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 submithis 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 convertedto 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

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

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS &

APPLIEED SCIENCES

Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Advanced Molecular Microbiology
Course No. (03.12. 311)
2022/2023

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

I. Course Identification and General Information:					
1	Course Title:	Advanced Molecular Microbiology			
2	Course Code & Number:	03.12. 311			
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:	Maste defee of MICROBIOLOGY & IMMUNOLOGY			
8	Language of Teaching the Course:	English			
9	Study System:	Semester			
10	Mode of Delivery:	Presentations and exercises			
11	Location of Teaching the Course:	University Campus			
12	Prepared by:	Dr Ghamdan Al-Tahish			
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	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass.Pr. Dr. Ebtesam Al-Zabedi

II. Course Description:
This course provides an in-depth study of the molecular biology of microorganisms. Topics include DNA replication, transcription, translation, regulation of gene expression, and molecular genetics of pathogens

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 basic structure and function of microbial DNA, RNA, and proteins	A2
B. Intellectual Skills: **Upon successful completion of the course, students will be able to:**		
b1	Explain the molecular basis of microbial pathogenesis gene expression	B1
C. Professional and Practical Skills: **Upon successful completion of the course, students will be able to:**		
c1	Evaluate the use of molecular biology techniques in the diagnosis, treatment, and prevention of infectious diseases	C1
D. Transferable Skills: **Upon successful completion of the course, students will be able to:**		
d1	Demonstrate oral and written effective communication skills	D2

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

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 basic structure and function of microbial DNA, RNA, and proteins	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 molecular basis of microbial pathogenesis gene expression	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	**Evaluate** the use of molecular biology techniques in the diagnosis, treatment, and prevention of infectious diseases	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	**Demonstrate** oral and written effective communication skills	Lectures	Exam

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

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Introduction to molecular microbiology	– Basic molecular biology: Nucleic acid structure, denaturation and re-pairing of DNA – replication, transcription, translation, DNA damage, mutagenesis……	1	2	a2,b2,c2,d1
2	Chromosome structure	– histone and DNA interactome; Structure and assembly of prokaryotic and eukaryotic DNA polymerases;…	1	2	a2,b2,c2,d1
3	DNA Replication and repair	– … Patterns of replication – Initiation of replication – Elongation of replication – Termination of replication – Proofreading and DNA repair – Difference DNA replication	1	2	a2,b2,c2,d1
4	Gene structure	– Gene definition – Gene structure – Gene function – Difference gene structure in prokaryotes and Eukaryotes	1	2	a2,b2,c2,d1
5	Gene expression-transcription	– Initiation of translation – Elongation of translation – Termination of translation – mRNA processing (for eukaryotes)			a2,b2,c2,d1

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

6	Gene expression-translation	– Terminology: Cistrons, Coding Sequences and Open Reading Frames. genetic code, The Start Codon – Initiation of Translation – Elongation of Translation – Termination of Translation protein processing Control of gene expression at transcription and translation level of Regulation of gene expression in viruses, prokaryotic and eukaryotic genes,			a2,b2,c2,d1
7	mutation	Definition Types of Mutations Gene Mutations. **silent, missense, or nonsense mutations** **frame shift mutations** Effects of gene mutations Chromosomal mutations and types Mutagens *Teratogen:* Identification and selection of mutants; …	1		a2,b2,c2,d1
8	DNA repair and recombination	**General classes of DNA damage** single base changes, structural distortion, and DNA backbone damage. Cellular response to DNA damage Recombination definition Types of Recombination Biological Roles for Recombination …	1		a2,b2,c2,d1
9	Med term			2	a2,b2,c2,d

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

					1
10	**Bacterial genetics** ,	Plasmids - types, replication, partitioning, copy-number control; Methods of gene transfer in Bacteria - Transformation: natural transformation systems. Transposable elements may be : Insertion sequence elements (IS) and Transposons Phage genetics: lytic and lysogenic switch; Virulent and temperate phage. Transduction: Generalized and specialized transduction	1	2	a2,b2,c2,d 1
11	**gene expression**	Definition Types Regulation of Bacterial Gene Expression House keeping gene in bacteria Inductive and repressive gene expression Gene expression in Bacteriophage …	1	2	a2,b2,c2,d 1
12	**Recombinant DNA technology**	Basics of Molecular Cloning Clone types DNA cloning definition Types. components process-application Cloning vectors types and Application2	1	2	a2,b2,c2,d 1
١٣	**Microbial pathogenesis and host-pathogen interactions**	Infection Process Virulence Factors Evading the Host Immune Response Evading the Host Immune	1	2	a2,b2,c2,d 1

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

		Response			
١٤	**Antibiotic types**	Types – structure Main classes –mode of action Members of each classes Antibiotic sensitivity testing methods	1	2	a2,b2,c2,d1
١٥	Molecular mechanisms of antibiotic resistance	Types . mechanism and genes of resistance For beach class	1	2	a2,b2,c2,d1
١٦	**Final Theoretical Exam**		1	2	
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,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

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

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					

Learning Resources:

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

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

Principles of Molecular Biology, 7th edition, by Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter

Molecular Microbiology, 5th edition, by Christopher Davies

2- Essential References.

Essential Molecular Biology, 4th edition, by Thomas D. Brock, Michael Madigan, John Martin, and Jack Parker

3- Electronic Materials and Web Sites *etc.*

The American Society for Microbiology (ASM) website:

https://www.asm.org/

The National Center for Biotechnology Information (NCBI) website:

https://www.ncbi.nlm.nih.gov/

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

The European Molecular Biology Laboratory (EMBL) website: https://www.embl.de/

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
	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.
3	**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.
	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.
4	**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.
5	**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 Ghamdan Al-Tahish	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Dr Gamil Taher Abdul Mughni	Ass.Pr. Dr. Ebtesam Al-Zabedi

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIEED SCIENCES

Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Advanced Medical Virology

Course No. (03.12.315)

2022/2023

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Ghamdan Altahish'	Dr\Gamil Taher Abdel Mughni	Dr\Gamil Taher Abdel Mughni	Dr\Gamil Taher Abdel Mughni	- Associate Prof. Dr. Ehesan Al-Zabedi

I. Course Identification and General Information:						
1	Course Title:	Advanced Medical Virology				
2	Course Code & Number:	03.12. 315				
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 / 2nd Semester				
5	Pre --Requisite (if any):	None				
6	Co --Requisite (if any):	None				
7	Program (s) in which the Course is Offered:	Maste degeee 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:	Prof. Dr. Khalid A. AL-Moyed				
13	Date of Approval:	2022-2023				

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Ghanidan Alfahish	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ehsaan Al-Zabedi

	A. II. Course Description:
	This course provides an in-depth study of the major groups of viruses pathogenic for humans. Topics include virus replication, host range, pathogenesis, immunology, and epidemiology.

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 basic structure and function of viruses, classification, morphological features of the different common human viral and fungal pathogens.	**a1,a4,b1,b36,c2,d3**
a2	**Describe** the pathogenicity, virulence factors and mode of transmission of the different common human viral pathogens	**a1,a4,b1,b3,c2,d3**
B. Intellectual Skills: *Upon successful completion of the course, students will be able to:*		
b1	**Explain** the replication cycle of viruses	**a1,a4,b1,b3,c2,d3**
b2	**Design** guidelines for prevention, treatment and control of infection/disease fo vial infection	**a1,a4,b1,b3,c2,d3**
C. Professional and Practical Skills: *Upon successful completion of the course, students will be able to:*		
c1	**Identify** the major groups of viruses that infect humans	**a1,a4,b1,b3,c2,d3**
D. Transferable Skills: *Upon successful completion of the course, students will be able to:*		
d1		**a1,a4,b1,b3,c2,d3**

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Ghamdan Altahish	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ebtesam Al-Zabedi

C. 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 basic structure and function of viruses, classification, morphological features of the different common human viral and fungal pathogens.	Lectures	Exams
A2	**Describe** the pathogenicity, virulence factors and mode of transmission of the different common human viral pathogens.	Lectures	Exams

(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 replication cycle of viruses	Lectures Practical sessions	Exams, Assignments.,Lab reports
B2	**Design** guidelines for prevention, treatment and control of infection/disease fo vial infection	Lectue	Exams, Assignments.,Lab reports

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** the major groups of viruses that infect humans	Lectures Practical sessions	Lab reports, Exams

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

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
D1			

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Ghamdan Altahish	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ebtesam Al-Zabedi

III. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	week	contact hours	Learning Outcomes
1	Introduction to Medical Virology	Definition viruses Desribes the basic components of viruses,	1	2	a1,a4,b1,b 36,c2
2	Structure and Function of Viruses	- Structure and classification of viruses - Viral replication strategies - Viral genetics and variability - Host-virus interactions and immune response to viral infections	1	2	a1,a4,b1,b 36,c2
3	Virus Replication	Describe Virus isolation in cell cultures, Discuss the tem cytopathic effects and identification of viruses.	1	2	a1,a4,b1,b 36,c2
4	Host Range and Pathogenesis of Viral Infections	Mechanisms of viral pathogenesis - Viral tropism and tissue targeting - Immune evasion and viral persistence - Oncogenic viruses and cancer	1	2	a1,a4,b1,b 36,c2
5	Immunology of Viral Infections		1		a1,a4,b1,b 36,c2
6	Epidemiology of Viral Infection	- Principles of virus transmission - Outbreak investigation and control	1		a1,a4,b1,b 36,c2

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Gharadaw Alrahish	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ebtesam Al-Zabedi

		- Epidemiology of viral infections - Emerging and re-emerging viral infections			
7	Diagnosis of viral infections Prevention and treatment of viral infections	- Laboratory diagnosis of viral infections - Antiviral therapies and drug resistance - Immunotherapy and passive immunization - Vaccine development and vaccination strategies	1	2	a1,a4,b1,b36,c2
8	Viral Diseases of the Respiratory Tract	influenza, respiratory syncytial virus (RSV), parainfluenza virus, adenovirus, rhinovirus	1	2	a1,a4,b1,b36,c2
9	Viral Diseases of the Gastrointestinal Tract	rotavirus, norovirus, hepatitis A virus, hepatitis B virus, hepatitis C virus, cytomegalovirus (CMV)	1	2	a1,a4,b1,b36,c2
10	Viral Diseases of the Nervous System	poliomyelitis, herpes simplex virus (HSV), varicella-zoster virus (VZV), Epstein-Barr virus (EBV), HIV	1	2	a1,a4,b1,b36,c2
11	Viral Diseases of the Skin	molluscum contagiosum, human papillomavirus (HPV), herpes zoster	1	2	a1,a4,b1,b36,c2
12	Viral Diseases of the Blood	HIV, hepatitis B virus, hepatitis C virus	1	2	a1,a4,b1,b36,c2
13	Viral diseases of the eyes:	herpes simplex virus (HSV), varicella-zoster virus (VZV),	1	2	a1,a4,b1,b36,c2

		cytomegalovirus (CMV)			
14	Final exam		1	2	a1,a4,b1,b36,c2
	Number of Weeks /and Units Per Semester		16	32	

B - Practical Aspect: (if any)				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Learning Outcomes**
1	**Introduction to virology diagnostic techniques Electron microscope**			a1,a4,b1,b36,c2
2	**Cell culture**			a1,a4,b1,b36,c2
3	**Introduction to serological tests used in diagnosis of viral infections Agglutination and haemagglutination**			a1,a4,b1,b36,c2,d3
4	**Immunofluorescence**			a1,a4,b1,b36,c2
5	**Enzyme Linked Immune-sorbent Assay (ELISA)**			a1,a4,b1,b36,c2
6	**Other serological tests (complement fixation, radioimmunoassay (RIA), Western blot)**			a1,a4,b1,b36,c2
7	**Molecular diagnosis of viral infection.**			a1,a4,b1,b36,c2
Number of Weeks /and Units Per Semester				

V. Teaching Strategies of the Course:	
1-	Lectures
2-	Practical session
3-	Seminars
4	**Dissccusion**

VI. Assessment Methods of the Course:	
No	**Assignment**
1	**Written Exams (Short Essays) and Quizzes**
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%	a1,a4,b1,b36,c2
2	**Activity**	Throughout the semester	5	5%	a1,a4,b1,b36,c2
3	Practical Report	Throughout the semester	10	10 %	a1,a4,b1,b36,c2
4	**Practical exam**	12	20	20%	a1,a4,b1,b36,c2
5	**Final Exam**	14	50	50%	a1,a4,b1,b36,c2
Total					

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Shaddad Altahish	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ebtesam A. Zabedi

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- Medical Virology, 9th Edition by David Knipe, Peter Palese, and David Roizman

2- Medical Virology" by Frederick A. Murphy and E. Paul J. Gibbs Fifth Edition • 2016.

2- Essential References.

1- Fields Virology" edited 7th edition (April 17, 2020 by David M. Knipe and Peter M. Howley

2- "Virology: Molecular Biology and Pathogenesis") (2010). ASM Press by Leonard C. Norkin

3- Electronic Materials and Web Sites *etc.*

1- Centers for Disease Control and Prevention (CDC)
- https://www.cdc.gov/vaccines/vpd/vpd-vac-basics.html

2- World Health Organization (WHO)
- https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON303

3-	. National Institute of Allergy and Infectious Diseases (NIAID) - https://www.niaid.nih.gov/diseases
4	Virology Education - https://www.virology-education.com/

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:**

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Dr. Ghamdan Alfatasir	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	- Associate Prof. Dr. Ebtesam Al-Zabedi

	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

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 SEPTEMBER UNIVERSITY of MEDICALS & APPLIEED

SCIENCES

Faculty of Laboratory medicine..

Department of MICROBIOLOGY & IMMUNOLOGY

Course Specification of Advanced Medical Parasitology

Course No. (03.12. 320)

2020/2021

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Associate Prof. Dr Rashad Ahmed Ali Abdulgani	Assistant Prof. Dr Ghamdan Al-Tahish	Dr\Gamil Taher Abdul Mughni	Dr\Gamil Taher Abdul Mughni	Associate Prof. Dr. Ebtesam Al-Zabidi

I. Course Identification and General Information:					
1	**Course Title:**	Advanced Medical Parasitology			
2	**Course Code & Number:**	03.12. 320			
3	**Credit Hours:**	Theory Hours			
		Lecture	Exercise	Practical	Credit Hours
		2	1	1	3
4	**Study Level/ Semester at which this Course is offered:**	1st Level / 1st Semester			
5	**Pre –Requisite (if any):**	Advanced Microbiology, Advanced Immunology			
6	**Co –Requisite (if any):**	None			
7	**Program (s) in which the Course is Offered:**	Maste degeee of microbiology & immunology			
8	**Language of Teaching the Course:**	English			
9	**Study System:**	semester			
10	**Mode of Delivery:**	rgular			
11	**Location of Teaching the Course:**	University Campus			
12	**Prepared by:**	Dr. ----			
13	**Date of Approval:**				

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II. Course Description:

his course is an advanced study of the biology, life cycles, pathogenesis, diagnosis, and treatment of parasitic infections. The course is designed for students who are interested in pursuing a career in research, control, or teaching related to medical parasitology.

III. Course objective:

Identify and classify parasites using morphological and microscopic techniques

Describe the life cycles of parasites and the mechanisms by which they are transmitted

Discuss the pathogenesis of parasitic infections and the clinical manifestations of these infections

Interpret laboratory results for parasitic infections

Develop and implement treatment plans for parasitic infections

Conduct research on parasitic infections

Communicate effectively about parasitic infections to patients, colleagues, and the public

Identify parasites under the microscope

Interpret laboratory results for parasitic infections

Develop and implement treatment plans for parasitic infections

demonstrate detailed knowledge and understanding of the biology and strategies for control of the vectors and intermediate hosts of human parasites; (iii) carry out practical laboratory identification of the various parasite stages both free and in tissues and diagnose infections; (iv) demonstrate specialised skills acquired through taking Modules on: advanced diagnostic, molecular, immunological, genetic, chemotherapeutic, ecological and/or control aspects of the subject; (v) demonstrate the ability to design a laboratory or field based research project, apply relevant research skills, critically analyse and interpret data, and work with minimal supervision;
Explain the host defense mechanisms against parasitic infections and mechanisms of co-infections

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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	Demonstrate detailed knowledge and understanding of the biology, life cycles, pathogenesis, diagnosis of parasitic infections in humans and their relevance for human health and strategies for control;	
A2	identify morphological, biological and epidemiological characteristics of the main parasites and microorganisms involved in human health. Associate the characteristics of major infectious diseases caused by parasites with prevention and possible treatments	
B. Intellectual Skills: **Upon successful completion of the course, students will be able to:**		
b1	Explain the host defense mechanisms against parasitic infections and mechanisms of co-infections	
B2	Performs	
B3		
C. Professional and Practical Skills: **Upon successful completion of the course, students will be able to:**		
c1		
c2		
D. Transferable Skills: **Upon successful completion of the course, students will be able to:**		
d1	Communicate with patients and their families to avoid further exposure to parasites	
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		Lecture	Exam
	Discuss the relationship between each parasite and its host		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	Investigate the different ways by which the parasites damage their hosts and the response of the host		
b2			
b3			

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	e the laboratory diagnosis of fecal samples, blood, tissues and other excretions.		
C2			

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

	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
	Communicate with patients and their families to avoid further exposure to parasites		
	❖		

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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	Introduction to medical parasitology	Basic concepts and definitions, history of medical parasitology, importance of medical parasitology in public health, and overview of the course.	1	1	
2	Protozoan parasites	Classification, morphology, life cycle, pathogenesis, and clinical manifestations of protozoan parasites such as Plasmodium, Trypanosoma, Leishmania, and Entamoeba.	1	2	
3	Helminth parasites	3. Helminth Parasites: Classification, morphology, life cycle, pathogenesis, and clinical manifestations of helminth parasites such as nematodes, cestodes, and trematodes.	1	2	
4	Arthropod parasites	4. Arthropod Parasites: Classification, morphology, life cycle, pathogenesis, and clinical manifestations of arthropod parasites such as ticks, mites, and lice.	1	2	

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5	Pathogenesis and clinical manifestations of parasitic infections	5. Pathogenesis and Clinical Manifestations of Parasitic Infections: Mechanisms of pathogenesis, immune responses, and clinical manifestations of parasitic infections.	1	2	
6	Laboratory diagnosis of parasitic infections	Laboratory Diagnosis of Parasitic Infections: Microscopic, serological, immunological, and molecular methods used for the diagnosis of parasitic infections.	1	2	
7	Antiparasitic drugs and treatment strategies	Mechanisms of action, pharmacokinetics, and side effects of antiparasitic drugs, and different treatment strategies for parasitic infections.	1	2	
8	Prevention and control of parasitic infections	Strategies for the prevention and control of parasitic infections, including vector control, sanitation and hygiene, and vaccination.	1	2	
8	Emerging and reemerging parasitic infections	Recent trends in the epidemiology of parasitic infections, including emerging and reemerging diseases such as Zika virus, Chagas disease, and	1	2	

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		schistosomiasis.			
9	Research and developments in medical parasitology	Current research and developments in the field of medical parasitology, including new diagnostic methods, drug development, and vaccine research.	1	2	
16	FINAL THEORTICAL				
			16	32	

B - Practical Aspect: (if any)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
Number of Weeks /and Units Per Semester				

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V. Teaching Strategies of the Course:	
1-	Lectures
2-	Practical session
3-	Seminars
	Lectures , seminars
	Practical sessions
	Discussion

VI. Assessment Methods of the Course:

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

VII. Assignments:

No.	Assessment Method	Week Due	Mark	Aligned Course Learning Outcomes	
1	**Midterm Exam**	7	20	20%	
2	**Practical exam**	12	30	30%	
3	**Final Exam**	14	50	50%	
4					
	Total		100	100%	

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