



**SECOND-YEAR OF BACHELOR OF SCIENCE  
CHEMISTRY (MAJOR AND MINOR)  
REVISED SYLLABUS ACCORDING TO CBCS  
NEP2020**

**COURSE TITLE: CHEMISTRY PRACTICAL-I  
SEMESTER-IV  
W.E.F. 2024-2025**

**RECOMMENDED BY THE BOARD OF STUDIES IN CHEMISTRY  
AND  
APPROVED BY THE ACADEMIC COUNCIL**

Devrukh Shikshan Prasarak Mandal's  
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and  
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.  
Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra,  
India

Academic Council Item No:

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Chemistry
Name of the Class	:	Second Year
Semester	:	Fourth
No. of Credits	:	02
Title of the Course	:	Chemistry Practical-I
Course Code	:	S207CHP
Name of the Vertical in adherence to NEP 2020	:	Major and Minor
Eligibility for Admission	:	Any student admitted to Second Year of B.Sc. Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Summative at the end of semester
Level	:	UG
Pattern of Marks Distribution for SEE	:	100 %
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances /Regulations (if any)		

*Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce and Vid. Dadasaheb Pitre Science College, Devrukh (An Autonomous College Affiliated with University of Mumbai)*

## Syllabus for Second Year of Bachelor of Science in Chemistry

(With effect from the academic year 2024-2025)

### SEMESTER-IV

Course Title: Chemistry Practical-I

No. of Credits - 02

Type of Vertical: Major and Minor

COURSE CODE: S207CHP

### Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to...		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Apply	determine standard EMF, standard free energy change of Daniel cell and the amount of HCl in the given sample.
CLO-02	Analyse	analyse strengths of HCl and H <sub>2</sub> SO <sub>4</sub> by studying kinetics.
CLO-02	Create	synthesize organic compounds by performing a single step and assemble analytical instruments.

## Syllabus for Second Year of Bachelor of Science in Chemistry

(With effect from the academic year 2024-2025)

### SEMESTER-IV

**Course Title: Chemistry Practical-I**

**No. of Credits - 02**

**Type of Vertical: Major and Minor**

**COURSE CODE: S207CHP**

<b>COURSE CONTENT</b>			
<b>Sr. No.</b>	<b>Content</b>	<b>Credits</b>	<b>No. of Hours</b>
1	<p><b>Physical Chemistry</b></p> <ol style="list-style-type: none"> <li>1. To determine standard EMF and the standard free energy change of Daniel cell potentiometrically.</li> <li>2. To determine the amount of HCl in the given sample potentiometrically.</li> <li>3. Compare the strengths of HCl and H<sub>2</sub>SO<sub>4</sub> by studying kinetics of acid hydrolysis of methyl acetate.</li> </ol>	02	60
2	<p><b>Organic Chemistry</b></p> <p>Short organic preparation and their purification: Use 0.5-1.0g of the organic compound. Purify the product by recrystallization. Report theoretical yield, percentage yield and melting point of the purified product.</p> <p>Preparation of:</p> <ol style="list-style-type: none"> <li>1 Glucosazone from dextrose or Fructose</li> <li>2 m-Dinitrobenzene from Nitrobenzene</li> <li>3 p-Bromoacetanilide from Acetanilide</li> <li>4 Iodoform from Acetone</li> </ol>		
	<b>Total</b>	<b>02</b>	<b>60</b>

### **Access to the Course**

The course is available for all the students admitted to Second Year Bachelor of Science.

### **Methods of Assessment**

Practical courses, Vocational Skill Courses, Skill Enhancement Courses and the courses having laboratory sessions shall be assessed at the end of each semester.

### **Reference Books**

1. Khosla B.D., Garg V.C. and Gulati A., Senior Practical Physical Chemistry, R. Chand and Co., New Delhi (2011).
2. Garland C. W., Nibler J.W. and Shoemaker D.P., Experiments in Physical Chemistry, 8thEd., McGraw-Hill, New York (2003).
3. Halpern A.M. and McBane G.C., Experimental Physical Chemistry, 3rd Ed., W. H. Freeman and Co., New York (2003).
4. Athawale V.D. and Mathur P., Experimental Physical Chemistry, New Age International, New Delhi (2001).
5. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
6. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
7. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000). Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
8. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic chemistry, 5th Ed., Pearson (2012)
9. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., Textbook of Practical Organic Chemistry, Prentice-Hall, 5th edition, 1996