



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

**COURSE TITLE: CHEMISTRY-I
SEMESTER-VI
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	:	Sixth
No. of Credits	:	02
Title of the Course	:	Chemistry-I
Course Code	:	S310CHT
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	:	Formative and Summative
Level	:	5.5
Pattern of Marks Distribution for SEE and CIA	:	40:60%
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-VI

Paper No.– I

Course Title: Chemistry-I

No. of Credits - 02

Type of Vertical: Major

COURSE CODE: S310CHT

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	Remember	Identify between chemical and concentration cell.
CLO-02	Understand	explain classification of polymers.
CLO-03	Apply	differentiate between spin-spin and spin-lattice relaxation.

Syllabus for Third Year of Bachelor of Science in Chemistry

(With effect from the academic year 2025-2026)

SEMESTER-VI

Paper No.– I

Course Title: Chemistry-I

No. of Credits - 02

Type of Vertical: Major

COURSE CODE: S310CHT

COURSE CONTENT			
Module No.	Content	Credits	No. of Hours
1	ELECTROCHEMISTRY Activity and Activity Coefficient: Lewis concept, ionic strength, Mean ionic activity and mean ionic activity coefficient of an electrolyte, expression for activities of electrolytes. Classification of cells: Chemical cells & Concentration cells. Chemical cells with and without transference, Electrode Concentration cells, Electrolyte concentration cells with and without transference (derivations are expected), POLYMERS Basic terms: macromolecule, monomer, repeat unit, degree of polymerization. Classification of polymers: Classification based on source, structure, thermal response. Molar masses of polymers: Number average, Weight average. Method of determining molar masses of polymers: Viscosity method using Ostwald Viscometer.	01	15

2	BASICS OF QUANTUM CHEMISTRY Classical mechanics: Introduction, limitations of classical mechanics, Black body radiation, photoelectric effect, Compton effect. Quantum mechanics: Introduction, Planck's theory of quantization, wave particle duality, de –Broglie's equation, Heisenberg's uncertainty principle, Schrodinger's time independent wave equation. Quantum mechanics: Concept of operators - definition, addition, subtraction and multiplication of operators, commutative and non – commutative operators, linear operator, Hamiltonian operator, Eigen function and Eigen value NMR -Nuclear Magnetic Resonance Spectroscopy Principle: Nuclear spin, magnetic moment, nuclear 'g' factor, energy levels, Larmor precession, Relaxation processes in NMR (spin -spin relaxation and spin - lattice relaxation). Instrumentation: NMR Spectrometer	01	15
	Total	02	30

Access to the Course

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

Methods of Assessment

The assessment pattern would be 40:60, 60% for Semester End Examination (SEE) and 40% for Continuous Internal Assessment (CIA). The structure of the SEE and CIA would be as recommended by the Board of Studies and approved by the Board of Examination and the Academic Council of the college.

References:

1. Physical Chemistry, Ira Levine, 5th Edition, 2002 Tata McGraw Hill Publishing Co.Ltd.
2. Physical Chemistry, P.C. Rakshit, 6th Edition, 2001, Sarat Book Distributors, Kolkata.
3. Physical Chemistry, R.J. Silbey, & R.A. Alberty, 3rd edition, John Wiley & Sons, Inc [part 1]
4. Physical Chemistry, G. Castellan, 3rd edition, 5th Reprint, 1995 Narosa Publishing House.
5. Modern Electrochemistry, J.O.M Bockris & A.K.N. Reddy, Maria Gamboa – Aldeco 2nd Edition, 1st Indian reprint, 2006 Springer
6. Fundamental of Molecular Spectroscopy, 4th Edn., Colin N Banwell and Elaine M McCash Tata McGraw Hill Publishing Co. Ltd. New Delhi, 2008.
7. Physical Chemistry, G.M. Barrow, 6th Edition, Tata McGraw Hill Publishing Co. Ltd. New Delhi.
8. The Elements of Physical Chemistry, P.W. Atkins, 2nd Edition, Oxford University Press Oxford.
9. Physical Chemistry, G.K. Vemullapallie, 1997, Prentice Hall of India, Pvt. Ltd. New Delhi.
10. Principles of Physical Chemistry B.R. Puri, L.R. Sharma, M.S. Pathania, VISHAL PUBLISHING Company, 2008.
11. Textbook of Polymer Science, Fred W Bilmeyer, John Wiley & Sons (Asia) Ple. Ltd., Singapore, 2007.
12. Polymer Science, V.R. Gowariker, N.V. Viswanathan, Jayadev Sreedhar, New Age International (P) Ltd., Publishers, 2005.
13. Essentials of Nuclear Chemistry, Arnika, Hari Jeevan, New Age International (P) Ltd., Publishers, 2011.
14. Chemical Kinetics, K. Laidler, Pearson Education India, 1987.
