Course Syllabus

Course Title:	Molecular Biology and Human Genetics
Course Code:	MBG 203
Department:	Basic Medical Sciences
Program:	Bachelor of Medicine and Surgery
College:	Vision College in Riyadh
Institution:	Vision College in Riyadh
Revised:	June 2025

A. Course Identification

1. Credit hours: 3 (2+1+0)
2. Level/year at which this course is offered: Level 3/Year 2
3. Pre-requisites for this course (if any): PHYS 101, CHEM 101, BIOL 101
4. Co-requisites for this course (if any): None

B. Teaching Methods

1	Lecture
2	Practical Sessions
3	Seminar

C. Course Description and Main objective

1. Course Description

This required foundation course covers the fundamental structure-function properties of proteins, cells, and genes.

- These fundamentals will provide a foundation for understanding the integrated systems courses at the cellular and molecular levels in health and disease.
- In this course, students will recognize that medical genetics is one of the most rapidly advancing fields of medicine and that their understanding of its principles is integral to all basic concepts and some major topics in human genetic medicine.
- This course is designed to deal with the basic principles of molecular genetics. Emphasis will be given to those principles that have application in medical practice. The structure of DNA and RNA as genetic material, DNA organization and its replication, mutation and repair in eukaryotes and prokaryotes will be covered. Furthermore, gene expression will also be discussed.
- Both classical and modern genetic principles, methods and techniques will be covered, with a strong emphasis on applications to human biology and medicine.

2. Course Main Objective

The goal of the course is to develop an in-depth understanding of the structure-function properties of proteins, genes, and cells.

D. Course Content

No.	List of Topics
1	DNA structure, organization, and repair (7 Hours)
2	RNA types and Transcription (6 Hours)
3	Genetic code and translation (3 Hours)
4	Mutation: the source of genetic variation (5 Hours)
5	Chromosomes labeling & abnormalities and Karyotypes (7 Hours)
6	Cytogenetic abnormalities and analysis (6 Hours)
7	Restriction endonuclease & Probes (5 Hours)
8	Molecular techniques (10 Hours)
9	Modes of inheritance (4 Hours)

10	Cancer genetics (7 Hours)

E. Assessment tools

#	Assessment task	Percentage of Total Assessment Score
1	Seminar evaluation	10%
2	Quiz	10%
3	Midterm Exam	20%
4	Final Written Exam	40%
5	Final Practical Exam	20%
	Total	**100%**

F. Learning Resources

Required Textbooks	• **Biedler J, Spengler B.Metaphase chromosome anomaly: association with drug resistance and cell-specific products. Science. 1976;191:185e187.**
Essential Reference Material	• **Lehman IR, Boehmer PE. Replication of herpes simplex virus DNA. J Biol Chem. 1999;274:28059e28062.**
Electronic Material	**https://sciencing.com/biochemistry-blotting-techniques-20171.html**