



(Master of Science - Home Science) (Food Biotechnology)  
(M.Sc. - H.Sc.) (Food Biotechnology) Semester (I)

Course Code	PH01CFBT55	Title of the Course	Cell and Molecular Biology
Total Credits of the Course	04	Hours per Week	04

Course Objective:	<ol style="list-style-type: none"><li>1. To enable students to acquire knowledge of the fundamentals of cell and molecular biology</li><li>2. To understand emerging and advanced concept in modern biology</li><li>3. To understand the general principles of gene organization and expression in both prokaryotic and eukaryotic organisms</li><li>4. To understand the various levels of gene regulation</li><li>5. To empower the students to develop an advanced focus on the molecular basis of diseases</li></ol>
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Course Content		
Unit	Description	Weightage (%)
1.	Chemistry of nucleic acids, DNA as hereditary molecule	18
2.	Genomic organization: genomic organization in eukaryotes, chromatin and chromosome structure, repetitive DNA	16
3.	DNA replication: Mechanism of DNA polymerase catalyzed synthesis of DNA in prokaryotes and eukaryotes, Types of DNA polymerases and their role, role of telomerases in Replication of eukaryotic chromosomes	17
4.	(a) Gene transcription, translation of m-RNA into protein in prokaryotes and eukaryotes (b) Gene regulation with specific examples lac, trp, ara etc. (c) Gene expression in eukaryotes with different control	16
5.	Molecular basis of mutation and DNA repair	17
6.	(a) Transportable genetic elements in prokaryotes and eukaryotes, mechanism of transposition (b) Bacterial recombination-transduction, transformation and conjugation	16

Teaching-Learning	Classroom lectures (Blackboard/Power Point Presentations), Discussion on recent updates with related examples.
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Methodology	
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Show a strong background of modern biology and molecular technology.
2.	Use these tools in industry and/or institutes wherever necessary.

Suggested References:	
Sr. No.	References
1.	de Robertis, E. D. P. and Holt, E.M.F. (1981). <i>Essentials of Cell and Molecular Biology</i> . Saunder's College Publishing.
2.	Malacinski G.M. (2003). <i>Essentials of Molecular Biology</i> . (4th edition). Jones & Bartlett. (ISBN: 0-7637- 2133-6).
3.	Lodish H. et. al. (2007). <i>Molecular biology of the Cell</i> . (6 <sup>th</sup> edition). W.H. Freeman & Co Ltd.
4.	Watson J.D. et. al. (2003). <i>Molecular Biology of the Gene</i> . (5 <sup>th</sup> Edition). Pearson.

On-line resources to be used if available as reference material
<a href="https://epgp.inflibnet.ac.in/">https://epgp.inflibnet.ac.in/</a>
<a href="https://www.web-books.com/MoBio/">https://www.web-books.com/MoBio/</a>





Replication Clamps and Clamp Loaders

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3683903/>

<https://pubmed.ncbi.nlm.nih.gov/11959500/>

[https://www.fmed.uniba.sk/uploads/media/Introduction\\_to\\_Medical\\_and\\_Molecular\\_Biology.pdf](https://www.fmed.uniba.sk/uploads/media/Introduction_to_Medical_and_Molecular_Biology.pdf)

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