BMS3004: ADVANCED MEDICAL MICROBIOLOGY

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Advanced Medical Microbiology

Subject Code
BMS - Biomedical Sciences
Course Number
3004

Academic Unit
Biomedical Sciences (BMS)

College/School
College of Biomedicine (BD)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
BMS2001 Medical Microbiology or equivalent

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

This course provides an in-depth study of pathogenic microorganisms, focusing on bacteriology, mycology, and parasitology. Students will explore infection mechanisms, diagnostic techniques, and treatment strategies for diseases caused by bacteria, fungi, and parasites. The curriculum integrates lectures, tutorials, and hands-on laboratory sessions, where students will practice culturing, identifying, and analyzing clinical specimens (e.g., urine, stool, respiratory, and wound samples). Topics include antimicrobial susceptibility testing, molecular diagnostics, and laboratory safety. Through problem-based learning and rigorous lab training, the course equips students with the theoretical knowledge and practical skills required for professional practice in medical microbiology and diagnostic laboratories.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Develop familiarity with the major types of pathogenic microorganisms and the diseases that they cause in humans		x	x	
2	Prepare specimens and study the characteristics of the pathogens (e.g. bacteria, fungi)			x	
3	Document the procedures and observations to reflect their understanding towards the specimen that is being examined			x	x
4	Demonstrate professional attitudes and high standards required for their future careers		x		x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures and tutorials	Lectures deliver subject-specific knowledge	1, 4	3
2	Laboratory exercises	Laboratory exercises on using various medical microbiology techniques to investigate human pathogens	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Group Presentations	1, 3, 4	10	-	Yes

2	Mid-term quizzes	1	15	-	No
3	Laboratory reports	1, 2, 3, 4	15	-	Yes

Continuous Assessment (%)

40

Examination (%)

60

Examination Duration (Hours)

3

Minimum Continuous Assessment Passing Requirement (%)

40

Minimum Examination Passing Requirement (%)

40

Additional Information for ATs

Practical Examination (duration: 3 hours): 30%; Written Examination (duration: 3 hours): 30%; Examination total: 60%. Minimum Passing Requirement: Continuous assessment: 40%; and Written examination: 40%; and Practical examination: 40%. Students must pass both the Practical Examination and Written Examination individually to achieve an overall pass in the course. Please note that attendance in all practical sessions is mandatory for the completion of the course. Practical sessions are an integral part of the curriculum, providing hands-on learning experiences essential for medical laboratory science training. Failure to attend practical sessions (including unauthorized absence or lateness) may result in a deduction of marks or, in extreme cases, lead to failure in the course.

Assessment Rubrics (AR)

Assessment Task

1. Group Presentation

Criterion

Demonstrate the ability to apply acquired knowledge to solve real problems

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

2. Mid-term Quizzes

Criterion

Demonstrate the understanding of course materials

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
3. Laboratory Reports

Criterion
Demonstrate the ability to use their knowledge and subject-specific skills in data collection and analysis

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
4. Practical Examination

Criterion
Demonstrate laboratory skills and the understanding of experimental designs

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
5. Final Written Examination

Criterion
Demonstrate the understanding of course materials

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

- Bacterium
- Parasite
- Fungus
- Human diseases
- Microbial culture
- Microscopy
- Antibiotics
- Infection mechanisms
- Treatment options
- Disease prevention
- Epidemiology
- Diagnostic methods and practical skills

Reading List

Compulsory Readings

	Title
1	Medical Microbiology (7th Edition, 2013) by Murray, Patrick R.; Rosenthal, Ken S.; and Pfaller, Michael A., published by Elsevier/Saunders. This book provides comprehensive coverage of pathogenic microorganisms and their clinical implications. Access the e-book via the CityU Library.

2	Jawetz, Melnick & Adelberg’ s Medical Microbiology (29th Edition, 2024) by Carroll, Karen C.; Hobden, Jeffery A.; Miller, Steve; Morse, Stephen A.; Mietzner, Timothy A.; and Detrick, Barbara, published by McGraw-Hill.

Additional Readings

	Title
1	Manual of Clinical Microbiology (13th Edition, 2024) edited by Karen C. Carroll and Michael A. Pfaller (ASM Press, ISBN 978-1-683-67429-0)
2	Bailey & Scott's Diagnostic Microbiology (16th Edition, 2023) by Patricia M. Tille (Elsevier, ISBN 9780443118913) focuses on diagnostic techniques.
3	Clinical Microbiology Procedures Handbook (5th Edition, 2023) edited by Amy L. Leber and Carey-Ann D. Burnham (ASM Press, ISBN 978-1-683-67398-9) provides step-by-step laboratory protocols.
4	Concise Manual of Pathogenic Microbiology (2nd Edition, 2019) by Mishra, Saroj K. and Agrawal, Dipti, published by John Wiley & Sons. A revised practical guide with expanded protocols for pathogen identification. Access via CityU’ s ebrary.