Module (Course Syllabus) Catalogue

2023-2024

College/ Institute	**Shaqlawa Technical College**	
Department	**Medical Laboratory Technology**	
Module Name	**Immunology**	
Module Code	**SHTC03M**	
Degree	**Technical Diploma** ■ **Bachelor** ■ **High Diploma** □ **Master** □ **PhD** □	
Semester	**3rd**	
Qualification	**Undergraduate/ diploma**	
Scientific Title	**Lecturer**	
ECTS (Credits)	**7**	
Module type	**Prerequisite** □ **Core** ■ **Assist.** □	
Weekly hours	**4**	
Weekly hours (Theory)	**(Two)hr Class**	**(70)Total hrs Workload**
Weekly hours (Practical)	**(Two)hr Class**	**(80)Total hrs Workload**
Number of Weeks	**14**	
Lecturer (Theory)	**Ali Zainal Omar**	
E-Mail & Mobile NO.	**alizainal@epu.edu.iq**	
Lecturer (Practical)	**Hawre Husamaddin**	
E-Mail & Mobile NO.	**07504967882**	
Websites		

Course Book

Course Description	Our immune system not only protects us from viruses, bacteria, and parasites, it can prevent the growth of tumours. Sometimes our immune system can be the cause of diseases like multiple sclerosis, Type 1 diabetes and rheumatoid arthritis. If you are interested in studying how our immune system works to keep us alive, then Immunology course is for you. This course of study will provide an overview of the immune system and the essential features of immune responses an introduction to the nature of the cells and molecules involved in the immune response, Phagocytosis, lymphoid organs, cells and receptors, Recognition of pathogens; antigen processing and presentation. The study of the immune system ultimately provides us with a fascinating insight into the relationship between animals, and the organisms that infect them (not only bacteria & viruses, but also protozoans and parasites). Evolutionary science has demonstrated how the life we see around us is the product of millions and millions of years of development – and part of this process has been the development of the immune system itself, as a consequence of the long and ongoing relationship between the organisms already mentioned. There is a value, and excitement, to discovering how the immune system in different organisms works, merely for its own sake. However, understanding the immune system also gives us the potential to develop therapies that control infectious disease (this includes vaccines, of which a great many have now been developed), cancer, and other diseases resulting from the malfunction of the immune system.
Course objectives	The objective of this course is to learn about the Immunity, Types of immunity, Subject and immunology tasks, History and development of immunology, Hematopoiesis-Localization of hematopoiesis, Innate Immunity (Innate immunity-Factor influencing level of innate immunity-Mechanism of innate immunity-Humoral factor-Cellular factor-Mode of intracellular killing), and Acquired Immunity (Acquired Immunity-Active immunity-Passive immunity-Difference between active and passive immunity). Localization of the immune system in the body and Lymphoid Organ [Lymphoid Organ-A/Primary lymphoid tissue (Bone marrow-Bursa of fabricius-Thymus) B-Secondary lymphoid tissue (Lymphatic circulation-Lymph node-Spleen) C/Tertiary lymphoid tissue (Mucosal associated lymphoid tissue-Intraepithelial lymphocyte), Different structure and shape of immunoglobulin (Structure of Ig-Type of Ig-Function of Ig), Properties of the immunogen-Antigen presenting cell-Ag processing pathway, and Immune Response
Student's obligation	***Exam policy:** Student Should take 2 exams during the course There will be no make-up exams for absences students without medical report.

	***Classroom polices:** **1- Attendance:** You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. **You are responsible for obtaining any information you miss due to absence** 2- **Lateness:** Lateness to class is disruptive 3- **Electronic devices:** All cell phones are to be turned off at the beginning of class and put away during the entire class. 4-**Talking:** During class please refrain from side conversations. These can be disruptive to your fellow students and your professor 5- **No Disrespectful to both the professor and to your fellow students**.
Required Learning Materials	- Printouts of weekly lectures taught at the college campus (Theoretical and Practical). - Reviewing of internet - Proper laboratory (Chemistry, Clinical Chemistry, or Biochemistry). - Proper instruments - Chemicals and reagents - Laboratory glassware, equipment
Forms of teaching	**Face-to-Face (Lectures and PowerPoint)**

Evaluation

Task		Weight (Marks)	Due Week	Relevant Learning Outcome
Paper Review				
Assignments	Homework	5%		Encourages students to search for more detailed knowledge relevant to the topics taught at campus.
	Class Activity	2%		
				Report their weekly laboratory work
	Seminar	10%		Enhances the preparation and presenting skills of the students
	Essay			To make students engage more with their favorite topics
	Project			
Quiz		8%		To encourage students, study every week.
Lab. report		10%		To make students practice obeying the laboratory rules including scientific, safety, attitude, and ethics.
Midterm Exam		25%		To evaluate students and

				their achievements at the middle of the term.
	Final Exam	40%		Final evaluation and assessment.
	Total	100%		

Specific learning outcome:	After completion of this course, you will be able to: Define Basic Immunology (Immunology-Hematopoiesis-Localization of hematopoiesis), Innate Immunity (Innate Immunity-Factor influencing level of innate immunity-Mechanism of innate immunity-Humoral factor-Cellular factor-Mode of intracellular killing), and Acquired Immunity (Acquired Immunity-Active immunity-Passive immunity-Difference between active and passive immunity). Localization of the immune system in the body and Lymphoid Organ [Lymphoid Organ-A/Primary lymphoid tissue (Bone marrow-Bursa of fabricius-Thymus) B-Secondary lymphoid tissue (Lymphatic circulation-Lymph node-Spleen) C/Tertiary lymphoid tissue (Mucosal associated lymphoid tissue-Intraepithelial lymphocyte) Different structure and shape of immunoglobulin (Structure of Ig-Type of Ig-Function of Ig) Properties of the immunogen-Antigen presenting cell-Ag processing pathway • Mechanism of immune response-Primary and secondary immune response.
Course References:	• Ivan Roitt,I. Brostoff,J. and Male,D. (2002) Immunology (6th Ed.) Ediburgh, Mosby. • Parslow,T.G. , Stites,D.P. , Terr,A.I. , Imboden,J.B. (2001) Medical Immunology(10th Ed.) NY, McGraw Hill • Brooks, G.F., Carroll, K.C., Butel, J.S. &Morse, S.A. (2007) Medical Microbiology (24th Ed.) NY, McGraw Hill.

Course topics (Theory)	Week	Learning Outcome
History of microbiology and immunology	**1**	
Overview of immunology	**2**	
Components of immunity (physical and mechanical)	**3**	
Phagocytosis	**4**	
Complement system	**5,6**	
Interferons and acute phase proteins	**7**	

NK cells	**8**	
Antigens structures and antigenicity	**9**	
Immunoglobulin	**10**	
Cytokines and chemokines	**11**	
Immune response and their features	**12**	
Major histocompatibility complex	**13**	
Antigen processing and presentation	**14**	
examination	**15**	
Practical Topics	**Week**	**Learning Outcome**
General concept of practical immunology	**1**	
Marking, injections of animals	**2**	
Bactericidal power of normal serum	**3**	
Reticuloendothelial system	**4**	
ABO system	**5**	
CRP test	**6**	
ASO test	**7**	
RF test	**8**	
Pregnancy test	**9**	
sLE test	**10**	
H pillory test	**11**	
Widal test	**12**	
Brucella test	**13**	
examination	**14**	

Questions Example Design (theoretical and practical exam):

1. Compositional* (Explain), *True or false type of exams, Multiple choices, and Fill the blanks

Answer the following:

Q1: Define
T-dependent Antigen
C4b binding protein
Diageorge Syndrome
Secondary immune response

Q2: Fill in the blanks
1- Precursor T cells must migrate to thymus where they undergo differentiation into tow type of T cells _____ and _____.
2-Chemotactic factor for attracting phagocytic cells to site of inflammation includes _____, _____, and _____.
3- Fixation of first complement (C1) needed for immune complex and binding with Ig requires _____ and _____ ions.
4- _____ blocks the association of factor-B complement with C3b in alternative pathway.
5- NK cells are capable of killing _____ and _____ cells.
6- IgA has a _____ which mad in _____ cells as its passes into secretions.
7- Thymic nurse cells secreted _____, _____, and _____ hormones to promote maturation of T cell in thymus.

Q3: Explain with drawing the early events in Antibody production in lymph node.

Q4: Explain
A- The classical pathway for complement activation.
B- Detoxification reaction in PMN and Macrophage.

Extra notes:

I want to be supportive to everyone. This "Course Book" will help you understand how College of Science/Biology Department environment works, what to do first, and who to contact if you need help. I appreciate the participation and sharing from all students related to classroom activities for the first time.

Whenever you have some questions or concerns about virology and the course book, ask any questions you may have about your concern. Sometimes a quick question at time can save a lot of frustration later!

Our discussion goal in the classroom is to be collaborative, not combative. This is important to your success in the course and as a professional. Experience shows that even an innocent remark in the class environment can be easily misconstrued. Please re-think your responses carefully before you react with others in order not to be conceder as personal attacks. Be positive to others and diplomatic with your words. I will try my best to do the same. Be careful when using sarcasm and humor. Without face-to-face communications your joke may be viewed as criticism. Remember you are not competing with each other for grades, but sharing information and learning from one another.

The College of Science, Department of Biology, expects that all students exhibit professional behaviour.

External Evaluator