

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:

Wine Brewing and Alcohol Technology

□□□□□□ □□□□□□ □□□□□□□□□□□□:

□□□□ □□□□□□□□ □□□ □□□□□□□□□□

□□□□□□□□□□

Implemented from

Academic Year 2024-25

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

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

Introduction of Skill Enhancement Courses: Wine Brewing and Alcohol Technology

Prologue: In the rapidly evolving fields like wine, brewing, and alcohol technology, practical courses focused on bioinstrumentation and bioanalytical techniques are vital. These courses are designed to bridge the gap between theoretical knowledge and real-world application, enhancing the practical skills of undergraduate students. They involve hands-on training with all type of (traditional and sophisticated) equipment and methodologies used to analyze biological materials, which are crucial in industries ranging from pharmaceuticals to food and beverage production.

These courses not only enhance the employability of graduates by equipping them with highly sought-after technical skills but also foster a deeper understanding of the scientific principles underpinning wine, brewing, and alcohol technology. Such training is particularly significant for those entering industries where precision and reliability in product development and quality assurance are paramount.

Learning Objectives:

1. Students will learn the fundamental principles behind the instruments and techniques required for wine, brewing, and alcohol technology.
2. This course will help students to handle instruments, perform analysis and interpret various bioanalytical methods.
3. Students will apply their skills to real-world situations, such as the fermentation process, chemical analysis and quality control in the production of alcoholic beverages.
4. Through practical experiments and troubleshooting, students will develop their problem-solving skills and ability to think critically about experimental design and data analysis.

Course Outcomes:

1. Students will be proficient in operating bioinstrumentation and will be capable of maintaining and troubleshooting these devices, which are pivotal in wine, brewing, and alcohol technology.

2. Students will advance with a strong grasp of various analytical techniques, ready to conduct biochemical analyses required in both research and industry.
3. Equipped with hands-on experience, students will be well-prepared to enter the workforce in wine, brewing, and alcohol and other allied industries, where they can contribute to innovations and quality control.
4. With comprehensive training in both traditional and cutting-edge bioanalytical methods, students will be capable of driving research and development projects, particularly in fields involving complex biochemical processes.

**Skill Enhancement Courses: Framework and Course Distribution:
Subject: Wine Brewing and Alcohol Technology**

Sr. No.	Year	Semester	Level	Course Type	Course Code	Title	Credits
1.	I	II	5.0	SEC-01	SEC-WT 01P	Bioinstrumentation	02
2.	II	III	5.5	SEC-02	SEC-WT 02P	Bioanalytical techniques	02
3.	II	IV	6.0	SEC-03	SEC-WT 03P	Basics of Oenology	02
Total							06

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

**Skill Enhancement Courses: Wine Brewing and Alcohol Technology-
Bioinstrumentation**

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

Learning Objectives:

1. To learn sterilization and aseptic transfer techniques.
2. To understand the calibration and handling of various instruments.
3. To study components of bright field compound microscope.
4. To study spectrophotometric, paper and thin layer chromatography techniques.

Course Outcomes (Cos)

1. Students will practically experience sterilization and aseptic transfer techniques.
2. Students will get hands on of various instruments like pH meter, hydrometer, refractometer colorimeter and spectrophotometer.
3. They will learn and study components of bright field compound microscope.
4. They will get practical experience of spectrophotometric, paper and thin layer chromatography techniques.

Detailed Syllabus:

Sr. No.	Practicals	No. of Practical
1.	Use of various weighing balances and micropipette and their calibration	(01)
2.	Centrifugation technique; separation of analyte by differential centrifugation	(01)
3.	Using a compound microscope: Learn the parts and functions of a microscope, observe prepared slides and identify basic cell structures.	(01)
4.	Use of instruments for sterilization and aseptic transfer	(01)

5.	Separation and identification of amino acids by paper chromatography	(01)
6.	Separation and identification of pigments by TLC	(01)
7.	Determination of sugar content by hydrometer and refractometer	(01)
8.	Components and working of Colorimeter and Spectrophotometer; verification of Beer and Lambert's law	(01)
9.	Calibration of pH meter and measurement of pH	(01)
10.	Determination of absorption maxima λ_{\max} for dye.	(01)
11.	Study of fractional distillation technique	(01)
12.	Acid base titration by conductivity meter/pH meter	(01)

Suggested Readings/Material:

1. Cotteril R. John (2002) Biophysics, an introduction. 1st edition. (Willey and Sons Ltd., USA
2. Pattabhi V and Gautham N. (2002), Biophysics. 1st edition, Kluwer Academic Publisher, USA.
3. Khande P.P. (1989) Textbook of optics and atomic physics, 8th edition lwal, Himlaya Publishing House, India.
4. Dany Spencer Adams (2014) Lab Math: A Handbook of Measurements, Calculations, and Other Quantitative Skills for Use at the Bench, 2nd edition. ISBN 978-1-936113-71-2
5. Rodney Boyer (2002) Modern Experimental Biochemistry 3rd edition. ISBN-13 978-8177588842