

ANHAP402

ANIMAL PHYSIOLOGY

Describe animal body physiology

Competence

RQF Level:4

Learning Hours



70

Credits: 7

Sector: Agriculture and food processing

Trade: Agriculture

Module Type: General

Curriculum: TVET Certificate IV in Animal health

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Purpose statement	This module describes the skills, knowledge and attitude required to describe animal body physiology. It is intended to the learners pursuing TVET Certificate IV in Animal health. Upon completion of this module the learner will be able to describe animal cell physiology, describe body defense mechanism and describe the physiology of body systems under minimum supervision					
Learning assumed to be in place	N.A					
Delivery modality	Training delivery		100%	Assessment		Total 100%
	Theoretical content		30%	Formative assessment	30%	50%
	Practical work:		70%		70%	
	Group project and presentation	%				
	Individual project /Work	%				
			Summative Assessment		50%	

Elements of Competence and Performance Criteria

Elements of competence	Performance criteria
1. Describe animal cell physiology	1.1. The animal cell is properly described according to types.
	1.2. Cell organelles are properly described based on their functions.
	1.3. Cell membrane function is properly described according to their types.
	1.4. Cell multiplication is appropriately described based on their types.
2. Describe body defense mechanism	2.1. Body defense mechanisms are properly described according to their types.
	2.2. Defensive cells are properly described based on their types.
	2.3. The immune system is properly described according to their components.
3. Describe the physiology of body systems	3.1. Musculoskeletal system physiology is properly described according to their anatomical functions.

	3.2. Circulatory system physiology is properly described according to their types.
	3.3. Respiratory system physiology is properly described based on their types.
	3.4. Digestive system physiology is properly described based on the Gastro-intestinal types.
	3.5. Uro-genital system physiology is properly described based on the species and sex.
	3.6. Nervous system physiology is properly described based on the types.
	3.7. Endocrine system physiology is properly described according to organ function.
	3.8. Integumentary system physiology is properly described based on the species.

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Describe animal cell physiology 2. Describe body defence mechanism 3. Describe the physiology of body systems
Learning outcome 1: Describe animal cell physiology	Learning hours: 20

Indicative content

Description of animal cell

- Description of animal body organization
 - ✓ Cell
 - ✓ Tissue
 - ✓ Organ
 - ✓ System
- Description of types of animal cells
 - ✓ Prokaryotic cells
 - ✓ Typical organisms
 - ✓ Typical size
 - ✓ Type of nucleus
 - ✓ DNA
 - ✓ Ribosomes
 - ✓ Cytoplasmatic structure

- ✓ Cell movement
- ✓ Mitochondria
- ✓ Chloroplasts
- ✓ Organization
- ✓ Cell division
- ✓ Eukaryotic cells
- ✓ Typical organisms
- ✓ Typical size
- ✓ Type of nucleus
- ✓ DNA
- ✓ Ribosomes
- ✓ Cytoplasmatic structure
- ✓ Cell movement
- ✓ Mitochondria
- ✓ Chloroplasts
- ✓ Organization
- ✓ Cell division
- Description of cell organelles
 - ✓ Cell membrane or plasma membrane
 - ✓ Centrosome
 - ✓ The Golgi Apparatus
 - ✓ Lybosome
 - ✓ Mitochondria
 - ✓ Nucleolus(within nucleus)
 - ✓ Endoplasmic reticulum (ER)-
 - ✓ Vacuole
 - ✓ cytoplasm
 - ✓ Lysosomes
 - ✓ Flagellae
 - ✓ Plasma membrane

Description of cell membrane function

- Description protection function
- Description of transport function
 - ✓ Passive transport
 -  Diffusion
 -  Facilitated diffusion
 -  Osmosis
 -  Filtration
 - ✓ Active Transport
 -  Primary Active Transport
 -  Secondary Active Transport
 - ✓ Phagocytosis
 - ✓ Pinocytosis

✓ Description of response to external stimuli function Description of cell multiplication • Description of cell Division ✓ Mitosis ✓ Meiosis	
Resources required for the learning outcome	
Equipment	Computer, scale, fan, aerator, heater, cooler, vaporizer, wheelbarrow Audio-visual equipment, scale
Materials	Livestock data register, different animal species Spade, Flip chart, marker pen, blackboard, chalk, Internet connection, workshop, hoe, Livestock farms, ruminants, swine, poultry, Rabbit
Tools	Body weight tape measure, decameter, Calculator, hygrometer, Thermometer, ammonia detector, gas detector, anemometer, measuring tape, Pitchfork,
Facilitation techniques	• Demonstration, group work, Practical works, Group discussion, Brainstorming
Formative assessment methods	• Written assessment, performance assessment

Learning outcome 2: Describe body defence mechanism	Learning hours: 20
Indicative content	
Description body defense mechanism • Definition of basic terminologies ✓ Immunity ✓ Immune system ✓ Immune response ✓ Allergens ✓ Antibody ✓ Antigen ✓ Autoimmune ✓ Epitope or Antigenic ✓ Determinant • Description of nonspecific immunity ✓ First line of defense mechanism: Intact, unbroken skin, Eyes, Outer ear canal, Mucus membranes, Digestive tract, Genitourinary tract, Respiratory tract, Microbial antagonism ✓ Second line of defense mechanism: phagocytosis (cellular defense), inflammation, Chemotaxis (fever),	

- Description of Specific immunity (Response of immune system)

- ✓ Specialized lymphocytes

- ✓ Antibodies

Description of body defensive cells (leukocytes)

- Description of Phagocytes

- ✓ Granulocytes: Basophils, neutrophils, Eosinophils

- ✓ Agranulocytes: monocytes, macrophages

- Description of Lymphocytes

- ✓ T-cells

- ✓ B-cells

Description of immune system

- Description of components of the Immune system

- ✓ Tonsils and Thymus

- ✓ Lymphatic system

- ✓ Bone marrow

- ✓ Spleen

- ✓ White blood cells

Resources required for the indicative content

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Indicative content

Description of musculoskeletal system physiology

- Description bone physiology
 - ✓ Structure of bone
 - ✓ Types of bone cells
 - ✓ Function of skeletal System
 - ✓ Bone marrow
 - ✓ Bone development
- ✓ Description of muscles physiology
 - ✓ Types of muscles
 - ✚ Skeletal muscles
 - ✚ Smooth muscles
 - ✚ Cardiac muscle
 - ✓ Structure of muscle
 - ✓ Properties of muscles
 - ✚ Excitability
 - ✚ Contractability
 - ✚ Elasticity
 - ✚ Extensibility

Description of digestive system physiology

- ✓ Description of mechanical digestion
 - ✓ In monogastric animals
 - ✓ In avians
 - ✓ In ruminants
- ✓ Description of biological digestion
 - ✓ fermentation
 - ✓ Synthetic activity
 - ✓ Recycling of Nitrogen into proteins
- ✓ Description of Biochemical digestion/Enzymatic digestion
 - ✓ Salivary gland
 - ✓ Stomach
 - ✓ The pancreas and the biliary system
 - ✓ Liver
 - ✓ Gall bladder
 - ✓ Caecum

Description of circulatory system physiology

- Description of heart as a pump
- Description of blood vessels
- Description of dynamics of exchange across the blood capillaries
- Description of pulmonary and systemic circulation
- Description of blood components physiology
 - ✓ Blood cells
 - ✓ Plasma

Description of the respiratory system physiology

- Description of types of respiration
 - ✓ Description of external respiration
 - ✚ Inspiration
 - ✚ Expiration
 - ✓ Description of internal respiration
 - ✓ Description of cellular respiration
- Description of muscles that intervene in respiratory physiology
 - ✓ Muscles of inspiration
 - ✓ Muscles of expiration
- Description of frequency and amplitude of respiration
- Methods of diagnosis of respiratory rate
- Description of carbon monoxide Poisoning

Describe urogenital system

- Description of the urinary system physiology
 - ✓ Function of the kidney
 - ✓ Urine formation and excretion
 - ✓ Composition and Properties of Urine
- Description of reproductive system physiology
 - ✓ Structure and functions of reproductive organs of males of different species
 - ✚ Puberty
 - ✚ Spermatogenesis
 - ✓ Structure and functions of reproductive organs of female:
 - ✚ Puberty
 - ✚ Ovogenesis and ovulation

Description of nervous system physiology

- Description of General organization of nervous system physiology
 - ✓ Description of Central Nervous System physiology

- + Function of C.N.S
- + Transmission of impulse across the synapsis
- + Reflex arc
- ✓ Description of Peripheral Nervous System physiology
 - + Cranial nerves
 - + Spinal nerve
 - + Autonomic nervous system (sympathetic system and the parasympathetic system)
- Description of Sense organs physiology
 - ✓ Sensory Receptors
 - ✓ General sense: Skin
 - + Basic functions of the skin: Sensing stimuli
Temperature control : (Poikilothermic, Homoiothermic)
Production of vit D
 - + Structures and function of keratin (Calluses, Scales, Nails, Claws, Hoofs and Horns)
 - + Structures of hairs
 - + Glands of the skin (Sweat, Scent, Preen Mammary)
 - ✓ Special senses
 - + Eye: (muscles, optic nerve, tear gland, cone, rod, accommodation, nictating membrane)
 - + Nose (olfactory nerve)
 - + Tongue (taste buds)
 - + Ear (Balance, Vestibular nerve, Eustachian tube)

Description of endocrine system physiology

- Classification of endocrine glands:
 - ✓ Adrenal gland
 - ✓ Hypothalamus
 - ✓ Pancreas
 - ✓ Parathyroid gland
 - ✓ Pineal gland
 - ✓ Pituitary gland
 - ✓ Testes
 - ✓ Thyroid gland
 - ✓ Ovaries
- Description of Main hormones produced by endocrine glands
 - ✓ ADH
 - ✓ Adrenaline
 - ✓ FSH
 - ✓ Glucagon
 - ✓ Insulin
 - ✓ LH
 - ✓ Melatonin
 - ✓ MSH
 - ✓ Oestrogen
 - ✓ Parathormone
 - ✓ Progesterone
 - ✓ Testosterone

✓ Thyroxine • Description of Homeostasis ✓ Blood Pressure Regulation ✓ Osmoregulation ✓ Temperature Regulation • Description of feedback control ✓ Negative feedback ✓ Positive feedback	
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Reference:

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