

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce, and Science College
Ahmednagar (Autonomous)
(Affiliated to Savitribai Phule Pune University, Pune)



National Education Policy (NEP)
Choice Based Credit System (CBCS)

Programme Framework and Syllabus for
Skill Enhancement Courses: Zoology

Implemented from
Academic Year 2024-25

New Arts, Commerce and Science College, Ahmednagar (Autonomous)

Skill Enhancement Courses: Framework and Course Distribution: Subject: Zoology

Sr. No.	Year	Semester	Level	Course Type	Course Code	Title	Credits
1.	I	II	5.0	SEC-01	SEC-ZO 01P	Basic Biochemistry	02
2.	II	III	5.5	SEC-02	SEC-ZO 02P	<i>Drosophila</i> Genetics	02
3.	II	IV	6.0	SEC-03	SEC-ZO 03P	Histology and Histochemistry	02
Total							06

Introduction to Skill Enhancement Course in Zoology: Basic Biochemistry

Biochemistry is the study of the chemical processes and substances that occur within living organisms. In the laboratory sessions of basic biochemistry, students will engage in a series of hands-on practical exercises designed to reinforce theoretical concepts and develop essential laboratory skills. From the meticulous calibration of pH meters to the precise preparation of standard solutions, students will learn the fundamentals of laboratory techniques and instrumentation. They will explore the principles behind colorimetry and spectrophotometry, mastering the use of instruments such as colorimeters and spectrophotometers for quantitative analysis. Through titration experiments, students will investigate the behavior of acids and bases, gaining insights into their properties and reactions. Moreover, qualitative tests for biomolecules such as carbohydrates, amino acids/proteins, and lipids will provide students with the opportunity to apply chemical assays for the detection and characterization of biological molecules. The isolation of starch from potato tissue will further enrich students' practical experience, allowing them to extract and purify biomolecules from natural sources. Throughout these practical sessions, students will develop proficiency in laboratory techniques, critical thinking, and data analysis, laying a solid foundation for their journey into the fascinating world of biochemistry.

**Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce and Science College, Ahmednagar
(Autonomous)**

Skill Enhancement Courses: Zoology

Title of the Course: Basic Biochemistry-I								
Year: I				Semester: II				
Course Type	Course Code	Credit Distribution		Credits	Allotted Hours	Allotted Marks		
		Theory	Practical			CIE	ESE	Total
SEC-01	SEC-ZO01P	00	02	02	60	15	35	50

Learning Objectives:

1. To understand basic concepts and laboratory processes in laboratory.
2. To understand basic techniques for qualitative analysis of biomolecules.
3. To understand basic techniques for quantitative analysis of biomolecules.

Course Outcomes (Cos)

After completion of this course students will be able to:

1. Equip with basic instrumentation and procedures in laboratory
2. Learn the basic techniques for qualitative analysis of biomolecules.
3. Learn the basic techniques for quantitative analysis of biomolecules.

Detailed Syllabus:

1. Introduction to laboratory apparatus and glassware (01)
2. Study of basic laboratory instruments in biochemistry: pH meter (Calibration and Demonstration) and Centrifuge (Principle and Demonstration) (01)
3. Study of Basic laboratory instruments in biochemistry: Colorimeter and Spectrophotometer (Principle and Demonstration) (01)
4. Preparation of Normal, Molar and Percent solutions (01)
5. To perform serial dilution of given chemical for particular concentration (01)
6. Titration of a mixture of a strong and a weak acid (01)
7. Titration of a mixture of a strong acid with a strong base (01)
8. Titration of a mixture of a weak acid with a strong base (01)
9. Determining Lambda Max of BSA, Glucose and Starch (01)
10. Qualitative estimation of carbohydrates (01)
11. Qualitative estimation of amino acids/proteins (01)
12. Qualitative estimation of lipids (01)
13. Isolation of starch from Potato (01)

Suggested Readings/Material:

1. An Introduction to Practical Biochemistry | 3rd Edition, David T. Plummer
2. Voet Donald and Voet Judith G Biochemistry, 3rd Ed. (2005),. John, Publisher: Wiley and Sons, New York.
3. Berg Jeremy, Tymoczko John, Stryer Lubert, Biochemistry 6th Ed, (2007) Publisher: W. H. Freeman, New York.
4. Nelson D. L. and Cox M. M. Lehninger's Principles of Biochemistry, 4th edition, (2005) W. H. Freeman and Co. NY.