UNIVERSITI TEKNOLOGI MARA

BIO621: Integrative Physiology

Course Name (English)	Integrative Physiology APPROVED
Course Code	BIO621
MQF Credit	3
Course Description	This course is designed to provide students with an overview of the broader aspects of physiology that involve the integration knowledge from such life-science disciplines as anatomy, biochemistry, mathematics, physics and, physiology. The course will also show how biophysics has so far contributed to a better understanding of neurobiology. Emphasis will be on the vertebrate, particularly mammalian nervous system. Students participation in class discussion and in-class assignments, as well as time spent on the homework assignments will be critical components of the learning process.
Transferable Skills	Values and attitudes. Problem solving and scientific reasoning
Teaching Methodologies	Lectures, Discussion
CLO	CLO1 Discuss the process of electrical and chemical neurotransmission in teamwork. CLO2 Debate the case study related to the fundamental principles and functions of the nervous system. CLO3 Identify some of the current techniques used in neuroscience areas
Pre-Requisite Courses	No course recommendations

Topics
1. Introduction to Integrative Physiology 1.1) Physiology: Past, Present and Future 1.2) Cells and Tissue 1.3) Molecular Interactions
2. The Nervous System 2.1) Organization of the Nervous System 2.2) Neurons and Glia 2.3) Classification of Neuron 2.4) Neural Circuit 2.5) The Structure of the Nervous System 2.6) Gross of the Human Nervous System
3. The Central Nervous System 3.1) Brain Development 3.2) Brain Plasticity 3.3) Neurodegenerative Diseases 3.4) Imaging Techniques
4. Neural Signaling 4.1) Membrane Potential 4.2) Ion Channels and Transporters 4.3) Synaptic Potentials 4.4) Synaptic Integration 4.5) Neurotransmitters, Receptors, and Their Effects (e-learning) 4.6) Molecular Signaling within Neurons
5. Sensation and Perception 5.1) Sensory Systems 5.2) Special senses (chemical senses: olfaction & taste; vision; audition; equilibrium)

6. Complex Brain Functions 6.1) Cognition: Association Cortex and Prefrontal Cortex 6.2) Language 6.3) Emotions 6.4) Memory 6.5) Neurobiology of sleep
7. Proteomic and Metabolomic 7.1) Introduction to proteomics and metabolomics 7.2) Methods of Measurement (NMR and FTIR spectroscopy)

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	One written assignment	10%	CLO2
Case Study	Physiology Case Studies.	20%	CLO3
Test	Test	20%	CLO1

Reading List	This Course does not have any book resources
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources