澳門理工大學
Universidade Politécnica de Macau
Macao Polytechnic University

FACULTY OF HEALTH SCIENCES AND SPORTS

BACHELOR OF SCIENCE IN BIOMEDICAL TECHNOLOGY (PHARMACY TECHNOLOGY)

LEARNING MODULE OUTLINE

Academic Year	2024 / 2025	Semester	2
Module Code	BSIM1102-122		
Learning Module	Immunology		
Pre-requisite(s)	N/A		
Medium of Instruction	Chinese / English		
Credits	3	Contact Hours	45
Instructor	Lam Im Fong, Cristina	Email	iflam@mpu.edu.mo
Office	Meng Tak Building Room M706	Office Phone	8599 3432 (Cristina)

MODULE DESCRIPTION

This 45-hour subject is one of the foundation subjects of the biomedical sciences program. It gives a comprehensive overview of the different components and processes of the immune system. The theoretical parts are treated during lectures, videos, and group presentations. It also includes several laboratory practices for immunological laboratory techniques training.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

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

M1.	Understand the principles of immunology, including its components, functions, and interactions with other systems in the body.
M2.	Explain the different types of immune responses, including innate and adaptive immunity, and understand the cellular and molecular mechanisms involved in these responses.
M3.	Understand the principles of immunization and vaccination, including the various types of vaccines, their mechanisms of action, and the importance of vaccination in preventing infectious diseases.
M4.	Able to integrate immunological knowledge with microbiology and biochemistry into a broader understanding of medical technology and patient care.
M5.	Study successive subjects: Clinical immunology, Haematology, Blood bank ...etc.

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

PILOs	M1	M2	M3	M4	M5
P1. To demonstrate an understanding of a range of subjects, fields, principles, and approaches relevant to medical laboratory technology	✓	✓	✓	✓	✓
P2. To demonstrate an 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 analyze, 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
1	Introduction to immunology	2
2	Innate immunity	4
3, 4	Adaptive immunity	4
4	Antigens	2
5	Immunoglobulins: structure and function	2
8	Immunoglobulins: isotypes, allotypes and idiotypes and genetics	2
8, 9	Complement	3
9	Lab – hCG	1
10	Midterm exam	2
10, 11	MHC Genetics and Function	4
12	Antigen presentation to T lymphocyte	4

13, 14	Biology of T lymphocytes: TCR structure and Function	4
15, 16	T Cell Activation and T Cell-Mediated Immunity	4
16	B Cell Activation and Humoral Immunity	2
17	Presentation	3
19	**Final 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**	**M4**	**M5**
T1. Lectures	✓	✓	✓	✓	✓
T2. Lab - hCG	✓	✓	✓		✓
T3. Active learning: presentation	✓	✓	✓	✓	✓
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. Lab report	4	M1, M2, M3, M5,
A2. Presentation	8	M1, M2, M3, M4, M5
A3. Test	38	M1, M2, M3, M4
A4. Examination	50	M1, M2, M3, M4, M5

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

Jenni Punt, Sharon Stranford, Patricia Jones, Judy Owen (2019). *Kuby immunology*. 8th Edition. W. H. Freeman, ISBN 978-1-319-26722-3

Kenneth M. Murphy, Casey Weaver, Leslie J. Berg (2022). *Janeway's Immunobiology*. 10th Edition. W. W. Norton & Company. ISBN 978-0-393-88489-0

REFERENCES

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 program coordinators will consider all feedback and respond with actions formally in the annual program 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 regulations and guidelines in the Student Handbook, which is distributed upon admission into the University. A copy of this handbook can also be found at www.mpu.edu.mo/student_handbook/.