King Saud University
College of Science
Department of Botany and Microbiology

Biochemical Instrumentation Techniques

MBIO 334

2nd Semester of the 2025/2026 Academic Year

Course Description

- This course introduces students to **fundamental biochemical instrumentation techniques**, including spectrophotometry, centrifugation, electrophoresis, DNA and protein analysis, gas chromatography, high-performance liquid chromatography, and atomic absorption spectroscopy.
- Emphasis is placed on understanding the principles, applications, and practical use of these methods in biological and biochemical research.

Objectives

By the end of this course, students will be able to:

1. **Understand** basic principles of biochemical techniques.
2. **Apply** methods in laboratory experiments.
3. **Operate** key biochemical instruments
4. **Connect** theory with experimental practice.

Essential references

- Biomedical Instrumentation: Technology and Applications 1st Edition, (2004) by R.S. KHANDPUR.
- Handbook of Biomedical Instrumentation, (2014) by R.S. KHANDPUR.

Course Learning Outcomes

At the endo of the course, students will be able to:

- **Distinguish** between different analytical techniques. - **Understand** different applications of different Instruments. - **know** which instrument is required to analyse specific type of samples to determine specific measurements.	Knowledge
- **Learn** how to use use different instruments, collect, analyses, interpret and evaluate data. - **Utilise** the theoretical concepts in applicable form during lab work.	Skills
- **Work** independently or as a part of a team.	Values

Course Grading Structure

	Component	Marks	Dates
Theoretical (70 points)	1st Midterm	13	5th Oct
	2nd Midterm	13	2nd Nov
	Assignments	4	
	Final Exam	40	30th December
Practical (30 points)	Activities, Assignments & Reports	30	
	Final Practical Exam		Week 15
	Total Marks = 100		

Weekly Syllabus:

Week	Topic	Week	Topic
1	Registration	6	Protein Methods
2	Introduction to Spectrophotometry	7	Introduction to Gas Chromatography
3	Centrifuges	8	High Performance Liquid Chromatography
4	Electrophoresis	9	Atomic Absorption Spectroscopy
5	DNA Isolation		