

Semester	AUG 2022
Open to semester	5,11,21
Course code	<b>BI3124/BI6114</b>
Course title	<b>Advanced Molecular Biology</b>
Credits	4 /4
Course Coordinator & participating faculty (if any)	Gayathri Pananghat*, Mayurika Lahiri
Nature of Course	Lectures
Pre-requisites	Nil
Objectives (goals, type of students for whom useful, outcome etc)	This course helps to provide fundamental concepts from the enormous and ever-growing field of Molecular Biology to Undergraduate students. This course will help students to have a sound knowledge of molecular biology, which will also enable them to carry out research using molecular biology techniques. This is mainly targeted for undergraduate students, and hence PhD students who have had a background in molecular biology in their BSc/MSc are discouraged from registering for the course.
Course contents (details of topics /sections with no. of lectures for each)	<ol style="list-style-type: none"> <li>1) Diversity of Genomes (2 lectures)</li> <li>2) Maintenance of the Genome (13 lectures) <ul style="list-style-type: none"> <li>- DNA, Chromosomes and Genome</li> <li>- Replication of DNA</li> <li>- The Mutability and Repair of DNA</li> <li>- Homologous Recombination at the Molecular Level</li> </ul> </li> <li>3) Expression of the Genome (12 lectures) <ul style="list-style-type: none"> <li>- Mechanisms of Transcription and its regulation</li> <li>- RNA Splicing</li> <li>- Translation</li> </ul> </li> <li>4) Techniques of Molecular Biology (5 lectures) <ul style="list-style-type: none"> <li>- Molecular Cloning methods</li> <li>- Molecular Tools for Studying Genes and Gene Activity</li> <li>- Genomics and Proteomics</li> </ul> </li> <li>5) Latest Advances in Molecular Biology (paper presentations, discussion, assignments) (8 lectures)</li> </ol>
Evaluation /assessment	<p>End-Sem Examination-40%</p> <p>Mid-Sem Examination-40%</p> <p>Others-20%</p>
Suggested readings (with full	1. Molecular Biology of the Gene by Watson, Baker, Levine,

list of authors, publisher, year, edn etc.)	<p>Losick et al. [2007] 6th Ed. Benjamin Cummings.</p> <p>2. Principles of Gene Manipulation by Primrose, Twyman, Old [2002] 6th Ed. Wiley-Blackwell.</p> <p>3. Molecular Biology by Weaver [2011] 5th Ed. McGraw-Hill Science.</p> <p>4. Molecular Biology and Genomics by Mulhardt [2006] 1st Ed. Elsevier.</p>
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