

1 Module Details	
Module Name	Basic Principles of Anatomy and Physiology
Nominal duration	It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 54 to 60 hours.
Module code	NUE910
Discipline code	0703230
2 Module purpose	This module provides clinical engineering students with a basic understanding of the general anatomy and function of the major body systems, particularly the anatomy and physiology of excitable cells and the cardiovascular system.
3 Prerequisites	nil
4 Relationship to competency standards	This module provides some of the knowledge and skills underpinning competency in the following standards: National Electrotechnology Industry Standards, Units NES304, NES406, NES504 and the relevant specialisation. Metals & Engineering Industry Standards, Units 18.56A, 18.57A, 18.58A, 18.65A, 18.66A.
5 Content	<ul style="list-style-type: none"> • Clinical Terminology • Primary Anatomy <ul style="list-style-type: none"> - surface anatomy • Cellular organisation <ul style="list-style-type: none"> - tissues - organs - organ systems • Neurophysiology • Muscle Physiology • Sensory Physiology • Cardiovascular Physiology • Pulmonary Physiology • Endocrine Physiology • Gastrointestinal Physiology • Renal Physiology • Reproductive Physiology • The Integument • Homeostasis <ul style="list-style-type: none"> - homeostatic malfunction • Vital Signs <ul style="list-style-type: none"> - significance - detection - physiological basis for measurement - pathology
6 Assessment strategy	
Assessment methods	Assessment should be progressive reflecting a holistic approach to ensure the module purpose is met. To assist in ensuring validity, reliability and fairness assessment instruments should include practical exercises, assignments and written tests consisting of a number of item types, such as

	multiple choice, short answer and problem solving.
Conditions of assessment	Normally learning and assessment will take place in a classroom/laboratory.
7 Learning Outcome Details	
Learning Outcome 1	Explain the terminology of anatomy and physiology, and apply the terminology of anatomy and physiology to clinical language.
Assessment criteria	<p>1.1 Explain what is meant by anatomy, physiology, histology, pathology and pharmacology.</p> <p>1.2 Identify key root words in common clinical terms.</p> <p>1.3 List key clinical, anatomical and physiological terms.</p>
Learning Outcome 2	Identify and locate key anatomical sites of the human body, and relate the macro and micro anatomy of body components to their function.
Assessment criteria	<p>2.1 Identify and locate key anatomical landmarks and regions.</p> <p>2.2 Describe the macro and micro anatomy of these key anatomical sites in relation to their function.</p> <p>2.3 Explain the significance of the major anatomical planes.</p>
Learning Outcome 3	Describe the role of cells in the formation of tissues and organs, in relation to anatomy and physiology.
Assessment criteria	<p>3.1 Identify the main components of the cell and briefly state the primary functions of:</p> <ul style="list-style-type: none"> • cell membrane • cytoplasm • nucleus • mitochondrion • endoplasmic reticulum • Golgi complex • ribosomes • lysosomes • cytoskeleton • ECM <p>3.2 Describe the role of receptors in cell function.</p> <p>3.3 Describe the major forms of transmembrane transport, and explain their significance in cell function.</p> <p>3.4 Describe how the cell obtains energy for the various cell processes, and how this energy is utilised.</p> <p>3.5 Describe how cells are organised into tissues.</p> <p>3.6 Describe the major types of tissue.</p> <p>3.7 Describe how tissues are organised into organs.</p> <p>3.8 Describe how the tissue types found in organs relate to their physiological function.</p>
Learning outcome 4	Describe the general anatomy and basic physiology of the

	<p>following systems:</p> <ul style="list-style-type: none"> • Nervous, including sensory systems • Musculoskeletal • Cardiovascular • Pulmonary • Endocrine • Gastrointestinal • Renal • Reproductive • Integumentary
Assessment criteria	<p>4.1 Describe the general anatomy, the basic histology of key regions, and the basic physiology of the following systems:</p> <ul style="list-style-type: none"> • Nervous system, including sensory systems. • Musculoskeletal system. • Cardiovascular system. • Pulmonary system. • Endocrine system. • Gastrointestinal system. • Renal system. • Reproductive system. • Integumentary system. <p>4.2 Describe the basic mechanisms of neuronal communication - the action potential and trans-synaptic conduction.</p> <p>4.3 Describe the functions of the autonomic nervous system.</p> <p>4.4 Explain how muscle contraction is produced in terms of muscle ultrastructure.</p> <p>4.5 Describe the general and special senses.</p> <p>4.6 Explain how the endocrine system regulates the processes of fertilisation, pregnancy, parturition and lactation.</p>
Learning outcome 5	Explain the mechanisms by which the body maintains homeostasis in relation to specific body systems.
Assessment criteria	<p>5.1 Explain the importance of negative feedback systems in the maintenance of homeostasis.</p> <p>5.2 Explain the contribution of the kidneys and lungs to the body's pH and electrolyte balance, and why this is important for excitable tissues.</p> <p>5.3 Explain how the endocrine and nervous systems contribute to homeostasis.</p> <p>5.4 List the contribution of each of the body's systems to the maintenance of homeostasis.</p>
Learning outcome 6	Explain the origins of pathophysiology in terms of homeostatic failure and relate this to specific body systems.
Assessment criteria	<p>6.1 Explain how disturbances in one physiological system may effect others.</p> <p>6.2 Explain the importance of positive feedback in the origins of pathology.</p> <p>6.3 Describe some of the more common problems of the cardiopulmonary system.</p> <p>6.4 Describe some of the more common problems of the</p>

	nervous system.
Learning outcome 7	Explain what is meant by a vital sign and the importance of vital signs in clinical diagnosis and patient care.
Assessment criteria	<p>7.1 Describe what is meant by a vital sign.</p> <p>7.2 List the major vital signs used in clinical practice.</p> <p>7.3 Describe the clinical situations where the monitoring of vital signs might be useful.</p> <p>7.4 Explain how the monitoring of vital signs might be useful in clinical diagnosis.</p>
Learning outcome 8	Explain the importance of pathology specimens in clinical diagnosis and patient care.
Assessment criteria	<p>8.1 List examples of the various types of pathology specimens utilised in clinical practice.</p> <p>8.2 Explain how pathology specimens may be used in clinical diagnosis and patient monitoring.</p>
8 Delivery of the module	
Delivery strategy	Delivery strategies must be suitable for learning both theoretical and practical aspects described in the module purpose. It is considered that the most effective way to achieve this is by the integration of theory and practice where students learn by experimentation and through research and laboratory reports. It is recommended that learning and assessment be facilitated in a holistic manner, which may require a learning outcome sequence other than that indicated in the module.
Resource requirements	<p>Resources should be sufficient for students to carry out practical exercises on an individual basis.</p> <p>Useful references include: Marieb, E.N. Human Anatomy and Physiology, 4th Edition, Benjamin/Cummings, Sydney, 1995.</p> <p>Marieb, E.N., Study Guide to Accompany Human Anatomy and Physiology, 4th Edition, Benjamin/Cummings, Sydney, 1995.</p>
Occupational health and safety requirements	A safe and healthy environment will be provided for students and teachers as well as safety procedures followed with regard to teaching/learning activities.