

<b>Programme</b>	BS Biochemistry	<b>Course Code</b>	<b>BCBT. 201</b>	<b>Credit Hours</b>	3
<b>Course Title</b>	<b>Molecular Biology</b>				
<b>Course Introduction/Objective</b>					
This course will impart knowledge about structure and function of nucleic acids. Give the basic knowledge of life processes at molecular level and the concept of central dogma of molecular biology.					
<b>Learning Outcomes</b>					
On the completion of the course, the students will:					
<ul style="list-style-type: none"> <li>• Understand the Central Dogma of molecular biology.</li> <li>• Understand gene regulation and expression in prokaryotes and eukaryotes.</li> <li>• Explain the mutations, DNA damage and repair mechanisms.</li> </ul>					
<b>Course Content</b>				<b>Assignments/Readings</b>	
<b>Theory Unit-</b> <ul style="list-style-type: none"> <li>• Introduction to molecular biology and history</li> <li>• Structure and function of nucleic acids</li> <li>• Types of DNA</li> <li>• Forces stabilizing the structure of DNA</li> <li>• Organelles genome (Mitochondrial and chloroplast).</li> <li>• Topology of DNA</li> <li>• Overview of DNA replication, Enzymes of DNA replication</li> <li>• DNA replication in viruses, Prokaryotes and eukaryotes</li> <li>• DNA damage and Repair</li> <li>• DNA Recombination</li> <li>• Transposable elements</li> <li>• Elements of gene expression and operons</li> <li>• Transcription in prokaryotes and eukaryotes, Post transcriptional modifications RNA splicing, alternative splicing, editing</li> <li>• Genetic code, Ribosomes and Transfer RNA</li> <li>• Translation in prokaryotes and eukaryotes, Post-translational processing</li> <li>• Protein folding, targeting and turnover</li> <li>• Gene regulation and expression in prokaryotes and eukaryotes</li> </ul>					
<b>Textbooks and Reading Material</b>					
DJ Voet, GJ Voet and CW Pratt. J Wiley & Sons (2014). <i>Fundamentals of Biochemistry 5th edition</i> Nelson D and Cox MM, (2009). <i>Lehninger Principles of Biochemistry. 5<sup>th</sup> Edition</i> ; WH Freeman, New York. Watson, DJ., Baker, TA., Bell, S.P., Gann, A., Levine, M and Losick, (2014) <i>Molecular Biology of the Gene (7<sup>th</sup> Edition)</i> . R. Cold Spring Harbor Laboratory Press. David Clark Nanette Pazdern, (2012), <i>Molecular Biology (2<sup>nd</sup> Edition)</i> . Lodish et al., (2016). <i>Molecular Cell Biology. 8th Edition</i> ; WH Freeman, New York Berg et al., (2006). <i>Biochemistry. 6th Edition</i> ; WH Freeman, New York. Alberts et al., 2007. <i>Molecular Biology of the Cell. 5th Edition</i> ; Garland Science Weaver R, 2011. <i>Molecular Biology. 5th Edition</i> ; McGraw-Hill					

<b>Teaching Learning Strategies</b>			
<ul style="list-style-type: none"> <li>• Lecturing</li> <li>• Written Assignments</li> <li>• Class activities and discussion</li> </ul>			
<b>Assignments: Types and Number with Calendar</b>			
<ul style="list-style-type: none"> <li>• 1<sup>st</sup> Quiz in 4<sup>th</sup> Week of 5 marks</li> <li>• 2<sup>nd</sup> Quiz in 10<sup>th</sup> Week of 5 marks</li> <li>• 3<sup>rd</sup> Quiz in 14<sup>th</sup> Week of 5 marks</li> <li>• 1<sup>st</sup> Assignment in 8<sup>th</sup> Week of 10 marks</li> </ul>			
<b>Assessment</b>			
<b>Sr. No.</b>	<b>Elements</b>	<b>Weightage</b>	<b>Details</b>
1	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.