BANKURA ZILLA SARADAMANI MAHILA MAHAVIDYAPITH
DEPARTMENT OF CHEMISTRY
Programme Outcome, Programme Specific Outcome and Course Outcome
For B.Sc. Honours (CBCS Pattern) in Chemistry
2023-2024

Department of Chemistry		After successful completion of three year degree program in Chemistry a student should be able to;
PO	**Programme Outcomes**	**Description**
PO 1	**Sound domain knowledge**	Acquiring sound knowledge of chemical concepts and emerging issues in chemical science.
PO2	**Academic and Scientific Endeavour**	To help the students in developing academic and scientific endeavour by fostering and nurturing the young talent for proper scientific pursuit.
PO3	**Creative and Practical Ability to analyse and deal with data**	Analysis of experimental data and their representation in the form of graphs and plots. Use of statistics as a means to express complicated chemical data.
PO4	**Familiarity with Recent Developments in a Particular Field**	Should be able to apply modern theories and approaches to explain all spatial phenomena and relate nature with human inter relations
PO5	**Environmental Awareness**	Impact of environmental changes on human and how it can be explained at a global and regional perspective.
PO 6	**Laboratory Skill**	The students are exposed to modern equipments in the Laboratory where they get hands-on training which help them to succeed at any entry-level position in chemical industry.
PSO	**Programme Specific Outcomes**	**Description**
PSO 1	**Critical appreciation of the Subject.**	Acquiring sound knowledge on the fundamentals of Physico-chemical concepts and applying them in practical and professional situations.
PSO 2	**Academic and Scientific Endeavour.**	To help the students in developing, Cultivating and demonstrating the art of science learning and teaching by fostering and nurturing the young talent for proper scientific pursuit.
PSO 3	**Scientific Attitude**	Developing the right scientific temper compatible with creative impulse.
PSO 4	**Technical Skill Development**	Creating updated knowledge on research methodology and developing skills in the application oriented Chemistry.

PSO 5	**Environmental Consciousness**	Impact of environmental changes on human and its reflection on society.
PSO 6	**Communication Skill**	Classroom discussions, student seminar ,written assignments, debates etc. help students to develop effective communication skill which will aid them to enhance employability.
PSO 7	**Personality Development**	Personality development skills are likely to help students in their professional and personal lives thus making them responsible and sincere citizens of the socie√ty.
PSO 8	**Spirit of Team Work**	Encouraging students to co-ordinate with one another in a team environment rather than trying to excel individually.
PSO 9	**Basic Human Values**	Study of various texts and mutual interaction among the students inside and outside the class room help the learners to understand human behavioural science.

Course Outcomes B. Sc Chemistry (Honours Semester-III)

Course	Outcomes After completion of these courses students should be able
CC-5 Physical Chemistry-II	CO-17. To learn about transport process CO-18. To learn application of thermodynamics in chemistry CO-19. To learn about basic quantum mechanics CO-20. To determine viscosity, partition coefficient, equilibrium constant and to perform conductometric experiments
CC-6 Inorganic Chemistry-II	CO-21. To learn chemical bonding CO-22. To learn radioactivity and nuclear structure CO-23. To learn about iodometric and iodimetric titrations experimentally
CC-7 Organic Chemistry-III	CO-24. To learn about chemistry of alkenes and alkynes CO-25. To learn aromatic substitutions CO-26. To learn about carbonyl compounds and organometallic reagents CO-27. To detect special elements and functional groups in organic compounds and to prepare suitable derivatives
SEC-1 Basic Analytical Chemistry	CO-28. To learn about fundamental mathematical procedure and their applications in chemistry CO-29. To learn computer programming for statistical analysis CO-30. To handle numeric data Co-31. To learn about application of basic analytical procedures in chemistry

Course Outcomes B. Sc Chemistry (Honours Semester-IV)	
Course	Outcomes After completion of these courses students should be able
CC-8 Physical Chemistry-III	CO-32. To learn about transport process CO-33. To learn application of thermodynamics in chemistry CO-34. To learn about basic quantum mechanics CO-35. To determine viscosity, partition coefficient, equilibrium constant and to perform conductometric experiments
CC-9 Inorganic Chemistry	CO-36. To learn about general principle of metallurgy CO-37. To learn about chemistry of s and p block elements and also on inorganic polymers CO-3. To learn about basic coordination chemistry CO-38. To studies complexometric titration and inorganic preparation of complex salts
CC-10 Organic Chemistry	CO-39. To studies about nitrogen compounds and various types of name reactions CO-40 To know about the rearrangement reaction and stereochemical feachers of aliphatic and aromatic compounds CO-41. To studies retrosynthesis analysis, ring synthesis, asymmetric synthessis CO-42. To learn about UV, IR and NMR spectroscopy CO-43 To learn about the estimation of organic compounds experimentally
SEC-2 Pharmaceutical Chemistry	CO-44. To learn about pharmaceuticals chemistry including drugs CO-45. To study about fermentation
Course Outcomes B. Sc Chemistry (Honours Semester-V)	
Course	Outcomes After completion of these courses students should be able
CC-11Inorganic Chemistry IV	CO-46. To learn about VBT and CFT, magnetic, colour properties of coordination compounds CO-47. To study coordination chemistry CO-48. To have idea about 3d, 4d and 5d elements in term of electronic configuration, oxidation states, redox properties, coordination chemistry. CO-49. To learn about the chemistry of transitions metal and lanthanoids and actinoids

CC-12 Organic Chemistry V	CO-50. To learn about heterocyclic compounds and poly nuclear aromatic compounds CO-51. To study about alicyclic ompounds CO-52 To understand about pericyclic reactions CO-53. To know about the amino acids and proteins CO-54 To learn about nuclic acids
DSE-1 Advanced Physical Chemistry	CO-55. To learn about Crystal Structure CO-56. To learn about statistical thermodynamics CO-57. To study about Specific heat of solid, 3rd law and Adiabatic demagnetization CO-58. To know about Computer Programming based on numerical methods
DSE-2 Green Chemistry	CO-59. To know about the principles of Green Chemistry and Designing a chemical synthesis CO-60. To study some examples of Green Synthesis/ Reactions CO-61. To learn about Future Trends in Green Chemistry
Course Outcomes B. Sc Chemistry (Honours Semester-VI)	
DSE -3 Analytical Methods in Chemistry	CO-62: Understand the fundamental principles of qualitative and quantitative analysis. CO-63: Apply classical methods like volumetric and gravimetric analysis. CO-64: Utilize instrumental techniques like spectroscopy (UV-Vis, IR, AAS, etc.), chromatography (HPLC, GC), and electrochemical methods. CO-65: Interpret experimental data and draw meaningful conclusions. CO-66: Develop practical skills in using analytical instruments and software. CO-67: Understand the importance of quality control and quality assurance in analytical chemistry. CO-68: Apply analytical techniques to solve real-world problems in various fields.
DSE -4 Polymer Chemistry	CO-69. State the basic concept of polymer. CO-70. Relate Tm, Tg and its significance. CO-71. Apply the Polymerization techniques andPolymer CO-72. Differentiate Natural and synthetic rubbers. CO-73. Distinguish Thermoplastic and thermosetting resins.
CC-13 Inorganic Chemistry V	CO-74. Study different inorganic chemistry of different biological process such as role of different elements biological system, oxygen transport, activity of enzymes, proteins, nitrogen fixation, Photosynthesis etc. CO-75. Gain knowledge of organometallic compounds,

	their use in catalysis. CO-76. Reaction kinetics and mechanism of reactions of coordination compounds. CO-77. Learn qualitative analysis mixture of inorganic salt mixture and determine their composition.
CC-14 Physical Chemistry IV	CO-78. Study different spectroscopic properties (UV, rotational, vibrational) of molecule to explain different molecular properties. CO-79 To analyze different physicochemical behaviour of chemical compounds in respect of their interaction with light. CO-80.Learn to measure physicochemical data (absorbance, molar extinction coefficient, pH of buffer, CMC etc.) of some compounds and also their interaction with biomolecules using UV, IR spectrophotometer.

Programme Outcome, Programme Specific Outcome and Course Outcome For B.Sc. Generic and Programme Cources (CBCS Pattern) in Chemistry 2023-2024

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Course Outcomes B. Sc Chemistry Generic Elective and Programme (Semester-III)

Course	Outcomes After completion of these courses students should be able
GE-3 /C-1C	CO-17. To learn about chemical thermodynamics and its application CO-18. To learn equilibrium for chemical reactions CO-19. To learn about equilibrium in ionic solutions CO-20. To learn aromatic hydrocarbon CO-21. To learn about organometallic compounds CO-22. To learn about aryl halides CO-23. To study about alcohols, phenols, ethers and carbonyl compounds CO-24. To learn determination of pH of various solutions CO-25. To identify pure organic compounds
SEC-1 Basic Analytical Chemistry	CO-26. To learn about fundamental mathematical procedure and their applications in chemistry CO-27. To learn computer programming for statistical analysis CO-28. To handle numeric data Co-29. To learn about application of basic analytical procedures in chemistry

Course Outcomes B. Sc Chemistry Generic Elective and Programme (Semester-IV)

Course	Outcomes After completion of these courses students should be able
GE-4 /CC-1D	CO-30. To learn about the Carboxylic Acids and Their Derivatives CO-31. To study about Amines and Diazonium Salts CO-32. To learn amino acids CO-33 To learn about aromatic nitro compounds. CO-34. To learn carbohydrate chemistry CO-35. To learn about general group trends in periodic table CO-36. To study Lanthanides and actinides CO-37. To learn Coordination chemistry CO-38. To study about Industrial chemistry CO-39. To study Error Analysis and Computer Applications
SEC-2 Pharmaceutical Chemistry	CO-40. To learn about pharmaceuticals chemistry including drugs CO-41. To study about fermentation
Course Outcomes B. Sc Chemistry Programme (Semester-V)	
DSE-1A Green Chemistry	CO-42. To know about the principles of Green Chemistry and Designing a chemical synthesis CO-43. To study some examples of Green Synthesis/ Reactions CO-44. To learn about Future Trends in Green Chemistry
SEC-3 IT Skill for Chemists	CO-45. To know about Uncertainty in experimental techniques and measurement. CO-46. To study Algebraic operations, Differential calculus and Numerical integration. CO-47. To know about basics of Computer programming CO-48. Acquire Practical Knowledge on Handling numeric data, Numeric modelling and tatistical analysis.
Course Outcomes B. Sc Chemistry Programme (Semester-VI)	
DSE-1B Polymer Chemistry	CO-49. State the basic concept of polymer. CO-50. Relate Tm, Tg and its significance. CO-51. Apply the Polymerization techniques andPolymer CO-52. Differentiate Natural and synthetic rubbers. CO-53. Distinguish Thermoplastic and thermosetting resins.
SEC-4 Analytical Chemical Biochemistry	CO-54. To learn the basic concept of carbohydrates, protein, enzymes, lipids etc. CO-55. To acquire knowledge about the diagnostic approach of blood and urine analysis. CO-56. To gather hands on laboratory experience about estimation of carbohydrates, lipids and proteins. CO-57. To acquire hands on experience on isolation of protein, determination of cholesterol and nucleic acids etc.

	CO-58. To develop basic knowledge about data handling using MS Word, MS Excel and MS PowerPoint.