



## FORMAT FOR COURSE CURRICULUM

**Course Title:** Biomolecules  
**Course Code:** 101  
**Credit Units:** 2

L	T	P/S	Lab	TOTAL CREDIT UNITS
2	--	--	--	2

### Course Objectives:

Theory: The course provides fundamental knowledge of structure and functions of major bio-molecules of the living system.

**Pre-requisites:** Basic knowledge of biology and chemistry.

### Student Learning Outcomes:

- Attain knowledge of structure, composition and functions of biomolecules.
- Students will learn how biomolecules acquire astonishing properties.
- Students will be able to compare the properties of different biomolecules.

### Course Contents/Syllabus- Theory:

	Weightage (%)
<b>Module I: Carbohydrates: Structure and functions</b>	<b>25</b>
<b>Descriptors/Topics:</b> Structure, properties and functions of: Monosaccharides (glucose, fructose, ribose and others, D-and L- sugars, reducing and non-reducing sugars), Disaccharides (maltose, sucrose and lactose) and polysaccharides (Starch and glycogen)	
<b>Module II Proteins and Enzymes</b>	<b>30</b>
<b>Descriptors/Topics:</b> Structures and properties of 20 amino acids. Chemical properties of peptide bond. Primary, secondary (alpha helix and beta pleated sheet), tertiary and quaternary structure of proteins. Enzymes: structure and properties, apoenzymes, prosthetic groups [cofactors (metal ions) and co-enzymes. Mechanism of enzyme action: Lock and Key model and Induced Fit hypothesis.	
<b>Module III Fatty acids and Lipids</b>	<b>25</b>
<b>Descriptors/Topics:</b> Structure and properties of the fatty acids (Saponification, acid values and iodine number). Triacylglycerols, phospholipids and derivatives viz., phosphoglycerides; lecithins, cephalins, plasmogens, phosphatidyl inositol, sphingomylin, glycolipids (cerebrosides and gangliosides) and cholesterol.	
<b>Module IV Proteins and nucleic acids</b>	<b>20</b>
<b>Descriptors/Topics:</b> Structure of nucleotides and nucleosides, nitrogenous bases. Chemical structures of DNA (Watson-Crick Model) and RNA. Significance of DNA and RNA.	

### Pedagogy for Course Delivery:

Lectures: 27  
Tutorial: 0  
Assignment: 1  
Class Test: 2  
Total: 30

### Assessment/ Examination Scheme:

<b>Theory L/T (%)</b>	<b>Lab/Practical/Studio (%)</b>	<b>End Term Examination</b>
<b>100</b>	<b>NA</b>	<b>100</b>

**Theory Assessment (L&T):**

<b>Continuous Assessment/Internal Assessment</b>					<b>End Term Examination</b>
<b>Components (Drop down)</b>	<b>Class Test 1</b>	<b>Class Test 2</b>	<b>Home Assignment</b>	<b>Attendance</b>	
<b>Weightage (%)</b>	10	10	5	5	70

**Lab/ Practical/ Studio Assessment: NA**

	<b>Continuous Assessment/Internal Assessment</b>				<b>End Term Examination</b>			<b>Total</b>
<b>Components (Drop down)</b>	<b>Performance</b>	<b>Lab record</b>	<b>viva</b>	<b>Attendance</b>	<b>Lab record</b>	<b>Performance</b>	<b>Viva</b>	
<b>Weightage (%)</b>								

**Text & References:**

1. Biochemistry by Todd, W. B., Mason, M., Bruggen, R. V. & Macmillan.
2. Principals of Biochemistry 6<sup>th</sup> Edition by David L. Nelson, Michael M. Cox
3. Biochemistry 2ed by Strayer
4. Introductory Practical Biochemistry by S.K. Sawhney and R. Singh, 2nd Edition, Alpha Science International, 2005.
5. An Introduction to Practical Biochemistry by David Plummer, 3rd Edition, Tata Mcgraw Hill Education (2006).

**Any other Study Material:**