

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



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

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-Meysal	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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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

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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					

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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.

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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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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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

Unit of Development & Quality assurance

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
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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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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

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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					

Prepared by: Dr Gamil Taher Abdul Mughni	Reviewed by: - Assistant Prof. Dr. Ghannada Al-Fabish	Head of the Department: Dr Gamil Taher Abdul Mughni	Vice Dean for Quality affairs: Dr Gamil Taher Abdul Mughni	Dean of College: Ass. Dr. 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- 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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