

Bharati Vidyapeeth's
Dr. Patangrao Kadam Mahavidyalaya, Sangli
Internal Quality Assurance Cell
Department of Chemistry

M.Sc. Organic Chemistry
(NEP-2020)

Program Outcomes:

PO-1:-	To educate and prepare post graduate students from rural and urban area who will get employment on large scale in academic institutes, R & D and Quality control laboratories of Indian chemical/pharmaceutical industries as well as multinational and forensic Laboratories.
PO-2:-	To provide students with broad theoretical and applied background in all specialization of Chemistry with emphasis on qualitative and quantitative technique.
PO-3:-	To provide broad common frame work of syllabus to expose our young graduates to the recent and applied knowledge of interdisciplinary branches of chemistry involving applied organic, inorganic, physical, analytical, industrial, pharmaceutical, polymer, nano science & technology.
PO-4:-	To conduct lesser written tests and to encourage on non-written tests.
PO-5:-	To focus on encouraging students to conduct various academic activities like midterm tests, online tests, open book tests, tutorial, surprise test, oral, seminar, assignments and seminar presentation.

Program Specific Outcomes:

PSO-1:-	A graduate with a Master's degree in Chemistry has in-depth and detailed functional knowledge of the fundamental theoretical concepts and experimental methods of chemistry
PSO-2	The graduate has expert knowledge of a well-defined area of research within chemistry.
PSO-3	The graduate has specific skills in planning and conducting advanced chemical experiments and applying structural-chemical characterization techniques.
PSO-4	Skilled in examining specific phenomena theoretically and/or experimentally, the graduate is able to contribute to the generation of new scientific insights or to the innovation of new applications of chemical research.

M. Sc. I (NEP-2020) Semester I

Course	Outcomes
OCH 101- (Organic Chemistry-I)	After completion of these courses, students should be able to, CO-1: To learn and understand types of reactions, structure, stability and reactivity of carbenes, arynes, nitrenes, and SN^1 , SN^2 , SN^i reactions. CO-2: To learn three, four and five membered system. To understand aromatic electrophilic substitution and nucleophilic aromatic substitution reactions. CO-3: To learn E1, into E1cB reaction, CO-4: To understand the concept of chirality, R/S configuration, conformational analysis of cyclohexane.
ICH 102- (Inorganic Chemistry-I)	CO-1: To understand CFT for Td, Oh, Sq. planar, TBP filled, CFSE and its applications. CO-2: To learn the classification, nomenclature, synthesis, bonding and properties of organometallic compounds. CO-3: To learn preparation, structure and properties of metal carbonyls. CO-4: To understand symmetry, point groups and Milliken symbolism rules.
E-ACH103- (Analytical Chemistry I) Elective paper	CO-1: To understand TGA, DTA, DTG and DSC and its applications. CO-2: To learn AAS in detail and its application, FES, ICP and its application. CO-3: To understand Beer-Lambert's law, structural problems and its application. CO-4: To understand IR spectroscopy in detail, problems and its applications.
CH104- (Research Methodology)	CO-1: To understand Research methodology and implementation of research. CO-2: To learn online searching, impact factor and paper writing for international journals. CO-3: To understand Errors, accuracy, precision. CO-4: To learn how to operate PC and How to learn standard programs.

M.Sc.I, Sem-I (Chemistry Practical)	
Course Laboratory practical	Outcomes After completion of these courses, students should be able to, CO-1: To learn ore, alloy analysis. CO-2: To learn preparation of coordination complexes CO-3: To learn instrumentation techniques. CO-4: To learn single stage preparation of important organic products. CO-5: To learn rate of reaction, kinetics of reaction. CO-6: To learn estimation and preparation of organic compounds.
M. Sc. I (NEP-2020) Semester II	
Course PCH 201- (Physical Chemistry-II)	Outcomes After completion of these courses, students should be able to, CO-1: To understand wave functions, spectroscopic term symbols and numericals. CO-2: To understand partition function, thermodynamic properties and numericals. CO-3: To know the theory of strong electrolyte, Debye Hukkel theory and numericals. CO-4: To learn kinetics of reaction and steady state approximation.
ACH 202- (Analytical Chemistry-II)	CO-1: To learn basics of analysis, statistics in chemical analysis and MS office in chemistry applications. CO-2: To understand volumetric and gravimetric analysis. CO-3: To understand Gas, HPLC and Ion exchange chromatography. CO-4 To learn Voltametry, polarography, amperometry and electrogravimetry analysis.
E-ACH203- (Analytical Chemistry) Elective paper	CO-1: To understand NMR and Instrumentation of FT-NMR and its applications. CO-2: To learn types of ionization, analyzers and application's. CO-3: To learn Rigid and non-rigid rotors and numericals. CO-4: To understand Raman Spectra, Vibrational Raman spectra and numericals.

Course Outcomes M.Sc.I, Sem-II (Chemistry Practical)

Course	Outcomes
Laboratory practical	After completion of these courses, students should be able to, Co-1: To learn ore, alloy analysis CO-2: To learn preparation of coordination complexes . CO-3: To learn instrumentation techniques. CO-4: To learn single stage preparation of important organic products. CO-5: To learn rate of reaction, kinetics of reaction. CO-6: To learn estimation and preparation of organic compounds.

M. Sc. Part –II (Sem – III) Organic Chemistry

Course Outcomes

Course	Outcomes
Paper No.- IX, OCH 3.1: ORGANIC REACTION MECHANISM	CO-1: Student should understand the difference between kinetic and non-kinetic methods of reaction mechanism. CO-2: They must know the exact concept of pericyclic reactions and photochemical reactions. CO-3: Student should study name reaction with their mechanism CO-4: They must know the Stereochemistry, migratory aptitude of different reactions.
Paper No. –X, OCH 3.2: ADVANCED SPECTROSCOPIC METHODS	CO-1: Student should know the difference in various spectroscopic techniques. CO-2: Student should understand principle of different spectroscopic techniques. CO-3: They came to predict the molecular structure of the given problem. CO-4: Student should solve the problems by combining spectroscopic entities.
Paper No. – XI, OCH 3.3 : ADVANCED SYNTHETIC METHODS	CO-1: Student should able to predict the designing of molecule with correct disconnection. CO-2: Students are skilled in reaction mechanism of different synthetic reagents and metals. CO-3 : Student should study the application of synthetic reagents and metals in organic synthesis. CO-4: Students are skilled to perform green synthetic

	procedure like microwave, ultrasonic bath, as well as different green solvents like ionic liquids.
Paper No.- XII (A), OCH 3.4(A): DRUG AND HETEROCYCLES	CO-1: Student should learn the synthesis of important drugs. CO-2: Student should study the computational designing. CO-3: Student should study the methods of preparation of heterocycles. CO-4: Student should study the reactions and applications of heterocycles

Course Outcomes M. Sc. Part -II (Sem - III) Organic Chemistry (Chemistry Practical)

Course	Outcomes
Organic Chemistry Practical Course OCHP- V and OCHP- VI	After completion of these courses, students should be able to, CO-1: Student should understand the difference between water soluble and ether soluble components. CO-2: Student must know the separation method of ternary mixture by micro technique (Green approach). CO-3: Student should understand two step preparations of different reactions. CO-4: Student should understand how and why to check TLC for monitoring the reaction. CO-5: Student should understand the method of solving spectral problems by spectra of different compounds

Course Outcomes M. Sc. Part -II (Sem - IV) Organic Chemistry

Course	Outcomes
Paper No.- XIII,OCH 4.1: THEORETICAL ORGANIC CHEMISTRY	After completion of these courses, students should be able to, CO-1: Student should understand the MOT and the concept of aromaticity. CO-2: They must know the free radical reactions. CO-3: Student should differentiate between kinetic and thermodynamic controlled reactions. CO-4: They should know the supramolecules with their structural explanation.
Paper No. - XIV, OCH 4.2: STEREOCHEMISTRY	CO-1: Student should understand difference between basic stereochemistry and modern stereochemistry. CO-2: Student must explore conceptual fact of stereoselective synthesis.

	<p>CO-3: Student should understand the shapes of ring other than five membered.</p> <p>CO-4: Student must learn the allenes, spiranes and biphenyls systems.</p>
<p>Paper No. – XV, OCH 4.3, CHEMISTRY OF NATURAL PRODUCTS</p>	<p>CO-1: Student should understand Classification and isolation methods.</p> <p>CO-2: Student should know Structure and synthesis of camphor, carvone, abietic acid, zingiberene, α-santonin, β-cuparenone and β-caryophyllene.</p> <p>CO-3: Student should understand different Structure, stereochemistry, synthesis and biosynthesis of the Morphine, Reserpine, Ephedrine and (+) Conin.</p> <p>CO-4: Student should study Occurrence, classification, biogenesis and physiological effects, Synthesis of PGE2 and PGF2.</p>
<p>Paper No. - XVI (A), OCH 4.4(A), APPLIED ORGANIC CHEMISTRY</p>	<p>CO-1: Student should know Structure and synthesis of Carbamate pesticides, pyrethroids, Plant growth regulators, Pheromones etc.</p> <p>CO-2: Student should learn the different unit processes such as Nitration of hydrocarbons, Bechamp reduction, halogenations etc.</p> <p>CO-3: Student should study the classification and synthesis of important dye intermediates</p> <p>CO-4: Students must know about synthesis of important polymers</p>
<p>Course Outcomes M. Sc. Part –II (Sem – IV) Organic Chemistry (Chemistry Practical)</p>	
<p>Course Organic Chemistry Practical Course OCHP-VII and OCHP-VIII</p>	<p>Outcomes</p> <p>CO-1: Student should understand the three step preparations.</p> <p>CO-2: Student must know the method of estimation of sulfur and nitrogen.</p> <p>CO-3: Student should understand how to assemble Kjeldahl's apparatus for estimation of nitrogen.</p> <p>CO-4: Student should understand Literature survey. Studies of reactions, synthesis, mechanism, isolation of natural products.</p> <p>CO-5: Student should understand standardization of reaction conditions, use of new methods etc.</p> <p>CO-6: Identification of organic compounds by spectroscopic methods</p>