Course Specification Clinical Microbiology

(2025 -2026)

1. Basic Information

Course Title (according to the bylaw)	(Basic) Clinical microbiology			
Course Code (according to the bylaw)	CPAT 703			
Department/s participating in delivery of the course	Clinical and Chemical pathology department			
Number of credit hours/points of the course (according to the bylaw)	**Theoretical**	**Practical**	**Other (specify)**	**Total**
	2h	**0.5 h**		
Course Type	اجباري			
Academic level at which the course is taught	الفرقة/المستوي الاول			
Academic Program	**MD of Clinical and Chemical pathology**			
Faculty/Institute	faculty of medicine			
University/Academy	Benha university			
Name of Course Coordinator	Prof. Dr. Yasser Ismail			
Course Specification Approval Date	**9/14/2025**			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	**9/14/2025**			

2. Course Overview (Brief summary of scientific content)

3. Theoretical as well as practical training is imparted to the candidates in the subspecialties viz. Bacteriology, Virology and Mycology so that they can participate in good patient care and prevention of infectious diseases in the community.
4. _ They are introduced to basic research methodology so that they can conduct fundamental and applied research.
5. _ They are also imparted training in teaching methods in the subject which may enable them to take up teaching assignments in Medical Colleges/Institutes.
6. _ Establish good clinical microbiological services in a hospital and in the community in the fields of virology and mycology.

7. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs(NARS/ARS)

Program Outcomes(NARS/ARS) (according to the matrix in the program specs)		**Course Learning Outcomes** Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
			2.a.1 Define each microbe according to pathogenesis, factors that weaken or strengthen the microbe and defense mechanism of the .body
			2.a.2.Identify normal commensals, their role in the disease and methods of diagnosis.
			2.a.3. Describe each group of viruses and fungus groups.

Program Outcomes(NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
			2.a.4 Outline safe disposal of medical waste products, types of Incinerators and danger of dealing with waste.
			2.a.5 describe chemical and thermal sterilization 2.b.1. Demonstrate methods and steps for discovery and naming the types of microbes causing disease. 2.b.2.. Operate and understand the results of different bacterial tests used in knowing the causative infective microbe - knowing alternative methods to diagnose microbes that can't be diagnosed by culture. 2.b.3.. Recognize types of different infections through different patients in different departments. 2.c.1. Apply all the methods to diagnose causative microbes for Different infections. 2.c.2 Co-operate with the staff in microbiological department. 2.c.3 Use different methods of disinfection and sterilization and practice to overcome infections in hospitals. 2.c.4. Perform work on automated instruments 2.d.1. Use information technology. 2.d.2. Communicate effectively with work team. 2.d.3. Respect the importance of team work. 2.d.4. Do good control of timing 2.d.5. Perform continuous self teaching

8. Teaching and Learning Methods

1- Lectures

2- Seminars

3 - Clinical sessions

4 - Groups discussion

5- Case presentation with interpretation of results

6- E lectures

Course Schedule

Topic		عدد ساعات المحاضرات	ILOs
Week 1	**Advanced** - Biosafety including universal precautions	1h	o2.a.3. 2.a.7..
	- Physical and biological containment	1h	2.b.1. 2.b.3.
Week 2	-Disinfection & Sterilization	1.5 h	2. c.1. 2.c.2.
Week 3	_ Quality assurance & quality control in microbiology - Accreditation of laboratories	1.5 h	2. c.3
Week 4	_ Microbiome & Opportunistic infections	1h	

	- Point of care testing		
Week 5	- Molecular techniques as applicable to microbiology - Automation in Microbiology	**2h**	
Week 6	**Virology** _General properties & classification of viruses _ Isolation & identification of viruses _ Vaccines & anti-viral drugs	**2h**	**2.a.5** **2.b.1⟶2.b.3** **2.c.1⟶2.c.4** **2.d.1⟶2.d**
Week 7	- DNA viruses of medical importance	**2h**	
Week 8	_ RNA viruses of medical importance	**2h**	
Week 9	Slow viruses including prions & Unclassified viruses Vaccines & anti-viral drugs	**2h**	
Week 10	**Mycology** - General characteristics & classification of fungi - Morphology & reproduction of fungi - Isolation & identification of fungi	**2h**	***2.a.1*** ***2.a.7***
	Yeasts and yeast like fungi of medical	1h	

Week 11	Mycelial fungi of medical importance including: a) Superficial & Cutaneous mycoses b)Subcutaneous mycoses	2 h	
Week 12	c)Systemic mycoses d)Opportunistic mycoses	2h	
Week 13	_ Pneumocystis carinii infection	1h	
	Mycetismus & mycotoxicosis	1h	
	Antifungal agents& in vitro antifungal susceptibility tests.	1h	
Week 14	**Applied Microbiology& infection control:** _ Basics of infection control **Infections of various organs and systems of human body:**	2h	
Week 15	- respiratory tract infections -urinary tract infections - central nervous system infections - congenital infections gastrointestinal infections -pyrexia of unknown origin	**2h**	

	- infections of eye, ear& nose, skin & wound infections - Blood stream infection septicaemia & endocarditis, - Sexually transmitted diseases		
Week 1	**Practical** - Aseptic practices in laboratory and safety precautions		

Week 2	**Disinfection and sterilization** - Testing of disinfectants - Operation of autoclave and hot air oven - Washing and sterilisation of glassware (plugging and packing)
Week 3	- Care and operation of microscopes - Preparation of stains (Gram& Ziehl Neelsen)
Week 4	- Preparation of different types of media - Plating technique
Week 5	- Identification of bacteria of medical importance up to species level (except anaerobes which could be up to generic level).
Week 6	- Special tests :Bile solubility, sheep cell haemolysis, CAMP test, satellitism, catalase, oxidase, slide & tube agglutination tests etc… - Serologic grouping of Streptococci - Techniques of anaerobiosis

Week 7	- Preparation of antibiotic discs; performance of antimicrobial susceptibility testing, eg. Kirby-Bauer method - Tests for Beta-lactamase production
Week 8	- Quantitative analysis of urine by pour plate method and semi quantitative analysis by standard loop tests for finding significant bacteriuria
Week 9	- Maintenance & preservation of bacterial cultures - Bacteriological tests for water, air and milk
Week 10	**Quality control** - Care and maintenance of common laboratory equipments like water bath, centrifuge, refrigerators, incubators etc . _ Sterility tests
	Waste management _ Disposal of contaminanted materials like cultures _ Disposal of infectious waste
Week 12	**Mycology** Collection and transport of specimens - - Processing of samples for microscopy and culture
Week 13	- Direct examination of specimens by KOH & Lactophenol cotton blue
Week 14	- Isolation and identification of medically important fungi

Week 15	- Antigen &Antibody detection in cryptococcosis, aspergillosis, candidiasis
	- Calcofluor staining & examination under fluorescent microscope

9. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1written (Semester work)	-		
2	Exam 2 ..... (Semester work)	-		
3	Final Written Exam	√	75	
	Final Practical/Clinical/... Exam	√	30	
	Final Oral Exam	√	20	
	Assignments / Project /Portfolio/ Logbook	√		
	Field training	√		
	Other (Mention)			

* The methods mentioned are examples, the organization may add and/or delete

10. Learning Resources and Supportive Facilities*

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course** (must be written in full according to the scientific documentation method)	- Jawetz, Melnick and Adel berg's Medical Microbiology, (2018) - Mackie & Mc. Cartney practical Medical Microbiology, (2013) - Diagnostic microbiology Bailey& scott partitia M. cille, Edition 14, 2022 Diagnostic microbiology Connie R. Mahon, MS, - Edition 15, 2019
	Other References	A Photographic Atlas f o r t h e Microbiology laboratory – District Laboratory Practice in Tropical Countries.
	Electronic Sources (Links must be added)	Journal of clinical Microbiology. - Journal of Medical Microbiology.

		- Antimicrobial chemotherapeutics. -www.Pubmed.com
	Learning Platforms (Links must be added)	
	Other (to be mentioned)	
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	√
	Supplies	√
	Electronic Programs	√
	Skill Labs/ Simulators	√
	Virtual Labs	
	Other (to be mentioned)	

*** The list mentioned is an example, the institution may add and/or delete depending on the nature of the course**

Name and Signature
Course Coordinator
& Name and Signature
Program Coordinator

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