Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIEED

SCIENCES

Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Basic of Immunology
Course No. (03.02.323)
2022/2023

Course Specification of Basic Immunology

I. Course Identification and General Information:

1	**Course Title:**	**Basic of Immunology**			
2	**Course Code & Number:**	03.02.323			
3	**Credit Hours:**	**Theory Hours**			
		Lecture	**Exercise**	Practical	**Credit Hours**
		2	0	2	3
4	**Study Level/ Semester at which this Course is offered:**	2nd Level / 1st Semester			
5	**Pre –Requisite (if any):**	General Biology			
6	**Co –Requisite (if any):**	None			
7	**Program (s) in which the Course is Offered:**	Bachelor in laboratory medicine			
8	**Language of Teaching the Course:**	English			
9	**Study System:**	semester			
10	**Mode of Delivery:**	Regular			
11	**Location of Teaching the Course:**	University Campus			
12	**Prepared by:**	Dr.Gamil Taher Abdul Mughni			
13	**Date of Approval:**	2022-2023			

II. Course Description:

This course provides the ground knowledge and skills to provide the student with a broad understanding of the immune system and its functions. Topics include activation and regulation of innate and adaptive immunity and the molecular basis of antigen specificity. Moreover, the course will also cover antibody structure and interaction with antigens, cytokines types, effects and complement activation pathways and vaccinations.

III. Alignment Course Intended Learning Outcomes with program outcomes

	III. Course Intended Learning Outcomes (CILOs)	**Referenced PILOs**
A.	**Knowledge and Understanding:** ***Upon successful completion of the course, students will be able to:***	
a1	**Describe** the structure and functions of immune system including organs, cells and molecular components	**A1**
a2	**List** the different organs, cells and molecules of immune system	**A2**
a3	**Identify** the different responses of immunity (natural or acquired).	**A1**
B.	**Intellectual Skills:** ***Upon successful completion of the course, students will be able to:***	
b1	**Interpret** responses of immunity of organs, cells, and molecular organs	B1
C.	**Professional and Practical Skills:** ***Upon successful completion of the course, students will be able to:***	
c1	**Perform** different immunological diagnostic assay such as agglutination, precipitation, Enzyme-linked immunosorbent assay, Western blotting etc.	**C3**
D.	**Transferable Skills:** ***Upon successful completion of the course, students will be able to:***	
d1	**Communicate** in groups and team in laboratory experiments	**D1**

IV. Alignment Course Intended Learning Outcomes with Teaching Strategies and Assessment methods :			
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	**Describe** the structure and functions of immune system including organs, cells and molecular components	Interactive lectures Self-learning	Written exam (mid and final terms and quizzes) Final oral exam
a2	**List** the different organs, cells and molecules of immune system	Interactive lectures Self-learning	Written exam (mid and final terms and quizzes) Final oral exam
a3	**Define** the different responses of immunity (natural or acquired).	Interactive lectures Self-learning	Written exam (mid and final terms and quizzes) Final oral exam
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1			
C Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	Perform different immunological diagnostic assay such as agglutination, precipitation, Enzyme-linked immunosorbent assay, Western blotting etc.	-Practical session.	Final practical exam
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Communicate** in groups and team in laboratory experiments	Seminars Self-learning	Assignment

Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes
1	Introduction of immunology	I) Definition of Immunity II) Innate & Acquired III) Organs of immune cells IV) Cells of the immune system	1	2	a1
2	Organs and Cells of the immune system	-Primary Organs Bone marrow Thymus -Secondary Organs Peripheral Lymph node spleen	1	2	a1, a2
3	Innate or Natural immunity	I) Definition Innate Immunity II) Characters of Innate III) Mechanisms of Innate	1	2	a3
4	Cellular Innate defense : -Phagocytosis -Antigen presenting cells -NK cells	I) Definition of Phagocytosis II) Steps of Phagocytosis III) Cytotoxicity (NK cells)	1	2	a3
	Inflammation	I) Definition Inflammation II) Characters III) Mechanisms Functional	1	2	a2 ,b1
5	Antigens	**Definition** : -Antigen -Immunogen -Adjuvant -Hapten. – Types and properties of antigen	1	2	a1 ,a2

		-List factors that influence Immunogenicity			
6	Complementary systems	**I) Definition** **II) Properties** **III) Activation** **IV) Function** **V) Regulation**	1	1	
7	Med term exam		1		c1
9	Antibodies structural	**-Definition** immunoglobulin Immunoglobulin classes Describe the basic structures and properties of immunoglobulin classes -Functional immunoglobulin -Discuss the general properties of all immunoglobulins -Describe the basic functional immunoglobulins classes	3	2	a2
10	Adaptive immunity:	**-Definition** -properties - Antigen presenting cells -Types	1	2	a2
11	Humoral	-mechanisms of humeral and cell-mediated immunity	2	4	a2
12	I) Cell mediated Immunity (CMI)	**I)Definition** **II) phase of CMI**	1	2	a2
13	Immunity regulation Cytokine		1	2	a2
14	Final exam		1	1	c1
Number of Weeks /and Units Per Semester			**17**	**26**	

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	**Lab safety and sample collection**	**1**	**2**	**_c2,c3**

2	**Immuno-agglutination technique**	**2**	**4**	**c2,c3**
3	**Precipitation technique**	**1**	**2**	**c2,c3**
4	**ELISA technique**	**1**	**2**	**c2,c3**
5	**Serodiagnosis of Hepatitis B Virus and Hepatitis C Virus.**	**1**	**2**	**c2,c3**
Number of Weeks /and Units Per Semester		**6**	**12**	

V. Teaching Strategies of the Course:	
1-	• Interactive lectures
2-	• Practical session
3-	• Self-learning
4-	• Discussion
5	• Presentation
	• Seminar

VI. Assessment Methods of the Course:	
No	**Assignment**
1	Written Exams (Short Essays) and Quizzes
2	Multiple Choice Questions (MCQ)
3	Practical Exams (PE)
4	Final oral exam

VII. Assignments:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
	Assignment		5	5%	d2
1	**Midterm Exam**	6	15	15%	a1,a2,
2	**Practical exam**	12	30	30%	C2,c3
3	**Final Exam**	14	50	50%	a1,a2,
	Total	100		100%	

Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1- lecture note
2- Kuby Immunology, 10th Edition,2019:Jenni Punt; Sharon Stranford; Patricia Jones; Judy Owen

2- Essential References.

1-Roitt's Essential Immunology, 13th Edition. 13thEdition, Peter J. Delves et al., Wiley-Blackwell, 2017.
2-Cellular and Molecular Immunology 10th edition, Abul K. Abbas, ELSVIEVER, 2021.

3- Electronic Materials and Web Sites *etc*.

1- https://www.youtube.com/results?search_query=Dr.+Saleh+Bahaj
2-https://onlinelearning.hms.harvard.edu/hmx/courses/immunology/
3- https://www.edx.org/learn/immunology
4- https://onlinelearning.hms.harvard.edu/hmx/courses/hmx-immunology/
-https://immunology.utoronto.ca/online-learning

XI. *Course Policies:*	
1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** -If the student dose not attend for more than 6 times, the student will be obligated to withdrew from the course
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration