



UNIVERSITI TEKNOLOGI MARA

BIO270: ANIMAL AND PLANT PHYSIOLOGY

Course Name (English)	ANIMAL AND PLANT PHYSIOLOGY APPROVED
Course Code	BIO270
MQF Credit	3
Course Description	This subject focus on the structures, processes and functions of selected biological systems in animals and plants.
Transferable Skills	Knowledge, Practical Skills, Information Management and Life Long Learning
Teaching Methodologies	Blended Learning, Lab Work, Case Study, Presentation, Collaborative Learning
CLO	CLO1 Explain the structure and physiology of animals and plants. CLO2 Perform (plan, conduct and analyse) scientific investigations in area of animals and plants physiology. CLO3 Demonstrate verbally and in writing, information related to animals and plants physiology articulately, and with relevant references.
Pre-Requisite Courses	No course recommendations
Topics	
1. Homeostasis and Excretory System (CLO1, CLO2, CLO3) 1.1) Introduction to animal systems 1.2) Maintaining the internal environment - thermoregulation, glucose level, osmoregulation 1.3) Forms of nitrogenous wastes 1.4) Excretory systems - protonephridia, metanephridia, Malpighian tubules, kidney	
2. Respiratory System (CLO1, CLO2, CLO3) 2.1) Characteristics of respiratory surfaces 2.2) Respiration in fish - gills, countercurrent exchange 2.3) Respiration in insect - tracheal system 2.4) Respiration in amphibians - skin and lungs 2.5) Respiration in birds - lungs 2.6) Respiration in mammals - lungs, breathing mechanism, tidal volume, vital capacity, residual volume	
3. Circulatory and Transport System (CLO1, CLO2, CLO3) 3.1) Open and closed circulatory system 3.2) Characteristics of blood vessels 3.3) Single and double circulatory system 3.4) Carbon dioxide and oxygen transport	
4. Digestive System (CLO1, CLO2, CLO3) 4.1) Types of feeding - suspension feeder, fluid feeder, substrate feeder, bulk feeder 4.2) Stages of food processing - ingestion, digestion, absorption, elimination 4.3) Human digestive system - structure and processes 4.4) The digestion of carbohydrates, lipids and proteins and explain how the products of digestion are absorbed.	
5. Immune System (CLO1, CLO3) 5.1) Innate immunity (nonspecific immunity) - first line defense mechanism, phagocytic cells, natural killer cells, antimicrobial proteins, inflammatory response 5.2) Adaptive immunity (specific response) - humoral and cell-mediated immunity	
6. Nervous System (CLO1, CLO3) 6.1) Organization of nervous system 6.2) Neuron – structure and function 6.3) Transmitting information along the neuron 6.4) Neural signaling across synapse	

<p>7. Endocrine System (CLO1, CLO3) 7.1) Chemical signaling - autocrine, paracrine, endocrine, synaptic 7.2) Chemical classes of hormones 7.3) Major human endocrine glands, their hormones and functions</p>
<p>8. Skeletal and Muscular System (CLO1, CLO3) 8.1) Types of skeleton - hydroskeleton, exoskeleton, endoskeleton 8.2) Ultrastructure of muscle 8.3) Physiology of muscle contraction</p>
<p>9. Reproduction in Animals (CLO1, CLO3) 9.1) Asexual and sexual reproduction 9.2) Internal and external fertilization 9.3) Oviparity, ovoviviparity, viviparity</p>
<p>10. Plants Reproduction and Growth (CLO1, CLO2, CLO3) 10.1) Asexual reproduction 10.2) Sexual reproduction – structure of flower, pollination, double fertilization, germination 10.3) Primary and secondary growth</p>
<p>11. Transport in Vascular Plant (CLO1, CLO2, CLO3) 11.1) Uptake and transport of water and minerals 11.2) Uptake and transport of organic substances</p>
<p>12. Plant Hormones (CLO1, CLO3) 12.1) Types of plant hormones and its functions</p>
<p>13. Plant Response to Stimuli (CLO1, CLO3) 13.1) Response to light 13.2) Response to a wide variety of stimulus other than light</p>

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Practical	Laboratory Report (1) - Briefing on the Laboratory Safety Rules and Regulations must be done prior to the first practical experiment.	20%	CLO2
	Presentation	Presentation (1) - Video/Online Presentation	15%	CLO3
	Test	Ongoing Online Test (1) - Chapter 1, 2, 3, 4, 5 & 6	25%	CLO1

Reading List	Reference Book Resources
	<ul style="list-style-type: none"> • Marieb, E.N. 2015, <i>Essentials of Human Anatomy and Physiology</i>, 11th Edition Ed., Pearson [ISBN: 10:1292057203] • Martini, F.H., Nath, J.L. and Bartholomew, E.F. 2015, <i>Fundamentals of Anatomy and Physiology</i>, 10th Edition Ed., Prentice Hall [ISBN: 10:032192861X] • Solomon, E.P., Martin, C., Martin, D.W. and Berg, L.R. 2015, <i>Biology</i>, 10th Edition Ed., Brooks/Cole Publishing Co. [ISBN: 10:1285423585] • Campbell, N.A. and Reece, J.B. 2014, <i>Biology</i>, 10th Edition Ed., Pearson Education Inc. [ISBN: 10:0321775651] • Marieb, E.N., Mitchell, S.J. and Smith, L.A. 2013, <i>Human Anatomy & Physiology Laboratory Manual</i>, 11th Edition Ed., Pearson/Benjamin Cummings San Francisco [ISBN: 10:0321822196]
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources