



Instructor:
Office #:
Office phone:
E-mail:

Office Hours:

Course description:

The students will be introduced to the basic concepts of immunology and the biology of the immune cells, they will also learn the fundamentals of the immune tests and the basic of the immune research experiments in addition to the serological techniques and instrumentations. Immune disturbance consequences and diseases will also be covered.

Aims of the course:

The course aims to provide students with a basic knowledge of the immune response and its involvement in health and disease.

Provide the students with a comprehensive understanding of practical aspects of immunity including: immunization, causes for immune response dysfunction, and immunisation at external surfaces.

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

A1. Concepts and Theories:

- Familiarize students with basic concepts in immunology
- Introduce students to the most important theories in immunology
- Introduce to the students the different types of failures of the immune system
- Present the difference between innate and adaptive immune responses
- Introduce the basic concepts in T cell education, survival, and maturation
- Familiarize the students with the different types of immunoglobulins and their functions
- Practically perform and interpret the common laboratory techniques used in the Immunology Laboratory

A2. Contemporary Trends, Problems and Research:

- Explain recent laboratory methods in diagnosis immunology-related disorders
- Plan and undertake research in Clinical Immunology in the clinic, laboratory and community

A3. Professional Responsibility:

- Apply the knowledge from this course while working in medical laboratory to diagnose different immunological disorders
- Apply quality control procedures in the lab

B. Subject-specific skills



B1. Problem solving skills:

Ability to analyze and solve problems related to immunological tests

Follow scientific procedure for solving problems in the lab and make sure to apply quality control procedures in the lab

B2. Modeling and Design:

Know how to access information about medical research

Perform information processing in the clinical laboratory

B3. Application of Methods and Tools:

Understand different methods used in medical immunology and apply them in future while working in medical laboratory or research labs

Practice and apply some of these techniques in the practical part of the course

Correlate laboratory results to diagnosis of clinical conditions resulted from immunological disorders

C. Critical-Thinking Skills**C1. Analytic skills:**

Interpret immunology test results to diagnose the cause of medical condition

Integrate the knowledge from this course to describe immunological disorders

Ability to analyze how an immunological disorder can affect the function of body and homeostasis

C2. Strategic Thinking:

Competent to understand and critically analyze the new literature in the field of immunology

Use a wide range of idea based on knowledge in this course to solve unexpected problems in the lab and apply this way of thinking in different life situations

C3. Creative thinking and innovation:

Use a wide range of idea based on their knowledge in this course to suggest research method related to clinical immunology and apply that on different scientific fields

D. General and Transferable Skills (other skills relevant to employability and personal development)**D1. Communication:**

Begin to develop intellectual independence and foster a commitment to lifelong learning

Appreciate the need to communicate information and arguments effectively using written and oral skills

D2. Teamwork and Leadership:

Understand and demonstrate how to work as part of a team by working with a group in the lab to perform experiment, analyze the data and submit report



Course structures:

Week	Topics	Chapter	Teaching Procedure	Assessment methods
1	Introduction to the immune system The organs of the immune system	1	Lecture, oral inquiry, figures & practical class	Class participation and discussion
2	Basic concepts and components of the immune system	2	Lecture, oral inquiry, figures & practical class	Practical test (measuring hormone from unknown sample), exam
3	Introduction to Antigen recognition Antigen and antibody structure Antigen Antibody interaction	5		
4	Innate immune system	3		
5	Adaptive immune system	4		
6	The T-cell receptor Major Histocompatibility complex	6		
7	Antigen processing and presentation Cell-Cell interaction in generating effector lymphocytes	7	Lecture, oral inquiry & figures	Class participation and discussion, exam
8	Killing in the immune system	Miscellaneous		
9	Phagocytosis	3		
10	Inflammation	8	Lecture, oral inquiry & figures	Class participation and discussion, exam
11	Cytokines	3,9	Lecture, oral inquiry & figures	Class participation and discussion, exam & homework
12	Hypersensitivity reactions type I Hypersensitivity reactions type II			
13	Hypersensitivity reactions type III Hypersensitivity reactions type IV	3,9	Lecture, oral inquiry & figures	Class participation and discussion, exam
14	Tumor Immunology Vaccines	10, 11	Lecture, oral inquiry & figures	Class participation and discussion, exam & homework
15-16				

References:

A. Main Textbook:

- Peakman, M., Vergani, D. 2009. Basic and Clinical Immunology (2nd Ed.). Churchill Livingstone, UK.



B. Supplementary Textbook(s) & Other Resources:

- 1.
2. **University Library:** the library in the university provides excellent electronic resources and databases that include research papers and book chapters. Please visit the university website/library page for more information.
3. **Internet:** there are many websites that provide valuable data related to clinical immunology including research paper, books, animation, etc. You can find more of these by searching in the internet using a suitable searching key. Many websites will be posted on moodle during the semester.
4. **NCBI database:** includes many textbooks that are available online FREE.
5. **Lecture Handouts**

Moodle:

- Moodle provides all the necessary information related to this course including: course syllabus, announcements related to the course, lecture handouts, etc.
- PLEASE MAKE SURE to check moodle for any update related to the course or to download lecture's handouts.

Assessment Methods:

Methods	Grade	Date
First exam	20 %	
Second exam	20 %	
Lab	20 %	
Final exam	40 %	To be determined by the registration

