

**ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR**

**Reaccredited 'A++' Grade by NAAC (CGPA: 3.58/4.00)**

**College with Potential for Excellence by UGC**

**DST-FIST Supported & STAR College Scheme by DBT**

### Syllabus of Theory

## Part A – Introduction

Program: Certificate Course	Class: B.Sc.	Semester: I	Session: 2025-2026
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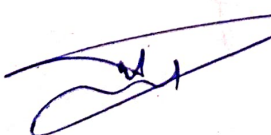

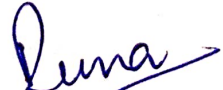



**Subject: ZOOLOGY**

1	Course Code		
2	Course Title	Fundamentals of Biochemistry	
3	Course Type	Minor I	
4	Prerequisite	To study this course student should have subject Biology in class 12 <sup>th</sup>	
5	Course Learning Outcomes (CLO)	<p>Upon completion of the course students will be able to</p> <ol style="list-style-type: none"> <li>1. Understand Importance of Biochemistry in Indian knowledge. System and five elements and balancing of three doshas.</li> <li>2. Learn about structure of water and biomolecules</li> <li>3. General structure and classification of Carbohydrate, Proteins and Lipids</li> <li>4. Signification of Biomolecules.</li> <li>5. Learn about enzymes, their classification and characteristics.</li> <li>6. Vitamins and their importance.</li> <li>7. Job prospect: Lab technician Pharmaceuticals, Pathology Lab.</li> </ol>	
6	Credit Value	4	
7	Total Marks	Max.Marks:30+70	Min. Passing Marks: 35

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**Part B - Content of the course LTP:**  
Total Number of Lectures:30

Unit	Topics	No. Of Lectures
I	<p><b><u>Ancient Historical Background of Biochemistry Definition of Biochemistry and Water.</u></b></p> <ol style="list-style-type: none"> <li>Definition, Importance of Biochemistry in Indian knowledge system.</li> <li>Ayurvedic Principles: Balancing the three doshas (Vata, Pitta, Kapha) to maintain homeostasis.</li> <li>Panchabhuta: Biochemical properties of five elements (Earth, water, Fire, Air and Ether)</li> <li>Water:               <ol style="list-style-type: none"> <li>Structure of water molecule</li> <li>pH and buffers: pH scale, weak acids and weak bases.</li> </ol> </li> </ol> <p><b>Key words:</b> Ayurveda, Panchabhuta, Homeostasis, pH, Buffers</p> <p><b>Suggested Activity:</b> Draw and display three-dimensional structure of water, make model of water bodies in and around your area.</p>	7
II	<p><b><u>Biomolecules</u></b></p> <ol style="list-style-type: none"> <li>Carbohydrate               <ol style="list-style-type: none"> <li>General structure of Carbohydrates</li> <li>Classification of Carbohydrates</li> <li>Optical Isomerism</li> <li>Physical and chemical properties of Carbohydrates</li> </ol> </li> <li>Proteins:               <ol style="list-style-type: none"> <li>General structure of Proteins (Primary, Secondary, tertiary and Quaternary)</li> <li>Classification of Proteins (an overview)</li> <li>Physical and chemical properties of Proteins.</li> </ol> <p><b>Key words:</b> Monosaccharides, Isomerism, Proteins, Carbohydrates.</p> <p><b>Suggested Activity:</b> Make a chart of classification of Carbohydrates and Proteins with examples.</p> </li> </ol>	8

III	<p><b><u>Biomolecules</u></b></p> <ol style="list-style-type: none"> <li>Lipids             <ol style="list-style-type: none"> <li>General structure of lipids</li> <li>Classification of lipids:                 <ol style="list-style-type: none"> <li>Simple lipids: Fats, Oil and Waxes.</li> <li>Compound lipids: Phospholipids, Glycolipids</li> <li>Derived lipids: Steroids</li> </ol> </li> </ol> </li> <li>Physical properties of lipids: Colour, odours solubility and surfaces tension.</li> <li>Chemical properties of lipids: Hydrolysis, saponification, rancidity and hydrogenation.</li> </ol> <p><b>Key words:</b> Lipids, Hydrolysis, Saponification, Rancidity, Hydrogenation  <b>Suggested Activity:</b> Submit an assignment on properties of lipids.</p>	8
IV	<p><b><u>Enzymes and Vitamins.</u></b></p> <ol style="list-style-type: none"> <li>Nomenclature of Enzymes.</li> <li>Classification of Enzymes</li> <li>Characteristics of Enzymes: Colloidal nature, Catalytic nature, Specificity &amp; pH</li> <li>Enzymes substrate complex: Key-Lock Theory, Induced Fit Theory</li> <li>Importance of Enzymes in Metabolism.</li> <li>Vitamins: Biochemical functions, dietary sources and deficiency symptoms.</li> </ol> <p><b>Key words:</b> Enzymes, Catalytic, Specificity, Vitamins  <b>Suggested Activity:</b> Make a flow- chart of dietary sources and deficiency symptoms of vitamins.</p>	7

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Part C-Assessment and Evaluation

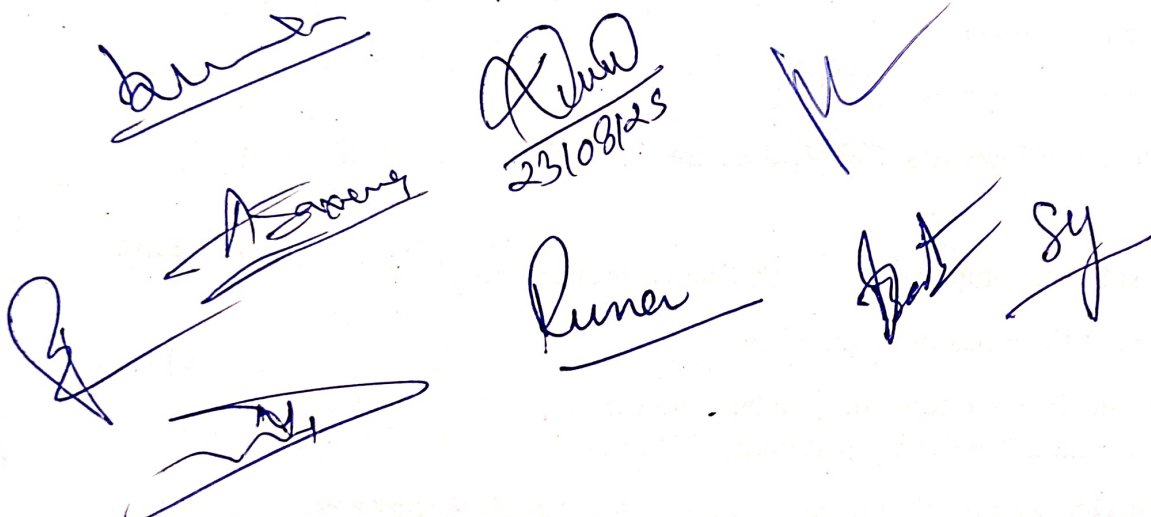
**Suggested Continuous Evaluation Methods:**

Maximum Marks :100

Continuous Comprehensive Evaluation (CCE: 30 Marks University Exam (UE): 70 Marks

<b>Internal Assessment: Continuous Comprehensive Evaluation (CCE)</b>	Class Test Assignment/Presentation	30
<b>External Assessment:</b> University Exam Section Time: 03.00 Hours	<b>Section(A):</b> Very Short Questions <b>Section (B):</b> Short Questions <b>Section (C):</b> Long Questions	70

Any remarks/ suggestions:

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## Syllabus of Practical

### Part A – Introduction

Program: Certificate course.

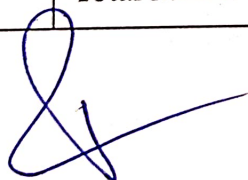
Class: B.Sc.

Semester : I

Session: 2025-2026

### Subject: ZOOLOGY

1	Course Code	
2	Course Title	Fundamentals or Biochemistry.
3	Course Type	Minor I
4	Prerequisite	To study this course a student must have had the subject Biology in 12th Class.
5	Course Learning Outcomes (CLO)	<p>The student who completes this course will be able to-</p> <ol style="list-style-type: none"> <li>1. Learn lab safety rules</li> <li>2. Prepare distilled water</li> <li>3. Prepare biochemical reagents</li> <li>4. Prepared of Buffers</li> <li>5. Perform qualitative tests for carbohydrate protein and lipids.</li> <li>6. Steady activities of enzymes.</li> <li>7. Job Prospects: Lab Technician, Work in any Pharmaceutical Company, Pursue career as Biochemist</li> </ol>
6	Credit Value	02
7	Total Marks	<div>Max. Marks: 30+70</div> <div>Min. Passing Marks: 35</div>



  
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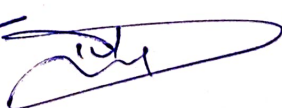


  
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**Part B - Content of the course**  
 Total No. Of Lectures-Tutorials-Practical (2 hours per week) LTP:  
 Total Number of Lectures:30

S. No.	Suggested list of experiment.	No of Lecture
1	Introduction to Biochemistry Lab, Safety aspects in laboratory (Lab rules)	5
2	Preparation of distilled water in laboratory	5
3	Biochemical reagent preparations for various solution with respect to different Normality, molarity, o/o solution (W/V), (V/V)	5
4	Preparation of buffers and its pH determination.	5
5	Quantitative tests for Carbohydrate, Protein and Lipids	5
6	Study activities of any enzymes under optimum condition.	5
	Total	30 hours
	Key words: Distilled water, Normality, Molarity	

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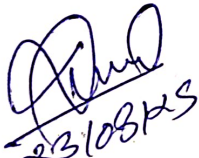


**Part -C: Assessment & Evaluation (Practical)**

**Suggested Continuous Evaluation Methods:**

	Internal Assessment	Marks	External Assessment	Marks
1	Class Interaction/Quiz	30	Viva Voce on Practical	70
2	Attendance		Practical Record File	
3	Assignments (Charts/Model Seminar/Rural Service /Technology Dissemination/ Report of Excursion /Lab Visit/Survey/ Industrial visit)		Table work/Experiments	
	<b>Total</b>	<b>30</b>		<b>70</b>

Any remarks/Suggestions: e- Demonstrations & e- procedures can be opted.

  
23/03/23

