Semester Lecture Plan

Name of College: Government College of Arts, Science & Commerce, Sanquelim Goa

Name of Faculty: Dr. Suphala Pujari	**Subject: Zoology**	
Paper code: ZOO - 203	**Program/Course: S.Y. B.Sc.**	**Division: A**
Academic year: 2024-2025	**Semester: IV**	**Total Lectures: 60**

Course Objectives:

1. Understand the fundamental principles and concepts of biochemistry.
2. Imparting understanding of structure of biomolecules, the basic building blocks of living organisms
3. Understanding the biological roles of the various biomolecules.
4. Examine the principles of enzyme kinetics and catalysis in biochemical reactions.

Course Learning Outcome:

At the end of the course, students will be able to

1. Impart understanding of structure of biomolecules, the basic building blocks of living organisms.
2. Understand the biological roles of the various biomolecules.
3. Analyze the structure and function of biomolecules such as proteins, carbohydrates, lipids, and nucleic acids.
4. Examine the kinetics and catalytic properties of enzymes in biochemical reactions.

Month	Lectures From:	To:	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
Dec 2024	09/12/2024	14/12/24	3	Module 1: Carbohydrates Structure and Biological importance: Monosaccharides, Disaccharides, Polysaccharides and Glycoconjugates.		Power point	1. J.M. Berg, J.L. Tymoczko, and L. Stryer, L. *Biochemistry*. VI Edition. W.H Freeman and Co., 2006. 2. R.K. *Murray, D. Granner, P. Mayes, V. Rodwell, Harper's*. Illustrated *Biochemistry* (LANGE medical book)
Jan 2025	02/01/2025	04/01/25	3	Monosaccharides - structure of aldoses and ketoses, ring structure of sugars, conformations of sugars, mutarotation, anomers, epimers and enantiomers,		Power point	
	06/01/2025	11/01/25	3	structure of biologically important monosaccharide derivatives, oxidation of sugars.		Power point	

	13//01/2025	18//01/25	3	Formation of disaccharides, reducing and non- reducing disaccharides.		Power point	26th edition., McGraw-Hill Education, 2003. 3. M.N. Chatterjea, R. Shinde, *Textbook of Medical Biochemistry.,* Jaypee Brothers Medical Publishers, 2012. 4. D.L. Nelson, M.M. Cox, Lehninger *Principles of Biochemistry*. 7th Edition. W.H. Freeman and Co., 2017. 5. *P. Naik*, Essentials of *Biochemistry*. Jaypee Brothers Medical Publishers., New Delhi., 2023 6. R.A. Joshi, M. Saraswat, A Text Book of Practical Biochemistry., B Jain Publishers Pvt Ltd; First Edition, 2021. 7. Ranjna Chawla, Practical Clinical Biochemistry Methods And Interpretations, Jaypee Brothers Medical publishers (P) Ltd. New Delhi 8. R.J.P. Williams and J.J.R.F. da Silva, Bringing chemistry to life: from matter to man, Oxford University Press., 1999. 9. U. Satyanarayana, U. Chakrapani, Biochemistry, Elsevier India Pvt. Ltd, Co published by Allied Books, 2020. 10. W. Pickering, C. Smith and E.J. Wood, Life, Chemistry and Molecular Biology", pub. Portland Press., 1997.
	20/0120/25	25/01/25	3	Polysaccharides – homo- and heteropolysaccharides, structural and storage polysaccharides		Power point	
Jan/ Feb 2025	27/01/2025	01/02/2025	3	Module II: Lipids Classification of Lipids. Building blocks of lipids - fatty acids (Physiologically important saturated and unsaturated fatty acids)		Power point	
	03/02/2025	08/02/2025	3	PUFA, glycerol, ceramide.		Power point	
Feb 2025	17/02/2025	22/02/2025	3	Storage lipids - triacylglycerol and waxes.		Power point	
Feb / March 2025	24/02/2025	01/03/2025	3	Structural lipids in membranes – glycerophospholipids, galactolipids and sulpholipids, sphingolipids and sterols,		Power point	
March 2025	03/03/2025	08/03/2025	3	structure, distribution and role of membrane lipids. Derived lipids- cholesterol & its importance		Power point	
	10/03/2025	15/03/2025	3	Module III: Proteins & Enzymes Classification, structure & physico-chemical properties of amino acids (amphoteric molecules, ionisation, zwitterions, pka values, isoelectric point), Physiological importance of essential and non-essential α-amino acids		Power point	
	17/03/2025	22/03/2025	3	Peptide bond, Proteins- simple, conjugated and derived. Fibrous and globular**,** bond stabilizing protein structure.		Power point	
March/ April 2024	24/03/2025	29/03/2025	3	Classification of Enzymes; Cofactors, Co-enzymes, Zymogens, Iso-enzymes, Specificity of enzyme action		Power point	
	31/03/2025	05/04/2025	3	Factors affecting rate of enzyme-catalysed reactions, Concept of Michaelis-Menten equation, Significance of Km		Power point	
	07/04/2025	11/04/2025	3	Lineweaver-Burk plot for enzyme inhibition- (competitive and non-competitive)			

*** Assessment Rubrics**	
Component	**Max Marks**
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Practical	25
Semester End Exam	60

Dr. Suphala Pujari

Practical Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim - Goa

Name of Faculty: Dr. Suphala Pujari	**Subject:** Zoology	
Paper code: ZOO 203	**Program: SY BSc**	**Division: A**
Academic year: 2024 - 2025	**Semester: IV**	**Total Practicals/Labs: 10**

Credits: 01

Course Objectives:

1. Understand the fundamental principles and concepts of biochemistry.
2. Imparting understanding of structure of biomolecules, the basic building blocks of living organisms
3. Understanding the biological roles of the various biomolecules.
4. Examine the principles of enzyme kinetics and catalysis in biochemical reactions.

Expected Course Outcome: Sound practical knowledge of Biochemistry.

Student Learning Outcome:

At the end of the course, students will be able to

1. Impart understanding of structure of biomolecules, the basic building blocks of living organisms.
2. Understand the biological roles of the various biomolecules.
3. Analyze the structure and function of biomolecules such as proteins, carbohydrates, lipids, and nucleic acids.
4. Examine the kinetics and catalytic properties of enzymes in biochemical reactions.

Month	Practicals/Labs Scheduled Date	No. of Practicals/Labs planned	List of Experiments	Reference books
December	10/12/2024	1	Qualitative tests for reducing and non-reducing sugars.	Departmental Laboratory Manual.
January	07/01/2025	1	Estimation of total protein from a suitable tissue	

January	14/01/2025	1	Fatty acid estimation from oil	Jayaraman J. (1981). Laboratory Manual in Biochemistry, Wiley, Chichester.
January	21/01/2025	1	Cholesterol estimation from blood serum.	
January	28/01/2025	1	Journal work	
February	04/02/2025	1	Estimation of Glycogen from liver tissue.	
February	11/02/2025	1	Effect of pH on salivary amylase activity.	
February	18/02/2025	1	Effect of temperature on the action of salivary amylase	
February	25/02/2025	1	Calculating the Km for Amylase enzyme	
March	04/03/2025	1	Calculations	
March	11/03/2025	1	Effect of inhibitor (any suitable) on salivary amylase activity	
March	18/03/2025	1	Calculations , journal work	
March	25/03/2025	1	Estimating sugar in fruit juices and soft drinks using refractometer.	
April	01/04/2025	1	Revision, Completion of Journal	
April	08/04/2025	1	Revision	

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