



Department of Medical Laboratory Analysis

College of Health Sciences

University of Cihan- Sulaymaniyah

Subject: Clinical Immunology

4th Stage - 1st semester

Course Book – Year 2023-2024.

Lecturer's name: Mohammed Tofiq Salih

Academic Year: 2023/2024

Course Book

1. Course Name	Clinical Immunology
2. Lecturer In Charge	Mohammed Tofiq Salih
3. Department/ College	Medical Laboratory Analysis
4. Time (In Hours) Per Week	6 hrs. Theory 12 hrs. Practical
5. Office Hours	All days of the Week From (9:00 to 14:00)
6. Course Code	
7. Teacher's Academic Profile	
8. Keywords	

9. Course overview:

Immunology can be broadly defined as a science that deals with the body's defence system (immune system) against various pathogens. The application of the knowledge of immunology and the immune system to human health can be defined as clinical immunology. Clinical immunology is a relatively new specialty of medicine. It encompasses the laboratory diagnosis and clinical management of various diseases caused by disorders of the immune system either due to its failure (immunodeficiency), aberrant action (autoimmunity, allergy) or malignant growth of cellular elements (leukaemia, lymphoma). It also encompasses the diseases of other systems, where immune reactions play a part in the pathogenesis such as multiple sclerosis, diabetes etc. Thus, Clinical Immunology can be grouped into the following six distinct divisions:

1. Autoimmunity,
2. Immunodeficiency,
3. Allergy,
4. Immune malignancies,
5. Transplantation Immunology and Immunogenetics,
6. Infectious disease immunology and vaccinology,

10. Course objective:

The aim of the course is to provide advanced training in Clinical Immunology to produce competent sub-specialists who are able to provide clinical care of the highest order to patients and serve as future trainers and researchers in the field.

11. Student's obligation

A student has an obligation to respect the ethical standards of **Cihan University** in the following points:

A. Class Attendance and responsibilities:

1. Students are expected to attend each class for the entire semester.
2. If a student arrives more than 15 minutes late or leaves more than 15 minutes early, they will be marked as absent for the whole hour.
3. Students are responsible for material present in lectures.
4. Students will take several quizzes over the course and the quiz marks will be counted toward the final grade. So, try to prepare yourself for quiz every week.

B. Penalty and acceptable excuses for class and exam absence:

1. Only students with official absence, family crises, and illness are excused from class.
2. Three occasions of lateness count as one absence.
3. The student who misses 10 percent of the classes will be placed on probation.
4. Since all examinations are announced in advance, **ZERO** grade will be given to any missed examination unless a student has an acceptable reason, such as illness, for not being able to take the examination during all those days when the examination was announced.

12. Forms of teaching

The way in which teaching is structured is in the form of lectures and laboratory exercises. Compulsory parts of the course include quizzes and final account. The lectures are added more detail through assignments, cooperative learning, videos and web tools.

13. Assessment scheme

Theory Session			
No.	Activities	Number or Quantity	Mark %
1	Assignments/ Home Work	2	2
2	Quiz	1-2	1
3	Attendance	-	2
4	Test (Theory)	1	25
Total			30
Practical Session			
1	Quiz	4-5	4
2	Lab. Report	-	8
3	Lab. Presentation	-	4
4	Lab. Attitude	-	2
5	Attendance	-	2
Total			20
Final Exam			
1	Practical Examination	1	20
2	Theory Examination	1	30
Total			100

14. Student Learning Outcome:

Specific Learning Objectives:

At the end of the course, the student should be able to:

- A.** Clinically diagnose, investigate and manage a whole spectrum of immune-mediated disorders.
- B.** Practically perform and interpret the common laboratory techniques used in the Immunology Laboratory.
- C.** Plan and undertake research in Clinical Immunology in the clinic, laboratory and community.
- D.** Competent to understand and critically analyse the new literature in the field of Immunology.

15. Course Reading List and References:

- a. CHAPEL, H., HAENEY, M., MISBAH, S., & SNOWDEN, N. Essentials of. Clinical Immunology.
- b. Rich, R. R., Fleisher, T. A., Shearer, W. T., Schroeder Jr, H. W., Frew, A. J., & Weyand, C. M. (2012). Clinical immunology e-book: principles and practice. Elsevier Health Sciences.
- c. Stevens, C. D., & Miller, L. E. (2021). Clinical Immunology and Serology: A Laboratory Perspective. FA Davis.
- d. Abbas, A. K., Lichtman, A. H., & Pillai, S. (2019). Basic immunology e-book: functions and disorders of the immune system. Elsevier Health Sciences.

16. The Topics:

A. Theory Lecture

no.	Topic
1	Basic Components: Structure and Function (Part-1) <ul style="list-style-type: none">• An Overview of the innate immunity
2	Basic Components: Structure and Function <ul style="list-style-type: none">• Key molecules• Functional basis of innate responses
3	Basic Components: Structure and Function (Part-2) <ul style="list-style-type: none">• An Overview of Specific Immunity• Functional basis of the adaptive immune responses
4	Basic Components: Structure and Function <ul style="list-style-type: none">• Physiological outcomes of immune responses• Tissue damage caused by the immune system• Organization of the immune system: an overview
5	Infection <ul style="list-style-type: none">• Normal resistance to infection• Viral infection• Bacterial infection• Mycobacterial infection• Fungal infection• Parasitic infections
6	Immunodeficiency <ul style="list-style-type: none">• Introduction• Primary antibody deficiencies [PADs]• Combined primary T- and B-cell immunodeficiencies• Primary defects in non-specific immunity• Secondary immunodeficiencies
7	Anaphylaxis and Allergy <ul style="list-style-type: none">• Introduction• Immediate (type I) hypersensitivity• Atopy• Anaphylaxis

	<ul style="list-style-type: none"> • Allergic conjunctivitis • Respiratory allergy • Food allergy and intolerance • Skin diseases
8	Autoimmunity <ul style="list-style-type: none"> • Definition of autoimmunity and autoimmune disease • Patterns of autoimmune disease • Who gets autoimmune disease? • What prevents autoimmunity? • How does tolerance break down? • What triggers autoimmunity? • Mechanisms of tissue damage • Treatment of autoimmune disease
9	Lymphoproliferative Disorders <ul style="list-style-type: none"> • Introduction, • Biology of malignant transformation in haematopoietic cells, • Leukaemias, • Lymphomas, • Plasma cell dyscrasias,
10	Immune Manipulation <ul style="list-style-type: none"> • Introduction, • Immunosuppression, • Immunization against infection, • Immune potentiation other than vaccines.
11	Transplantation (Part 1) <ul style="list-style-type: none"> • Introduction, • Histocompatibility genetics in humans,
12	Transplantation (Part 2) <ul style="list-style-type: none"> • Renal transplantation, • Other types of transplantation, • Haematopoietic stem cell transplantation.
13	Final Examination

B. Practical Lecture

no.	Topic
1	Types of Samples
2	Antigen preparation
3	Laboratory Animals in Immunology Research
4	Immunization and Secondary lymphoid organs (lymph node & Spleen) collection
5	The basic principle of serologic tests/ Routine Serological tests

6	Labeled Immunoassays- ELISA technique (Part-1)
7	Labeled Immunoassays- ELISA technique (Part-2)
8	Labeled Immunoassays- Radioimmunoassay (RIA)
9	Fluorescent Immunoassays (Direct & Indirect)
10	Western blotting or Immunoblotting
11	Flow Cytometry
12	HLA typing (serological)
13	Final Examination

17. Sample of Question:

Q1/ Define the following terms:

1) Affinity, 2) Epitope (antigenic determinant)

Q2/ Determine if the following statements are true or false. If false, replace the underlined word(s) or expression to produce a true statement.

No.	Answer	Statements
1.	T	The antibodies are <u>carbohydrates</u> present in the serum and tissue fluids.
2.	T	Adaptive immune system is the <u>first line of defence</u> against infection.
3.	<u>T</u>	Central immune organs are the site that lymphocytes <u>generate and mature into functional cells.</u>

Q3/ Choose the correct answer for each question:

1. Which of the following cells defend against virus-infected and tumour cells?

- A. NK-cells.
- B. Megakaryocytes.
- C. Eosinophils.
- D. Macrophages.

2. Which of the following autoimmune disease affects the joints?

- A. Scleroderma.
- B. Hashimoto's Thyroiditis.
- C. Rheumatoid arthritis.
- D. Guilliane-Barré syndrome.

3. Which of the following cell types mediates adaptive immune responses?

- A. Dendritic cell.
- B. Lymphocyte.
- C. Macrophage.
- D. Natural Killer cell.

Q4/ Enumerate the following:

1. The components of innate immunity:
2. Types of hypersensitivity reactions with their synonyms:
3. Induction types of acquired immune system:

Q5/ Explain the following in details:

1. Properties of Adaptive Immune Responses.
2. The role of Lymphocytes in the immune system.

18. Peer review: I certify that:

1. I read and verify all requirements of teaching quality assurance are respected in this course book.
2. The scientific contents are new, convenient and well organized for this stage.
3. The order of chapters is well done.
4. References are new and available for students.

That's why I signed on this course book and I take all responsibilities.

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Signature:

Mohammed Tofiq Salih

Main Lecturer in charged

Mohammed Tofiq Salih

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