



IX Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1					
2					
3					
4					
5					
6					
Total					

X. Learning Resources:

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

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

- 1- Bogitsh B.J., Carter C.E., Oeltmann T.N. (eds.) (2005). Human Parasitology, Elsevier Academic Press.
- 2- Mandal F.B. (ed.) (2011). Human Parasitology, PHI.

2- Essential References.

- 1- Cox F.E.G. (ed.) (2009). Modern Parasitology: A Text Book of Parasitology, Blackwell Science Ltd.
- 2-
- 3-

Prepared by: Associate Prof. Dr Rashad Ahmed Ali Abdulgani	Reviewed by: Assistant Prof. Dr Ghaidan Al-Tahiri	Head of the Department: Dr/Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr/Gamil Taher Abdul Mughni	Dean of College: Associate Prof. Dr Ebtesam Al-Babedi
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XI. Course Policies:

1	Class Attendance: -If the student dose not attend for more than 6 times, the student will be obligated to withdrew from the course
2	Tardy: - If the student is late for the lectures for the 2nd time, he will not be allowed to attend this lecture
3	Exam Attendance/Punctuality: - If any student does not attend the exam in the scheduled day, it will consider as a fail for him
4	Assignments & Projects: - Any student dose not submit this assignment, he will lose its grade.
5	Cheating: - ANY STUDENT TRY TO CHEAT IN ANY QUIZ OR EXAM, HE WILL NOT BE ALLOWED TO CONTINUE THE EXAM AND IT WILL CONSIDER AS A FAIL FOR HIM
6	Plagiarism: - If any student try to plagiarism another student identity, both of them will be converted to investigation and they might be expelled from the program
7	Other policies: - Undelivered requirement will not be marked - You should leave your dental Chair as clean as possible

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Republic of Yemen
Ministry of Higher Education & Scientific Research
21 September university for medical & applied sciences



Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Advanced Medical Immunology II

Course No. (03.12. 319)

2020/2021

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr.Gamil Taher Abdul Mughni	Assistant Prof. Dr Ghamdan Al-Tahish	Dr.Gamil Taher Abdul Mughni	Dr.Gamil Taher Abdul Mughni	Assistant prof. Dr Ebtessam AlZabedi



I. Course Identification and General Information:

1	Course Title:	Advanced Medical Immunology II			
2	Course Code & Number:	03.12. 319			
3	Credit Hours:	Theory Hours			
		Lecture	Exercise	Practical	Credit Hours
		2	0	0	2
4	Study Level/ Semester at which this Course is offered:	1 st Level / 2 nd Semester			
5	Pre –Requisite (if any):	Advanced Medical immunology I			
6	Co –Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Master Degree In Microbiology & Immunology			
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:				

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Gamil Taher Abdul Mughni	Assistant Prof. Dr. Ghandar Al-Tahish	Dr. Gamil Taher Abdul Mughni	Dr. Gamil Taher Abdul Mughni	Assistant prof. Dr. Ebtessam Al-Zabedi



II. Course Description:

This course is designed to provide an in-depth understanding of the cellular and molecular mechanisms underlying the immune response. The course will cover the cellular components of the immune system, including T and B cells, dendritic cells, and macrophages, as well as the molecular processes involved in antigen recognition, processing, and presentation. Topics to be covered include immune cell signaling, cytokine regulation, immune cell development, immune surveillance, immune evasion, and immunotherapy. The course will also cover current research topics in cellular and molecular immunology.

III. Alignment Course Intended Learning Outcomes with program outcomes

III. Course Intended Learning Outcomes (CILOs)	Referenced PILOs
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A. Knowledge and Understanding:

Upon successful completion of the course, students will be able to:

a1	Describe the cellular and molecular components of the immune system and explain their roles in immune responses.	A2
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B. Intellectual Skills:

Upon successful completion of the course, students will be able to:

b1	Illustrate the molecular mechanisms of antigen recognition, processing, and presentation	B1
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C. Professional and Practical Skills:

Upon successful completion of the course, students will be able to:

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c1	Demonstrate the cellular and molecular processes underlying immune cell development, activation, and differentiation.	CI
D. Transferable Skills:		
Upon successful completion of the course, students will be able to:		
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 cellular and molecular components of the immune system and explain their roles in immune responses.	Lectures	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	Illustrate the molecular mechanisms of antigen recognition, processing, and presentation	Lectures Practical session	Exam Practical Exams

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	Demonstrate the cellular and molecular processes underlying immune cell development, activation, and differentiation.	Lectures Practical session	Exam Practical Exams

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching	Assessment
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	strategies	Strategies
d1	Lectures Practical session	Exam Practical Exams

III. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes
1	Introduction to Cellular and Molecular Immunology	- Overview of the immune system - Cellular and Molecular components of the immune system - Innate vs. adaptive immunity	1	2	a1,b2,c1
2	T-Development	-Lymphocyte Development and -Antigen Receptor Gene -Rearrangement -Positive and negative selection	1	2	a1,b2,c1
3	B-Development		1	2	a1,b2,c1
4	Innate immunity -Antigen Recognition - Structure and function of	Structure and function of immune receptors 1-Innate - Pattern recognition receptor	1	2	a1,b2,c1
	Macrophages Dendritic Cells Mast Cells Natural Killer Cells Inflammation	Development of macrophages Monocytes Tissue macrophages Macrophages receptors Toll-like receptors (TLRs) Cytokine receptors Macrophages activation Phagocytosis Release of cytokines Macrophages effector functions Phagocytosis Release of cytokines Cell lysis Macrophages regulation	1	2	a1,b2,c1
	Antigen processing and	Major Histocompatibility Complex		2	a1,b2,c1

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Ministry of Higher Education & Scientific Research

21 SEPTEMBER UMAS

Faculty of Laboratory medicine

Department of MICROBIOLOGY & IMMUNOLOGY

Unit of Development & Quality assurance



الجمهورية اليمنية

وزارة التعليم العالي والبحث العلمي

جامعة ٢١ سبتمبر للطب التطبيقية والتطبيقية

كلية الطب المخبري

قسم الاحياء الدقيقة والمناعة

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	presentation	Molecules Class I MHC Molecules Class II MHC Molecules			
6	Adaptive Immune System	Antigen Recognition, Antigen processing Antigen presentation	1	2	a1,b2,c1
7	T Lymphocytes	- T cell activation and differentiation - Immune Receptors and Signal Transduction - Signal transduction pathways and intracellular signaling molecules	1	2	a1,b2,c1
8	Effector Mechanisms of T Cell- Mediated Immunity	T-helper cells (Th1, Th2, Th17) Regulatory T-cells	1	2	a1,b2,c1
9	Cytotoxic T-cells	-Development of CTLs -CTL receptors -CTL activation -CTL effector functions -CTL regulation -Role of CTLs in the : -Immune response -Therapies	1	2	a1,b2,c1
10	NK cells	• Development of NK cells • NK receptors • NK activation • NK effector functions • NK regulation	1	2	a1,b2,c1
11	B cell	-B-cell activation -maturation -Differentiation -Activation - Signal transduction pathways and intracellular signaling molecules	1	2	a1,b2,c1
12	B&T-cells signaling		1	2	a1,b2,c1
13	Cytokine	Cytokine signaling: Janus kinase (JAK)/signal transducer and activator of transcription (STAT) pathways and nuclear factor kappa B (NF-κB) pathways	2	4	A1
14	Immune cell trafficking:	-Migration -adhesion			a1,b2,c1

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		-Cytokines -Chemkines - Cytokine signaling and regulation			
	Immunotherapy	checkpoint inhibitors adoptive cell therapy monoclonal antibodies			a1,b2,c1
	Cell surface molecules involved in immune response.				a1,b2,c1
	Stem cell and the immune system				a1,b2,c1
	Final exam		1		a1,b2,c1
	Number of Weeks /and Units Per Semester			32	

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B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Subtile	Number of Weeks	contact hours	Learning Outcomes
1	Animal models	1. Human studies: advantages versus disadvantages 2. Brief overview of different animal models that can be used to study immunological concepts • Knock-out • Knock-in	1	2	cl
2	Cellular techniques considerations	Cellular techniques 1. Overview of sample preparation consideration 2. Overview of assay sensitivity versus specificity 3. in vitro, ex vivo, in vivo experiments - differences and techniques 4. Isolation of immune cells from tissue 5. Flow cytometry	2	4	Cl
8	Antibodies for research, diagnostics, and therapeutics	Antibodies for research, diagnostics, and therapeutics 1. Introduction 2. Generation of antibodies	2	4	Cl

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		for research and clinical use 3. Immunoassays • Pros and cons • Overview of technical concepts • Interpretation of Results • Examples o ELISA/EIA/ELISPOT o Western Immunoblot o Immunohistochemistry and immunofluorescence o Microscopic imaging o Flow cytometry			
3	Flow cytometry	1. Overview of technical concepts • Overview of instrumentation • Controls for experiments • Sample preparation • Data acquisition Interpretation of results Cellular analysis versus cell sorting	2	4	C1
Number of Weeks /and Units Per Semester					

V. Teaching Strategies of the Course:

1-	Lectures
2-	Practical session
3-	Self leaning
4-	Group research

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VI: Assessment Methods of the Course:

No	Assignment	
1	Written Exams (Short Essays) and Quizzes	A1.
2	Written Exams(MCQ)	
3	Structured Oral Exams	
4	Objective Structured Practical Exams (OSPE)	
5	Student presentation	

VII. Assignments:

No.	Assignments	Week Due	Mark	Proportion of Final Assessment	Aligned CILOs (symbols)
1	Midterm Exam	7	15	15%	A,b,c,d
2	Activity	Throughout the semester	5	5%	b
3	Practical Report	Throughout the semester	10	10 %	C
4	Practical exam	12	20	20%	C

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5	Final Exam	14	50	50%	
Total					

IX. Learning Resources:

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

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

- 1- Janeway's Immunobiology, 9th edition, by Kenneth Murphy, Paul Travers, and Mark Walport.
- 2- "Cellular and Molecular Immunology" by Abul K. Abbas, Andrew H. Lichtman, and Shiv Pillai. This textbook is known for its clear explanations of complex topics in immunology, and has a strong focus on cellular and molecular mechanisms.

2- Essential References.

- 1- "Basic Immunology: Functions and Disorders of the Immune System" by Abul K. Abbas and Andrew H. Lichtman
- 2- Principles of Immunology by Ivan Roitt, Peter Delves, and Seamus Martin - This textbook provides a comprehensive introduction to immunology, covering both the cellular and molecular aspects of the immune response

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3- Electronic Materials and Web Sites etc.

- 1- The Immunology Database and Analysis Portal
- <https://www.immunedb.com/>
- 2- The National Institute of Allergy and Infectious Diseases –
<https://www.niaid.nih.gov/>
- 3- The Journal of Immunology –
<https://www.jimmunol.org/>
- 4- The Immune System and Immunology
- <https://www.ncbi.nlm.nih.gov/books/NBK279364/>
The American Association of Immunologists
- <https://www.aai.org/>

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

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	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

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Republic of Yemen
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21 SEPTEMBER UMAS
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Department of microbiology & immunology
Unit of Development & Quality assurance



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Republic of Yemen
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21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIED

SCIENCES



Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Advanced ~~Molecular~~ Diagnostic Microbiology
Course No. (03.12. 318)
2022/2023

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Assistant Prof. Dr. Ghamdan Al-Tahish	Prof. Dr. Khalid A. AL-Moyed	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass.Pr/Dr Ebtesam Al-Zabedi



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جامعة صنعاء ٢١ سبتمبر العلوم الطبية والتطبيقية
كلية الطب المخبري
قسم الأحياء الدقيقة والمناعة
وحدة التطوير وضمان الجودة

I. Course Identification and General Information:				
1	Course Title:	Advanced Molecular Diagnostic Microbiology		
2	Course Code & Number:	03.12. 318		
3	Credit Hours:	Theory Hours		
		Lecture	Exercise	Practical
4	Study Level/ Semester at which this Course is offered:	2nd Level / 2nd Semester		
5	Pre -Requisite (if any):	Advanced Molecular microbiology		
6	Co -Requisite (if any):	None		
7	Program (s) in which the Course is Offered:	Master of Medical Microbiology & Immunology		
8	Language of Teaching the Course:	English		
9	Study System:	Semester		
10	Mode of Delivery:	Full times		
11	Location of Teaching the Course:	University Campus		
12	Prepared by:	Dr. Ghamdan Altahish i		
13	Date of Approval:	2022-2023		

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Assistant/Prof. Dr Ghamdan Al-Tahish	Prof. Dr. Khalid A. AL-Moyed	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass.Pr/Dr: Ebtesam AlZabedi



II. Course Description:

This course aims to provide advanced knowledge and skills in the field of diagnostic microbiology. It covers the principles and applications of advanced diagnostic techniques] used for the identification and characterization of bacteria, viruses, fungi, and parasites. Covering range of molecular techniques used for laboratory diagnosis and management of infections, such as nucleic acid extraction PCR-based methods, blotting techniques, electrophoresis, microarray, In Situ Hybridization, bioinformatics and DNA sequencing. The course focuses on the interpretation of laboratory results and the development of effective treatment strategies for infectious diseases.

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	Understand the principles and applications of advanced and molecular diagnostic techniques used in diagnostic microbiology	A1
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B. Intellectual Skills:

Upon successful completion of the course, students will be able to:

b1	Analyze and interpret molecular data of microbial genomes for the identification and characterization of virulence factors, the diagnosis and treatment of infectious diseases.	B4
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C. Professional and Practical Skills:

Upon successful completion of the course, students will be able to:

c1	Apply molecular microbiology methodologies in scientific research aimed at solving problems.	C3
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D. Transferable Skills:

Upon successful completion of the course, students will be able to:

d1		D2
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وحدة التطوير وضمان الجودة

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	Understand the principles and applications of advanced and molecular diagnostic techniques used in diagnostic microbiology	Lectures	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	Analyze and interpret molecular data of microbial genomes for the identification and characterization of virulence factors , the diagnosis and treatment of infectious diseases.	Lectures	Exam

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	Apply molecular microbiology methodologies in scientific research aimed at solving problems.	Lectures	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		Lectures	Exam

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IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Nucleic acid extraction	DNA extraction methods – Sample source, assessment of quality and quantity, nucleic acid storage	1	2	a1,b4,c1
2	Nucleic acid extraction	RNA extraction methods Sample source, assessment of quality and quantity, nucleic acid storage	1	2	a1,b4,c1
3	blotting techniques	Identification Hybridization , blotting and probe. Types , procedures and uses of blotting techniques Southern, northern and dot/slot blot; RFLP : (Principles. steps. Reaction Components and Applications);2	1	2	a1,b4,c1
4	In situ nucleic acid hybridization & DNA Microarray	FISH: (Principles steps Reaction Components Applications) DNA chip (Principles steps . Reaction Components applications)	1	2	a1,b4,c1
5	nucleic acid amplification techniques	Types PCR: principles applications Principles steps reaction Components Variants of the PCR Applications	1	2	a1,b4,c1

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		optimization of PCR reactions, contaminants, analysis and verification of PC R products			
6	nested PCR , multiplex PCR and hot start PCR Reverse transcriptase PCR,	Principles steps reaction Components Variants of the PCR Applications	1	2	a1,b4,c1
7	Med tem		1	2	a1,b4,c1
8	Electrophoretic	TYPES Principles steps reaction Components Applications	1	2	a1,b4,c1
9	Real-time PCR	Principles steps Reaction Components Applications	1	2	a1,b4,c1
10	DNA sequencing techniques	applications of DNA sequencing in the clinical laboratory. Principles steps reaction Components Applications	1	2	a1,b4,c1
11	recombinant DNA technology	Principles steps reaction Components Applications	1	2	a1,b4,c1
12	DNA CLONING	Principles steps Reaction Components Applications	1	2	a1,b4,c1
13	TMA SDA	Principles types Reaction Components	1	2	a1,b4,c1

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		Applications			
١٤	LAMP LCR	Principles types Reaction Components Applications	1	2	a1,b4,c1
١٥	Typing	Principles Types steps applications	1	2	a1,b4,c1
١٦	Final Theoretical Exam		1	2	a1,b4,c1
Number of Weeks /and Units Per Semester			16	32	

V. Teaching Strategies of the Course:

1-	Lectures
2-	Practical session
3-	Self leaning
4-	Group research

VI. Assessment Methods of the Course:

No	Assignment	
1	Written Exams (Short Essays) and Quizzes	a1,b4,c1
2	Written Exams(MCQ)	a1,b4,c1
3	Structured Oral Exams	a1,b4,c1
4	Objective Structured Practical Exams (OSPE)	a1,b4,c1
5	Student presentation	a1,b4,c1

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Ministry of Higher Education & Scientific Research
21 SEPTEMBER UMAS
Faculty of Laboratory medicine
Department of microbiology & immunology
Unit of Development & Quality assurance

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية
كلية الطب المخبري
قسم الأحياء الدقيقة والمناعة
وحدة التطوير وضمان الجودة

VII. Assignments:

No.	Assignments	Week Due	Mark	Proportion of Final Assessment	Aligned CILOs (symbols)
1	Midterm Exam	7	15	15%	a1,b4,c1
2	Activity	Throughout the semester	5	5%	a1,b4,c1
3	Practical Report	Throughout the semester	10	10 %	a1,b4,c1
4	Practical exam	12	20	20%	a1,b4,c1
5	Final Exam	14	50	50%	a1,b4,c1
Total					

IX. Learning Resources:

- Written in the following order: Author, Year of publication, Title, Edition, Place of publication, Publisher.

1- Required Textbook(s) (maximum two): مثال example

- 1- Brooker, R. J. (2009). *Genetics: Analysis & principles*. New York, NY: McGraw-Hill.
- 2- Coleman, W. B., & Tsongalis, G. J. (1997). *Molecular diagnostics: For the clinical laboratorian*. Totowa, NJ: Humana Press.
- 3- Glick, B. R., Pasternak, J. J., & Patten, C. L. (2010). *Molecular biotechnology: Principles and applications of recombinant DNA*. Washington, DC: ASM Press

2- Essential References:

- 1- Lela Buckingham and Maribeth Flaws .Molecular Diagnostics: Fundamentals, Methods and Clinical Applications, 2nd edition. ISBN-13: 978-0-8036-2677-5
- 2- Lela Buckingham and Maribeth Flaws , Molecular Diagnostics: Fundamentals, Methods and Clinical Applications, 2007, ISBN-13: 978-0-8036-1659-2, ISBN-10: 0-8036-1659-7
ISBN-10: 0-8036-1659-7
- 3- Lela Buckingham and Maribeth Flaws , Molecular Diagnostics: Fundamentals, Methods and Clinical Applications, 2007, ISBN-13: 978-0-8036-1659-2, ISBN-10: 0-8036-1659-7
ISBN-10: 0-8036-1659-7

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Assistant Prof. Dr. Ghamdan Al-Tahish	Prof. Dr. Khalid A. AL-Moyed	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass.Pf. Dr. Ebtessam Al-Zabedi

3- Electronic Materials and Web Sites etc.:

Websites:

- 1- <http://www.asnmusa.org>
- 2- <http://www.phage.org/black09.htm>
- 3- http://www.microbe.org/microbes/virus_or_bacterium.asp

Journals:

4-

Other Web Sources:

5-

6-

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

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Assistant Prof. Dr. Ghandan Al-Tahish	Prof. Dr. Khalid A. Al-Moyed	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass. Pr. Dr. Ebtessam Al-Zabedi

Republic of Yemen
Ministry of Higher Education & Scientific Research
21 SEPTEMBER UMAS
Faculty of Laboratory medicine
Department of microbiology & immunology
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Republic of Yemen
Ministry of Higher Education & Scientific Research
21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIED
SCIENCES



Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Research Methodology

Course No. (03.12. 317)

2022/2023

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Prof. Dr. Khaled A. Al-Moyed	Dr Gamil Taber Abdul Mughni	Dr Gamil Taber Abdul Mughni	Dr Gamil Taber Abdul Mughni	Ass. Pr. Dr. Ebtessam Al-Zabedi



I. Course Identification and General Information:

1	Course Title:	Research Methodology			
2	Course Code & Number:	03.12. 317			
3	Credit Hours:	Theory Hours			Credit Hours
		Lecture	Exercise	Practical	
		2	0	0	
4	Study Level/Semester at which this Course is offered:	1 st Level / 2nd Semester			
5	Pre-Requisite (if any):	None			
6	Co-Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Master degree of microbiology & immunology			
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			

Prepared by: Prof. Dr. Khaled A. Al-Meysad	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs: Dr Gamil Taher Abdul Mughni	Dean of College: Ass.Prof. Dr. Ebtessam Al-Zabedi
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II. Course Description:

This course is an advanced study of research methods and scientific writing. Students will learn about more complex research designs, statistical analysis, and writing for a scholarly audience. The course will also cover ethical issues in research.

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	Understand specialized research methods	A1
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B. Intellectual Skills:

Upon successful completion of the course, students will be able to:

b1	Explain scientific writing and research methodology in the writing scientific reports	B1
b2	Design advanced research project autonomously synthesizing the various ethical, statistical, and reporting methods	B3

C. Professional and Practical Skills:

Upon successful completion of the course, students will be able to:

c1	Demonstrate mastery in advanced research methods when write clear and concise research reports.	C1
c2	Applied advanced ethical issues in research	C3

D. Transferable Skills:

Upon successful completion of the course, students will be able to:

d1	Communicate effectively about Research Methods and Scientific Writing to a variety of audiences	D1
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Prepared by: Prof. Dr. Khaled A. Al-Mayed	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass.Pr. Dr. Ebtessam AlZabedi
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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	Understand specialized research methods	Lectures	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	Explain scientific writing and research methodology in the writing scientific reports	Lectures	Exam
B2	Design advanced research project autonomously synthesizing the various ethical, statistical, and reporting methods	Lectures	Exam

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	Demonstrate mastery in advanced research methods when write clear and concise research reports.	Lectures	Exam
C2	Applied advanced ethical issues in research	Lecture Research proposal Research report	Exam Research proposal Research report

(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 effectively about Research Methods and Scientific Writing to a variety of audiences	Lectures Research proposal Research report	Exam Research proposal Research report

Prepared by: Prof. Dr. Khaled A. Al-Moved	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College. Ass.Pr. Dr. Ebtasam Al-Labedi
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Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes
1	Introduction to advanced research methods	What is research? The different types of research The research process	1	2	a1,b1,b2,c1,c2,d1
2	Research questions and hypotheses	Developing a research question, designing a study, data collection methods, and statistical analysis.	1	2	a1,b1,b2,c1,c2,d1
3	Literature review and research design	Presenting research results in written and oral formats, creating effective visual aids, and responding to questions from an audience.	1	2	a1,b1,b2,c1,c2,d1
4	Data collection and analysis	1. Sampling 2. Survey research 3. Experimental research 4. Descriptive statistics 5. Inferential statistics 6. Critiquing Research: Evaluating scientific literature, reviewing peer-reviewed articles, and providing constructive feedback to peers	1	2	a1,b1,b2,c1,c2,d1
5	Writing research proposals	The structure of a research paper, academic writing conventions, scientific language, and citation formats.	1	2	a1,b1,b2,c1,c2,d1
6	Ethical issues in research	Scientific Writing The elements of scientific	1	2	a1,b1,b2,c1,c2,d1

Prepared by: Prof. Dr. Khaled A. Al-Moyed	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass.Pr. Dr. Ebtessam Al-Labedi
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Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes
1	Introduction to advanced research methods	What is research? The different types of research The research process	1	2	a1,b1,b2,c1,c2,d1
2	Research questions and hypotheses	Developing a research question, designing a study, data collection methods, and statistical analysis.	1	2	a1,b1,b2,c1,c2,d1
3	Literature review and research design	Presenting research results in written and oral formats, creating effective visual aids, and responding to questions from an audience.	1	2	a1,b1,b2,c1,c2,d1
4	Data collection and analysis	1. Sampling 2. Survey research 3. Experimental research 4. Descriptive statistics 5. Inferential statistics 6. Critiquing Research: Evaluating scientific literature, reviewing peer-reviewed articles, and providing constructive feedback to peers	1	2	a1,b1,b2,c1,c2,d1
5	Writing research proposals	The structure of a research paper, academic writing conventions, scientific language, and citation formats.	1	2	a1,b1,b2,c1,c2,d1
6	Ethical issues in research	Scientific Writing The elements of scientific	1	2	a1,b1,b2,c1,c2,d1

Prepared by: Prof. Dr. Khaled A. Al-Moyed	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass.Pr. Dr. Ebtisam Al-Labedi
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		writing Writing a research proposal Writing a research report Scientific Writing (cont.) Reviewing and editing scientific writing Presenting research findings			
7	Midterm exam		1	2	a1,b1,b2,c1,c2,d1
8	Research paper proposal	The structure of a research paper, academic writing conventions, scientific language, and citation formats	1	2	a1,b1,b2,c1,c2,d1
9	Research paper draft	The structure of a research paper, academic writing conventions, scientific language, and citation formats	1	2	a1,b1,b2,c1,c2,d1
10	Research paper final draft	The structure of a research paper, academic writing conventions, scientific language, and citation formats	1	2	a1,b1,b2,c1,c2,d1
11			1	2	a1,b1,b2,c1,c2,d1
12	Scientific Writing	The elements of scientific writing Writing a research proposal Writing a research report	1	2	a1,b1,b2,c1,c2,d1
13	Scientific Writing (cont.)	Reviewing and editing scientific writing Presenting research findings	1	2	a1,b1,b2,c1,c2,d1
14	Final exam		1	2	a1,b1,b2,c1,c2,d1
Number of Weeks /and Units Per Semester			16	32	

V. Teaching Strategies of the Course:	
1-	Lectures
2-	Practical session

Prepared by: Prof. Dr. Khaled A. Al-Mayed	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass. Prof. Dr. Ebtessam Al-Zabedi
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3-	Research proposal
4-	Research report

VI. Assessment Methods of the Course:

No	Assignment	
1	Written Exams (Short Essays) and Quizzes	A1,b3,b4,C1
2	Written Exams(MCQ)	A1,b3,b4,C1
3	Structured Oral Exams	A1,b3,b4,C1
4	Objective Structured Practical Exams (OSPE)	A1,b3,b4,C1
5	Student presentation	A1,b3,b4,C1

VII. Assignments:

No.	Assignments	Week Due	Mark	Proportion of Final Assessment	Aligned CILOs (symbols)
1	Midterm Exam	7	15	15%	a1,b3,b4,c1
2	Activity	Throughout the semester	5	5%	A1,b3,b4,C1
3	Practical Report	Throughout the semester	10	10 %	A1,b3,b4,C1
4	Practical exam	12	20	20%	A1,b3,b4,C1
5	Final Exam	14	50	50%	A1,b3,b4,C1
Total					

Prepared by: Prof. Dr. Khaled A. Al-Moyed	Reviewed by: Dr Gamil Taher Abdul Mughni	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs: Dr Gamil Taher Abdul Mughni	Dean of College: Ass. Pr. Dr. Ebtessam Al-Zabedi
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Learning Resources:

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

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

1-Research Methods: A Process for Scientific Investigation, 11th Edition by John W. Creswe

2-Research Methods: A Process for Scientific Investigation, 8th Edition by David L. Stufflebeam and Charles W. Shinkfield.

2- Essential References.

1-Research Methods: A Structured Inquiry, 12th Edition by John W. Creswell and -Vicki L. Plano Clark

2- Research Design, John W. Creswell's 3rd Ed

3- Electronic Materials and Web Sites etc.

The American Psychological Association (APA) Style Guide.

The Publication Manual of the American Sociological Association (ASA).

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.

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5 **Cheating:**

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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

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Prof. Dr. Khaled A. Al-Moved	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass. Pr. Dr. Ebtisam Al-Zabedi

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Republic of Yemen
Ministry of Higher Education & Scientific Research
21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIED
SCIENCES



Faculty of Laboratory medicine..
Department of MICROBIOLOGY & IMMUNOLOGY
Course Specification of Advanced Medical Mycology
Course No. (03.12. 316)
2022/2023

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr Gamil Taher Abdul Mughni	- Assistant Prof. Dr Ghamdan Ak-Tahish	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass. Pr. Dr. Ebtessam Al-Zabedi

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UMAS

Faculty of Laboratory medicine

Department of microbiology & immunology

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



الجمهورية اليمنية

وزارة التعليم العالي والبحث العلمي

جامعة ٢١ سبتمبر للعلوم الطبية والتطبيقية

كلية الطب المخبري

قسم الأحياء الدقيقة والمناعة

وحدة التطوير وضمان الجودة

I. Course Identification and General Information:

1	Course Title:	Advanced Medical Mycology			
2	Course Code & Number:	03.12. 316			
3	Credit Hours:	Theory Hours			
		Lecture	Exercise	Practical	Credit Hours
		2	0	2	3
4	Study Level/ Semester at which this Course is offered:	1st Level / 1st Semester			
5	Pre -Requisite (if any):	None			
6	Co -Requisite (if any):	None			
7	Program (s) in which the Course is Offered:	Master degree in Medical Microbiology & Immunology			
8	Language of Teaching the Course:	English			
9	Study System:	Semester			
10	Mode of Delivery:	Regula r			
11	Location of Teaching the Course:	University Campus			
12	Prepared by:	Dr. Gamil Taher Abdul-Mughni			
13	Date of Approval:	2022-2023			

Prepared by: Dr Gamil Taher Abdul Mughni	Reviewed by: - Assistant Prof. Dr. Qhamañan Al-Taish	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass.Pr. Dr. Ebtessam Al-Zabedi
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II. Course Description:

Advanced Medical Mycology is provides an in-depth understanding of fungal infections in humans. The course covers a wide range of topics, including: The popetase taxonomy, morphology, and physiology of fungi, epidemiology and pathogenesis of fungal infections, the diagnosis and treatment of fungal infections and the prevention of fungal infections

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 important mechanisms of fungi pathogenesis, modes of transmission, eliminated, treatment and treatment and pevantion and the ole of immune esponse	A2
----	---	----

B. Intellectual Skills:

Upon successful completion of the course, students will be able to:

b1	Explain the pathogenesis of fungal infections	B4
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C. Professional and Practical Skills:

Upon successful completion of the course, students will be able to:

c1	Identify and interpret the results of laboratory tests used to diagnose fungal infections.	C1
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c2	Select appropriate antifungal therapy for the treatment of fungal infections.	C2
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D. Transferable Skills:

Upon successful completion of the course, students will be able to:

d1		D2
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Prepared by: Dr Gamil Taher Abdul Mughni	Reviewed by: - Assistant Prof/Dr Ghandan Al-Tahish	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass Pr. Dr. Ebtessam Al-Zabedi
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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 important mechanisms of fungi pathogenesis, modes of transmission, eliminated, treatment and treatment and pevantion and the ole of immune esponse.	Lectures	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	Explain the pathogenesis of fungal infections	Lectures	Exam

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	Identify and interpret the results of laboratory tests used to diagnose fungal infections.	Lectures Practical	Practical exam
	Select appropriate antifungal therapy for the treatment of fungal infections.	Lectures Practical	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		Lectures	Exam

Prepared by: Dr Gamil Taher Abdul Mughni	Reviewed by: - Assisjant Prof. Dr Ghamdan Al Tahish	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass. Pr. Dr. Ebtesam Al-Zabedi
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V. Course Content:

A – Theoretical Aspect:

NO.	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	General Introduction to Medical Mycology & Course Instruction.	Definitions and Fungal terminology - Fungal in the economy -Importance of medical mycology Immunology of the Mycoses	1	2	a1,b1,c1,c2,d3
2	-Fungal Importance and its	Definitions and Fungal terminology	1	2	a1,b1,c1,c2,d3
3	-Fungal Classification and Taxonomy	Definitions Geographic Epidemiologic, Morphological, Taxonomical classification Medical classification	1	2	a1,b1,c1,c2,d3
4	Fungal Pathogenesis	-Pathogenesis of Fungal Disease -Primary Fungal Pathogens -Opportunistic Pathogens	1	2	a1,b1,c1,c2,d3
5	General Aspects of Fungal Immunology	Innate Immunity/Nonspecific Immunity Factors that Affect Host-Fungus Interactions Relationship of Natural Immunity to Outcome of Mycoses Importance of CMI (TH1 Immune Responses)	1	2	a1,b1,c1,c2,d3
	Lab Diagnosis of Fungal infection	Diagnosis of fungal Disease : Safety Precautions -specimen Collection -transportation and processing of mycological specimen Direct Techniques and Isolation Techniques Diagnosis of fungal Disease : Rapid Diagnosis and	1	2	a1,b1,c1,c2,d3

Prepared by: Dr Gamil Taher Abdul Mughni	Reviewed by: - Assistant Prof. Dr. Ghaidan Al-Tahish	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass. Pr. Dr. Ebtesam Al-Zabedi
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		Investigational Immunoassays Final Exam : Date , Time and Location to be Announced			
	Antifungal Drugs: Overview : -Polyenes: Amphotericin B , Nystatin, and others Azoles: Fluconazole, Itraconazole, Posaconazole, Voriconazole, Ketoconazole, Ravuconazole and others. -Fluorocytosine, Echinocandins (Caspofungin, Micafungin, Anidulafungin) and other antifungal agents	Define Mechanism Popetase Used saide effect	1	2	a1,b1,c1,c2,d 3
7	Med term		1	2	a1,b1,c1,c2,d 3
8	Superficial mycoses: A-Tinea (Pityriasis) Versicolor; B-Tinea nigra; C-Piedra	Definition Disease Etiolog Popetase Distibution Diagnosis Treatment and pevantion	1	2	a1,b1,c1,c2,d 3
9	Cutaneous mycoses: Dermatophyte (Dermatomycosis) Cutaneous mycoses: 1. Tinea capitis 2. Tinea pedis 3. Tinea corporis 4. Tinea cruris 5. Tinea barbae 6. Tinea unguium 7. Tinea favosa Microsporum spp., Trichophyton spp., and Epidermophyton floccosum	Definition Disease causes, symptoms, diagnosis and treatment:	2	2	a1,b1,c1,c2,d 3
10	Subcutaneous Mycoses: a- Eumycotic, Actinomycotic b-Chromomycosis.	Definition Disease causes, symptoms, diagnosis and treatment:	2	4	a1,b1,c1,c2,d 3

Prepared by: Dr Gamil Taher Abdul Mughni	Reviewed by: - Assistant Prof. Dr Ghaidan Al-Takish	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs Dr Gamil Taher Abdul Mughni	Dean of College: Ass.Pc/Dr. Ebtessam Al-Zabedi
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	c- Spototrichosis. d. Phaeohyphomycosis				
11	Systemic Mycoses: A – Zygomycosis. B – Histoplasmosis. C – Blastomycosis. D – Cryptococcosis. E – Aspergillosis. F – Paracoccidioidomycosis G – Coccidioidomycosis.	Definition Disease causes, symptoms, diagnosis and treatment:	2	4	a1,b1,c1,c2,d 3
12	Opportunistic Mycoses: -Aspergillosis Zygomycosis Candidiasis Cryptococcosis.	Definition Disease Causes Symptoms diagnosis and treatment	2	4	a1,b1,c1,c2,d 3
13	FINAL THEORTICAL		16	32	

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Lab safet			
2	Isolated			
3				
4				
5				
Number of Weeks /and Units Per Semester				

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V. Teaching Strategies of the Course:

1-	Lectures
2-	Practical session
3-	Self leaning
4-	Group research

VI. Assessment Methods of the Course:

No	Assignment	
1	Written Exams (Short Essays) and Quizzes	a1,b1,c1,c2,d3
2	Written Exams(MCQ)	a1,b1,c1,c2,d3
3	Structured Oral Exams	a1,b1,c1,c2,d3
4	Objective Structured Practical Exams (OSPE)	a1,b1,c1,c2,d3
5	Student presentation	a1,b1,c1,c2,d3

VII. Assignments:

No.	Assignments	Week Due	Mark	Proportion of Final Assessment	Aligned CILOs (symbols)
1	Midterm Exam	7	15	15%	a1,b1,c1,c2,d3
2	Activity	Throughout the semester	5	5%	a1,b1,c1,c2,d3
3	Practical Report	Throughout the semester	10	10 %	a1,b1,c1,c2,d3
4	Practical exam	12	20	20%	a1,b1,c1,c2,d3
5	Final Exam	14	50	50%	a1,b1,c1,c2,d3
Total					

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Learning Resources:

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

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

- 1- Medical Mycology by Anaissie et al.
- 2- Textbook of Medical Mycology, Jagdish Chander, 2017

2- Essential References.

Fundamental Medical Mycology : Errol Reiss, 2011

3- Electronic Materials and Web Sites etc.:

- 1- <https://www.ncbi.nlm.nih.gov>

2-

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

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