



---

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

---

**COURSE TITLE: CHEMISTRY PRACTICAL-I  
SEMESTER-III  
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                                      | : | Third   |
| No. of Credits                                | : | 02  |
| Title of the Course                           | : | Chemistry Practical-I   |
| Course Code                                   | : | S203CHP   |
| 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-III

Course Title: Chemistry Practical-I

No. of Credits - 02

Type of Vertical: Major and Minor

COURSE CODE: S203CHP

### 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 dissociation constant of weak acid, critical solution temperature of Phenol-Water System, energy of activation of hydrolysis reaction. |
| CLO-02                      | Evaluate        | verify Ostwald's dilution law and solubility of sparingly soluble salts  |
| 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-III****Course Title: Chemistry Practical-I****No. of Credits - 02****Type of Vertical: Major and Minor****COURSE CODE: S203CHP**

| <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>To verify Ostwald's dilution law for weak acid conductometrically.</li> <li>To determine dissociation constant of weak acid conductometrically.</li> <li>To determine the critical solution temperature (CST) of Phenol - Water System.</li> <li>Determination of energy of activation of acid catalyzed hydrolysis of methyl acetate.</li> <li>To investigate the reaction between <math>K_2S_2O_8</math> and KI with equal initial concentrations of the reactants</li> <li>To determine solubility of sparingly soluble salts (any two) conductometrically.</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>Cyclohexanone oxime from Cyclohexanone.</li> <li>Tribromoaniline from Aniline.</li> <li>Phthalic anhydride from Phthalic acid by sublimation</li> <li>Acetanilide from Aniline</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. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
6. 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)
1. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic chemistry, 5th Ed., Pearson (2012)
2. 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