



**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	BSCI2102		
Learning Module	Clinical Immunology		
Pre-requisite(s)	BSIM1102		
Medium of Instruction	Chinese / English		
Credits	4	Contact Hours	60
Instructor	Lam Im Fong, Cristina	Email	iflam@mpu.edu.mo
Office	Meng Tak Building, Room M706	Office Phone	8599 3432 (Cristina)

#### MODULE DESCRIPTION

This 60-hour subject is one of the foundation subjects of the biomedical sciences program. It introduces the concepts of clinical immunology and serology for clinical laboratory practice. It involves the essential theoretical principles along with serology techniques most commonly used in clinical immunological laboratory. It provides knowledge required to perform different serological techniques used in disease diagnosis. The laboratory practices consist of the theory, application, and performance of common serological testing used clinical immunological laboratory.

#### MODULE INTENDED LEARNING OUTCOMES (ILOS)

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

M1.	Understand the Immunological concepts and principles of clinical immunology, including the immune system, immune responses, immunological disorders, and immunological tests.
M2.	Familiar with the various immunological disorders encountered in clinical practice, e.g.: autoimmune diseases, allergies, immunodeficiencies, and transplant rejection. Understand the underlying immunological mechanisms, clinical manifestations, and appropriate laboratory testing for these disorders.
M3.	Acquire practical skills in performing immunological laboratory techniques commonly used in the diagnosis and monitoring of immunological disorders. Understand the principles, limitations, and interpretation of these tests.
M4.	understand the importance of quality assurance and quality control measures in immunological testing. Implement and monitor quality control procedures, ensure accuracy and precision in test results, and troubleshoot technical issues that may arise during testing.
M5.	Develop effective communication skills to interact with healthcare professionals, patients, and laboratory staff. Provide appropriate professional recommendations and aware with ethical considerations.

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



PIOs	M1	M2	M3	M4	M5
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 clinical immunology	2
2, 3	Natural immunity	3
3	Lymphoid system	3
4	Precipitation reactions	2
4, 5	Active learning: agglutination reactions	4
5, 8	Labeled immunoassays	6
9	Lab - precipitation	4
10	Midterm exam	2
10, 11	Hypersensitivity	6
12, 13	Autoimmunity	8
14	Lab – ANA and dsDNA	4
15	Transplantation immunology	3
15	Tumor immunology	3
16	Lab – VCA-IgG, IgA	4
17	Technique exam	4
19	Final exam	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	✓	✓	✓	✓	✓
T3. Active learning: agglutination reactions	✓	✓	✓	✓	✓
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. Active learning: agglutination presentation	5	M1, M2, M3, M4, M5
A2. Lab report	5	M1, M2, M3, M4, M5
A3. Lab technique exam	10	M1, M2, M3, M4, M5
A4. Test	35	M1, M2, M3, M4
A5. Examination	45	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](http://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

Linda E. Miller, Christine Dorresteyn Steven (2021). *Clinical Immunology and Serology – a Laboratory perspective*. 5<sup>th</sup> edition. F. A. Davis. ISBN 978-0-803-69441-5

Robert R. Rich, Thomas A. Fleisher... (2023) *Clinical Immunology Principles and Practice*. 6<sup>th</sup> edition. Mosby Elsevier, ISBN 978-0-7020-8165-1

## 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 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/](http://www.mpu.edu.mo/student_handbook/).