JOYA GOGOI COLLEGE, KHUMTAI
P.O.: KHUMTAI, DIST.: GOLAGHAT, PIN: 785619 (ASSAM)
DEPARTMENT OF CHEMISTRY
Email id: chemjgc2023@gmail.com

BSc. Honours with Chemistry	
CBCS (Core Course)	
Semester-I	
Course Name	**Course Outcome**
CHEMISTRY-C-101 Inorganic Chemistry	Through this course students will gain the knowledge about the wave function and its significance, Schrodinger equation and its importance in quantum mechanics, periodicity properties of elements, atomic number, properties of elements like atomic radii, ionic radii, size effect of ionic bond, solvation energy, covalent character of ionic bond, about the concept of valence bond theory and molecular orbital theory, redox equations etc.
CHEMISTRY-C-102 Physical Chemistry	Through this course students will gain an understanding of Kinetic theory of a gas, deviation from ideal behaviour (concept of real gases) and behaviour of real gases etc. Concept of surface tension and viscosity of liquids, cleansing action of detergents. About the solid state and nature of different solid states, Bragg's equation, Miller indices, ionization of weak and strong electrolytes, solubility and solubility products etc.
Semester-II	
Course Name	**Course Outcome**
CHEMISTRY-C-201 Organic Chemistry	Through this course students will gain the knowledge of basic concept of organic chemistry such as IUPAC nomenclature, hybridization, concept of electronic effects, concept of stereochemistry, isomerism, absolute and relative configuration etc. and the idea of properties and different chemical reactions of aliphatic hydrocarbon and relative stability, Bayer's strain theory, conformational analysis of cyclic hydrocarbon etc.
CHEMISTRY-C-202 Physical Chemistry	Through this course students will learn about the concept and application of thermodynamic, calculation of thermodynamic properties, the idea of free energy change and its relation with spontaneity of reaction. They will also learn about the thermodynamic derivation of relation between Gibbs free energy and reaction quotient and concept of colligative properties and their derivation by using chemical potential etc.
Semester-III	
Course Name	**Course Outcome**
CHEMISTRY-C-301 Inorganic Chemistry	Through this course students will gain the knowledge about the different techniques of purification of metal, concept of acids and bases, properties and structural aspects of s and p-block elements, noble gases, idea of inorganic polymers etc.
CHEMISTRY-C-302 Organic Chemistry	Through this course students will gain an understanding of the prediction of organic reaction mechanism, relative reactivity of alkyl and aryl halides etc. idea about the properties and

	reactions of alcohols, phenols, carbonyl compounds, carboxylic acids and their derivatives etc. Preparation of sulphur containing compounds.
CHEMISTRY-C-303 Physical Chemistry	Through this course students will gain an idea about phases and phase diagrams of two component and three component systems, eutectic point, congruent and incongruent melting point, concept of degrees of freedom, order and molecularity of reaction, Steady -state approximation in reaction mechanism, types of catalysis, concept of Michaelis-Menten mechanism, adsorption and adsorption isotherm etc.
Semester-IV	
Course Name	**Course Outcome**
CHEMISTRY-C-401 Inorganic Chemistry	Through this course students will gain the concept of coordination compounds, application of Werner's theory and Crystal field theory, geometry of different coordination complexes, properties and structure of transition metals, metal ion present in biological systems and their importance, use of chelating agents in medicine etc.
CHEMISTRY-C-402 Organic Chemistry	Through this course students will gain the knowledge about preparation and properties of Aryl Amines, Heterocyclic compounds, Polynuclear hydrocarbon and methods of structure elucidation of alkaloids and terpenoids etc.
CHEMISTRY-C-403 Physical Chemistry	Through this course students will gain an understanding of conductance, application of conductance measurements, concept of strong and weak electrolytes, concept of Electrochemistry, Faraday's law, Nernst equation, EMF, basic idea of electrostatics, magnetic properties of atoms and molecules etc.
Semester-V	
Course Name	**Course Outcome**
CHEMISTRY-C-501 Organic Chemistry	Through this course students will gain an understanding of synthesis, properties and structural aspects of Nucleic acids, Amino acids, peptides and enzymes etc. They will learn about lipids, disconnection approach in organic synthesis, structure and applications of pharmaceutical compounds like antimalarial drugs, antipyretics and analgesic etc.
CHEMISTRY-C-502 Physical Chemistry	Through this course students will learn about the concept of quantum mechanics, qualitative treatment of hydrogen atom and hydrogen like ions, Schrodinger wave equation etc. They will also learn about different spectroscopic techniques and their application in prediction of structure of different inorganic and organic compounds etc.
CHEMISTRY-DSE-501 Analytical Methods in	Through this course students will gain the knowledge of the principles and applications of different modern chemical

Chemistry	instrumentation techniques like Spectroscopic techniques, Chromatographic techniques, Thermo gravimetric analysis, and methods of Solvent extraction which are used in field of research.
CHEMISTRY-DSE-502 Green Chemistry	Through this course students will learn about the concept of green chemistry and its principles, how to design safer chemical in laboratory, concept of atom economy, green solvents and green methods of organic synthesis etc.
Semester-VI	
CHEMISTRY-C-601 Inorganic Chemistry (Organometallic Chemistry)	Through this course students will gain the knowledge of Organometallic compounds, their properties and reactions, Zeise's salt, concept of 18 electron rule, haptacity of organic ligands. They will also learn about the inorganic reaction mechanism, concept of Wilkinson's catalyst and its application in industrial process like hydrogenation of alkene and structural aspects of metal carbonyl etc.
CHEMISTRY-C-602 Organic Chemistry	Through this course students will learn about the application of UV, IR, NMR spectroscopy, mass spectra in organic molecules. They will also learn about the methods of synthesis, structure and importance of carbohydrates, biodegradable polymer, dyes and applications of different dyes etc.
CHEMISTRY-DSE-602 Industrial Chemicals and Environment	Through this course students will learn about the manufacture, application, handling of different industrial gases and inorganic chemicals, different types of pollutions, their effects and the control measures, source of energy and the concept of biocatalysts etc.
CHEMISTRY-DSE-603 Dissertation	Through this course students will gain the knowledge of scientific research, how to find a literature, how to solve a scientific problem etc. They will also learn about the availability of different instrumental techniques for conducting scientific research and idea about the writing of research paper etc.

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BSc. Honours with Chemistry	
CBCS (Generic Course)	
Semester-I	
Course Name	**Course Outcomes**
CHEMISTRY-GE-101 Atomic Structure, Bonding, General Organic Chemistry and Aliphatic Hydrocarbons	Through this course students will gain the knowledge of the concept of quantum mechanics, Schrodinger wave equation, quantum numbers, chemical bonding, general characteristics of ionic bonding, VSEPR theory, concept of Molecular orbital theory and its application for the homonuclear and heteronuclear diatomic molecule, about the fundamentals of organic chemistry, different types of electronic effects like inductive effect, electromeric effect, mesomeric effect etc. Concept of aromaticity and isomerism. They will also learn about the stereochemistry, R/S-nomenclature, cis-trans etc. They will learn about preparation, properties and reactions of aliphatic hydrocarbon etc.
Semester-II	
Course Name	**Course Outcomes**
CHEMISTRY-GE-201 Chemical Energetics, Equilibria and Functional Organic Chemistry	Through this course students will learn about the concept of thermodynamics, variation of enthalpy with temperature-Kirchhoff's equation, Gibb's free energy, Thermodynamic derivation of law of chemical equilibrium, concept of strong and weak electrolytes, solubility and solubility product etc. They will also learn about the synthesis, properties and chemical reactions of aromatic hydrocarbon, aryl and alkyl halides, alcohols, phenols and ethers etc.
Semester-III	
Course Name	**Course Outcomes**
CHEMISTRY-GE-301 Solutions, Phase Equilibrium, Conductance,	Through this course students will gain the knowledge of Thermodynamics of ideal solutions, partial miscibility of liquids, phases and degrees of freedom, phase diagrams of one component and two component systems, concept of

Electrochemistry and Functional Group Organic Chemistry-II	conductance, application of conductometric measurements, electrochemistry, Nernst equation, EMF etc. They will also learn about the preparation, properties and chemical reactions of carboxylic acids and derivatives, amines, carbohydrates, amino acids, peptides and protein etc.
Semester-IV	
Course Name	**Course Outcomes**
CHEMISTRY-GE-401 Transition metals, Coordination Chemistry, States of Matter and Chemical Kinetics	Through this course students will gain the understanding of properties transition elements, application of Valence bond theory on coordination complexes, Crystal field theory and its application for strong and weak field complexes, Jahn-Teller distortion etc. They will also learn about the kinetic theory gases, deviation from ideal behaviour, concept of real gases, properties of liquids and solids, concept of surface tension and viscosity, Bragg's law, defects in crystal system, concept of reaction rates, order and molecularity of reaction, concept of activation energy etc.