

## PERFORM ANATOMY AND PHYSIOLOGY STUDIES

**UNIT CODE:** APB/OS/AB/CC/01/6/A

### UNIT DESCRIPTION

This unit specifies the competencies required to perform anatomy and physiology studies. It involves demonstrating communication in plants and animals, demonstrating nutrition in plants and animals and demonstrating transport in plants and animals. It also involves applying support and locomotion in animals, demonstrating reproduction in plants and animals and demonstrating excretion in plants and animals.

### ELEMENTS AND PERFORMANCE CRITERIA

<b>ELEMENT</b> These describe the <b>key outcomes</b> which make up workplace function (to be stated in active)	<b>PERFORMANCE CRITERIA</b> These are <b>assessable statements</b> which specify the required level of performance for each of the elements (to be stated in passive voice) <i><b>Bold and italicized terms are elaborated in the Range</b></i>
1 Demonstrate communication in plants and animals	1.1 <i>Structure</i> and function of the nervous system is determined as per anatomical procedures 1.2 Structure and function of the <i>sensory organs</i> are determined as per anatomical procedures 1.3 Role of <i>endocrine glands</i> in communication is demonstrated as per anatomical and physiological procedures 1.4 Plant growth curves are illustrated as per anatomical procedures 1.5 Plant growth is measured as per anatomical procedures 1.6 Growth zones in plants are observed and drawn as per anatomical procedures 1.7 Tropic and tactic movements are demonstrated as per physiological procedures
2 Demonstrate nutrition in plants and animals	2.1 Structure and function of the leaf is identified as per anatomical procedures 2.2 Photosynthetic process is determined as per physiological procedures 2.3 <i>Factors affecting photosynthesis</i> are determined as per physiological procedures 2.4 Heterotrophic types of nutrition are determined as per physiological procedures

	<p>2.5 <b>Digestive enzymes</b> are demonstrated as per physiological procedures</p> <p>2.6 Dissection of a laboratory animal is carried out as per anatomical procedures</p>
3 Demonstrate transport in plants and animals	<p>3.1 Internal structure of the root and shoot is observed under the microscope as per laboratory procedures</p> <p>3.2 Uptake of water and mineral salts in plants is demonstrated as per laboratory procedures</p> <p>3.3 Translocation experiments are carried out as per laboratory procedures</p> <p>3.4 <b>Blood cells</b> are observed and identified under the microscope as per laboratory procedures</p> <p>3.5 Mammalian circulatory system is demonstrated as per anatomical procedures</p> <p>3.6 <b>Organs and tissues of lymphatic system</b> are demonstrated as per anatomical procedures</p> <p>3.7 <b>Structures of gaseous exchange in plants and animals</b> are identified and drawn as per anatomical procedures</p> <p>3.8 Dissection of a laboratory animal is carried out to demonstrate transport and gaseous exchange as per anatomical procedures</p>
4 Apply support and locomotion in animals	<p>4.1 <b>Types of muscles</b> are demonstrated as per anatomical procedures</p> <p>4.2 <b>Types of skeletons</b> are identified as per anatomical procedures</p> <p>4.3 Structure and functions of skeletons are demonstrated as per anatomical procedures</p> <p>4.4 Structure and functions of <b>joints</b> are demonstrated as per anatomical procedures</p>
5 Demonstrate reproduction in plants and animals	<p>5.1 Meiosis in plants is observed under the microscope as per laboratory procedures</p> <p>5.2 Dissection of a flower is carried out to identify floral parts as per laboratory procedures.</p> <p>5.3 Various seeds and fruits are identified and drawn as per anatomical procedures.</p>

	<p>5.4 Adaptations of seeds and fruits to dispersal is demonstrated as per anatomical and physiological procedures</p> <p>5.5 Reproductive system in animals is demonstrated as per laboratory procedures.</p> <p>5.6 <b>Birth control methods</b> are identified according to medical standards</p> <p>5.7 Dissection of a laboratory animal is carried out as per anatomical procedures</p>
6 Demonstrate excretion in plants and animals	<p>6.1 Products of excretion in plants are collected and identified as per laboratory procedures</p> <p>6.2 Mammalian excretory organs are identified as per anatomical procedures</p> <p>6.3 Dissection of a laboratory animal is carried out to demonstrate excretory organs as per anatomical procedures</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.

VARIABLE	RANGE
Structure include but are not limited to:	<ul style="list-style-type: none"> <li>• Neuron</li> <li>• Central Nervous System (CNS)</li> <li>• Peripheral Nervous System (PNS)</li> </ul>
Sensory organs include but not limited to:	<ul style="list-style-type: none"> <li>• Eye</li> <li>• Ear</li> <li>• Nose</li> <li>• Tongue</li> <li>• Skin</li> </ul>

Endocrine glands include but not limited to:	<ul style="list-style-type: none"> <li>• Pituitary gland</li> <li>• Hypothalamus</li> <li>• Pineal gland</li> <li>• Thyroid gland</li> <li>• Parathyroid gland</li> <li>• Pancreas</li> <li>• Adrenal gland</li> <li>• Testes</li> <li>• Ovaries</li> <li>• Thymus</li> </ul>
Factors affecting photosynthesis include but not limited to:	<ul style="list-style-type: none"> <li>• Carbon dioxide</li> <li>• Light</li> <li>• Chlorophyll</li> </ul>
Digestive enzymes include but not limited to:	<ul style="list-style-type: none"> <li>• Amylase</li> <li>• Renin</li> <li>• Pepsin</li> <li>• Lipase</li> <li>• Peptidase</li> <li>• Trypsin</li> <li>• Sucrase</li> </ul>
Blood cells include but not limited to:	<ul style="list-style-type: none"> <li>• Red blood cells</li> <li>• White blood cells</li> <li>• Platelets</li> </ul>
Organs and tissues of lymphatic system include but not limited to:	<ul style="list-style-type: none"> <li>• Thymus</li> <li>• Bone marrow</li> <li>• Spleen</li> </ul>
Structures of gaseous exchange in plants and animals include but not limited to:	<ul style="list-style-type: none"> <li>• Lungs</li> <li>• Gills</li> <li>• Stomata</li> <li>• Lenticels</li> </ul>
Types of muscles include but not limited to:	<ul style="list-style-type: none"> <li>• Smooth</li> <li>• Skeletal</li> <li>• Cardiac</li> </ul>
Types of skeletons include but not limited to:	<ul style="list-style-type: none"> <li>• Exoskeleton</li> <li>• Endoskeleton</li> <li>• Hydro skeleton</li> </ul>

Joints include but not limited to:	<ul style="list-style-type: none"> <li>• Ball and socket</li> <li>• Saddle</li> <li>• Hinge</li> </ul>
Birth control methods include but not limited to:	<ul style="list-style-type: none"> <li>• Natural</li> <li>• artificial</li> </ul>

## 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 skill

- Maintenance
- Communication
- Interpersonal
- Analytical
- Critical thinking
- Problem solving
- First aid
- Innovation
- Creativity

### Required Knowledge

The individual needs to demonstrate knowledge of:

- Microscopy
- Cytological techniques
- Cell growth and division
- Histological techniques
- Specimen collection methods
- Storage of specimens
- Tissue processing

## EVIDENCE GUIDE

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

1 Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Demonstrated communication in plants and animals 1.2 Demonstrated nutrition in plants and animals 1.3 Demonstrated transport in plants and animals 1.4 Demonstrated types of muscles 1.5 Identified types of skeletons 1.6 Demonstrated structure and functions of skeletons and joints 1.7 Demonstrated reproduction in plants and animals 1.8 Collected and identified products of excretion in plants 1.9 Identified mammalian excretory organs 1.10 Carried out dissection of laboratory animals to demonstrate excretory organs
2 Resource Implications	The following resources should be provided: 2.1 Well-equipped biology laboratory facility 2.2 Science laboratory procedures manual 2.3 Laboratory reagents and chemicals 2.4 PPEs
3 Methods of Assessment	Competency in this unit may be assessed through: 3.1 Oral 3.2 Written 3.3 Observation 3.4 Third party 3.5 Practical test
4 Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.
5 Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.