of physiology and nutrition of microorganisms | **10** |
|  | Apply knowledge of microbial genetics | **10** |
|  | Identify microbes of veterinary importance | **20** |
| **Total** | | **60** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Perform basic laboratory techniques | * 1. Definition of key terms      1. Microbiology      2. Normal flora      3. Infection      4. Pathogen      5. Pathogenesis      6. Pathogenicity      7. Virulence      8. Lesion      9. Disease   2. Study of specific microorganisms      1. Prokaryotic      2. Eukaryotic   3. History of microbiology   4. Microscopy and microscopy techniques      1. Laboratory equipment      2. Microscope      3. Slides      4. Bunsen burner      5. Centrifuge      6. Spatula      7. Cover slip      8. Beakers      9. Petri dishes      10. Inoculating wires      11. Test tubes   5. Staining techniques      1. Gram staining      2. Giemsa staining      3. Methylene blue staining      4. Eosin staining | * Written tests * Practical * Third party report * Oral questions * Projects |

|  |  |  |
| --- | --- | --- |
| 1. Apply knowledge of physiology and nutrition of microorganisms | * 1. Introduction   2. Bacterial cell   3. Bacterial growth colony   4. Staining techniques   5. Microbial metabolism   6. Microbial nutrition and growth | * Written tests * Third party report * Practical * Projects |
| 1. Apply knowledge of microbial genetics | * 1. Introduction to microbial genetics   2. General structure   3. Functions   4. DNA replication   5. Control of microorganisms   6. Sensitivity tests   7. Microbial resistance | * Written tests * Third party report * Case Studies * Practical * Projects |
| 1. Identify microbes of veterinary importance | * 1. Pathogen-host relationships   2. Microscopy of the microbes      1. Bacteria      2. Fungi      3. Viruses      4. Mycoplasma      5. Rickettsia      6. Chlamydia   3. Microbe culture and culture techniques      1. Blood agar      2. MacConkey agar      3. Mannitol salt agar      4. Dextrose broth      5. Glucose agar   4. Characteristics identification of organisms | * Written tests * Third party report * Interviews/ Oral questions * Practical * Projects |

**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)** |
|  | **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. | Laboratory |  | 1 | 1:25 |
| 6. | Animal farm |  | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |

## **IMMUNOLOGY AND VACCINES**

**ISCED UNIT CODE:** 0912 541 16A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of immunology in animal vaccination

**Unit Duration**: 50 Hours

**Unit Description**

This unit specifies the competencies required by animal health and production technologist 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 | **20** |
|  | Apply knowledge of serology in disease diagnosis | **10** |
|  | Apply knowledge of vaccinology and immunization | **20** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply knowledge of immunology | * 1. Definition of terminologies      1. Immunology      2. Vaccine      3. Immunogenicity      4. Immune system      5. Immunological principles   2. Types of immunity      1. Acquired      2. Innate      3. Humoral      4. Cell mediated   3. Immune reactions   4. Antigen antibody reactions   5. The complement system   6. Autoimmune diseases of animals | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of serology in disease diagnosis | * 1. Define serology   2. Serological principles   3. Types of serological tests      1. ELISA      2. CFT      3. PCR   4. Importance of serology | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of vaccinology and immunization | * 1. Types of vaccines      1. Live      2. Killed      3. Attenuated      4. Toxoids   2. Mode of action of vaccines   3. Adjuvants and vaccines   4. Vaccine storage and handling   5. Vaccines for veterinary use. (Rabies, FMD, LSD, RVF, NCD, fowl pox, ASF, Fowl Typhoid, Anthrax) | * 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. | Laboratory | As guided by KVB | 1 | 1:25 |
| 6. | Animal farm | As guided by KVB | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |

## **PARASTOLOGY**

**ISCED UNIT CODE:** 0841 551 38A

**Relationship to Occupational Standards**

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

**Unit Duration:** 80 hours

**Unit Description**

This unit describes competencies required by animal health and production technologists to apply parasitology in disease control. It involves managing livestock nematodes, livestock trematodes, livestock cestodes 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 | **15** |
|  | Manage livestock trematodes | **15** |
|  | Manage livestock cestodes | **15** |
|  | Manage livestock arthropods | **15** |
|  | Manage livestock protozoa | **20** |
| **Total** | | **80** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Manage livestock nematodes | * 1. Introduction to nematodes   2. PPEs on parasite management,      1. Glove      2. Overall      3. Dust coat      4. Gum boots      5. Face masks   3. Tools and equipment      1. Microscope      2. Centrifuge      3. Microscope slides      4. Forceps      5. Magnifying glass      6. Incubator      7. Refrigerator      8. Autoclave      9. Hot air oven      10. Cover slips      11. McMaster Chamber   4. Livestock nematode identification      1. Ascarids      2. Haemonchus      3. Ostertagia      4. Trychostrongylus      5. Cooperia      6. Trichuris      7. Oesophagostomum      8. Bunostomum   5. Treatment of affected livestock   6. Prevention and control | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage livestock trematodes | * 1. Introduction to livestock trematodes managements.   2. Livestock trematodes identification      1. Fasciola      2. Paraphistosomes      3. Schistosomes   3. Livestock trematode treatment   4. Prevention and control | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage livestock cestodes | * 1. Introduction to livestock cestodes.   2. Livestock cestodes      1. Taenia      2. Echinococcus      3. Hymenolepis   3. Livestock cestodes treatment   4. Prevention and control | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage livestock arthropods | * 1. Introduction to livestock Arthropods      1. Insects      2. Arachnids      3. Myriapods      4. Crustaceans   2. Livestock arthropods treatment   3. Prevention and control | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage livestock protozoa | * 1. Introduction to livestock Protozoa      1. Theileria      2. Eimeria      3. Trypanosomes      4. Anaplasma      5. Toxoplasma   2. Livestock protozoon treatment   3. Prevention and control | * 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 |
|  | Hot air oven |  | 1 | 1:25 |
|  | Syringes and needle |  | 25 | 1:1 |
|  | Scalpel blades |  | 25 | 1:1 |
|  | Microscope |  | 5 | 1:5 |
|  | Acaricides |  | 5 | 1:5 |
|  | Autoclave |  | 2 | 1:25 |
|  | Refrigerator |  | 1 | 1:25 |

## **ANIMAL NUTRITION**

**ISCED UNIT CODE:** 0811 541 11A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 50Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 formulate 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 system | **20** |
|  | Apply knowledge of animal feed requirements | **10** |
|  | Formulate animal feed | **10** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of principles of nutrition | * 1. Composition of animal feeds      1. Carbohydrates      2. Lipids      3. Proteins      4. Vitamins      5. Minerals      6. Water   2. Types of animal feed      1. Pastures      2. Forages      3. Concentrates   3. Functions of feed components | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies * Practical |
| 1. Apply knowledge of types of digestive systems | * 1. Ruminant digestive systems      1. Cattle      2. Sheep      3. Goats   2. Non-ruminant digestive systems      1. Pigs      2. Poultry      3. Donkeys      4. Camels.   3. Factors that affect digestibility of feed   4. Factors affecting bioavailability of feed | * Written tests * Third party report * Reflection papers * Projects * Interviews/ Oral questions * Case Studies * Practical |
| 1. Apply knowledge of animal feed requirements | * 1. Feed intake is evaluation   2. Factors affecting animal feed requirements   3. Feed conversion efficiency | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies * Practical |
| 1. Formulate animal feed | * 1. Principles of ration formulation   2. Ration formulation techniques      1. Pearson’s square      2. Trial and error      3. Algebraic      4. Linear programming      5. Least Cost formulation      6. Computerized feed formulation   3. Feed presentation | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies * Practical |

**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)** |
|  | **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. | Laboratory | As guided by Kenya bureau of standard. | 1 | 1:25 |
| 6. | Animal farm |  | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |
| 9. | Pasture and fodder land |  | 1 | 1:25 |

## **SOIL SCIENCE**

**ISCED UNIT CODE:** 0811 541 06A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 50 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to demonstrate knowledge of soil science. It involves applying knowledge of principles of soil science, identifying properties of soil, identifying 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 | **20** |
|  | Apply knowledge of soil organisms and organic matter | **15** |
|  | Apply knowledge of soil fertility in fodder production | **15** |
| **Total** | | **50** |

**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 physical 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 * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

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

**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)** |
|  | **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. | Soil science Laboratory |  | 1 | 1:25 |
| 6. | Library |  | 1 | 1:25 |
| 7. | E-Library |  | 1 | 1:25 |
| 8. | Soil Auger |  | 5 | 1:5 |
| 9.. | Khaki bags |  | 25 | 1:1 |
| 10. | Buckets |  | 5 | 1:5 |
| 11. | Hoes |  | 25 | 1:1 |
| 12. | Machetes |  | 5 | 1:5 |
| 13. | Shovels |  | 5 | 1:5 |
| 14. | Digestion block |  | 2 | 1:25 |
| 15. | UV-VIS Spectrophotometer |  | 2 | 1:25 |
| 16. | Atomic absorption spectrophotometer (AAS) |  | 2 | 1:25 |
| 17. | Flame photometer |  | 2 | 1:25 |

## **PASTURE AND FODDER PRODUCTION**

**ISCED UNIT CODE:**0811 541 31A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 50 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 | **20** |
|  | Conserve pasture and fodder | **15** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Classify pasture and fodder | * 1. Pasture classification      1. Pastures      2. Rhodes grass      3. Brachiaria      4. Napier grass      5. Guatemala grass      6. Kikuyu grass      7. Sudan grass      8. Lucerne      9. Desmodium      10. Calliandra      11. White clover      12. Hydroponic fodder      13. Black soldier fly   2. Agro-ecological zones      1. Upper Highland      2. Upper Midland      3. Lower highland      4. Lower midland   3. Classes of forage plants   4. Selection of forage species | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Establish pasture and fodder | * 1. Methods of pasture establishment   2. Seeding methods and rates   3. Methods of weed control and management   4. Methods of natural pasture management      1. Grazing systems      2. Zero grazing      3. Herding      4. Rotational grazing      5. Paddocking | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Conserve pasture and fodder | * 1. Introduction to pasture and fodder conservation   2. Methods of forage conservation      1. Silage      2. Hay making   3. Emerging trends in pasture establishment and conservation | * 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 |
|  | 5 liter Molasses |  | 1 | 1:25 |
|  | Water can |  | 5 | 1:5 |
|  | Pit silo |  | 1 | 1:25 |
|  | Silage pack |  | 1 | 1:25 |
|  | 100gms fodder seeds |  | 1 | 1:25 |
|  | Chaff cutter |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |

# 

# **MODULE III**

## **GENERAL PATHOLOGY**

**ISCED UNIT CODE:** 0912 541 12A

**Relationship to Occupational Standards**

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

**Unit Duration:** 50 hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply knowledge of basic general pathology. It involves applying principles of pathology, knowledge of cell injury, 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 | **5** |
|  | Apply knowledge of cell injury | **5** |
|  | Apply knowledge of tissue inflammation | **5** |
|  | Apply knowledge of tissue healing and repair | **10** |
|  | Apply knowledge of hemodynamic disorders | **10** |
|  | Apply knowledge of cellular adaptations | **5** |
|  | Apply knowledge of neoplasia | **10** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply principles of pathology | * 1. Define pathology   2. Introduction to principles of pathology   3. Branches of pathology      1. Anatomical      2. Clinical      3. Forensic      4. Histopathology      5. Surgical      6. Dermatopathology   4. Pathology terms      1. Etiology      2. Biopsy      3. Edema | * Written test * Third party report * Oral questioning/ Interviews * Practical |
| 1. Apply knowledge of cell injury | * 1. Define terminologies      1. Atrophy      2. Hypertrophy      3. Aplasia      4. Hyperplasia      5. Metaplasia      6. Neoplasia   2. Causes of cell injury   3. Cell injury management. | * Written test * Third party report * Oral questioning/ Interviews * Practical |
| 1. Apply knowledge of tissue inflammation | * 1. Introduction to tissue Inflammation   2. Cardinal signs of inflammation   3. Types of inflammation | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Apply knowledge of tissue healing and repair | * 1. Introduction to tissue healing/repair   2. Types of wound      1. Open wound      2. Closed wound      3. Contaminated wound      4. Clean wound      5. Surgical wound   3. Wound healing      1. Wound healing by first intention.      2. Wound healing by second intention   4. Factors affecting wound healing | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Apply knowledge of hemodynamic disorders | * 1. Define terminologies      1. Hyperemia      2. Congestion      3. Hemorrhage      4. Thrombosis      5. Oedema      6. Infarction      7. Shock   2. Management of hemodynamic disorders | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 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. | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Apply knowledge of neoplasia | * 1. Define Neoplasia   2. Types of Neoplasia      1. Carcinoma      2. Sarcoma      3. Adenoma      4. Lymphoma   3. Causes of neoplasia   4. Management of neoplasia | * Written tests * Practical * Project * Portfolio of evidence * Third party report * 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. | Laboratory | As guided by KVB | 1 | 1:25 |
| 6. | Animal farm | As guided by KVB | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |

## **PARASITIC DISEASES**

**ISCED UNIT CODE:** 0841 551 34A

**Relationship to Occupational Standards**

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

**Unit Duration:** 80 hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 | **20** |
|  | Manage rickettsial diseases | **20** |
|  | Manage helminthosis | **20** |
|  | Manage livestock mange | **20** |
| **Total** | | **80** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Manage protozoal diseases | * 1. Introduction to protozoal diseases.   2. Tools and equipment for managing protozoal diseases.      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes and needles      5. Drenching gun      6. Scalpel blades   3. PPEs on protozoal diseases management      1. Gloves      2. Overall      3. Dust Coats      4. Gumboots      5. Face masks   4. Protozoal diseases include:      1. Trypanosomiasis      2. Babesiosis      3. Anaplasmosis.   5. Protozoal diseases diagnosis      1. Epidemiology      2. A etiology      3. Pathogenesis      4. Diagnosis      5. Treatment   6. Anti-protozoal drugs   7. Prevention and control      1. Acaricides      2. Spraying      3. Dipping      4. Dusting      5. Pour on   1.6. Economic importance | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage Rickettsial diseases | * 1. Rickettsial diseases      1. Ehrlichiosis      2. Q fever      3. Epidemiology      4. Aetiology      5. Pathogenesis      6. Diagnosis      7. Treatment         1. Antibiotics         2. Antiinflamatory.   2. Prevention and control   3. Economic importance | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage livestock helminthosis | * 1. Helminthosis   2. Causative agent of helminthosis      1. Haemonchosis      2. Osterargiasis      3. Fascioliasis      4. Trychostronglosis      5. Ascariasis      6. Pathogenesis of helminthosis   3. Management of helminthosis * Antihelminth drenching   1. Economic importance of helminthosis | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage livestock mange | * 1. Define mange   2. Species of animals affected by mange   3. Pathogenesis of mange   4. Management of mange      1. Ivermectin | * 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/Smartboard |  | 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 |
|  | Knapsack |  | 5 | 1:5 |
|  | Drenching gun |  | 5 | 1:5 |
|  | Syringes and needle |  | 25 | 1:1 |
|  | Scalpel blades |  | 25 | 1:1 |
|  | Microscope |  | 5 | 1:5 |
|  | Acaricides |  | 5 | 1:5 |
|  | Crush |  | 1 | 1:25 |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |

## **MICROBIAL DISEASES**

**ISCED UNIT CODE:** 0841 551 35A

**Relationship to Occupational Standards**

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

UNIT DURATION: 90 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 | **30** |
|  | Manage viral diseases | **30** |
|  | Manage fungal diseases | **30** |
| **Total** | | **90** |

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

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

|  |  |  |
| --- | --- | --- |
| 1. Manage bacterial diseases | * 1. PPE’s for bacterial diseases management      1. Gloves      2. Gumboots      3. Overall      4. Dustcoats      5. Face masks   2. Tools, equipment and apparel for bacterial diseases management.      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes & Needles      5. Automatic Syringes      6. Cool boxes      7. Scalpel blades      8. Surgical spirit   3. Manage bacterial diseases   4. Bacterial diseases identification      1. Anthrax      2. Black-quarter      3. Brucellosis      4. Tuberculosis      5. CCPP      6. CBPP      7. Pasteurellosis   5. Bacterial diagnosis      1. Epidemiology      2. Aetiology      3. Clinical signs      4. Diagnosis      5. Pathogenesis      6. Prevention and Control.      7. Treatment         1. Antibiotics | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage viral diseases. | * 1. Introduction to viral diseases.   2. Personal protective equipment for managing and testing diseases   3. Manage viral diseases   4. Identify Viral disease      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   5. Viral disease diagnosis      1. Epidemiology      2. A etiology      3. Diagnosis      4. Pathogenesis      5. Treatment      6. Prevention and Control   6. Viral diseases diagnostic tests      1. Molecular test      2. PCR      3. Serological test      4. Antigen test | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage fungal diseases | * 1. Introduction to fungal diseases.   2. Manage fungal diseases   3. Fungal diseases identification      1. Candidiasis      2. Aspergillosis      3. Dermatophylosis      4. Taeniosis   4. Fungal diseases diagnosis      1. Epidemiology      2. Aetiology      3. Clinical signs      4. Diagnosis      5. Pathogenesis      6. Treatment      7. Prevention and Control.   5. Carry out fungal diagnosis, treatment and control      1. Microscopy      2. Fungal culture tests      3. Copper sulphate. | * 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 |
|  | Drenching gun |  | 5 | 1:5 |
|  | Syringes and needle |  | 25 | 1:1 |
|  | Scalpel blades |  | 25 | 1:1 |
|  | Microscope |  | 5 | 1:5 |
|  | Crush |  | 1 | 1:25 |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |
|  | Weigh band |  | 5 | 1:5 |
|  | Cool box |  | 5 | 1:5 |

## **FARM STRUCTURES AND MECHANIZATION**

**ISCED UNIT CODE:** 0811 541 10A/0716 541 10A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 50Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist in order to apply knowledge of farm structures and mechanization. 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 | **20** |
|  | Apply knowledge of farm mechanization | **10** |
| **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      1. Timber      2. Stone      3. Metal      4. Iron sheets      5. Sand      6. Ballast      7. Cement      8. Nails   3. Livestock structures      1. Zero grazing unit      2. Piggery      3. Rabbitry      4. Poultry unit   4. Livestock restraining structures      1. Crush      2. Squeeze chute      3. Dips and spray races      4. Silo      5. Store      6. Fence | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies * Practical |
| 1. Apply knowledge on farm power | * 1. Farm power      1. Electricity      2. Wind      3. Biogas      4. Fossil fuels      5. Solar   2. Farm power selection      1. Tractor      2. Animal power operation      3. Solar power      4. Human power | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies * Practical |
| 1. Apply knowledge of farm mechanization | * 1. Farm mechanization   2. Challenges of farm mechanization   3. Farm machinery and equipment      1. Chaff cutter      2. Hay Bailing machine      3. Knapsack sprayer | * Written tests * Third party report * Projects * Interviews/ Oral questions * Case Studies * Practical |

**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)** |
|  | **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. | Workshop |  | 1 | 1:25 |
| 6. | Animal farm | As per KVB guidelines. | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |
| **9.** | Hay baler machine |  | 1 | 1:25 |
| 10. | Knapsack sprayer |  | 5 | 1:5 |
| 11. | Chaff cutter |  | 1 | 1:25 |
| 12. | Tractor |  | 1 | 1:25 |

## **RUMINANT LIVESTOCK PRODUCTION**

**ISCED UNIT CODE:** 0811 541 17A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 60Hours

**Unit Description**

This unit specifies the competencies required by animal health and production technologist in order to apply knowledge of livestock production systems in 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 system | **25** |
|  | Carry out routine ruminant practices | **25** |
|  | Determine economic implications of keeping ruminant livestock | **10** |
| **Total** | | **60** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Manage ruminant production systems | * 1. Ruminant animals      1. Cow      2. Sheep      3. Goat   2. Ruminant production systems      1. Intensive      2. Extensive      3. Semi intensive   3. Ruminant structures management      1. Calf pen      2. Milking shed      3. Crush      4. Plunge dip      5. Spray race      6. Zero grazing unit   4. Maintenance practices-cleaning, repair | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out routine ruminant practices | * 1. Feeding ruminant animals   2. Types of feeds.   3. Feeding procedure   4. Quantity of feeds   5. Feed Quality   6. Feeding schedule   7. Ruminant health management      1. Proper Nutrition      2. Vaccination      3. Housing      4. Biosecurity   8. Ruminant records documentation      1. Breeding records      2. Feeding records      3. Health records      4. Production records | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Determine economic implications of keeping ruminant livestock | * 1. Economic implications of ruminant keeping   2. Ruminant production constraints   3. Roles of ruminants in Kenya’s economy | * 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 |

## **NON-RUMINANT LIVESTOCK PRODUCTION**

**ISCED UNIT CODE:** 0811 541 18A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 60Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist in order to apply knowledge of livestock production systems in non-ruminants. It involves identifying various non-ruminants, identifying various 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 | **25** |
|  | Carry out routine non-ruminant practices | **25** |
|  | Determine economic implications of keeping non-ruminant livestock | **10** |
| **Total** | | **60** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Manage non-ruminant production systems | * 1. Non-Ruminant animals      1. Poultry      2. Pigs      3. Donkeys      4. Cats      5. Dogs   2. Production systems in poultry      1. Intensive      2. Extensive      3. Semi intensive   3. Non-Ruminant structures management      1. Piggery      2. Rabbitry      3. Poultry house   4. Maintenance practices-cleaning, repair | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. 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 | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Determine economic implications of keeping non-ruminant livestock | * 1. Economic implications of non-ruminant keeping   2. Non-Ruminant production constraints   3. Economic roles of non-ruminants in Kenya’s economy | * 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 |

## **BASIC EPIDEMIOLOGY**

**ISCED UNIT CODE:** 0912 541 14A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 50Hours

**Unit Description**

This unit specifies the competencies required by animal health and production technologists 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 | **10** |
|  | Apply knowledge of disease occurrence | **10** |
|  | Carry out disease surveillance | **10** |
|  | Develop and apply disease prevention programme | **20** |
| **Total** | | **50** |

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

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

|  |  |  |
| --- | --- | --- |
| 1. Apply principles of epidemiology | * 1. Principles of Epidemiology   2. The distribution and determinants of health-related events in a specific population   3. The scope of epidemiology   4. Importance of epidemiology   5. Descriptive, analytic and clinical epidemiology   6. Measures of association | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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. Disease patterns and factors influencing disease patterns | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out disease surveillance | * 1. Study designs      1. Incidence studies      2. Incidence cases      3. Prevalence studies      4. Prevalence cases   2. Disease monitoring and surveillance   3. Sources of surveillance data   4. Department of veterinary services in the Ministry of Livestock Development      1. Veterinary Laboratories      2. Private veterinary practitioners      3. Non-governmental organizations      4. Livestock research organizations such as the International Livestock Research Institute (ILRI)   5. Disease surveillance data | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Develop and apply disease prevention programme | * 1. Disease prevention programs      1. Vaccinations      2. Quarantine      3. Vector control      4. Adequate nutrition      5. Good husbandry management practices   2. Surveillance and reporting   3. Adequate nutrition   4. Good husbandry management practices   5. Notifiable diseases      1. Rabies      2. Anthrax      3. Rift valley fever      4. Rinderpest      5. Newsastle disease   6. Notifiable diseases reporting | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**Suggested Methods of delivery**

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

**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. | Laboratory | As guided by KVB | 1 | 1:25 |
| 6. | Animal farm | As guided by KVB | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |

# 

# **MODULE IV**

## **DIGITAL LITERACY**

**UNIT CODE:** 0611 451 01A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply digital literacy

**Duration of Unit:** 40 Hours

**Unit Description**

This unit covers the competencies required to demonstrate digital literacy. It involves operating computer devices, solving tasks using the Office 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 Technique   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) | * Practical * Project * Written tests * 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 document      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 presentation       8. Switch between open presentations   21. Developing a presentation       1. Presentation views          1. Slides          2. Master slide       2. Text       3. Editing text       4. Formatting       5. Tables   22. Chart       1. Using charts       2. Organization charts   23. Graphical objects       1. Insert       2. manipulate       3. Drawings   24. Prepare outputs       1. Applying slide effects and transitions       2. Check and deliver       3. Spell check a presentation       4. Slide orientation       5. Slide shows, navigation   25. Print presentations (slides and handouts) | * Practical * Project * Written tests * 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 concept      2. Security and safety   6. Web browsing      1. Using the web browser      2. Tools and setting      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 | * Practical * Project * Written tests * 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   4/5 Online collaboration tools  4,5.1 Online Storage (Google Drive)   * + 1. Online productivity applications (Google Docs & Forms)     2. Online meetings (Google Meet/Zoom)     3. Online learning environments     4. Online calendars (Google Calendars)     5. Social networks (Facebook/Twitter - Settings & Privacy)   1. Preparation for online collaboration      1. Common setup features      2. Setup   2. Mobile collaboration      1. Key concepts      2. Using mobile devices      3. Applications      4. Synchronization | * Practical * Project * Written tests * 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      7. [Phishing Attacks](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/#phishing-attacks)      8. [Ransomware](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/#ransomware)   3. Computer threats and crimes   4. Cybersecurity control measures      1. Physical Controls      2. Technical/Logical Controls (Passwords, PINs, Biometrics)      3. Operational Controls   5. 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 | * Practical * Project * Written tests * 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. | * Practical * Project * Written tests * 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   7. Generally knowledgeable in current affairs and technical area | * Practical * Project * Written tests * Third party report * Portfolio of evidence * Oral questions |

**Suggested Methods Instruction**

* Practical
* Demonstrations
* Project
* Group discussion
* Direct instruction

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** |  |  |  |
|  | Textbooks |  | 5 pcs | 1:5 |
|  | Production Manuals |  | 5 | 1;5 |
|  | PowerPoint presentations | For trainer’s use |  |  |
|  | Projector |  | 1 | 1;25 |
|  | Assorted Flash Cards |  | 5 | 1;5 |
|  | Whiteboard |  | 1 | 1;25 |
|  | Rolls flip charts |  | 1 | 1;25 |
|  | Assorted color of whiteboard markers | For trainers Use |  |  |
| **B** | **Learning Facilities & infrastructure** |  |  |  |
|  | Lecture/theory room |  | 1 | 1:25 |
|  | Computer Laboratory |  | 1 | 1:25 |
| **C** | **Consumable materials** |  |  |  |
|  | Assorted whiteboard markers |  | 25 | 1:1 |
|  | Internet connection |  | 200 mbps | - |
|  | Antivirus Software |  |  | - |
|  | Printing Papers |  | Enough | - |
|  | External storage media |  | 1 tb | - |
| **D** | **Tools and Equipment** |  |  |  |
|  | Printers |  | 2 pcs | 2:25 |
|  | Computers | With Windows /Linux/Macintosh Operating System, Microsoft Office Software, Google Workspace Account, Antivirus Software | 25pcs | 1:1 |

## **VERTINARY PHARMACOLOGY AND TOXICOLOGY**

**ISCED UNIT CODE:** 0512 551 37A

**Relationship to Occupational Standards**

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

**UNIT DURATION**: 90 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 | **30** |
|  | Administer veterinary drugs | **20** |
|  | Manage drug toxicities | **20** |
|  | Manage toxins in animals | **20** |
| **Total** | | **90** |

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

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

|  |  |  |
| --- | --- | --- |
| 1. Dispense veterinary drugs | * 1. Introduction to pharmacology   2. Define terms      1. Pharmacology      2. Toxicology      3. Pharmacokinetics      4. Pharmacodynamics      5. Lethal dose 50      6. Bioavailability      7. Potency   3. Dispense veterinary drugs      1. Dosage and dosage rates      2. Prescription writing      3. Withdrawal periods.   4. Personal protective equipment for dispensing veterinary drugs      1. Gloves      2. Overall      3. Dust coats      4. Gumboots      5. Face masks   5. Veterinary drugs      1. Anesthetics      2. Anti-inflammatory      3. Antibiotics      4. Anthelmintic      5. Antifungal      6. Antihistamines      7. Antidiuretic | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Administer veterinary drugs | * 1. Veterinary drugs administration   2. Tools, materials and equipment      1. Writing materials      2. Antibiotics      3. Syringe and Needle      4. Swab | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage drug toxicities | * 1. Introduction to drug toxicities   2. Causes of drug toxicities   3. Diagnosis of drug toxicities   4. Management of drug toxicities   5. Prevention and control of drug toxicities | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage toxins in animals | * 1. Introduction to toxins   2. Types of toxins      1. Paints      2. Poisonous plants      3. Pesticides      4. Aflatoxin      5. Batteries      6. Poisonous animals      7. Prevention and control of toxins | * 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 |
|  | Drenching gun |  | 5 | 1:5 |
|  | Syringes and needle |  | 25 | 1:1 |
|  | Scalpel blades |  | 25 | 1:1 |
|  | Diagnostic kit |  | 5 | 1:5 |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |

## **METABOLIC, NUTRITIONAL AND REPRODUCTIVE DISEASES AND DISORDERS**

**ISCED UNIT CODE**: 0841 551 36A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage metabolic, nutritional and reproductive diseases and disorders.

Unit Duration: 80 hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to manage metabolic, nutritional and reproductive diseases and disorders. It involves identifying, diagnosing, controlling and treating metabolic, nutritional and reproductive diseases.

**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 | **30** |
|  | Manage nutritional disorders | **30** |
|  | Manage reproductive diseases and disorders | **20** |
| **Total** | | **80** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Manage metabolic diseases | * 1. Introduction to metabolic diseases.   2. PPEs for metabolic disease management.      1. Glove      2. Overall      3. Dust coat      4. Gum boots      5. Face masks   3. Tools, equipment and materials      1. Thermometer      2. Stethoscope      3. Microscope      4. Syringes & Needles      5. Drenching gun      6. Scalpel blades   4. Manage metabolic diseases      1. Epidermiology      2. Aetiology      3. Clinical signs      4. Diagnosis      5. Treatment      6. Prevention and control      7. Economic impact   5. Animals to manage metabolic diseases      1. Cattle      2. Sheep      3. Goats      4. Poultry      5. Pigs   6. Metabolic disease      1. Milk fever      2. Ketosis      3. Grass tetany      4. Grain overload      5. Bloat      6. Hardware diseases (TRP)   7. Treatment and management of metabolic diseases      1. Laxatives      2. Purgatives | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage nutritional disorders | * 1. Introduction to nutritional disorders.   2. Nutritional disorders   3. Nutritional diseases      1. Vitamin E/ Selenium deficiency      2. Obesity      3. Polio encephalomalacia      4. Diagnosis of nutritional disorders      5. Causes      6. Clinical signs      7. Diagnosis      8. Treatment      9. Prevention      10. Control      11. Economic impact | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage reproductive diseases and disorders | * 1. Reproductive diseases and disorders   2. Diagnosis of reproductive diseases.      1. Causes      2. Diagnosis      3. Treatment      4. Prevention      5. Control      6. Economic impact   3. Reproductive diseases      1. Trichomoniasis      2. Brucellosis      3. Leptospirosis      4. Hard ware diseases (TRP)   4. Management and treatment of reproductive diseases      1. Antibiotics      2. Anti-inflammatory | * 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 trainee****s**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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 |
|  | Drenching gun |  | 5 | 1:5 |
|  | Syringes and needle |  | 25 | 1:1 |
|  | Scalpel blades |  | 25 | 1:1 |
|  | Microscope |  | 5 | 1:5 |
|  | Crush |  | 1 | 1:25 |
|  | Thermometer |  | 25 | 1:1 |
|  | Stethoscope |  | 25 | 1:1 |

## **CLINICAL PATHOLOGY**

**ISCED UNIT CODE**: 0912 541 29A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of clinical Pathology.

**UNIT DURATION**: 50 Hour

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply knowledge of clinical pathological techniques in animal health. It involves applying knowledge of clinical pathology and principles of hematology, collecting and processing animal blood and urine samples and applying knowledge of clinical chemistry.

**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 clinical pathology and principles of hematology | **5** |
|  | Collect and process animal blood sample | **15** |
|  | Collect and process animal urine sample | **15** |
|  | Apply knowledge of clinical chemistry | **15** |
| **Total** | | **50** |

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

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

|  |  |  |
| --- | --- | --- |
| 1. Apply knowledge of clinical pathology and principles of hematology | * 1. Introduction to clinical pathology   2. Principles of hematology   3. Clinical pathology procedure      1. Hematology      2. Urinalysis      3. Kidney function test      4. Liver function test   4. Erythrocyte structures and their inclusions   5. Erythrocyte destruction processes   6. Leukocyte structures | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Collect and process animal blood sample | * 1. Introduction to animal blood samples collection and processing   2. Venipuncture sites      1. Jugular vein      2. Femoral vein      3. Coccygeal vein      4. Ear vein      5. Milk vein   3. Blood sample collection   4. Blood sample handling   5. Blood sample processing | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Collect and process animal urine sample | * 1. Collection and processing of animal urine samples   2. Methods of urine sample collection      1. Voided urine collection      2. Cystocentesis      3. Cauterization      4. Bladder expression   3. Collection from environmental surfaces      1. Use of specialized equipment      2. Natural walking technique      3. Urine sample collection      4. Urine sample handling      5. Urine sample processing | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of clinical chemistry | * 1. Introduction to clinical chemistry   2. Liver and kidney functions   3. Liver and kidney function tests      1. Serum creatinine      2. Blood urine nitrogen      3. Glomerular filtration rate      4. Urinalysis      5. Urine protein levels      6. Urine creatinine clearance      7. Electrolyte panel      8. Imaging tests      9. Kidney biopsy      10. Cerebrospinal fluid      11. Acid base balance | * 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 |

## **ANIMAL HEALTH SKILLS**

**ISCED UNIT CODE:** 0841 551 40A

**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 technologists 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** | **Method of assessment** |
| 1. Carry out animal identification | * 1. Introduction to animal identification   2. PPEs for animal identification.      1. Disposable gloves      2. Overall      3. Gumboot   3. Tools and equipment      1. Ear tag applicators      2. Ear tags      3. Ear notcher      4. Tattooing machine   4. Identification methods      1. Ear tags      2. Ear notch      3. Branding      4. Microchip      5. Tattooing | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out dehorning | * 1. Introduction to dehorning   2. Definition of terms      1. Dehorning      2. Disbudding   3. Tools and equipment for dehorning and disbudding   4. Dehorning procedure   5. Reasons for dehorning and disbudding | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out hoof trimming | * 1. Introduction to hoof trimming   2. Tools and equipment for hoof trimming   3. Hoof trimming procedure   4. Reasons for hoof trimming | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out tail docking | * 1. Introduction to tail docking   2. Tools and equipment for tail docking      1. Scalpel      2. Burdizzo   3. Elastrator and rubber ring.   4. Tail docking procedure   5. Reasons or tail docking | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Perform poultry debeaking | * 1. Poultry debeaking introduction   2. Procedure Carry out poultry debeaking.   3. Reasons for debeaking | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Perform teeth clipping | * 1. Introduction teeth clipping   2. Carry out teeth clipping   3. Reasons for teeth clipping | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Conduct animal grooming | * 1. Animal grooming introduction   2. Carry out animal grooming   3. 7.3 Reasons for grooming | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Perform animal castration | * 1. Introduction to castration   2. Animal castration   3. Carry out animal castration | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out wool shearing | * 1. Introduction to wool shearing.   2. Animal wool shearing   3. Carry out wool shearing | * 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 |
|  | Demonstration farm |  | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |
|  | Ear tags |  | 25 | 1:1 |
|  | Ear notcher |  | 5 | 1:5 |
|  | Branding rod |  | 5 | 1:5 |
|  | Micro chip |  | 5 | 1:5 |
|  | Ear tag applicators |  | 5 | 1:5 |
|  | Tooth clipper |  | 5 | 1:5 |
|  | Wool shearer |  | 5 | 1:5 |
|  | Debeaker |  | 5 | 1:5 |
|  | Rasp |  | 5 | 1:5 |
|  | Hoof trimmer |  | 5 | 1:5 |
|  | Disbudding iron |  | 5 | 1:5 |
|  | Dehorning wire |  | 5 | 1:5 |

## **LIVESTOCK ROUTINE PRACTICES**

**ISCED UNIT CODE:** 0841 551 41A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 110 hours

**Unit Description:**

This unit specifies the competencies required by animal health and production technologist 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 | **40** |
|  | Carry out animal milking | **40** |
|  | Maintain farm hygiene | **30** |
| **Total** | | **110** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Carry out animal feeding | * 1. Introduction to animal feeding.   2. Identification of animals to be fed.   3. PPEs for animal feeding      1. Apron      2. Overall      3. Gloves      4. Gumboots      5. Face mask   4. Tools and equipment      1. Disinfectants      2. Cleaning brushes      3. Cleaning towel   5. Animal feeding      1. Steaming up      2. Flushing      3. Challenge feeding   1.6 animal housing | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out animal milking | * 1. Introduction to animal milking.   2. Identification of animals to be milked.      1. Animal milking      2. Milking methods      3. Milking machine      4. Hand milking   3. Milking tools and equipment      1. Milking buckets      2. Milking salve      3. Teat dips      4. CMT kit   4. Pre-milking activities   5. Mastitis testing   6. Post milking activities | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Maintain farm hygiene | * 1. Introduction to farm hygiene.   2. Farm structure and equipment      1. Milking parlor      2. Calf pen      3. Milking machine      4. Milk churns      5. Buckets      6. Strip cup   3. Cleaning and Disinfection of veterinary equipment   4. Storage of disinfectants and other chemicals | * 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 |
|  | Demonstration farm |  | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |
|  | Teat dips-5 |  | 25 | 1:1 |
|  | CMT KIT-5 |  | 5 | 1:5 |
|  | Cleaning brushes-5 |  | 5 | 1:5 |
|  | Cleaning towel |  | 5 | 1:5 |
|  | Milking parlor |  | 1 | 1:25 |
|  | Calf pen |  | 1 | 1:25 |
|  | Milk churns |  | 5 | 1:5 |
|  | Strip cup-5 |  | 5 | 1:5 |
|  | Teat dips-5 |  | 5 | 1:5 |
|  | CMT KIT-5 |  | 5 | 1:5 |

# 

# **MODULE V**

## **MARKETING AND VALUE ADDITION OF ANIMAL PRODUCTS**

**ISCED UNIT CODE:** 0721 541 25A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 50Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 determine 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 | **10** |
|  | Analyze agricultural marketing information systems | **10** |
|  | Identify principles of value addition of animal products | **10** |
|  | Maintain farm inventory | **10** |
|  | Determine cost estimation and tendering | **10** |
| **Total** | | **50** |

**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. Introduction to value addition of animal products   2. Marketing structures   3. Animal products      1. Milk      2. Meat      3. Wool      4. Hide      5. Skin   4. Value addition of animal products | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

|  |  |  |
| --- | --- | --- |
| 1. Analyze agricultural marketing information systems | * 1. Agricultural marketing information systems   2. Group marketing approach   3. Livestock value chains   4. Measures of AMIS   5. Risk in production      1. Market risk      2. Financial risks      3. Human risk   6. Management risk. | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Identify principles of value addition of animal products | * 1. Principles of value addition of animal products   2. Principles of Value addition of animal products.   3. Handling animal products      1. Grading      2. Packaging      3. Processing of animal products | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Maintain farm inventory | * 1. Farm inventory   2. Types of farm inventories      1. Feeds      2. Raw material      3. Work in progress   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 | * 1. Cost estimation and tendering   2. Carried out cost estimation   3. Identification of farm contracts      1. Production contracts      2. Marketing contracts   4. Importance of farm tendering | * Practical * Project * Portfolio of evidence * Written test * Third party report * Oral questioning/ Interviews * Practical |

**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 |

## **AGRIBUSINESS MANAGEMENT**

**ISCED UNIT CODE:** 0811 541 24A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency:Apply knowledge of agribusiness management and entrepreneurial skills.

**UNIT DURATION:** 90 Hour

**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 | **10** |
|  | Apply knowledge of farm planning and budgeting | **15** |
|  | Evaluate farm records and accounting cycle | **20** |
|  | Prepare trial balance, income statement | **20** |
|  | Maintain farm inventory | **15** |
|  | Determine cost estimation and tendering knowledge | **10** |
| **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 |

## **ZOONOSIS AND ONE HEALTH CONCEPT**

**ISCED UNIT CODE**: 0841 541 15A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of zoonoses and one health concept .

**UNIT DURATION**: 60 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist in order to apply knowledge of zoonoses and one health concept. It involves applying knowledge of zoonoses, diagnosing zoonoses in animals, treating and preventing the incidence of zoonoses, controlling the spread of zoonoses and applying knowledge of one 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 | **15** |
|  | Diagnose zoonosis in animals | **15** |
|  | Prevent and treat zoonosis in animals | **15** |
|  | Apply knowledge of one health | **15** |
| **Total** | | **60** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of zoonosis | * 1. Introduction to zoonoses   2. Classification of zoonoses   3. Zoonotic diseases      1. Rabies      2. Anthrax      3. Brucellosis      4. Listeriosis      5. Dermatophytosis      6. Rift valley fever      7. Toxoplasmosis   4. Zoonoses transmission      1. Direct contact      2. Inoculation      3. Aerosol      4. Ingestion   5. Zoonotic risks to humans | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Diagnose zoonosis in animals | * 1. Clinical diagnosis of zoonosis in animals   2. Collection and analysis of zoonosis samples      1. Blood      2. Tissue      3. Serum      4. Milk   3. Post-mortem examination | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Prevent and treat zoonosis in animals | * 1. Intervention of diagnosed zoonotic disease   2. Prevent and treat zoonosis in animals   3. Biosecurity measures to control zoonosis diseases      1. Cleaning and sanitizing      2. Disinfection and sterilization      3. Isolation      4. Quarantine      5. Testing and slaughter   4. Vaccination programs | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of one health | * 1. One health concept   2. Components of One health triad   3. One health principles | * 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. | Laboratory | As guided by KVB | 1 | 1:25 |
| 6. | Animal farm | As guided by KVB | 1 | 1:25 |
| 7. | Surgical kit | Full set | 5 | 1:5 |
| 8. | Library |  | 1 | 1:25 |
| 9. | E-Library |  | 1 | 1:25 |

## **APICULTURE AND AQUACULTURE**

**ISCED UNIT CODE:** 0831 541 33A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 60 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 | 5 |
|  | Monitor and manage swarming | 5 |
|  | Rear queen bee | 5 |
|  | Perform apiary maintenance | 5 |
|  | Conduct bee feeding | 5 |
|  | Prepare and maintain bee record | 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** | | **60** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Select and establish Apiary site | * 1. Apiary site selection   2. PPE’s for apiary management      1. Gloves      2. Gumboots      3. Apron      4. Bee suit.      5. Gloves      6. Apiary set up   3. Types of hive      1. Log hive      2. KTBH      3. Lagstroth hive   4. Bee species      1. *Apis mellifera yemenitica*      2. *Apis mellifera scutellate*      3. *Apis mellifera littorea*      4. *Apis mellifera monticolla*      5. Hybrid species (of A.m. littorea and monticolla) | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Prepare hive equipment | * 1. Bee colony management   2. Hive management tools      1. Hammer      2. Pliers      3. Cutting tools      4. Uncapping knife      5. Comb cutter   3. Hive equipment      1. Bee brush      2. Catcher box      3. Bee propolis trap collector      4. Honey warmer      5. Clearer board      6. Double sieve      7. Refractometer      8. Uncapping tray      9. Wax melter      10. Dip tank/ vat      11. Roller/ mold      12. Hives (log, top bar, box, pot, Langstroth   4. Hive equipment preparation | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Monitor and manage swarming | * 1. Colony management   2. Swarm prevention   3. Swarm capturing | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Rear queen bee | * 1. Rearing of queen   2. Parent colony selection   3. Methods of queen rearing   4. Queen rearing equipment   5. Queen rearing program   6. Queen transportation | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Perform apiary maintenance | * 1. Apiary maintenance      1. During the dearth period      2. During pre-season      3. During main season      4. During post season   2. Disease management      1. Bee paralysis virus      2. Sacbrood virus      3. Deformed wing virus      4. Slow bee paralysis virus      5. Tobacco ringspot virus      6. Colony collapse disorder      7. Stonebrood      8. Chalk brood      9. Nosema   3. Pest management      1. Small hive beetles SHB      2. tracheal mite      3. wax moths      4. Mice      5. Toad/Fogs      6. Spider      7. Ants      8. Humans      9. Varroa mites      10. Lizard      11. Birds      12. Honey badger      13. Wax moth      14. Pirate wasp      15. Bee louse | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Conduct bee feeding | * 1. Bee feeding   2. Feed ration preparation   3. Feeding method selection | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out harvesting, grading, processing, packaging and marketing | * 1. Hive products harvesting      1. Honey harvesting      2. Propolis harvesting      3. Bee wax harvesting      4. Bee venom   2. Bee products post-harvest      1. Processing      2. Packaging      3. Marketing | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Prepare and maintain bee record | * 1. Bee records   2. Inventory of apiary and equipment   3. Work schedule preparation | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Select and establish fish pond | * 1. Fish management tools      1. Digging tools      2. Levelling tool      3. Desilting tool      4. Net and traps      5. Screens on water control      6. Harvesting bag net      7. Analysis kit   2. Fish management equipment      1. Pond liner      2. Pond filter      3. Pond plant      4. Pond pump and fish elevator      5. Fish grader   3. Fish pond site selection      1. Pond size   4. Equipment selection      1. Pond set up   5. Fish species selection      1. Nile perch      2. Common carp      3. Nile tilapia      4. Black bass      5. Omena   6. Stocking rate   7. Water quality      1. Water temperature      2. Oxygen      3. P.H.   8. Fingerlings sourcing and transportation | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Monitor and manage fish health | * 1. Fish feeding   2. Reproduction behavior of fish   3. Diseases and parasites management      1. Viral esocid      2. Lymphosarcoma      3. Lymph virus      4. Common mouth rot, tail rot      5. Colunaris      6. Swim bladder infection      7. Environmental dropsy   4. Drugs used in fish management      1. Oxytetracycline      2. Ciprofloxacin      3. Enrofloxacin      4. Erythromycin      5. Sulphadiazine      6. Trimethoprim | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Conduct fish feeding | * 1. Feeding method   2. Feed ration preparation   3. Fish feeding | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Rear fingerlings | * 1. Introduction to fingerlings   2. Method of rearing fingerlings   3. Fish species selection   4. Fresh water species      1. Nile perch      2. Common carp      3. Nile tilapia      4. Black bass      5. Omena   5. Fingerlings transportation   6. Feeding regime of fingerlings   7. Fingerlings harvesting and processing   8. Environmental protection regulations      1. Public health Act      2. EMCA 1999      3. OSH Act | * 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 |
|  | Apiary | With different types of bee hives | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |
|  | Bee venom collector |  | 1 | 1:25 |
|  | Honey extractor |  | 1 | 1:25 |
|  | Bee suit |  | 5 | 1:5 |
|  | Propolis trap collector |  | 5 | 1:5 |
|  | Hive tool |  | 5 | 1:5 |
|  | Smoker |  | 5 | 1:5 |
|  | Bee brush |  | 5 | 1:5 |
|  | Digging tool |  | 5 | 1:5 |
|  | Leveling tool |  | 5 | 1:5 |
|  | Desilting tool |  | 5 | 1:5 |
|  | Nets and traps |  | 5 | 1:5 |
|  | Screens on water control |  | 5 | 1:5 |
|  | Harvesting bag nets |  | 5 | 1:5 |
|  | Analysis kit |  | 1 | 1:25 |
|  | Pond liner |  | 5 | 1:5 |
|  | Pond filter |  | 5 | 1:5 |
|  | Pond plant |  | 5 | 1:5 |
|  | Pond pump and fish elevator |  | 1 | 1:25 |
|  | Fish grader |  | 1 | 1:25 |

## **SCIENTIFIC RESEARCH**

**ISCED UNIT CODE:** 0111 541 19A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Conduct scientific research.

**Unit Duration:** 150 hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to conduct scientific research**.** It involves preparing scientific research proposals, applying scientific research and analyzing scientific research.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Prepare scientific research proposal | **50** |
|  | Apply scientific research methods | **50** |
|  | Analyze scientific research finding | **50** |
| **Total** | | **150** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Prepare scientific research proposal | * 1. Introduction to scientific research proposal   2. Scientific research problem   3. Research objectives   4. Research questions/ hypothesis   1.5. Types of hypothesis  1.6. Hypothesis formulation  1.7. Scientific research proposal  1.8. Components of research proposals  1.9. Format of research proposal  1.10. Approval of research proposal | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply scientific research methods | * 1. Scientific research methods   2. Scientific study design      1. Qualitative designs      2. Quantitative designs   3. Sample size   4. Sampling techniques      1. Probability      2. Non probability   5. Ethical consideration   6. Research materials   7. Data collection | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Analyze scientific research finding | * 1. Data analysis techniques   2. ANOVA   3. Measures of central tendency   4. Measures of dispersal   5. Components of a research report   6. Formats of research report   7. Dissemination methods   8. Result finding   9. Publishing | * 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 |

## **HIV/AIDS**

**ISCED UNIT CODE:** 0913 541 21A

**Relationship to Occupational Standards**

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

**Unit Duration:** 50 hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply knowledge on 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 | 10 |
|  | Apply knowledge of human sexuality | 15 |
|  | Apply knowledge of common STIs | 10 |
|  | Apply knowledge of prevention, control and management of HIV & AIDS and STIs | 15 |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Apply concepts of HIV& AIDS | * 1. Concepts of HIV& AIDS   2. Socio Economic impact of HIV AIDS   3. HIV/AIDS epidemiology   4. HIV & AIDS infection phases | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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 * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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 * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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. HIV/AIDS and STIs testing   3. HIV & AIDS sensitization | * 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. | Library |  | 1 | 1:25 |
| 6 | E-Library |  | 1 | 1:25 |

## **COMPANION AND DRAUGHT ANIMALS**

**ISCED UNIT CODE:** 0811 541 20A

**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 technologist 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 Outcome** | **Content** | **Methods of assessment** |
| 1. Manage companion and draught animals | * 1. Introduction to companion and draught animals   2. Companion animals      1. Dogs      2. Cats      3. Horses   3. Draught animals      1. Donkeys      2. Water Buffalo      3. Camels   4. Socio-economic effect of companion animals   5. Socio-economic effect of draught animal | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage housing & feeding of companion and draught animals | * 1. Housing & feeding of companion and draught animals   2. Draught animal housing   3. Draught animals feeding   4. Companion animal housing   5. Companion animal feeding | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of camel production | * 1. Introduction to camel production   2. Camel geographical distribution   3. Camel handling   4. Camel management | * 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 |

# 

# **MODULE VI**

## **HERD HEALTH MANAGEMENT**

**ISCED UNIT CODE:** 0841 551 42A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Conduct herd health management.

**UNIT DURATION:** 50 Hours

**Unit Description**

This unit specifies the competencies required by animal health and production technologists to conduct herd health management. It involves managing reproductive performance, carrying out disease surveillance and carrying out veterinary first aid.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage reproductive performance | **15** |
|  | Carry out disease surveillance | **15** |
|  | Carry out veterinary first Aid | **20** |
| **Total** | | **50** |

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

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

|  |  |  |
| --- | --- | --- |
| 1. Manage reproductive performance | * 1. Introduction to reproductive performance.   2. Reproductive performance      1. Reproductive index      2. Artificial insemination      3. Synchronization protocols      4. Embryo transfer   3. Nutritional management   4. PPEs for managing reproductive performance      1. PPEs categories      2. PPEs requirement      3. Uses and care   5. Classification of livestock according to reproductive parameters | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Carry out disease surveillance | * 1. Introduction to disease surveillance.   2. Disease surveillance   3. Biosecurity measures      1. Quarantine      2. Isolation      3. Test and slaughter      4. Disinfection      5. Incineration | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioni |
| 1. Carry out veterinary first Aid | * 1. Carry out veterinary first Aid   2. Livestock emergency condition      1. Choke      2. Bloat      3. Hemorrhage      4. Shock      5. Dystocia      6. Fracture      7. Burns      8. Poisoning      9. Wounds   3. Causes of emergency conditions   4. Management of emergency conditions | * 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 |
|  | Demonstration farm |  | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |
|  | Artificial insemination kit |  | 5 | 1:1 |
|  | Incinerator |  | 1 | 1:25 |
|  | Thermometer |  | 5 | 1:5 |
|  | Stethoscope |  | 5 | 1:5 |
|  | Vaginal speculum |  | 1 | 1:25 |
|  | Burdizzo |  | 1 | 1:25 |

## **VETERINARY PUBLIC HEALTH**

**ISCED UNIT CODE**: 0841 541 28A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Apply knowledge of veterinary public health.

**UNIT DURATION**: 60 Hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist to apply knowledge of veterinary public health. It involves applying principles of public health, knowledge of environmental health and safety in ensuring food safety and conducting food hygiene and quality inspection.

**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 veterinary public health | **25** |
|  | Apply knowledge of environmental health and safety | **15** |
|  | Conduct food hygiene and quality inspection | **20** |
| **Total** | | **60** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply principles of veterinary public health | * 1. Principles of veterinary public health      1. Clean      2. Separate      3. Cook      4. Chill   2. Concept of veterinary public health      1. Milk hygiene      2. Meat hygiene      3. Water hygiene   3. Principles of food hygiene   4. Principles of water hygiene | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of environmental health and safety | * 1. Introduction to environmental health and safety   2. Water quality parameters      1. Temperature      2. pH      3. Turbidity   3. Biochemical oxygen demand (BOD)   4. Chemical oxygen demand (COD)   5. Salinity   6. Personal hygiene when handling food | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Conduct food hygiene and quality inspection | * 1. Introduction to food hygiene and quality inspection   2. Food borne illnesses      1. Salmonellosis      2. Giardiasis      3. Shigellosis      4. Cholera   3. Milk inspection   4. Meat inspection   5. Drug residues | * 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 |

## **RANGELANDS MANAGEMENT**

**ISCED UNIT CODE:** 0522 541 27A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage rangelands.

**UNIT DURATION:** 50Hours

**Unit Description**

This unit describes competencies required by animal health and production technologist to manage rangelands. It involves managing rangeland resources, applying knowledge of biotic and abiotic environmental factors, determining use of livestock as a management tool for range land and managing rangeland complexity.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Manage range land resources | **15** |
|  | Apply knowledge of biotic and abiotic environmental factors | **10** |
|  | Determine use of livestock as a management tool for range land | **15** |
|  | Manage rangeland complexity | **10** |
| **Total** | | **50** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Manage range land resources | * 1. Basic principles of rangeland management   2. Rangeland resources      1. Grasslands      2. Shrub lands      3. Woodlands      4. Wetlands      5. Savannas      6. Chaparrals      7. Steppes      8. Tundra      9. Forest canop      10. Semi-arid lands      11. Arid lands.   3. Rangeland resources distribution   4. Soil types   5. Vegetation types | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Apply knowledge of biotic and abiotic environmental factors | * 1. Biotic and abiotic environmental factors   2. Biotic and abiotic interaction   3. Control measures of invasive spp. in rangelands | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Determine use of livestock as a management tool for range land | * 1. Grazing management systems      1. Paddocking      2. Rotational grazing   2. Definition of terms      1. Stocking density      2. Land degradation      3. Range land resilience      4. Conflicts in land use   3. Geographical Information System      1. Microchip in Ear Tag      2. Digitalized collar | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Manage range land complexity | * 1. Water availability, quality and conservation   2. Endangered species   3. Rangeland inventory   4. Rangeland health | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |

**Suggested Methods of delivery**

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

**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 |

## **ANIMAL HEALTH EXTENSION SERVICES**

**ISCED UNIT CODE:** 0114 551 39A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 90 hours

**Unit Description**

This unit specifies the competencies required by an animal health and production technologist 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 | **30** |
|  | Conduct extension services | **30** |
|  | Evaluate extension services | **30** |
| **Total** | | **90** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Methods of assessment** |
| 1. Organize extension services | * 1. Introduction to extension services.   2. Extension services      1. Field day      2. Farm visit      3. Livestock exhibit shows      4. Field demonstrations      5. Farmer field schools   3. Resources identification      1. Brochures      2. Posters      3. Drama      4. Videos   4. Extension service program preparation | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 1. Conduct extension services | * 1. Conducting extension services   2. Rules of engagement   3. Dissemination of technologies      1. Advisory services      2. Agricultural extension      3. Extension.      4. Extension approaches   4. Audience engagement | * Practical * Project * Portfolio of evidence * Third party report * Written assessment * Oral questioning |
| 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 * 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 |
|  | Demonstration farm |  | 1 | 1:25 |
|  | Library |  | 1 | 1:25 |
|  | E-Library |  | 1 | 1:25 |
|  | Posters |  | 5 | 1:5 |
|  | Pamphlets |  | 25 | 1:1 |
|  | Note book |  | 25 | 1:1 |
|  | Flip charts |  | 5 | 1:5 |

## **RURAL SOCIOLOGY**

**ISCED UNIT CODE:** 0314 541 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 applying knowledge of 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 | **20** |
|  | Apply knowledge of rural communities and social system | **15** |
|  | Apply knowledge of gender relation and social construction | **15** |
|  | Apply knowledge of culture and agricultural extension | **15** |
|  | Apply knowledge of culture and agricultural extension | **15** |
| **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 |

## **ANIMAL WELFARE, ETHICS AND LAW**

**ISCED UNIT CODE:** 0929 541 13A

**Relationship to Occupational Standards**

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

**UNIT DURATION:** 90 Hours

**Unit Description**

This unit specifies the competencies required by animal health and production technologist in order to promote animal welfare and adhere to 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 | **30** |
|  | Apply veterinary ethics | **30** |
|  | Applying livestock development policies | **30** |
| **Total** | | **90** |

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Content** | **Suggested Assessment Methods** |
| 1. Apply knowledge of animal welfare | * 1. Introduction to 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. Humane animal handling      1. Transport      2. Slaughter      3. Sports   4. Draught animals handling      1. Horses      2. Donkeys      3. Mules      4. Camels      5. Llamas | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |

|  |  |  |
| --- | --- | --- |
| 1. Apply veterinary ethics | * 1. Veterinary ethics   2. Veterinary extension services      1. Field days      2. Farm visits      3. Livestock exhibit shows      4. Field demonstrations      5. Farmer field schools   3. Kenya's Vision 2030 | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |
| 1. Applying livestock development policies | * 1. Livestock policies   2. Kenya veterinary policy   3. National livestock policy   4. Animal welfare policies   5. Animal health and production legislation   6. Institutions mandated with livestock policy development | * Written tests * Practical * Project * Portfolio of evidence * Third party report * Oral questioning |

**Suggested Methods of delivery**

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

**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. | Laboratory | As guided by KVB | 1 | 1:25 |
| 6. | Animal farm | As guided by KVB | 1 | 1:25 |
| 7. | Library |  | 1 | 1:25 |
| 8. | E-Library |  | 1 | 1:25 |
| 9. | Horses |  | 1 | 1:25 |
| 10. | Donkeys | As guided by KVB |  |  |
| 11. | Mules | As guided by KVB |  |  |
| 12. | Camels | As guided by KVB |  |  |
| 13. | Illamas | As guided by KVB |  |  |