

Programme	BS Biotechnology	Course Code	BCBT. 201	Credit Hours	3
Course Title	Molecular Biology				
Course Introduction/Objective					
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.					
Learning Outcomes					
On the completion of the course, the students will:					
<ul style="list-style-type: none"> • Understand the Central Dogma of molecular biology. • Understand gene regulation and expression in prokaryotes and eukaryotes. • Explain the mutations, DNA damage and repair mechanisms. 					
Course Content					
<ul style="list-style-type: none"> • Introduction to molecular biology and history • Structure and function of nucleic acids • Types of DNA • Forces stabilizing the structure of DNA • Organelles genome (Mitochondrial and chloroplast). • Topology of DNA • Overview of DNA replication, Enzymes of DNA replication • DNA replication in viruses, Prokaryotes and eukaryotes • DNA damage and Repair • DNA Recombination • Transposable elements • Elements of gene expression and operons • Transcription in prokaryotes and eukaryotes, Post transcriptional modifications RNA splicing, alternative splicing, editing • Genetic code, Ribosomes and Transfer RNA • Translation in prokaryotes and eukaryotes, Post-translational processing • Protein folding, targeting and turnover • Gene regulation and expression in prokaryotes and eukaryotes 					
Textbooks and Reading Material					
<ul style="list-style-type: none"> • 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. 5th 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 (7th Edition)</i>. R. Cold Spring Harbor Laboratory Press. • David Clark Nanette Pazdern, (2012), <i>Molecular Biology (2nd Edition)</i>. • Lodish et al., (2016). <i>Molecular Cell Biology</i>. 8th Edition; WH Freeman, New York • Berg et al., (2006). <i>Biochemistry</i>. 6th Edition; WH Freeman, New York. • Alberts et al., 2007. <i>Molecular Biology of the Cell</i>. 5th Edition; Garland Science • Weaver R, 2011. <i>Molecular Biology</i>. 5th Edition; McGraw-Hill 					

Teaching Learning Strategies			
<ul style="list-style-type: none"> • Lecturing • Written Assignments • Class activities and discussion 			
Assignments: Types and Number with Calendar			
<ul style="list-style-type: none"> • 1st Quiz in 4th Week of 5 marks • 2nd Quiz in 10th Week of 5 marks • 3rd Quiz in 14th Week of 5 marks • 1st Assignment in 8th Week of 10 marks 			
Assessment			
Sr. No.	Elements	Weightage	Details
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.