



UNIVERSITI TEKNOLOGI MARA

BIO083: BIOLOGY FOR PRE SCIENCE

Course Name (English)	BIOLOGY FOR PRE SCIENCE APPROVED
Course Code	BIO083
MQF Credit	4
Course Description	This course involves the basic concepts and principles of biology that cover on the surface information about cells structure, component and function, basic animal and plant tissue, structure and function, organ structure and functions, basic concept of nutrition in organism such as for example digestive process in human and photosynthesis process in plant. Throughout the course students will be equipped with basic knowledge in biology that is very important for the detail biology process during the diploma and degree level.
Transferable Skills	Demonstrate ability to identify and articulate self skills, knowledge and understanding confidently and in a variety of contexts.
Teaching Methodologies	Lectures, Lab Work, Tutorial
CLO	CLO1 Explain the basic concepts and principles relevant to biology. CLO2 Follow scientific procedures in experiments and complete the laboratory datasheet related to basic concepts and principles in biology. CLO3 Demonstrate teamwork through group project as related to living organisms.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to Biology 1.1) 1.1 What is biology 1.2) 1.2 Branches in biology 1.3) 1.3 Characteristics of life 1.4) 1.4 Hierarchy of organization of organisms 1.5) 1.5 Hierarchy of classification of organisms	
2. Organic Compounds 2.1) 2.1 Carbohydrates 2.2) 2.2 Lipids 2.3) 2.3 Protein 2.4) 2.4 Nucleic acids	
3. Introduction to Cell 3.1) 3.1 Theory of cell and biogenesis 3.2) 3.2 Prokaryotic and eukaryotic cell 3.3) 3.3 The structure and function of eukaryotic cell components 3.4) 3.4 Comparison of animal cell, plant cell and bacteria cell 3.5) 3.5 Unicellular and multicellular organisms: definition, example and differences	
4. Plasma Membrane and Transportation Process 4.1) 4.1 General function of plasma membrane 4.2) 4.2 Brief explanation and diagram of membrane structure according to Fluid Mosaic Model 4.3) 4.3 Definition of permeable, semi permeable, selectively permeable, impermeable 4.4) 4.4 membrane, solutions, solvents and solutes 4.5) 4.5 Differences between active transport and passive transport 4.6) 4.6 Movement across plasma membrane through passive transportation 4.7) 4.7 Movement across plasma membrane through active transportation	

5. Histology

- 5.1) 5.1 Animal tissues
- 5.2) 5.1.1 Epidermis tissue
- 5.3) • Simple-Squamous, Cuboidal, Columnar
- 5.4) • Compound-Transitional, Stratified
- 5.5) 5.1.2 Connective tissue
- 5.6) • Areolar, Cartilage, Bone, Blood
- 5.7) 5.1.3 Muscle tissue
- 5.8) • Skeletal, Smooth, Cardiac muscle
- 5.9) 5.1.4 Nervous tissue
- 5.10) • Sensory neuron, Interneuron, Motor Neuron
- 5.11) 5.2 Plant tissues
- 5.12) 5.2.1 Meristem tissue
- 5.13) • Apical, Intercalary, Lateral meristem
- 5.14) 5.2.2 Permanent tissue
- 5.15) • Dermal tissue, Ground tissue, vascular tissue

6. Organ and Organ Systems

- 6.1) 6.1 Definition of organ
- 6.2) 6.2 Definition of systems
- 6.3) • Brief explanation on function, diagram and components of the systems (Integumentary system, Skeletal system, Nervous system, Endocrine system, Circulatory system, Urinary system, Digestive system, Respiratory system, Reproductive system)

7. Nutrition

- 7.1) 7.1 Definition of autotroph and heterotroph
- 7.2) 7.2 Nutrition of autotrophic organisms
- 7.3) 7.3 Nutrition of heterotrophic organisms
- 7.4) 7.4 Human digestive system

8. Homeostasis

- 8.1) 8.1 Definition and the importance of homeostasis
- 8.2) 8.2 Concepts of positive and negative feedback mechanisms: definition, explanation and examples
- 8.3) 8.3 Renal osmoregulation by kidney
- 8.4) 8.4 Control body temperature
- 8.5) 8.5 Control blood sugar level

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Written essay about a project related to living things.	20%	CLO3
	Lab Exercise	Lab report writing. Report on each experiment on week 4, 6 or 8 and 11. Total 3 labs.	20%	CLO2
	Test	Test. Cover chapter 1, 2, 3, 4.	20%	CLO1

Reading List	Recommended Text
	<ul style="list-style-type: none"> • Ching L. 2018, <i>STPM Biology Super skills Pre-U Text Term 1</i> [ISBN: 13 9789835989] • Chia Lok Thye, Jacqueline J. Jacob, Nalini T. Balachandran 2014, <i>Ace Ahead STPM Text Biology First Term Updated Edition</i> [ISBN: 978 983 47 29] • Eldra Solomon, Charles Martin, Diana W. Martin, Linda R. Berg 2014, <i>Biology</i>, Cengage Learning [ISBN: 9781285423586] • Campbell, N., and Reece, Jane 2015, <i>Biology</i> [ISBN: 8601415659009] • Starr, C 1999, <i>Basic Concepts in Biology</i> [ISBN: 0534372589] • Kamaludin A. R., Mamat M., Aziz, N. A. A., Hashim, N. H., Starr, C., Taggart, R. 2006, <i>Biology for STPM Volume 1</i>, Brooks/Cole Publishing Company [ISBN: 133089050]
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources