Subject Description Form

Subject Code	ABCT2328
Subject Title	Advanced Physiology
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	1. To understand the normal functioning of the human body with emphasis on the high-level physiological mechanisms; 2. To instill into students the various control mechanisms of the body with appreciation of the integrative nature in the operation of the different body systems in health and illness
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. demonstrate understanding of the high-level normal functioning of the human body; b. demonstrate understanding of the various controlling mechanisms of the body; c. show the awareness of the integrative nature in the operation of the different body systems for survival and adaptation in health and illness; d. Interpret and analyze data obtained in physiological measurements
Subject Synopsis/ Indicative Syllabus	Nervous system: Classification, structure, function and properties of neurons and synapses; divisions of the nervous system; roles of the central as well as the autonomic nervous system; receptors and chemical transmission at nerve-nerve and nerve-muscle junctions; neurotransmitters; organization and function of the sensory system for both general and special senses; control of body movement. Cardiovascular system: Structure and function of the heart and blood vessels; control of cardiac functions; function of the systemic and pulmonary circulation; hemodynamics; components and properties of blood; structure and function of the lymphatic system. Respiratory system: Organization and structure of the respiratory system; ventilation and lung mechanics; exchange of gases in alveoli and tissues; transport of blood gases; chemical control of ventilation.

Renal system: Organisation of the urinogenital system; structure of a typical nephron; basic renal processes; regulation of sodium and water balance; regulation of potassium, calcium and hydrogen ions.

Immune system: 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.

Endocrine system: Organisation and structure of the endocrine system; classification of hormones; controlling mechanisms of hormone secretion; function of hormones; anatomical and physiological link between the endocrine and nervous systems.

Reproductive system: Principles of gametogenesis; male reproductive physiology; female reproductive physiology; female sex cycle; pregnancy.

Teaching/Learning Methodology

Lecture	26 hours
Tutorial	12 hours
Laboratory	4 hours

Lecture
Lectures are conducted to provide students with the knowledge related to the high-level features and operation of different body systems, and to discuss the integration of body systems in different physiological aspects.

Tutorial
Tutorials are conducted to help students understand and reinforce the knowledge of physiological controlling mechanisms in human body that are essential to life. The tutorials include the discussions on physiological functions of different body systems in Q&A formats.

Laboratory
Laboratory sessions are conducted to help students understand and reinforce the knowledge of selected physiological controlling mechanisms in human body that are essential to life. Laboratory reports are required to be submitted by all students after each experiment to demonstrate their analytical skills and understanding on the subject matters.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed			
		a	b	c	d
1.Coursework	50 %	✓	✓	✓	✓
2. Examination	50 %	✓	✓	✓	

	Total	100 %	

Coursework:

(a) Test

It is used to assess students' knowledge at the mid-term in the recall, comprehension and application aspects.

(b) Laboratory Report

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.

Examination:

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.

Student Study Effort Expected		
	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	12 Hrs.
	▪ Laboratory	4 Hrs.
	Other student study effort:	
	▪ Pre-reading	20 Hrs.
	▪ Preparation for tests and final exam	30 Hrs.
	▪ Preparation for written assignment	20 Hrs.
	Total student study effort	112 Hrs.

Reading List and References

Textbooks:

Fox, S.I. (2013). *Human Physiology* (13th ed). New York:McGraw-Hill

Widmaier E.P., Raff H., Strang K.T. (2011) *Vander's Human Physiology: The Mechanisms of Body Function with ARIS* (12th ed). New York:McGraw-Hill

Reading List:

Shier D.N., Butler J.L., Lewis R. (2010) *Hole's Human Anatomy and Physiology* (12th ed). New York:McGraw-Hill

Frederic H. Martini and Judi L. Nath. (2008). *Fundamentals of Anatomy & Physiology* (8th ed.). Benjamin Cummings Publisher

	Martini, F. (2001). *Fundamentals of Anatomy and Physiology* (5th ed.). New Jersey: Prentice Hall. Rhodes, R., & Pflanzer, R. (2003). *Human Physiology* (4th ed.). Pacific Grove, Calif.: Thomsen Learning, Brooks/Cole. **References:** Fox, S.I. (2009). *A Laboratory Guide to Human Physiology, Concepts and Clinical Applications* (1st ed). New York:McGraw-Hill Fox, S.I. (2009). *Laboratory Guide to accompany Human Physiology* (13th ed). New York:McGraw-Hill