Republic of Yemen

Ministry of Higher Education &Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIED SCIENCES

Faculty of Medicine

Bachelor Program of Medicine and Surgery

Course Specification of

Immunology

Course Code. (A21P21٥)

2023

T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:	Reviewed by:	Head of department	Quality Unit:	Dean of Medicine Faculty	Center of Development and Quality Assurance Dean
Dr Gamil Taher Abdul Mughni	Dr. Ghamdan Al-tahish		Dr. Fadhl Shujaa Al-deen	Dr. Salwa Al-Ghomeri	

I. General Information:

1.	Course Title:	Immunology				
2.	Course Code:	A21P21٥				
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
4.	Level/ Semester at which this Course is offered:	2nd Level / 1st Semester				
5.	Pre –Requisite (if any):	Introduction to Physiology				
6.	Co –Requisite (if any):	Molecular Biology & Genetics				
7.	Program (s) in which the Course is Offered:	Bachelor of Medicine and Surgery (MBBS)				
8.	Language of Teaching the Course:	English				
9.	Location of Teaching the Course:	Faculty of Medicine				
10.	Prepared by:	Dr Gamil Taher Abdul Mughni				
١١	Date and Number of Approval by Council:	٢٠٢٣				

II. Course Description:

The Immunology course provides the students with major concepts of immune system, it is organs, cells and natural function of innate immunity, and adaptive immunity, cell-mediated & humeral immune responses to prevent or limit infections by pathogenic microorganisms. It provides the medicinal students with knowledge and understanding diseases related to the immune system emphasizing the hypersensitivity reactions, autoimmunity and immunodeficiency diseases. It is also give the medicinal student's practical skill in uses the different technique and basic identification methods.

III. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs		
A. Knowledge and Understanding:		**I,P or M/A**		
a1	Outline major concepts used in immunity.	**M**	**A1**	Describe the general and basic sciences related to human body structure and functions with emphasis on normal and abnormal conditions.
a2	Classify the types of hypersensitivity, autoimmunity, and immunodeficiency	**M**		
a3	Describe the characteristics, Pathophysiology, mechanism, diagnosis and treatment of hypersensitivity, autoimmune diseases.	**M**	**A3**	Explain the pathological and pathogenesis changes in various diseases, and their etiological triggers including genetic, developmental, infectious, metabolic, endocrinal, autoimmune, neoplastic, traumatic, degenerative and occupational factors.
B. Intellectual Skills:				
b1	Differentiate between types of antigens, antibodies and types of immunity	**A**	**B1**	Compare between normal and abnormal conditions and predict the appropriate treatment or intervention.
b2	Distinguish between types of hypersensitivity, autoimmune diseases, and the graft rejection	**A**	**B2**	Analyze and interpret the finding from history, clinical examination and investigations to propose a diagnosis and develop a shared management plan for common acute, chronic and urgent physical and mental health presentations.
C. Professional and Practical Skills:				
c1	Select the appropriate specimen and processing method needed to diagnose of hypersensitivity, autoimmune diseases, and immunodeficiency	**P**	**C1**	Perform complete clinical examination and precise

	diseases			investigations to reach the final diagnosis
c2	Perform the different serological tests to determination the compatibilities, autoimmune diseases and hypersensitivity in deferent clinical specimens.	**P**	**C3**	Carry out routine medical procedure and demonstrate the ability of using common medical tools required for diagnosis and management with highly qualified competency.
	D. Transferable Skills:			
d1	Use effectively different computer skills such as internet, word processing and data sheet to interpret and analysis results and investigation of the diseases.	**I**	**D1**	Communicate with professionals, patients, their families and the community through verbal, written and other non-verbal means.
d2	Work independently or as a member of team effectively and lead teams carrying out various professional tasks and accept the view of others.	**I**	**D2**	Work individually or in a team and develop lifelong learning using up to date technology that help in understanding the diseases and its control and prevention.
I= Introduced, P=Practiced or M/A= Mastered/Advanced				

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes		Teaching Strategies	Assessment Strategies
a1	Outline major concepts used in immunity.	- Interactive lectures - Self-learning - Office hours	- Written exam (mid and final terms and quizzes) - Assignments
a2	Classify the types of hypersensitivity, autoimmunity, and immunodeficiency	- Interactive lectures, - Office Hours - Self learning	- Written Exam
a3	Describe the characteristics, Pathophysiology, mechanism, diagnosis and treatment of hypersensitivity, autoimmune diseases.	- Interactive lectures, - Office Hours - Self learning	-Quizzes - Written Exam - Assignments
(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching			

Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
b1	Differentiate between types of antigens, antibodies and types of immunity	- Interactive lectures - Discussion - Presentation	- Written exam - Assignments. - Final Practical Exam.
b2	Distinguish between types of hypersensitivity, autoimmune diseases, and the graft rejection	- Interactive lectures - Discussion - Self-learning - Presentation	- Written exam. - Final Practical Exam.
(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
c1	Select the appropriate specimen and processing method needed to diagnose of hypersensitivity, autoimmune diseases, and immunodeficiency diseases	-Practical session.	- Final Practical Exam.
c2	Perform the different serological tests to determination the compatibilities, autoimmune diseases and hypersensitivity in deferent clinical specimens.	-Practical session.	- Final Practical Exam
(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:			
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
d1	Use effectively different computer skills such as internet, word processing and data sheet to interpret and analysis results and investigation of the diseases.	- Seminars - Discussion - Self Learning - Presentation	Assignments - Homework - Teamwork
d2	Work independently or as a member of team effectively and lead teams carrying out various professional tasks and accept the view of others.	- Seminars - Discussion - Self Learning - Presentation	Assignments - Homework - Teamwork

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	**Introduction to immunology**	– Historical Perspective – Innate Immunity, Adaptive Immunity – Comparative Immunity – Immune Dysfunction and Its Consequences	1	2	a1,a2
2	**Cells and Organs of the Immune System**	– Hematopoiesis – Cells of the Immune System – Organs of the Immune System – Systemic Function of the Immune System	1	2	a1, d1
3	**Antigens**	– Immunogenicity Versus Antigenicity – Factors That Influence Immunogenicity – Epitopes – Haptens and the Study of Antigenicity – Pattern-Recognition Receptors	1	2	a1,a3, d1
4	**Antibodies: Structure and Function**	– Basic Structure of Antibodies – Obstacles to Antibody Sequencing – Immunoglobulin Fine Structure – Antibody-Mediated Effectors Functions – Antibody Classes and Biological Activities – Antigenic Determinants on Immunoglobulins – The B-Cell Receptor – The Immunoglobulin Superfamily – Monoclonal Antibodies	1	2	a1-a3 b1, d1
5	**Antigens and Antibodies: Structure and Function**	– Immunogenicity Versus Antigenicity – Factors That Influence Immunogenicity – Epitopes, Haptens and the Study of Antigenicity – Pattern-Recognition Receptors – Basic Structure of Antibodies – Antibody Classes and Biological Activities – The Immunoglobulin Superfamily	1	2	a1-a3 b1, d1

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
		– Monoclonal Antibodies			
6	**Antigen-Antibody Interactions: Principles and Applications 1**	– Strength of Antigen-Antibody Interactions – Cross-Reactivity – Precipitation Reactions – Agglutination Reactions	1	2	a1-a3 b1, d1
7	**Antigen-Antibody Interactions: Principles and Applications II**	– Radioimmunoassay – Enzyme-Linked Immunosorbent Assay – and other methods	1	2	a1,d1
8	**Mid-Term Theoretical Exam**	– MCQs and essay questions	1	2	a1,a2,a3, b1
9	**Major Histocompatibility Complex**	– Self-MHC Restriction of T Cells – Role of Antigen-Presenting Cells	1	2	a1-a3 b1, d1
10	**Antigen Processing and Presentation**	– Evidence for Two Processing and Presentation – Pathways – Endogenous Antigens: The Cytosolic Pathway – Exogenous Antigens: The Endocytic Pathway – Presentation of Nonpeptide Antigens	1	2	a1-a3 b1, d1
11,١٢	**The Complement System**	– The Functions of Complement – The Complement Components – Complement Activation – Regulation of the Complement System – Biological Consequences of Complement Activation – Complement Deficiencies	2	4	a1-a3 b1, d1
١٣	**Hypersensitive Reactions I**	– Gell and Coombs Classification – IgE-Mediated (Type I) Hypersensitivity – Antibody-Mediated Cytotoxic (Type II) Hypersensitivity	1	2	a1-a3 b1, d1
١٤	**Hypersensitive Reactions II**	– Immune Complex–Mediated (Type III) Hypersensitivity – Type IV or Delayed-Type Hypersensitivity (DTH)	1	2	a1-a3 b1, d1

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
١٥	**Autoimmunity and Transplantation Immunology**	– Organ-Specific Autoimmune Diseases – Systemic Autoimmune Diseases. – Treatment of Autoimmune Diseases	1	2	a1-a3 b1, d1
١6	**Final Theoretical Exam**	MCQs and essay questions	1	2	a1, a2,a3 b1,b2
Number of Weeks /and Units Per Semester			**16**	**32**	

B. Practical Aspect (Lab):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	- General information about safety precaution inside **Immunology lab**	1	2	b1,c1,c2 d1, d2
2	- Introduction about Immunity system , cell on the immunity system	1	2	b1, c1,c2 d1, d2
3	- Collection, preservation and transport of specimens	1	2	b1,c1,c2 d1, d2
4	- Antigen – Antibody reaction - Agglutination reaction- Blood grouping and Cross matching - ASO, CRP, RF	1	2	b1,c1,c2 d1, d2
5	- Antigen – Antibody reaction - Precipitation reaction - Enzyme linked immune sorbent assay (Elisa)	1	2	b1,c1,c2 d1, d2
6	- Antigen – Antibody reaction - Immune chromatography antibody assay (HCV, and H. pylori)	1	2	b1,c1,c2 d1, d2
7	- Methods for Diagnosis of Hypersensitivity	1	2	b1,c1,c2 d1, d2
8	- Methods for Diagnosis of Autoimmune Diseases	1	2	b2,c1,c2

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
	- ANA			d1, d2
9	- Methods for Diagnosis of Autoimmune Diseases - DNA	1	2	b2,c1,c2 d1, d2
10	- Methods for Diagnosis of Autoimmune Diseases - Others	1	2	b2,c1,c2 d1, d2
11	- Methods for Diagnosis of Immunodeficiency Diseases - B cell HIV	1	2	b2,c1,c2 d1, d2
12	- Methods for Diagnosis of Immunodeficiency Diseases - T cell deficiency, - HIV	1	2	b2,c1,c2 d1, d2
13	- Review	1	2	c1,c2 d1, d2
14	- Final Practical Exam	1	2	b1,b2,c1,c2
Number of Weeks /and Units Per Semester		**14**	**28**	

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	NA			
Number of Weeks /and Units Per Semester				

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs(symbols)
1	**Assignment 1: Types of Immunity and Factors That Influence Immunogenicity**	4th	2	a1,a3, b1,d1,d2
2	**Assignment 2: Types of hypersensitivity**	**10th**	2	a1,a3, b1,d1,d2
3	**Assignment 3: Case study about Autoimmune**	**13th**	**1**	a1,a3, b1,d1,d2

No.	Assignments	Week Due	Mark	Aligned CILOs(symbols)
	Diseases			
Total			**5**	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Assignments**	weeks 4-13	**5**	5%	a1,a3, b1, d1,d2
2	**Quizzes**	week 6	**5**	5%	a1,a3
3	**Mid-Term Theoretical Exam**	week 8	**10**	10%	a1,a2,a3,b1
4	**Final Practical Exam**	week 14	**30**	30%	b1,b2, c1,c2
5	**Final Theoretical Exam**	week 16	**50**	50%	a1,a2,a3, b1,b2
Total			**100**	**100%**	

IX. Learning Resources:

1- Required Textbook(s):

1. John B. Zabriskie (2014). **Essential Clinical Immunology**. 6th ed . New York: Cambridge University Press
2. Richard A. Goldsby, Barbara A. Osborne, Thomas J. Kindt, Janis Kuby (2018). **Kuby immunology**. 8th ed. W H Freeman & Company.

2- Essential References:

1. Levinson, W (2014). **Review of Medical Microbiology and Immunology**, 15th ed. lange review series (NY: McGraw-Hill,).
2. Brooks, G.F.; Carroll, K. C.; Butel, J.S.; Morse, S. A. (2020):**Jawetz, Melnick and Adelberg's Medical Microbiology**. 24th ed.McGraw-Hill.

3- Electronic Materials and Web Sites etc.:

Websites:

1. *http://www.mdconsult.com*
2. *http://http://en.wikipedia.org/wiki/Immunology*
3. *http://www.biology.arizona.edu/immunology/microbiology_immunology*

Journals:

1. *Nature Reviews Immunology*

2. *Journal of Immunology*
3. *Journal of Clinical Immunology*

Other Web Sources:

1. *On-line Mendelian Inheritance in Man, http://gdbwww.gdb.org/omimdoc/omimtop.html*
2. *www.web-books.com/MoBio/Free/Ch8D1.htm*

X. Course Policies: (Based on the Uniform Students' By law (2007)

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:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
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.

Faculty of Medicine

Program of Bachelor of Medicine and Surgery (MBBS)

Course Plan (Syllabus) of Immunology

Course Code. A21P21٥

I. Information about Faculty Member Responsible for the Course:								
Name of Faculty Member:	Dr. Taha Abdul-Aziz Alnosary	Office Hours						
Location& Telephone No.:	Sanaa-77794004							
E-mail:	Taha_kaid @yhoo.com	SAT	SUN	MON	TUE	WED	THU

2023

II. Course Identification and General Information:

	Course Title:	**Immunology**				
	Course Code:	**A21P21٥**				
	Credit Hours:	**Credit Hours**	**Theory Contact Hours**		**Practical Contact Hours**	
			Lecture	**Tutorial/Seminar**	**Lab**	**Clinical**
		3	2	--	2	--
	Level/ Semester at which this Course is offered:	2nd Level / 1st Semester				
	Pre –Requisite (if any):	Introduction to Physiology				
	Co –Requisite (if any):	Molecular Biology & Genetics				
	Program (s) in which the Course is Offered:	Bachelor of Medicine and Surgery (MBBS)				
	Language of Teaching the Course:	English				
	Location of Teaching the Course:	Faculty of Medicine				
	Prepared by:	Dr Gamil Taher Abdul Mughni				
١١	**Date and Number of Approval by Council:**	٢٠٢٣				

III. Course Description:

The Immunology course provides the students with major concepts of immune system, it is organs, cells and natural function of innate immunity, and adaptive immunity, cell-mediated &

humeral immune responses to prevent or limit infections by pathogenic microorganisms. It provides the medicinal students with knowledge and understanding diseases related to the immune system emphasizing the hypersensitivity reactions, autoimmunity and immunodeficiency diseases. It is also give the medicinal student's practical skill in uses the different technique and basic identification methods.

IV. Course Intended Learning Outcomes (CILOs) :

Upon successful completion of the Course, student will be able to:

	A. Knowledge and Understanding:
a1	Outline major concepts used in immunity.
a2	Classify the types of hypersensitivity, autoimmunity, and immunodeficiency
a3	Describe the characteristics, Pathophysiology, mechanism, diagnosis and treatment of hypersensitivity, autoimmune diseases.
	B. Intellectual Skills:
b1	Differentiate between types of antigens, antibodies and types of immunity
b2	Distinguish between types of hypersensitivity, autoimmune diseases, and the graft rejection
	C. Professional and Practical Skills:
c1	Select the appropriate specimen and processing method needed to diagnose of hypersensitivity, autoimmune diseases, and immunodeficiency diseases
c2	Perform the different serological tests to determination the compatibilities, autoimmune diseases and hypersensitivity in deferent clinical specimens.
	D. Transferable Skills:
d1	Use effectively different computer skills such as internet, word processing and data sheet to interpret and analysis results and investigation of the diseases.
d2	Work independently or as a member of team effectively and lead teams carrying out various professional tasks and accept the view of others.

I= Introduced, P=Practiced or M/A= Mastered/Advanced

V. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	**Introduction to immunology**	– Historical Perspective – Innate Immunity, Adaptive Immunity – Comparative Immunity – Immune Dysfunction and Its Consequences	1	2
2	**Cells and Organs of the Immune System**	– Hematopoiesis – Cells of the Immune System – Organs of the Immune System – Systemic Function of the Immune System	1	2
3	**Antigens**	– Immunogenicity Versus Antigenicity – Factors That Influence Immunogenicity – Epitopes – Haptens and the Study of Antigenicity – Pattern-Recognition Receptors	1	2
4	**Antibodies: Structure and Function**	– Basic Structure of Antibodies – Obstacles to Antibody Sequencing – Immunoglobulin Fine Structure – Antibody-Mediated Effectors Functions – Antibody Classes and Biological Activities – Antigenic Determinants on Immunoglobulins – The B-Cell Receptor – The Immunoglobulin Superfamily – Monoclonal Antibodies	1	2
5	**Antigens and Antibodies: Structure and Function**	– Immunogenicity Versus Antigenicity – Factors That Influence Immunogenicity – Epitopes, Haptens and the Study of Antigenicity – Pattern-Recognition Receptors – Basic Structure of Antibodies – Antibody Classes and Biological Activities – The Immunoglobulin Superfamily – Monoclonal Antibodies	1	2
6	**Antigen-Antibody Interactions: Principles and Applications 1**	– Strength of Antigen-Antibody Interactions – Cross-Reactivity – Precipitation Reactions – Agglutination Reactions	1	2
7	**Antigen-Antibody Interactions: Principles and Applications II**	– Radioimmunoassay – Enzyme-Linked Immunosorbent Assay – and other methods	1	2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
8	Mid-Term Theoretical Exam	– MCQs and essay questions	1	2
9	Major Histocompatibility Complex	– Self-MHC Restriction of T Cells – Role of Antigen-Presenting Cells	1	2
10	Antigen Processing and Presentation	– Evidence for Two Processing and Presentation – Pathways – Endogenous Antigens: The Cytosolic Pathway – Exogenous Antigens: The Endocytic Pathway – Presentation of Nonpeptide Antigens	1	2
11, ١٢	The Complement System	– The Functions of Complement – The Complement Components – Complement Activation – Regulation of the Complement System – Biological Consequences of Complement Activation – Complement Deficiencies	2	4
١٣	Hypersensitive Reactions I	– Gell and Coombs Classification – IgE-Mediated (Type I) Hypersensitivity – Antibody-Mediated Cytotoxic (Type II) Hypersensitivity	1	2
١٤	Hypersensitive Reactions II	– Immune Complex–Mediated (Type III) Hypersensitivity – Type IV or Delayed-Type Hypersensitivity (DTH)	1	2
١٥	Autoimmunity and Transplantation Immunology	– Organ-Specific Autoimmune Diseases – Systemic Autoimmune Diseases. – Treatment of Autoimmune Diseases	1	2
16	Final Theoretical Exam	MCQs and essay questions	1	2
Number of Weeks /and Units Per Semester			16	32

B. Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	- General information about safety precaution inside **Immunology lab**	1	2

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
2	- Introduction about Immunity system , cell on the immunity system	1	2
3	- Collection, preservation and transport of specimens	1	2
4	- Antigen – Antibody reaction - Agglutination reaction- Blood grouping and Cross matching - ASO, CRP, RF	1	2
5	- Antigen – Antibody reaction - Precipitation reaction - Enzyme linked immune sorbent assay (Elisa)	1	2
6	- Antigen – Antibody reaction - Immune chromatography antibody assay (HCV, and H. pylori)	1	2
7	- Methods for Diagnosis of Hypersensitivity	1	2
8	- Methods for Diagnosis of Autoimmune Diseases - ANA	1	2
9	- Methods for Diagnosis of Autoimmune Diseases - DNA	1	2
10	- Methods for Diagnosis of Autoimmune Diseases - Others	1	2
11	- Methods for Diagnosis of Immunodeficiency Diseases - B cell HIV	1	2
12	- Methods for Diagnosis of Immunodeficiency Diseases - T cell deficiency, - HIV	1	2
13	- Review	1	2
14	- Final Practical Exam	1	2
Number of Weeks /and Units Per Semester		**14**	**28**

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	- General information about safety precaution inside **Immunology lab**	1	2

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
2	- Introduction about Immunity system , cell on the immunity system	1	2
3	- Collection, preservation and transport of specimens	1	2
4	- Antigen – Antibody reaction - Agglutination reaction- Blood grouping and Cross matching - ASO, CRP, RF	1	2
5	- Antigen – Antibody reaction - Precipitation reaction - Enzyme linked immune sorbent assay (Elisa)	1	2
6	- Antigen – Antibody reaction - Immune chromatography antibody assay (HCV, and H. pylori)	1	2
7	- Methods for Diagnosis of Hypersensitivity	1	2
8	- Methods for Diagnosis of Autoimmune Diseases - ANA	1	2
9	- Methods for Diagnosis of Autoimmune Diseases - DNA	1	2
10	- Methods for Diagnosis of Autoimmune Diseases - Others	1	2
11	- Methods for Diagnosis of Immunodeficiency Diseases - B cell HIV	1	2
12	- Methods for Diagnosis of Immunodeficiency Diseases - T cell deficiency, - HIV	1	2
13	- Review	1	2
14	- Final Practical Exam	1	2
Number of Weeks /and Units Per Semester		**14**	**28**

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours
1	NA		
Number of Weeks /and Units Per Semester			

VI. Teaching Strategies of the Course:

خطأ! لم يتم العثور على مصدر المرجع.

VII. Assessment Methods of the Course:

خطأ! لم يتم العثور على مصدر المرجع.

VIII. Assignments:

No.	Assignments	Week Due	Mark
1	**Assignment 1: Types of Immunity and Factors That Influence Immunogenicity**	4th	2
2	**Assignment 2: Types of hypersensitivity**	**10th**	2
3	**Assignment 3: Case study about Autoimmune Diseases**	**13th**	**1**
Total			**5**

IX. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	**Assignments**	weeks 4-13	**5**	5%
2	**Quizzes**	week 6	**5**	5%
3	**Mid-Term Theoretical Exam**	week 8	**10**	10%
4	**Final Practical Exam**	week 14	**30**	30%
5	**Final Theoretical Exam**	week 16	**50**	50%
Total			**100**	**100%**

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	**Assignments**	weeks 4-13	**5**	5%

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
2	**Quizzes**	week 6	**5**	5%
3	**Mid-Term Theoretical Exam**	week 8	**10**	10%
4	**Final Practical Exam**	week 14	**30**	30%
5	**Final Theoretical Exam**	week 16	**50**	50%
Total			**100**	**100%**

X. Learning Resources:

1- Required Textbook(s):

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3. Richard A. Goldsby, Barbara A. Osborne, Thomas J. Kindt, Janis Kuby (2018). **Kuby immunology**. 8th ed. W H Freeman & Company.

1. 2- Essential References:

Levinson, W (2014). Review of Medical Microbiology and Immunology, 15th ed. lange review series (NY: McGraw-Hill,).

3. Brooks, G.F.; Carroll, K. C.; Butel, J.S.; Morse, S. A. (2020):**Jawetz, Melnick and Adelberg's Medical Microbiology**. 24th ed.McGraw-Hill.

1. 3- Electronic Materials and Web **Sites etc.:**

Websites:

http://www.mdconsult.com

http://*http://en.wikipedia.org/wiki/Immunology*

4. *http://www.biology.arizona.edu/immunology/microbiology_immunology*

Journals:

4. *Nature Reviews Immunology*
5. *Journal of Immunology*
6. *Journal of Clinical Immunology*

Other Web Sources:

3. *On-line Mendelian Inheritance in Man, http://gdbwww.gdb.org/omimdoc/omimtop.html*
4. *www.web-books.com/MoBio/Free/Ch8D1.htm*

XI. Course Policies: (Based on the Uniform Students' Bylaw (2007)

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:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
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.
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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.