



UNIVERSITI TEKNOLOGI MARA

BIO320: INTRODUCTION TO BIOLOGICAL DIVERSITY

Course Name (English)	INTRODUCTION TO BIOLOGICAL DIVERSITY APPROVED
Course Code	BIO320
MQF Credit	3
Course Description	This course gives information about the diversity of life on earth from the simplest and primitive organisms to more complex and advanced organisms. It also covers how living things are categorized into groups based on their common features, unique life history and evolutionary relationship.
Transferable Skills	Classification of living things.
Teaching Methodologies	Lectures, Lab Work, Tutorial, Presentation
CLO	CLO1 Describe characteristics, unique life history and common features in each major group of living things. CLO2 Perform (plan, conduct and analyse) scientific investigations in area of biological diversity. CLO3 Demonstrate verbally and in writing the articulation of information with relevant ideas related to biological diversity.
Pre-Requisite Courses	No course recommendations
Topics	<p>1. Introduction to Biological Diversity 1.1) 1.1 Terminology: Biodiversity, Systematics, Taxonomy, Classification 1.2) 1.2 Binomial System of Nomenclature 1.3) 1.3 Hierarchy of Classification 1.4) 1.4 Classification of Organisms - 2-kingdom classification, 3-domain classification, 5-kingdom classification & 6-kingdom classification 1.5) 1.5 Systematic and phylogeny</p> <p>2. Viruses 2.1) 2.1 Structure and characteristics of viruses 2.2) 2.2 Lytic and Lysogenic life cycles of bacteriophage 2.3) 2.3 Viroids and Prions</p> <p>3. Kingdom Eubacteria and Archaeobacteria 3.1) 3.1 Eubacteria 3.2) i) Structure and Characteristics of bacteria 3.3) ii) Sexual and asexual life cycle 3.4) iii) Gram-positive and Gram-negative bacteria 3.5) iv) Metabolic diversity in bacteria: Heterotrophs (free living, saprotroph, parasite), Autotrophs (photoautotroph, chemoautotroph), Aerobe and facultative/obligate Anaerobe 3.7) 3.2 Archaeobacteria 3.8) i) Methanogens, extreme halophiles, extreme thermophiles 3.9) ii) Differences between eubacteria and archaeobacteria 3.10) iii) Significance of bacteria in ecosystem, food and beverage industries, medicine, biotechnology</p> <p>4. Kingdom Protista 4.1) 4.1 Characteristics of Protista 4.2) 4.2 Protozoa 4.3) i) Classification of protozoa 4.4) ii) Structure and characteristics of Amoebas, Forams, Actinopods, Zooflagellates, Ciliates and Apicomplexans 4.5) iii) Reproduction in Paramecium 4.6) iv) Life cycle of Plasmodium sp.</p>

4.7) 4.3 Algae
4.8) i) Classification of algae
4.9) ii) Structure and characteristics of Euglenoids, Dinoflagellates, Diatoms, Golden Algae, Brown Algae, Green Algae and Red Algae
4.10) iii) Life cycle of Chlamydomonas
4.11) 4.4 Molds
4.12) i) Classification of molds
4.13) ii) Structure and characteristics of Plasmodial Slime Molds, Cellular Slime Molds and Water Molds
4.14) iii) Life cycle of Molds

5. Kingdom Fungi

5.1) 5.1 Characteristics of Fungi
5.2) 5.2 Classification and life cycle of Fungi: Chytridiomycetes, Zygomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes.
5.3) 5.3 Lichens
5.4) 5.4 Significance of fungi ecologically and economically

6. Kingdom Plantae

6.1) 6.1 Characteristics of Plants
6.2) 6.2 Nonvascular Plants – Mosses and Allies (Life cycles of Polytrichum and Marchantia)
6.3) 6.3 Vascular Plants
6.4) i) Evolutionary history : roots, leaves, spores and seeds
6.5) ii) Ferns and Allies (Life cycles of fern)
6.6) iii) Gymnosperms – Characteristics and lifecycle of Pinus
6.7) iv) Angiosperms – Characteristics and double fertilization

7. Kingdom Animalia

7.1) 7.1 Evolutionary relationship and characteristics of animals (body symmetry, body cavity and pattern of development)
7.2) 7.2 Structure and characteristics of Sponge
7.3) 7.3 Structure and characteristics of Cnidaria and Ctenophora
7.4) 7.4 Structure and characteristics of Flatworm, Nemertea, Nematoda and Annelida
7.5) 7.5 Structure and characteristics of Rotifera, Mollusca and Arthropoda (Arachnida, Crustacea, Insecta, Chilopoda and Diplopoda)
7.6) 7.6 Structure and characteristics of Echinodermata
7.7) 7.7 Structure and characteristics of Chordata

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Presentation	Video Presentation	15%	CLO3
	Test	Ongoing Online Test	25%	CLO1
	Written Report	Lab Report	20%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> Campbell, N.A. and Reece, J.B. 2014, <i>Biology</i>, 10 Ed., Pearson Education Inc.
	Reference Book Resources	<ul style="list-style-type: none"> Solomon, E.P., Martin, C., Martin, D.W. and Berg, L.R 2015, <i>Biology</i>, 10 Ed., Brooks/Cole Publishing Co. Raven, P.H., Johnson, G.B., Mason, K.A., Losos, J.B. & Singer, S.R. 2016, <i>Biology</i>, 11 Ed., McGraw Hill Education. Mader, S. & Windelspecht, M. 2015, <i>Biology</i>, 12 Ed., McGraw Hill Education. Brooker, R., Widmaier, E., Graham, L. & Stiling, P. 2016, <i>Biology</i>, 4 Ed., McGraw Hill Education.

Article/Paper List	This Course does not have any article/paper resources
---------------------------	---

Other References	This Course does not have any other resources
-------------------------	---