

BMS2003B: CLINICAL CHEMISTRY

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Clinical Chemistry

Subject Code

BMS - Biomedical Sciences

Course Number

2003B

Academic Unit

Biomedical Sciences (BMS)

College/School

College of Biomedicine (BD)

Course Duration

One Semester

Credit Units

2

Level

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

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Additional Information

Note: BMS2003B does not contain any practical component, and has a credit unit value of 2.

Part II Course Details

Abstract

This course covers the basic principles and practice of clinical chemistry together with clinical laboratory instrumentation. It includes the topics of purine catabolism and excretion, specific protein markers, inherited metabolic disorders and newborn screening, chemical toxicology, trace and toxic elements, and therapeutic drug monitoring, etc. The course also includes some analytical techniques and topics in clinical laboratory instrumentation, such as osmometry, turbidimetry, electrophoresis, atomic absorption spectrophotometry, and immunoassay. It allows students to learn the theoretical knowledge and practical skills to carry out clinical studies in clinical laboratory.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Implement the procedures and methodologies in clinical chemistry for diagnosis and monitoring of human diseases	25	x	x	
2	Carry out laboratory investigations by applying appropriate methodology and techniques, demonstrate ability in using equipment available in the laboratories	25	x	x	x
3	Evaluate and interpret the laboratory results in different clinical conditions, critically discuss the interpretation of the results and recommend changes based on recent practice	25	x	x	x
4	Develop an enduring set of clinical and research skills for use in their future laboratory work.	25	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	Basic knowledge will be taught mainly by lectures.	1, 2, 3, 4	
2	Tutorials	A forum for problem solving by applying the knowledge learned from the lectures.		

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?
1	Quizzes	1, 2, 3	30	-	No

Continuous Assessment (%)

30

Examination (%)

70

Examination Duration (Hours)

3

Minimum Continuous Assessment Passing Requirement (%)

40

Minimum Examination Passing Requirement (%)

40

Additional Information for ATs

Minimum Passing Requirement: A minimum of 40% in both continuous assessment and examination.

Assessment Rubrics (AR)**Assessment Task**

1. Coursework (Mid-term quizzes)

Criterion

Mid-term Quizzes: Quiz score will be used to verify the state of students' learning progress

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Less than Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

2. End-of-term examination

Criterion

To test students' basic knowledge learnt in class and see whether they can apply the knowledge in case studies

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Less than Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

- Purine catabolism and excretion
- Specific protein markers
- Inherited metabolic disorders and newborn screening
- Gonadal function and pregnancy test
- Chemical toxicology
- Trace elements
- Therapeutic drug monitoring
- Clinical laboratory instrumentation

Reading List**Compulsory Readings**

Title	
1	N. Ahmed, Clinical Biochemistry, Oxford University Press, Oxford, 2011.

Additional Readings

Title	
1	C. A. Burtis and D. E. Bruns, Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics, Saunders, Elsevier, USA, 7th ed., 2015.
2	M. L. Bishop, E. P. Fody, and L. E. Schoeff, Clinical Chemistry: Principles, Techniques, and Correlations, Lippincott Williams & Wilkins, USA, 7th ed., 2013. By,
3	A. Dasgupta and A. Wahed, Clinical Chemistry, Immunology and Laboratory Quality Control, Elsevier, San Diego USA, 2014.
4	S. Walker, G. Beckett, P. Rae, and P. Ashby, Clinical Biochemistry – Lecture Notes, Wiley-Blackwell, UK, 9th ed., 2013.