COURSE SYLLABUS FORM

American University of Beirut
Faculty of Arts and Sciences
Department Biology

Course Number and Title: BIOL 223 Genetics

1. Course Learning Outcomes

At the completion of this course, a student will be able to:

Describe the basic principles of classical and molecular genetics.

Explain the fundamental aspects of genetics at the subcellular, cellular, organismal, and evolutionary levels.

Understand and explain the use of common techniques such as electrophoresis, Southern blots, recombinant DNA technology, cloning, and the polymerase chain reaction.

Analyze the potential for using these techniques in medicine, forensics, ecological, and agricultural situations.

Develop their critical thinking skills and their ability to integrate information from many different areas of biology, chemistry, and physics.

Show critical awareness of ethical and social implications of genetics research.

2. Resources Available to Students

Required Textbook: Russel, P. J. 2002, Genetics
The Benjamin/Cummings Publishing Company

Required Guide: Palladino, M. A. 2002, Understanding the Human Genome Project
The Benjamin/Cummings Publishing Company

All class notes will be made available on reserve.

Additional readings from the literature may be assigned and will be made available.

Web access will be required for some topic assignments.

3. Grading Criteria

Your grade will be based on four parts: three exams covering the genetics lecture and one part covering the laboratory section.

Exam I	25%
Exam II	25%
Exam III	25%
Lab	25%

75% of the grade will be based on the average of the three exams.

The remaining 25% covering the laboratory section of the course will be based on assigned reports, drop quizzes, midterm and final exams, and evaluation.

4. Schedule

Week	Topic	Assignments
1	Introduction & Gene Function	Chapters 1 & 4
2	Structure and Organization of Genetic Material	Chapter 2
3	DNA Replication & Gene Transcription	Chapters 3 & 5
4	Post-Transcriptional Processing & Protein Synthesis	Chapters 5 & 6
Exam I		
5	Introduction to the Regulation of Gene Expression in Prokaryotes and Eukaryotes	Chapters 16 & 17
6	Recombinant DNA Cloning Technology & Some Applications of Recombinant DNA Technology	Chapters 7 & 8
7	Linkage, Crossing-Over, and Gene Mapping in Eukaryotes	Chapter 13
8	The Human Genome Project	Understanding the Human Genome Project by Palladino & Internet
	Genomics	Chapter 9 & Internet
	DNA Microarrays	Chapter 9 & Internet

Exam II

Week	**Topic**	**Assignments**
9	Chromosomal Mutations and Variations in Chromosome Structure and Function	Chapter 21
	Genetic Mutations	Chapter 19
10	Molecular Genetics of Cancer	Chapter 18
11	Human Gene Therapy	Internet & literature
	Extranuclear Genomes and Non-Mendelian Inheritance	Chapter 15
12	Population Genetics	Chapter 22

Exam III