

Molecular Biology

Semester No	Code	Credit Hours
4/8	BIO-207	3-0

Course description:

The course is designed to meet the interdisciplinary and collaborative nature of the post-genomic technologies field and is suitable for those with experience or qualifications from a variety of backgrounds e.g. biology, chemistry, physics, computer science, mathematics or medical disciplines. This course will cover basic knowledge of genomes, genes, and expression of genes at the molecular level. Particularly emphasized are structures, function and evolution of genomes, and regulation of gene expression.

Recommended Books:

1. **Molecular biology: genes to proteins** by Burton E. Tropp, David Freifelder.
2. **Molecular biology and biotechnology** (5th Edition) by John M Walker, Ralph Rapley.
3. **Fundamental Molecular Biology** by Lizabeth A. Allison

Prerequisite:

None

Course Learning Outcomes:

The course aims to develop individuals with the technical skills and scientific knowledge required by the biotechnology, pharmaceutical and healthcare industries. It is also beneficial to academic research laboratories investigating the future progression of predictive biology. This course covers a wide range of up-to-date and industry relevant technologies and will enable students to become familiar with the latest advances and commercial techniques.

Assessment system:

Quizzes	10-15%
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Assignments	5-10%
MSE	30-40%
ESE	40-50%

Week wise Lecture Plan:

Week	Lecture Topic
1	Fundamentals of Molecular Biology
2	DNA Structure & Function
3	DNA Replication, Damage & Repair
4	DNA Transcription
5	DNA Translation
6	RNA synthesis, repair & recombination
7	DNA Recombination
8	Protein synthesis & Transport
9	MIDTERMS
10	Positive & Negative Control of the Operon
11	Promoter recognition by the RNA Polymerases
12	Cis & Trans acting elements
13	RNA Splicing & Processing
14	Mutations
15	Molecular Biology of Plant & Animal
16	Molecular Biology of Animal Viruses
17	Genome Replication & regulation
18	END SEMESTER EXAMINATION