



UNIVERSITI TEKNOLOGI MARA

BCM150: BIOCHEMISTRY I

Course Name (English)	BIOCHEMISTRY I APPROVED
Course Code	BCM150
MQF Credit	2
Course Description	This subject covers an introductory concept of basic biochemistry in the following topics: carbohydrate, fatty acids, enzymes, amino acids, proteins, nucleic acids and metabolism. This subject will be performed via face-to-face lecture discussion.
Transferable Skills	Demonstrate ability to identify and articulate self skills, knowledge and understanding confidently and in a variety of contexts.
Teaching Methodologies	Lectures, Discussion
CLO	CLO1 Describe the structures, functions, interactions and chemical reactions of biomolecules in biochemistry. CLO2 Relate the structures of biomolecules to their functions and interactions in biochemistry. CLO3 Identify the uses of biochemistry in daily life and in industries.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction 1.1) What is Biochemistry? 1.2) The Uses of Biochemistry	
2. Enzymes: Biological Catalysts 2.1) Role of Enzymes 2.2) Classification of Enzymes 2.3) How Enzymes Act as Catalysts: Principles and Examples 2.4) Enzymes Cofactor: Structure and Function 2.5) Isozymes, Multienzymes, Allosteric Enzymes	
3. Carbohydrate 3.1) Monosaccharide (Structure and stereochemistry, Fischer and Haworth Projections & Reducing and Non-reducing Sugars) 3.2) Oligosaccharides (Stability and Formation of Glycosidic 3.3) Bonds, Oligosaccharides Structures 3.4) Polysaccharides (Structural Polysaccharides & Storage Polysaccharides)	
4. Lipid 4.1) Fatty Acids (Essential Fatty Acids 4.2) Physical and Chemical Properties of Fatty Acids 4.3) Classification of Lipids	
5. Amino Acids 5.1) Definition, Functions and Classification 5.2) Peptides and Polypeptides	
6. Proteins 6.1) Definition and function 6.2) Types of Chemical Bonds 6.3) Primary, Secondary, Tertiary and Quaternary Structure 6.4) Protein Denaturation	

7. Nucleic Acids

- 7.1) Definition
- 7.2) Purines, Pyrimidines, Nucleosides and Nucleotides
- 7.3) Phosphate Diester Bond
- 7.4) Structure and Functions of DNA and RNA

8. Overview of Metabolism

- 8.1) Overview of Metabolism (Definition, Catabolism and anabolism – definition, example, Identify/distinguish structure of coenzymes &
- 8.2) Identify structure of ATP)
- 8.3) Carbohydrate Respiration (Glycolysis, the fate of pyruvate, Substrate-level phosphorylation and oxidative phosphorylation)
- 8.4) Citric acid cycle (Definition, Explain the citric acid cycle, Distinguish between glycolysis and citric acid cycle)
- 8.5) Catabolism of lipid (Understand Beta-oxidation)

Assessment Breakdown		%		
Continuous Assessment		100.00%		
Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Individual Assignment	20%	CLO2
	Assignment	Group Assignment	20%	CLO3
	Final Test	Final Test	20%	CLO1
	Test	Test 1	20%	CLO1
	Test	Test 2	20%	CLO1
Reading List	Recommended Text	<ul style="list-style-type: none"> • Campbell Farrell 2012, <i>Biochemistry</i>, 7th Ed., Brooks/Cole Cengage Learning [ISBN: 9781111425647] • Rodney Boyer 2006, <i>Concepts in Biochemistry</i>, 3rd Ed., Wiley Asia [ISBN: 9780471661832] 		
Article/Paper List	This Course does not have any article/paper resources			
Other References	This Course does not have any other resources			