

Template for Course Plan (Genetics)

II. Course Description:

This course provides an overview of the principles and techniques of molecular biology and genetics. It covers topics such as DNA replication, transcription, translation, genetic regulation, genetic engineering, and genomics.

V. Course Content:

A – Theoretical Aspect:

N O .	Units/Topics List	Sub Topics List	Number of Weeks	Credit Hours	
1	Introduction to Molecular Biology and Genetics	- Definition of Molecular Biology and Genetics - Historical Development of Molecular Biology and Genetics - The Central Dogma of Molecular Biology - Research Methods in Molecular Biology and Genetics	1	2	
2	DNA Structure and Replication	-DNA Structure and Function -DNA Replication Mechanisms -DNA Repair Mechanisms	1	2	

		-DNA Recombination			
3	Transcription and RNA Processing	- RNA Structure and Function - Transcription Mechanisms - RNA Processing - RNA Editing	1	2	
4	The Central Dogma of Molecular Biology The flow of genetic information The replication of DNA The transcription of DNA into RNA The translation of RNA into protein Translation and Protein Synthesis	- Protein Structure and Function - Translation Mechanisms - Post-Translational Modifications - Protein Folding and Quality Control	1	2	
5	Genetic Regulation	- Gene Expression Regulation - Transcriptional Regulation - Post-Transcriptional Regulation - Epigenetics	2	4	
6	Med tem exam		1	2	
7	Genetic Analysis	- Mendelian Genetics - Pedigree Analysis	2	4	

		- Linkage and Mapping - Quantitative Genetics			
8	Genetic Engineering	- Restriction Enzymes and DNA Cloning - Polymerase Chain Reaction (PCR) - Gene Editing Technologies - Transgenic Organisms	2	4	
9	Genomics	- Genome Sequencing - Genome Annotation - Comparative Genomics - Functional Genomics	2	4	
10	Ethical and Legal Issues in Molecular Biology and Genetics	- Ethical Issues in Genetic Research - Genetic Counseling and Testing - Intellectual Property Rights - Regulation of Genetic Engineering	2	4	
11	FINAL THEORTICAL		1	2	
			16	32	