



THIRD-YEAR OF BACHELOR OF SCIENCE CHEMISTRY (MAJOR) REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: CHEMISTRY PRACTICAL-I
SEMESTER-V
W.E.F. 2025-2026

**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: 02/2025

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	:	Third Year
Semester	:	Fifth
No. of Credits	:	02
Title of the Course	:	Practical-I
Course Code	:	S304CHP
Name of the Vertical in adherence to NEP 2020	:	Major
Eligibility for Admission	:	Any student admitted to Third 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	:	5.5
Pattern of Marks Distribution for SEE and CIA	:	100 %
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2025-2026
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 Third Year of Bachelor of Science in Chemistry

(With effect from the academic year 2025-2026)

SEMESTER-V

Paper No.– I

Course Title: Practical-I

No. of Credits - 02

Type of Vertical: Major

COURSE CODE: S304CHP

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 molecular weight of compound by Rast method and chemical type of binary solid-solid mixture
CLO-02	Analyse	Investigate velocity constant of alkaline hydrolysis of ethyl acetate by conductometric method and separate binary solid-solid mixture using separating reagent.
CLO-03	Evaluate	determine acidic and basic dissociation constants of amino acid and calculate isoelectric point.

Syllabus for Third Year of Bachelor of Science in Chemistry

(With effect from the academic year 2025-2026)

SEMESTER-V

Paper No.– I

Course Title: Practical-I

No. of Credits - 02

Type of Vertical: Major

COURSE CODE: S304CHP

COURSE CONTENT			
Sr. No.	Content	Credits	No. of Hours
1	Physical Chemistry I. Non-Instrumental - Colligative Properties To determine the molecular weight of compound by Rast Method - Chemical Kinetics To determine the order between $K_2S_2O_8$ and KI by fractional change method. II. Instrumental - Potentiometry To determine the solubility product and solubility of AgCl potentiometrically using chemical cell. - Conductometry To determine the velocity constant of alkaline hydrolysis of ethyl acetate by conductometric method. - pH-metry To determine acidic and basic dissociation constants of amino acid and hence to calculate isoelectric point.	02	60
2	Organic Chemistry Separation of Binary solid-solid mixture (2.0 gms mixture to be given) - Minimum Six mixtures to be completed by the students. - Components of the mixture should include water soluble and water insoluble acids (carboxylic acid), water insoluble phenols (2-naphthol, 1-naphthol), water insoluble bases (nitroanilines), water soluble neutral		

	(thiourea) and water insoluble neutral compounds (anilides, amides, m-DNB, hydrocarbons). 3. After correct determination of chemical type, the separating reagent should be decided by the student for separation. 4. Follow separation scheme with the bulk sample of binary mixture. 5. After separation into component A and component B, one component (decided by the examiner) is to be analyzed and identified with melting point.		
	Total	02	60

Access to the Course

The course is available for all the students admitted for Third 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.

References:

1. Practical Physical Chemistry 3rd edition A.M. James and F.E. Prichard, Longman publication
2. Experiments in Physical Chemistry R.C. Das and B. Behra, Tata Mc Graw Hill
3. Advanced Practical Physical Chemistry J.B. Yadav, Goel Publishing House
4. Advanced Experimental Chemistry. Vol-I J.N. Gurtu and R Kapoor, S. Chand and Co.
5. Experimental Physical Chemistry by V.D. Athawale.
6. Senior Practical Physical Chemistry By: B. D. Khosla, V. C. Garg and A. Gulati, R Chand and Co. 2011
7. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
8. 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)
9. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic chemistry, 5th Ed., Pearson (2012)
10. 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.
