

DEMONSTRATE THE KNOWLEDGE OF GENERAL BIOLOGY

UNIT CODE: MED/OS/NUD/CC/01/5/A

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate knowledge of general biology. It involves demonstrating the knowledge of terminologies in general biology, types of plant and animal cells and tissues, plant anatomy and physiology, structures of a plant and their functions, knowledge of human body systems, their structures, functions and associated disorders. It also entails demonstrating knowledge of macromolecules and their metabolism, knowledge of enzymes and hormones and knowledge of biochemistry of macronutrient.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function .	These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range</i>
1. Demonstrate the knowledge of terminologies in general biology	1.1 Relevant <i>terminologies in general biology</i> are identified as per the relevant literature and resource materials 1.2 Branches in general biology <i>are</i> identified and described as per the relevant literature and resource materials 1.3 Basics of plant and human cells <i>are</i> identified and described as per the relevant literature and resource materials
2. Demonstrate knowledge of types of plant and animal cells and tissues	2.1 Types of plant and animal cells and tissues <i>are</i> identified and described as per the relevant literature and resource materials. 2.2 Structures of plant and animal cells are illustrated and discussed as per the relevant literature and resource materials. 2.3 Roles of plant and animal organelles are described as per the relevant literature and resource materials. 2.4 Plant and animal cell metabolism and reproduction are described as per the relevant literature and resource materials.

<p>3. Demonstrate the knowledge of the plant anatomy and physiology. structures of a plant and their functions</p>	<p>3.1 Plants with nutrition and health potency are identified and described as per work place procedures, relevant literature and resource materials.</p> <p>3.2 The anatomy and physiology of plants with nutrition and health potency (the identified plants) are illustrated and discussed as per work place procedures, relevant literature and resource materials.</p> <p>3.3 The plants with nutrition and health potency (identified plants) are classified into herbs, spices and condiments as per work place procedures, relevant literature and resource materials.</p>
<p>4. Demonstrate the knowledge of the human body systems, their structures, functions and associated disorders.</p>	<p>4.1 The components of the human body systems are identified as per the workplace procedures</p> <p>4.2 Relevant functions of the body s systems identified as per the workplace procedures</p> <p>4.3 Relevant principles of the body s systems to performance of therapy treatment applied as per the workplace procedures</p>
<p>5. Demonstrate the knowledge of macromolecules and their metabolism</p>	<p>5.1 Types of macro molecules and metabolism are identified as per the workplace procedures, relevant literature and resource materials</p> <p>5.2 The hierarchy of molecular organization of cells is illustrated as per the workplace procedures</p> <p>5.3 The structure of the cell and how it is organized to conduct its characteristic chemical functions is outlined based on workplace procedures</p>
<p>6. Demonstrate the knowledge of enzymes and hormones</p>	<p>6.1 The structure of enzymes outlined as per the workplace procedures</p> <p>6.2 The relationship among holoenzymes, apoenzymes and cofactors outlined as per the workplace procedures</p> <p>6.3 The general mechanisms by which enzymes catalyze reactions outlined as per the type of macro molecule</p> <p>6.4 Enzymes classified as per the I.B.U.N</p> <p>6.5 Role of enzyme in food processing is described as per relevant literature and resource materials</p> <p>6.6 Isoenzymes and zymogens discussed based on workplace procedures</p> <p>6.7 Functions of hormones in homoeostasis is described as per relevant literature and resource materials</p> <p>6.8 Mechanisms in hormonal physiology is described as per</p>

	relevant literature and resource materials
7. Demonstrate the knowledge of biochemistry of macronutrient	<p>7.1 Terminologies in biochemistry of macronutrients are identified and described as per resource materials</p> <p>7.2 Biochemistry of carbohydrates is described as per resource materials</p> <p>7.3 Biochemistry of proteins is described as per resource materials</p> <p>7.4 Biochemistry of lipids is described as per resource materials</p>

RANGE

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

Variables	Range
	May include but not limited to:
1. Anatomical and physiological terminology may include but are not limited to:	<ul style="list-style-type: none"> • Proximal • Distal • Cranial • Anterior • Posterior
2. Components of the human body systems may include but are not limited to:	<ul style="list-style-type: none"> • Cardiovascular system • Respiratory system • Renal system • Musculoskeletal system • Reproductive system • Skin • Gastro intestinal • Central nervous system
3. Staining methods may include but are not limited to:	<ul style="list-style-type: none"> • Hematoxylin and eosin • Uranyl acetate and lead citrate

4. Tissue location may include but are not limited to:	<ul style="list-style-type: none"> • Epithelial • Connective • Adipose • Bone • Nerve and muscle
5. Types of cell division may include but are not limited to:	<ul style="list-style-type: none"> • Mitosis • Meiosis
6. Process of cell division may include but are not limited to:	<ul style="list-style-type: none"> • Interphase • Prophase • Prometaphase • Anaphase • Telophase • Cytokinesis

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

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

Required Knowledge

The individual needs to demonstrate knowledge of:

- Basic anatomy
- Anatomical terminologies
- Scope of anatomy

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified relevant anatomical and physiological terminology as per the anatomical position. 1.2 Applied relevant anatomical and physiological terminology to daily tasks as per the workplace procedures 1.3 Identified cell types as per the workplace procedures 1.4 Identified components of a human cell as per the workplace procedures 1.5 Outlined processes of cell division as per the SOP 1.6 Described the composition of cytoplasm as per the workplace procedures 1.7 Performed direct observation based on workplace procedures 1.8 Identified histochemical methods based on the material available 1.9 Identified chemical methods based on the material available 1.10 Identified physical methods based on the material available 1.11 Identified Staining methods as per workplace procedures 1.12 Identified immunohistochemical methods based on the material available 1.13 Performed X-ray diffraction as per the workplace procedures 1.14 Outlined tissue location as per the workplace procedures 1.15 Identified embryonic tissues as per the tissue location 1.16 Classified tissues as per the tissue location
2. Resource Implications	The following resources must be provided: 2.1 Functional Pharmaceutical technology system
3. Methods of Assessment	Competency may be assessed through: 3.1 Written tests 3.2 Third party reports

	<p>3.3 Oral questioning</p> <p>3.4 Interview</p> <p>3.5 Observation</p>
4. Context of Assessment	<p>Assessment could be conducted:</p> <p>4.1 On-the-job</p> <p>4.2 Off-the-job</p> <p>4.3 During industrial attachment</p>
5. Guidance information for assessment	<p>Holistic assessment with related units in the sector</p>

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