



UNIVERSITI TEKNOLOGI MARA

BIO100: INTRODUCTION TO GENERAL BIOLOGY

Course Name (English)	INTRODUCTION TO GENERAL BIOLOGY APPROVED
Course Code	BIO100
MQF Credit	3
Course Description	This subject covers an introductory concept of basic biology in the following topics: introduction, biological molecules, cells, plasma membrane and transport of molecules, acquisition of energy by organism, multicellular organization, introduction to organ system and environmental biology.
Transferable Skills	Demonstrate practical and contemporary knowledge of relevant professional, ethical and legal frameworks.
Teaching Methodologies	Lectures, Blended Learning, Practical Classes
CLO	CLO1 Apply the basic concepts of biology in life CLO2 Display the practical skills involve in concepts of biology. CLO3 Explain the organ system in human body.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction 1.1) Biology as the scientific study of life. 1.2) The characteristic of living organism. 1.3) The process of science.	
2. Biological Molecules 2.1) Functional groups: Hydroxyl, carbonyl, carboxyl, amino, sulfhydryl, phosphate 2.2) Carbohydrates: Monosaccharides, disaccharides, structural polysaccharides, storage polysaccharides. 2.3) Lipids: Fatty acids, complex lipids (triacylglycerol, phospholipids, sphingolipids, waxes), simple lipids (terpenes, steroids, prostaglandins). 2.4) Proteins: Amino acids, polypeptide chains, peptide conformation, levels of protein structure (primary/secondary/tertiary/quaternary) 2.5) Nucleic acids: Function of nucleic acid, nucleotides bases, introduction to double helix (Watson-Crick Model)	
3. Cells 3.1) Microscopy: light and electron microscopes. 3.2) Cell theory 3.3) Typical animal and plant cell structure 3.4) Division of cell : Cell cycle, mitosis, meiosis and cytokinesis. 3.5) Chromosomes and inheritance: An overview of Mendelian genetics.	
4. Plasma membrane and transport of molecules 4.1) Fluid Mosaic model ; Phospholipids bilayers, intergral proteins, peripheral proteins, lipoproteins, glycolipids, cholesterol, permeability of lipid bilayer, transport proteins. 4.2) Transport of small molecules: Diffusion, passive transport, osmosis (osmotic pressure, tonicity), facilitated diffusion, active transport (Na ⁺ - K ⁺ pump). 4.3) Transport of large molecules : Exocytosis, Endocytosis	
5. Acquisition of energy by organism 5.1) Photosynthesis: Significance of photosynthesis, structure and function of chloroplast, requirement of photosynthesis, reactions in photosynthesis. 5.2) Aerobic respiration : Glycolysis, Krebs Cycle, Electron Transport Chain.	
6. Multicellular organization 6.1) Basic types of animal tissues; epithelia, connective tissue, nerve and muscle. 6.2) Primary and compound tissue in plants.	

7. Introduction to organ system

- 7.1) Overview of major systems and homeostasis
- 7.2) The digestive system; anatomy of digestive system, process of chemical digestion and absorption.
- 7.3) The circulatory system; open and close circulatory systems, blood and the characteristic of blood vessel
- 7.4) The respiratory system: Structure of human lung, mechanism of breathing,
- 7.5) The nervous system; CNS and PNS, types of neurons, structure of synapses, type of neurotransmitter and their functions.
- 7.6) The endocrine system: Endocrine glands and hormones (glands in Human and functions of hormones)
- 7.7) The urinary system: Types of nitrogenous waste, structure of kidney
- 7.8) The reproductive system

8. Environmental biology

- 8.1) Levels of biological organization; Systematics and Taxonomy
- 8.2) Biosphere and biomes
- 8.3) Ecosystems and energy flow
- 8.4) Population growth; intraspecific and interspecific relationship
- 8.5) Nutrient cycle: Nitrogen, Carbon and Phosphate.

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	n/a	10%	CLO3
	Lab Exercise	Lab report	10%	CLO2
	Quiz	QUIZ 1	3%	CLO1
	Quiz	QUIZ 2	3%	CLO1
	Quiz	QUIZ 3	4%	CLO1
	Test	TEST 1	10%	CLO1
	Test	TEST 2	10%	CLO1
	Test	TEST 3	10%	CLO1

Reading List	Reference Book Resources	<ul style="list-style-type: none"> Campbell, Reece, Taylor & Simon, <i>BIOLOGY Concepts & Connection</i>, 10 Ed., Pearson Benjamin Cummings Star, Evers & Star, <i>BIOLOGY Concepts & Application</i>, 7 Ed., Thomson Brooks/Cole
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	