Name of Programme : BSc Honours (Chemistry)

Programme Outcome:

On successful completion of a B.Sc Programme as designed by Gauhati University, a student will attain-

- Eligibility for enrolment into a Masters programme in Science, humanities, business management, or any other allied field.
- Eligibility to apply for Graduate level posts in various Govt. Departments.
- Eligibility to enroll in B.ED Course, a required qualification for appearing in Teachers Eligibility Test (TET) to become Trained Graduate Teacher (Science) at schools in Government and Private Sector.
- Incorporation of a number of skill enhancement and ability enhancement course in the programme will boost employability of students.

Programme Specific Outcome:

B. Sc (Honours) degree in Chemistry will enrich and enable a student to

- Enroll into Masters programme (M.Sc) in Chemistry and thereby set a vision of becoming
  - Researcher at an institute of national/ International repute.
  - Professor at colleges/universities of national/ international repute.
  - Scientist at various National and International laboratories and industries related to dyes, drugs, pesticides, germicides, food technology, leather technology etc.
- Apply for various posts in Govt. petroleum exploration, refining and marketing agencies (such as ONGC, OIL, GAIL, etc), Fertilizer companies, polymer industries, pharmaceutical companies among others
- Work as Chemist in different FMCG, food processing industries.
- Try enterpreunial skill in developing a start-up in petrochemicals and polymer based ventures.

Course Outcome:

Semester and paper wise course outcome:

Semester	Paper Code : Paper Name	Course Outcome
I	HC-1016 : Inorganic Chemistry-I	• Clear understanding of atomic and molecular structure, periodic properties, chemical bonding, and redox behavior of chemical species. • Hands on experience of standard solution preparation and volumetric estimation.
	HC-1026 : Physical Chemistry-I	• Chemical insight into the structure and properties of different states of matter viz. gaseous, liquid and solid • Basic solid state chemistry application of x-ray crystallography • The students will also learn another important topic "ionic equilibria" in this course.
II	HC-2016 Organic Chemistry-I	• Learn the fundamentals of organic chemistry in regards to classification, nomenclature and reactivity of organic compounds • Analysis of chemical and stereo chemical aspects of organic compounds.
	HC- 2026: Physical Chemistry-II	Students are expected to understand • Various concepts of thermodynamics and thermochemistry, chemical systems from thermodynamic point of view. • Partial molar quantities, chemical equilibrium, solutions and colligative properties.
	HC-3016 Inorganic Chemistry-I	Students will be able to • Apply theoretical principles of redox chemistry in the understanding of metallurgical processes. • Identify the variety of s and p block compounds and comprehend their preparation, structure, bonding, properties and uses. • Experiments in this course will boost their quantitative estimation skills and introduce the students to preparative methods in inorganic chemistry.

III		
	CHE-HC-3026 Organic Chemistry II	• Students will be able to describe and classify organic compounds in terms of their functional groups and reactivity.
	CHE-HC-3036 Physical Chemistry - III	The students are expected to learn • Phase rule and its application in some specific systems. • Laws of chemical transformation • Experimental methods of rate law determination, steady state approximation • Different types of surface adsorption processes • Basics of catalysis including enzyme catalysis, acid base catalysis and particle size effect on catalysis.
	CHE-SE-3034 Basic Analytical Chemistry	Upon completion of this course, students shall be able to • Explain the basic principles of chemical analysis • Design/implement microscale and semimicro experiments • Analyze data following scientific methodology.
IV	HC-4016 Inorganic Chemistry III	On successful completion, students will learn- • IUPAC name, bonding, properties and reactivity of coordination compounds • General trends in the properties of transition elements in the periodic table. • To prepare, estimate or separate metal complexes
	HC-4026 Organic Chemistry III	Students shall be able to • Identify and classify different types of N-based derivatives, alkaloids and hetrocyclic compounds/ • Explain their structure mechanism and reactivity/critically examine their synthesis and reactions mechanism.
	HC-4036 Physical Chemistry-IV	In this course the students will learn • Theories of conductance and electrochemistry. • Solubility and solubility products, ionic products of water, conductometric titrations etc.

		• Various parts of electrochemical cells along with Faraday's Laws of electrolysis • Electrical & magnetic properties of atoms and molecules.
	CHE-SE-4064: Fuel Chemistry	At the end of this course students will learn about • The classes of renewable and non-renewable energy sources. • Composition of coal and crude petroleum, their classification, • Isolation of coal and petroleum products and their usage in various industries. • Determine industrially significant physical parameters for fuels and lubricants.
V	CHE-HC-5016 Organic Chemistry IV	Students will be able to • Explain the important features of nucleic acids, amino acids and enzymes • Examine their properties and applications.
	CHE-HC-5026 Physical Chemistry-V	After completion of this course the students are expected to • Understand the application of quantum mechanics in some simple chemical systems such as hydrogen atom or hydrogen like ions. • Learn chemical bonding in some simple molecular systems. • Understand the basics of various kinds of spectroscopic techniques and photochemistry
	CHE-HE-5026 Analytical Methods In Chemistry	On successful completion students will • Have theoretical understanding about choice of various analytical techniques used for qualitative and quantitative characterization of samples. • Gain hands on experience of the discussed techniques. This will enable students to take judicious decisions while analyzing different samples.
	CHE-HE-5056 Polymer	After completion of this course the students will learn • The definition and classifications of polymers, kinetics of polymerization, molecular weight of polymers, glass

	Chemistry	transition temperature, and polymer solutions etc. • Preparation, structure and properties of some industrially important and technologically promising polymers.
VI	CHE-HC-6016 Inorganic Chemistry-IV	By studying this course the students will learn about • Ligand substitution and redox reactions in coordination complexes. • Organometallic compounds, their bonding, stability, reactivity and uses. • The variety of catalysts based on transition metals and their application in industry. • The use of concepts like solubility product, common ion effect, pH etc. in analysis of ions
	CHE- HC-6026 Organic Chemistry-V	Students will be able to • Explain basic principles of different spectroscopic techniques and their importance in chemical/organic analysis. • Classify/identify/critically examine carbohydrates, polymers and dye materials.
	CHE-HE-6026 Industrial Chemicals And Environment	After successful completion of the course, students would have learnt about • The manufacture, applications and safe ways of storage and handling gaseous and inorganic industrial chemicals. • Industrial metallurgy and the energy generation industry. • Environmental pollution by various gaseous, liquid wastes and nuclear wastes and their effects on living beings. • Industrial waste management, their safe disposal and the importance of environment friendly “green chemistry” in chemical industry.
	CHE-HE-6056 Dissertation	Students complete a project work and then prepare a report on that. By this students are introduced to the arena of chemical research.

BSc Regular Course:

Semester	Paper Code : Paper Name	Course Outcome
I	CHE-HG/RC-1016	After completion of this course the students will learn • The atomic structure through the basic concepts of quantum mechanics. • Chemical bonding through VB and MO approaches. • Basic ideas used in organic chemistry, stereochemistry, functional groups, alkanes, alkenes, alkynes etc
II	CHE-HG/RC-2016	After completion of this course the students will learn • Periodic properties in main group elements, transition metals (3d series). • The crystal field theory in coordination chemistry • Kinetic theory of gases, ideal gas and real gases, surface tension, viscosity , basic solid state chemistry and chemical kinetics.
III	CHE-HG/RC 3016	After completion of this course the students will learn • Chemical system from thermodynamic points of view. • Chemical equilibrium and ionic equilibrium. • Various classes of organic molecules-alkyl halides, aryl halides, alcohols, phenols, ethers, aldehydes and ketones
	CHE-SE-3034: Basic Analytical Chemistry	Upon completion of this course, students shall be able to • Explain the basic principles of chemical analysis • Design/implement microscale and semimicro experiments analyze data following scientific methodology.
IV	CHE-HG/RC-4016	After completion of this course the students learn • Solutions, phase rule and its application in specific cases, • Basics of conductance and electrochemistry. • Some important topics of carboxylic acids, amines, amino acids, peptides, proteins and carbohydrates.
	CHE-SE-4034: Pharmaceutical Chemistry	Students will be able to • Appreciate the drug development process, • Identify various small molecules used for treatments different ailments and other physiological processes.

V	CHE-RE-5056 Polymer Chemistry	After completion of this course the students will learn • The definition and classifications of polymers, kinetics of polymerization, molecular weight of polymers, glass transition temperature, and polymer solutions etc. • Preparation, structure and properties of some industrially important and technologically promising polymers. • Introduction and history of polymer
	CHE-SE-5014: Chemical Technology & Society	Students shall be familiarized with • Processes and terminologies in chemical industry, like mass balance, energy balance etc • Chemical and scientific literacy as a means to better understand the topics related to the society.
VI	CHE-RE-6026: Industrial Chemicals And Environment	After completion of the course, students would learn about • The manufacture, applications and safe ways of storage and handling gaseous and inorganic industrial chemicals. • Industrial metallurgy and the energy generation industry. • Environmental pollution by various gaseous, liquid wastes and nuclear wastes and their effects on living beings. • Industrial waste management, their safe disposal and the importance of environment friendly “green chemistry” in chemical industry.
	CHE-SE-6034: Fuel Chemistry	At the end of this course students will learn about • The classes of renewable and non-renewable energy sources. • The composition of coal and crude petroleum, their classification, isolation of coal and petroleum products and their usage in various industries. • Determination of industrially significant physical parameters for fuels and lubricants.