Course plan

Year: 2025	**Semester:** ☐First, ■Second, ☐Summer	**Number of students: 12**
Major: Medical immunology	■Basic sciences, ☐Physiopathology	**Department:** Bacteriology and immunology
Course Title: Introduction to Laboratory Methods in Immunology	■Theoretical, ■Practical	**Credit:** **Code N.:** 1221047
Prerequisite:	**Day & Time:** Monday and Tuesday & ١٠-12	**Course type:**
Instructor:	**Office address:**	**Tel:** 09171747335
Email: safoora.pordel@gmail.com	**Response Hours and Days:**	**Student representative name and mobile number:**

Main objective: At the end of the course, the student should be familiar with some basic safety-related methods and have the necessary ability to conduct experiments and interpret the results.

On completion of this course, the student will be able to:

١. Use Principles of working in the laboratory, including dress code, definition of protection and safety (personal and environmental), familiarity with the building and sections of the laboratory, safety (various rooms and sections of the laboratory, including the cultivation room and the washing section, etc., exit doors and emergency escape routes)
٢. Use Principles of laboratory safety, classification of infectious and chemical agents, methods of storing chemicals in the laboratory, and training in R and S safety abbreviations and warnings, principles of disposal of biological, microbial, and chemical hazardous waste, principles of transportation and shipping of packages containing biological and pathological samples, familiarization with first aid in the event of chemical accidents in the laboratory.
٣. Learn Principles of disinfection and sterilization in clinical laboratories, principles of filtration of culture media, washing of containers in the laboratory, how to work with sterilization and washing devices in the laboratory
٤. Learn Principles of blood collection, types of anticoagulants, correct principles of working with syringes and needles, and how to deal with related incidents
٥. Learn Principles of freezing and thawing, principles of storing materials and cells at low temperatures, familiarity with types of refrigerators, cold rooms, types of freezers, freeze dryers, nitrogen tanks
٦. Learn Principles of volume measurement, principles of weighing in the laboratory, methods of making solutions and buffers, including familiarity with types of distilled water and the use of each in the laboratory, principles of pH adjustment and working with a pH meter.
٧. Know about the types of centrifuge devices, the laws related to them, and their use and performance, familiarity with the types of centrifuge methods, their basic operation and application.
٨. Learn Principles of microscopy and familiarity with microscopes used in immunology laboratories
٩. Learn Principles of photometry in the laboratory, Beer and Alembert's laws, familiarity with photometers and spectrophotometers, principles of drawing standard graphs and calculating concentrations
١٠. Know about antigen and antibody reactions, types of reactions
١١. Know about Sedimentation experiments and their applications, factors affecting sedimentation experiments
١٢. Know about Nephelometry, its principles and applications in the clinical laboratory, turbidometry
١٣. Explain skin tests and how to perform them
١٤. Explain Familiarity with quality control methods in the laboratory, including familiarity with quality assurance guidelines regarding quality control before, during, and after testing, methods for implementing quality control
١٥. Learn aboute Principles of electrophoresis, types of electrophoresis and its applications in the immunology laboratory (immunoelectrophoresis and countercurrent immunoelectrophoresis, etc.)
١٦. Explain Principles and foundations of Good Practice in the laboratory

References (Text books):

١- Deetrick B, Manual of clinical and laboratory immunology, latest edition.

٢- 2) McPherson RA, Henry's clinical diagnosis and management by laboratory methods, latest edition

Student evaluation and the value related to each evaluation:
(The assessment tools that will be used to test student ability to understand the course material and gain the skills and competencies stated in learning outcomes)

ASSESSMENT TOOLS	From
Assignments	2
Quiz	-
Presence in online courses	-
Midterm Exam	8
Final Exam (Written exam)	10
TOTAL MARKS	**20**

Students responsibilities:

١- 1- Mobile phones must be turned off during class or exams.
٢- 2- Attending class on time
٣- 3- It is necessary for the student to attend all class hours. Unexcused absence during the course will result in a grade deduction.

Discipline and educational rules:

١- It is applied according to the regulations of the educational regulations.

Mid exam date: **Final exam date:**

Row	date	Time	Topic	Professor	References	Chapter	Pages
1	April/14	10-12	Principles of working in the laboratory, including dress code, definition of protection and safety (personal and environmental), familiarity with the building and sections of the laboratory, safety (various rooms and sections of the laboratory, including the cultivation room and the washing section, etc., exit doors and emergency escape routes)	Dr.Pordel			
2	April/16	10-12	Principles of laboratory safety, classification of infectious and chemical agents, methods of storing chemicals in the laboratory, and training in R and S safety abbreviations and warnings, principles of disposal of biological, microbial, and chemical hazardous waste,	Dr.Pordel			

			principles of transportation and shipping of packages containing biological and pathological samples, familiarization with first aid in the event of chemical accidents in the laboratory.				
3	April/21	10-12	Principles of disinfection and sterilization in clinical laboratories, principles of filtration of culture media, washing of containers in the laboratory, how to work with sterilization and washing devices in the laboratory	Dr.Pordel			
4	April/24	10-12	Principles of blood collection, types of anticoagulants, correct principles of working with syringes and needles, and how to deal with related incidents	Dr.Pordel			
5	April/28	10-12	Principles of freezing and thawing, principles of storing materials and cells at low temperatures, familiarity with types of refrigerators, cold rooms, types of freezers, freeze dryers, nitrogen tanks	Dr.Pordel			
6	April/30	10-12	Principles of volume measurement, principles of weighing in the laboratory, methods of making solutions and buffers, including familiarity with types of distilled water and the use of each in the laboratory, principles of pH adjustment and working with a pH meter.	Dr.Pordel			
7	May/5	10-12	Familiarity with the types of centrifuge devices, the laws related to them, and their use and performance, familiarity with the types of centrifuge methods, their basic operation and application.	Dr.Pordel			
8	May/7	10-12	Principles of microscopy and familiarity with microscopes used in immunology laboratories	Dr.Pordel			
Midterm Exam							
9	May/12	10-12	Principles of photometry in the laboratory, Beer and Alembert's laws, familiarity with photometers and spectrophotometers, principles of drawing standard graphs and calculating concentrations	Dr.Pordel			
10	May/14	10-12	Introduction to antigen and antibody reactions, types of reactions	Dr.Pordel			
11	May/19	10-12	Sedimentation experiments and their applications, factors affecting sedimentation experiments	Dr.Pordel			

12	May/21	10-12	Nephelometry, its principles and applications in the clinical laboratory, turbidometry	Dr.Pordel			
13	May/26	10-12	Familiarity with skin tests and how to perform them	Dr.Pordel			
14	May/28	10-12	Familiarity with quality control methods in the laboratory, including familiarity with quality assurance guidelines regarding quality control before, during, and after testing, methods for implementing quality control	Dr.Pordel			
15	May/12	10-12	Principles of electrophoresis, types of electrophoresis and its applications in the immunology laboratory (immunoelectrophoresis and countercurrent immunoelectrophoresis, etc.)	Dr.Pordel			
16	Make up	10-12	Principles and foundations of Good Practice in the laboratory	Dr.Pordel			