



FACULTY OF HEALTH SCIENCES AND SPORTS
BACHELOR OF SCIENCE IN BIOMEDICAL TECHNOLOGY (MEDICAL LABORATORY TECHNOLOGY)
LEARNING MODULE OUTLINE

Academic Year	2023 / 2024	Semester	2
Module Code	BSBC1102		
Learning Module	Biochemistry		
Pre-requisite(s)	N/A		
Medium of Instruction	Chinese / English		
Credits	4	Contact Hours	60
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MODULE DESCRIPTION

This 60-hour subject is one of the foundation subjects of the biomedical sciences program. It involves the study of the molecular composition of living cells. This course focuses on the organization, the structure, the function and the metabolic mechanisms of biological molecules within the cell. Along with the study of the macromolecules, we provide several laboratory practices with methods and approaches used in biochemical research will be presented as will the biochemical basis of some disease states.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

On completion of this learning module, students will be able to:

M1.	understand basic biochemistry theory.
M2.	master the basic biochemistry laboratory techniques.
M3.	study successive subjects; Clinical biochemistry, Molecular biology, Molecular Genetics, Pharmacology ...etc.

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):



PILOs	M1	M2	M3
P1. To demonstrate understanding of a range of subjects, fields, principles and approaches relevant to medical laboratory technology	✓	✓	✓
P2. To demonstrate understanding of theories, analytical approaches and practices that underpin medical laboratory operations and management			
P3. To demonstrate understanding of major trends and issues related to medical laboratory technology	✓	✓	✓
P4. To apply professional knowledge and skills to analyse, interpret and solve problems, challenges and risks in medical laboratory practice	✓		
P5. To critically appraise and interpret scientific and clinical literature and apply evidence-based practice	✓	✓	✓
P6. To acquire and apply research skills in medical laboratory technology	✓	✓	✓
P7. To demonstrate effective communication and teamwork skills		✓	
P8. To maintain professional and ethical standards in medical laboratory practice and research	✓	✓	✓

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
2	Introduction to biochemistry Cell and Molecules	2
2, 3	Amino acids and Peptides	4
3, 4	Proteins	8
5, 6	Nucleotides and nucleic acids	6
7	Carbohydrates and Glycobiology	4
8	Lipids	2
8	Experiment – Total protein and Albumin detection	4
9	Midterm test	2
9, 10	Enzyme	4
11, 13	Glycolysis, Gluconeogenesis and Pentose phosphate pathway	4
13, 14	Metabolic regulation of glucose and glycogen	4
14	Citric acid cycle	4
15	Fatty acid catabolism	4
15	Lipid biosynthesis	2
15	Experiment – Calcium detection and Liver protein extraction	2
15	Experiment – Human DNA extraction	2
17	Examination	2



TEACHING AND LEARNING ACTIVITIES

In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	M1	M2	M3
T1. Lectures	✓	✓	✓
T2. In-class discussion	✓	✓	✓
T3. Experiment reports		✓	
T4. Test and examination	✓	✓	✓

ATTENDANCE

Attendance requirements are governed by the Academic Regulations Governing Bachelor's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

ASSESSMENT

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	Weighting (%)	ILOs to be Assessed
A1. Experiment reports	15	M1, M2
A2. Test	40	M1, M2, M3
A3. Examination	45	M1, M2, M3

This learning module is graded on a 100 point scale, with 100 being the highest possible score and 50 being the passing score.

Any students scoring less than 35% of the total mark in the final examination will be given an "F" grade for the module even if the overall grade is 50% or higher.

The assessment will be conducted following the University's Assessment Strategy (see www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.



MARKING SCHEME

Assessment Activities	Assessment Criteria	Mark Ranges				
		88-100	73-87	58-72	50-57	<50
A1.	Demonstrate the understanding of the covered topics in module and show active learning attitude	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A2.	Demonstrate the understanding of the covered topics in module	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A3.	Demonstrate the understanding of the covered topics in module	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels

REQUIRED READINGS

Reginald H. Garrett, Charles M. Grisham (2023). *Biochemistry*. 7th Edition. Cengage Learning. ISBN 978-0357728451

REFERENCES

David L. Nelson, Michael M. Cox, Aaron A. Hoskins (2021). *Lehninger Principles of Biochemistry*. 8th Edition. W.H. Freeman. ISBN 978-1319228002

Jeremy M. Berg, Gregory J. Gatto, Justin K. Hines, et al. (2023) *Biochemistry* 10th Edition. W. H. Freeman. ISBN 978-1319333621

STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at www.mpu.edu.mo/student_handbook/.