

## Subject Description Form

<b>Subject Code</b>	ABCT5029
<b>Subject Title</b>	Advanced Human Physiology and Anatomy
<b>Credit Value</b>	3
<b>Level</b>	5
<b>Pre-requisite</b>	Nil
<b>Objectives</b>	The aim of this subject is to provide students with a high-level physiological knowledge and an appreciation of the importance of physiology in the human body especially the elderly as well as its application in the field of nutritional science.
<b>Intended Learning Outcomes</b>	<p>On successfully completing this subject, students will be able to:</p> <ol style="list-style-type: none"> <li>a) Describe the normal ageing process and pathology of common chronic conditions encountered by older adults</li> <li>b) Explain and discuss the high-level physiological controlling mechanisms in the human body which are essential to life and apply their knowledge to specialized areas of physiology or multi-disciplinary areas of nutrition</li> <li>c) Develop the awareness of the integrative nature in the operation of the different body systems for survival and adaptation in health and illness;</li> <li>d) Develop a broad and balanced foundation of nutritional science knowledge and practical skills related to physiology.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p><b>Age-related changes in physiology in different systems in human body</b></p> <p><b>Nutrition and human body</b> Nature and extent of metabolic demand for nutrients in human body at different ages, genders, physical activity and lifestyle for human; mechanisms for integration of metabolism in human; energy balance.</p> <p><b>Digestive system:</b> Digestion and absorption of different nutrients in different life stages, e.g. vitamin B12 in elderly; regulation of the digestive processes; transportation and storage of nutrients and non-nutrient components of foods for human, gut microbiota and human health</p> <p><b>Cardiovascular system:</b> Structure and function of the heart and blood vessels; role of the pacemaker, nervous and endocrine control of cardiac functions; haemodynamics and blood flow; thrombosis and anticoagulation; dietary fat intake and its impact on cardiovascular system</p> <p><b>Endocrine system:</b> Organization of the endocrine system; classification and chemistry of hormones; controlling mechanisms of hormone secretion; function of various</p>

	<p>types of hormones especially those affecting glucose and fat metabolism, and energy balance; the role of IGF1 in human growth</p> <p><b>Immune system:</b> Classifications of cells of the internal defense system; recognition of self and “non-self”, non-specific defense processes; specific defense processes; roles of antibodies and complement pathways; food allergy reactions (IgG, IgE); chronic inflammation (TNF-<math>\alpha</math>).</p> <p><b>Renal system:</b> Renal reabsorption processes; significance of the long and short loop of Henle; function of the vasa recta; regulation of acid-base balance; the regulation of sodium and potassium as well as water balance; the regulation of vitamin D activation</p> <p><b>Nervous system:</b> Generation of the various types of membrane potentials and their interrelationship, roles and significance; mechanisms of generation of receptor potentials; synapses and neurotransmitters; function of the sensory cortex and transmission of nervous modulations from the periphery to the sensory cortex; Effects of drugs and poisons on the function of the nervous system; brain regulation of appetite and satiety; disease related to brain and nervous system such as dementia.</p> <p><b>Reproductive system:</b> Male and female reproductive physiology; female sex cycle; menopause and the male climacteric; integration with the other systems, body composition, especially body fatness and its impact on menses and Polycystic ovary syndrome (PCOS); Iron need in female during reproductive years</p> <p><b>Respiratory system:</b> Ventilation and lung mechanics; significance of forced vital capacity and expiratory volume exchange; transport of blood gases; mechanism of chemical control of ventilation rate.</p>
<p><b>Teaching/Learning Methodology</b></p>	<p>Lectures are designed to provide students with the high-level physiological knowledge and its application in the field of nutritional science. Tutorial classes and Blackboard platform will be used to gauge their learning and performance. Laboratory classes are used to introduce students to physiological laboratory techniques and provide demonstrations of physiological processes learned in lectures, develop their skills to interpret data and report writing. A variety of assessment tools will be used, including quizzes, assignments and reports to develop students’ analytical and communication skills.</p>

<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
			a	b	c	d
	1. Test	20%	✓		✓	✓
	2. Lab Attendance and Reports	15%	✓	✓	✓	✓
	3. Group Presentation	15%	✓	✓	✓	✓
	4. Final Examination	50%	✓		✓	✓
Total	100%					
	<p><b>Test:</b> It is used to assess students' knowledge at the mid-term in the recall, comprehension and application aspects.</p> <p><b>Laboratory Report:</b> It is used to assess students' analytical skills, team work, peer learning and critical thinking during the experiments and explanation of subject matters in a format of written report.</p> <p><b>Group presentation:</b> It is used to assess students' understanding of various physiological mechanisms and their awareness of the integrative nature in the operation of the different body systems for survival and adaptation in health and illness.</p> <p><b>Final Examination:</b> It is used as a summative assessment to examine students' ability to recall, comprehend, analyze and apply the knowledge of physiology to the specific systems.</p>					
<b>Student Study Effort Expected</b>	Class contact					
	▪ Lecture				32 hours	
	▪ Tutorial				4 hours	
	▪ Laboratory				3 hours	
	Other student study effort:					
	▪ Self-study				60 hours	
	▪ Preparation on Group Presentation				10 hours	
	▪ Preparation for assessments/assignments				12 hours	
	Total student study effort:					121 hours
<b>Reading List and References</b>	<p>Human Physiology (2015) 14<sup>th</sup> Ed. Fox SI. Publisher: McGrawHill.</p> <p>Martini, Nath &amp; Bartholomew; Fundamentals of Anatomy &amp; Physiology 11<sup>th</sup> Ed or latest book.</p>					