Dyal Singh College, Karnal

Name of the Programme: BACHELOR OF SCIENCE (BSc)

Duration: Three Years

Programme Outcomes (POs) for UG courses of Faculty of Medical/Non Medical		
PO1	**Knowledge**	Capable to apply the full scale and the thorough knowledge in social practices gained during multidisciplinary course of study.
PO2	**Communication**	Proficiency in communicating with effective scientific aptitude on general and scientific topic with society.
PO3	**Problem Solving**	Ability of critical thinking to solve general and scientific problems by applying the knowledge gained during the course of study.
PO4	**Individual and Team Work**	Competency to learn and work as an individual and as a team in multidisciplinary options.
PO5	**Investigation of Problems**	Capable of analysing the different aspects of a problem, designing of experiments, developing new techniques, analysing and interpreting the data to reach a conclusion.
PO6	**Modern Tool Usage**	Capability to learn and use modern skills, tools and technologies for social and scientific practices.
PO7	**Science and Society**	Capable to assess different kinds of social issues by applying reasoning and scientific aptitude developed during the course.
PO8	**Life-Long Learning**	Developed Learning attitude for newer skills and activities throughout their life.
PO9	**Environment and Sustainability**	Capable to use the acquired knowledge and developed thinking to design new ideas and systems that are helpful for environment and its sustainability.
PO10	**Ethics**	Apply ethics and principles in different professional and social practices.
PO11	**Project Management**	Competency to handle and manage projects with comprehensive knowledge and understanding of diverse scientific principles.

Programme Specific Outcomes (PSOs) for Chemistry subject of B.Sc. Medical/Non Medical	
The aim of the curriculum designed for BSc course in to nurture the technical aptitude of students for professional competency in the area of Chemical industries/ Research programmes.	
PSO1	All branches of Science and Technology are basically associated with Chemistry.
PSO2	Acquire good knowledge about the fundamentals and applications of chemical substances for daily use purposes.
PSO3	Teaching of this subject will inculcate the ability in youth to have understanding of basic knowledge about medical science.
PSO4	Knowledge of chemistry plays an important role in the area of Fertilizer industry, Food adulteration and Fats/Oil industries.
PSO5	This programme will build up the ability to synthesize, separate, characterize and analyse compounds using laboratory and instrumentation techniques.

B. Sc. 1st Year (Ist Semester) CHEMISTRY

Course Outcomes of Paper-I (CHEM-101) Inorganic Chemistry

Course Objectives:

CHEM-101.1	Elaborate the de-broglie relation and principle, wave function and solved numericals of slater's rule.
CHEM-101.2	To understand the periodic properties of s, p, d, f block elements and analysed the different methods of electronegativity calculation of different compounds.
CHEM-101.3	To learn about valence bond theory and hybridisation concept evaluation in different molecules as well as ions.
CHEM-101.4	To describe the structure of ionic solids in 3D and defects in geometry of these ionic solids.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-101.1	3	3	3	3	3	3	2	3	2	3	2
CHEM-101.2	2	3	3	3	3	3	2	3	3	3	3
CHEM-101.3	3	3	3	2	3	3	2	3	2	2	3
CHEM-101.4	2	3	3	2	3	2	3	2	3	3	2
Average	2.5	3	3	2.5	3	2.75	2.5	2.5	2.5	2.75	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-101.1	3	3	3	3	2
CHEM-101.2	3	3	3	3	3
CHEM-101.3	3	3	3	3	3
CHEM-101.4	3	3	3	3	2
Average	3	3	3	3	2.50

B. Sc. 1st Year (Ist Semester) CHEMISTRY

Course Outcomes of Paper-II (CHEM-102) Physical Chemistry

Course Objectives:

CHEM-102.1	To learn and describe Maxwell's distribution of velocities and collision theory and derivation of parameters related to collision theory.
CHEM-102.2	To learn about critical temperature, pressure and volume, isothermal relations and critical compressibility factor.
CHEM-102.3	To understand the structure and properties of liquids.
CHEM-102.4	To give idea of symmetry and symmetry elements, Bragg's equation and powder pattern method.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-102.1	3	3	3	3	3	3	2	3	2	2	3
CHEM-102.2	2	3	2	3	3	3	3	2	2	3	2
CHEM-102.3	2	3	3	2	3	3	2	3	3	2	3
CHEM-102.4	3	2	2	2	3	2	3	2	2	3	2
Average	2.5	2.75	3	2.5	3	2.75	2.5	2.5	2.25	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-102.1	3	3	3	3	2
CHEM-102.2	3	2	3	3	3
CHEM-102.3	3	3	3	3	3
CHEM-101.4	3	2	2	3	2
Average	3	2.5	2.75	3	2.5

B. Sc. 1st Year (Ist Semester) CHEMISTRY

Course Outcomes of Paper-III (CHEM-103) Organic Chemistry

Course Objectives:

CHEM-103.1	To learn and describe localised, delocalised chemical bond, Hyperconjugation and Electromeric effect.
CHEM-103.2	To learn about isomerism, types of isomerism and stereochemistry of organic compounds.
CHEM-103.3	To understand the mechanism of organic reactions and reaction intermediates.
CHEM-103.4	To give idea about alkanes and cycloalkanes along with their nomenclature and physical and chemical properties.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-103.1	3	3	3	3	3	3	2	2	3	2	3
CHEM-103.2	2	3	2	2	3	3	2	3	2	3	3
CHEM-103.3	2	3	3	3	3	3	2	2	3	3	2
CHEM-103.4	3	3	3	2	3	2	2	3	2	2	2
Average	2.5	3	2.75	2.5	3	2.75	2	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-103.1	3	3	3	3	2
CHEM-103.2	3	3	3	3	3
CHEM-103.3	2	3	3	3	3
CHEM-103.4	2	3	2	3	2
Average	2.5	3	2.75	3	2.5

B. Sc. 1st Year (2nd Semester) CHEMISTRY

Course Outcomes of Paper-IV (CHEM-104) Inorganic Chemistry

Course Objectives:

CHEM-104.1	Elaborate the Hydrogen bonding and van der-waal's forces and their types.
CHEM-104.2	To understand the metallic bonding and semiconductors along with characterisation and applications.
CHEM-104.3	To learn about s Block elements and its chemical properties of different elements, noble gases and study of xenon compounds.
CHEM-104.4	To describe the p Block elements and detailed study of Boron, Carbon Oxygen and Halogen families.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-104.1	3	3	3	3	3	3	3	2	2	3	2
CHEM-104.2	2	2	2	3	3	3	2	3	2	2	3
CHEM-104.3	3	2	3	2	3	3	3	3	3	3	2
CHEM-104.4	3	3	2	2	3	2	2	2	3	2	3
Average	2.75	2.5	3	2.5	3	2.75	2.5	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-104.1	3	3	3	3	2
CHEM-104.2	3	3	3	3	3
CHEM-104.3	3	2	3	3	3
CHEM-104.4	3	3	3	3	2
Average	3	2.75	3	3	2.5

B. Sc. 1st Year (2nd Semester) CHEMISTRY

Course Outcomes of Paper-V (CHEM-105) Physical Chemistry

Course Objectives:

CHEM-105.1	To learn and describe rate of reaction and all the chemical kinetic parameters of chemical reaction.
CHEM-105.2	To learn about theories of Electrochemistry and factors affecting electrolytic conduction.
CHEM-105.3	To understand application of Kohlrausch's law, Debye-Huckle law and calculation of conductance.
CHEM-105.4	To give idea about Buffer solution and Henderson- Hassel equation.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-105.1	3	3	3	3	3	3	2	2	3	2	3
CHEM-105.2	2	3	2	2	3	3	3	2	2	3	2
CHEM-105.3	3	3	3	3	3	3	2	3	3	2	3
CHEM-105.4	2	3	2	2	3	2	3	3	2	3	2
Average	2.5	3	3	2.5	3	2.75	2.5	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-105.1	3	3	3	3	2
CHEM-105.2	3	3	3	3	3
CHEM-105.3	3	3	3	3	3
CHEM-105.4	3	3	3	3	2
Average	3	3	3	3	2.5

B. Sc. 1st Year (2nd Semester) CHEMISTRY

Course Outcomes of Paper-VI (CHEM-106) Organic Chemistry

Course Objectives:

CHEM-106.1	To describe nomenclature of alkenes, mechanism of hydration and dehydration of alcohols.
CHEM-106.2	To learn about chemical reactions of alkene based organic compounds.
CHEM-106.3	To understand the aromaticity, non aromaticity and anti aromaticity.
CHEM-106.4	To give detailed analysis about aromatic electrophilic substitution reactions and energy profile diagrams.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-106.1	3	3	3	3	3	3	2	2	2	2	3
CHEM-106.2	2	3	2	2	3	3	3	2	3	3	2
CHEM-106.3	3	2	3	3	3	3	2	3	2	2	3
CHEM-106.4	2	2	2	2	3	2	3	3	3	3	2
Average	2.5	2.50	3	2.5	3	2.75	2.5	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-106.1	3	3	3	3	2
CHEM-106.2	3	3	3	3	3
CHEM-106.3	3	3	3	3	3
CHEM-106.4	3	3	2	3	2
Average	3	3	2.75	3	2.5

B. Sc. 1st Year (2nd Semester) CHEMISTRY

Course Outcomes of Paper-VII (CHEM-107) Chemistry Practical

Course Objectives:

CHEM-107.1	To learn experimentally about Redox titrations of Fe^{2+}, $C_2O_4^{2-}$, using $KMnO_4$ and made calculations also.
CHEM-107.2	To perform Paper chromatography of qualitative analysis of metal ions and anions.
CHEM-107.3	To perform experiment for determination of surface tension by different methods and specific refractivity.
CHEM-107.4	To prepare crystals of different organic compounds and determine melting

	points. Also perform sublimation of organic compounds

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-107.1	3	3	3	3	3	3	2	2	2	2	3
CHEM-107.2	2	3	2	2	3	3	3	3	3	3	2
CHEM-107.3	2	3	3	2	3	3	2	3	2	2	3
CHEM-107.4	3	3	2	2	3	2	3	2	3	3	2
Average	2.5	3	3	2.5	3	2.75	2.5	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-107.1	3	3	3	3	2
CHEM-107.2	3	2	3	3	3
CHEM-107.3	3	2	3	3	3
CHEM-107.4	3	3	3	3	2
Average	3	2.5	3	3	2.5

B. Sc. 2nd Year (3rd Semester) CHEMISTRY

Course Outcomes of Paper- VIII (CHEM-201) Inorganic Chemistry

Course Objectives: After studying this paper, the student will:

CHEM- 201.1	Gets insights into d-block elements particularly of transition elements.
CHEM - 201.2	Have an idea of Stability of various oxidation states and e.m.f (Latimer and Frost diagrams), Structure and properties of some compounds of transition elements.
CHEM - 201.3	Be able to know about the basic concepts of coordination chemistry like EAN, Werner theory of coordination and isomerism in coordination complexes.
CHEM - 201.4	Learn the Physical properties of solvents, reactions in non aqueous solvents.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-201.1	3	3	3	2	3	2	3	2	2	2	3
CHEM-201.2	3	3	3	3	3	3	3	3	3	3	2
CHEM-201.3	3	3	3	2	3	2	3	2	3	2	3
CHEM-201.4	3	2	3	3	3	3	3	3	3	3	2
Average	3	2.75	3	2.5	3	2.5	3	2.5	2.75	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-201.1	2	3	2	2	3
CHEM-201.2	2	2	3	2	2
CHEM-201.3	3	3	3	3	3
CHEM-201.4	3	3	3	3	3
Average	2.5	2.75	2.75	2.5	2.75

B. Sc. 2nd Year (3rd Semester) CHEMISTRY

Course Outcomes of Paper- IX (CHEM-202) Physical Chemistry

Course Objectives: After studying this paper, the student will:

CHEM- 202.1	Get knowledge of basic terms of thermodynamics, various processes, and concept of heat and work.
CHEM - 202.2	Be able to Calculate w,q, dU & dH for isothermal and adiabatic conditions.
CHEM - 202.3	Understand the basic terms related to chemical equilibrium and derive the law thermodynamically and will be able to deduce relation between various equilibrium constants.
CHEM - 202.4	Have an idea of partition coefficient for a solvent dissolved in two immiscible solvents and apply it for calculating degree of hydrolysis and hydrolysis constant, equilibrium constant, Process of extraction.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-202.1	3	2	3	2	3	2	3	3	2	2	2
CHEM-202.2	3	3	3	3	3	3	3	2	3	3	3
CHEM-202.3	3	3	3	2	3	2	3	2	3	2	2
CHEM-202.4	3	2	3	3	3	3	3	3	3	3	3
Average	3	2.5	3	2.5	3	2.5	3	2.5	3	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-202.1	2	3	2	2	3
CHEM-202.2	2	2	3	2	2
CHEM-202.3	3	3	3	3	3
CHEM-202.4	3	3	3	3	3
Average	2.5	2.75	2.75	2.5	2.75

B. Sc. 2nd Year (3rd Semester) CHEMISTRY

Course Outcomes of Paper- X (CHEM-203) Organic Chemistry

Course Objectives: After studying this paper, the student will:

CHEM- 203.1	Learn the nomenclature, methods of formation, chemical reactions of monohydric and dihydric alcohols.
CHEM - 203.2	Come to know about Preparation of phenols and Epoxides, their physical properties, chemical properties and reactions.
CHEM - 203.3	Understand Ultraviolet (UV) absorption spectroscopy basics, various shifts and finally its applications in structure elucidation.
CHEM - 203.4	Have Knowledge about various methods for the preparation of carboxylic acid, carboxylic derivatives (ester, amide, acid chlorides, anhydrides) and their chemical reactions.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-203.1	3	2	3	3	3	3	3	2	3	2	2
CHEM-203.2	3	3	3	2	3	3	3	3	2	2	3
CHEM-203.3	3	3	3	3	3	2	3	2	2	3	3
CHEM-203.4	3	2	3	2	3	3	3	3	3	3	2
Average	3	2.5	3	2.5	3	2.75	3	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-203.1	3	3	2	2	3
CHEM-203.2	3	3	2	3	3
CHEM-203.3	3	3	3	3	3
CHEM-203.4	3	3	3	3	3
Average	3	3	2.5	2.75	3

B. Sc. 2nd Year (4th Semester) CHEMISTRY

Course Outcomes of Paper- XI (CHEM-204) Inorganic Chemistry

Course Objectives: After studying this paper, the student will:

CHEM- 204.1	Gets insight into the position of f block elements in periodic table and their general characteristics.
CHEM - 204.2	Be able to compare the properties of Lanthanides and actinides with transition elements.
CHEM - 204.3	Gain knowledge of analysis of various groups of basic and acidic radicals, chemistry of interference.
CHEM - 204.4	Learn the common ion effect, solubility product, theory of precipitation, co-precipitation, post precipitation, purification of precipitates.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-204.1	3	2	3	2	3	2	3	3	2	2	2
CHEM - 204.2	3	2	3	3	3	3	3	2	3	3	3
CHEM - 204.3	3	3	3	2	3	2	3	3	3	2	2
CHEM - 204.4	3	3	3	3	3	3	3	3	3	3	3
Average	3	2.5	3	2.5	3	2.5	3	2.75	2.75	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM - 204.1	2	3	2	2	3
CHEM - 204.2	2	2	3	2	2
CHEM - 204.3	3	3	3	3	3
CHEM - 204.4	3	3	3	3	3
Average	2.5	2.75	2.75	2.5	2.75

B. Sc. 2nd Year (4th Semester) CHEMISTRY

Course Outcomes of Paper- XII (CHEM-205) Physical Chemistry

Course Objectives: After studying this paper, the student will:

CHEM- 205.1	Get knowledge about the laws and concepts of chemical thermodynamics and their applications in thermochemical calculations.
CHEM - 205.2	Be able to describe Gibbs function (G) and Helmholtz function (A), spontaneity, Variation of G and S with P, V and T.
CHEM - 205.3	Understand basics of cells, their EMF determination by use of Nernst equation and thermodynamic properties.
CHEM - 205.4	Learn derivation of cell EMF and its application.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-205.1	3	2	3	2	3	2	3	2	2	2	3
CHEM - 205.2	3	3	3	3	3	3	3	3	3	3	3
CHEM - 205.3	3	3	3	2	3	2	3	2	3	2	2
CHEM - 205.4	3	2	3	3	3	3	3	3	3	3	2
Average	3	2.5	3	2.5	3	2.5	3	2.5	2.75	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM - 205.1	2	3	2	2	3
CHEM - 205.2	2	2	3	2	2
CHEM - 205.3	3	3	3	3	3
CHEM - 205.4	3	3	3	3	3
Average	2.5	2.75	2.75	2.5	2.75

B. Sc. 2nd Year (4th Semester) CHEMISTRY

Course Outcomes of Paper- XIII (CHEM-206) Organic Chemistry

Course Objectives: After studying this paper, the student will:

CHEM- 206.1	Understand Infrared (IR) absorption spectroscopy basics, characterstic peak for functional groups, its applications in structure elucidation.
CHEM - 206.2	Learn Structure, nomenclature, physical properties of amines, factors affecting basicity of amines.
CHEM - 206.3	Be able to discuss synthetic application of diazonium salt
CHEM - 206.4	Know about the preparation, the acidity of α-hydrogens of aliphatic, aromatic aldehydes and ketones and various important name reactions of aldehydes and ketones.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM - 206.1	3	2	3	2	3	3	3	2	3	2	2
CHEM - 206.2	3	3	3	2	3	3	3	3	2	3	3
CHEM - 206.3	3	3	3	3	3	2	3	2	2	3	3
CHEM - 206.4	3	2	3	3	3	3	3	3	3	2	2
Average	3	2.5	3	2.5	3	2.75	3	2.5	2.5	2.5	2.5

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM- 206.1	3	3	2	2	3
CHEM - 206.2	3	3	2	3	3
CHEM - 206.3	3	3	3	3	3
CHEM - 206.4	3	3	3	3	3
Average	3	3	2.5	2.75	3

B. Sc. 2nd Year (4th Semester) CHEMISTRY

Course Outcomes of Paper- XIV (CHEM-207) Practical Chemistry

Course Objectives: After performing the experiments, the student will:

CHEM- 207.1	Acquire skill for quantitative estimations of Cu^{2+}, Al^{3+} and Ni^{2+}, verifying Beer – Lamberts' law.
CHEM - 207.2	Learn the Preparation of various inorganic complexes.
CHEM - 207.3	Be able to determine various enthalpies, rate constant and distribution coefficient.
CHEM - 207.4	Detect extra elements, functional groups, melting point along with preparation of one pure solid derivative.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-207.1	3	3	3	3	3	3	3	3	3	3	3
CHEM - 207.2	3	3	3	2	3	3	2	3	2	3	3
CHEM - 207.3	3	3	3	2	2	3	2	3	2	3	3
CHEM - 207.4	3	2	3	3	3	3	3	3	3	3	3
Average	3	2.75	3	2.5	2.75	3	2.5	3	2.5	3	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM- 207.1	3	3	3	2	3
CHEM - 207.2	3	3	2	3	3
CHEM - 207.3	3	3	2	2	3
CHEM - 207.4	3	3	3	3	3
Average	3	3	2.5	2.5	3

B. Sc. 3rd Year (5th Semester) CHEMISTRY

Course Outcomes of Paper-XV (CHEM-301) Inorganic Chemistry

Course Objectives:

CHEM-301.1	Understanding about metal ligand bonding in transition metal complexes and elementary idea of crystal field theory, factor affecting crystal field parameters.
CHEM-301.2	Familiarize with thermodynamic and kinetic aspects of metal complexes
CHEM-301.3	Understanding about magnetic properties of Transition metal complexes, types of magnetic materials. Magnetic susceptibility, methods of determining magnetic susceptibility.
CHEM-301.4	Understanding about Electronic spectra of transition metal complexes.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-301.1	3	3	3	3	3	3	3	2	3	3	3
CHEM-301.2	3	3	3	3	3	3	3	3	2	3	3
CHEM-301.3	3	3	3	3	3	3	3	2	3	3	3
CHEM-301.4	3	3	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	3	3	2.5	2.5	3	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-301.1	3	3	3	3	3
CHEM-301.2	3	3	3	3	3
CHEM-301.3	3	3	3	3	3
CHEM-301.4	3	3	3	3	3
Average	3	3	3	3	3

B. Sc. 3rd Year (5th Semester) CHEMISTRY

Course Outcomes of Paper-XVI (CHEM-302) Physical Chemistry

Course Objectives:

CHEM-302.1	Understanding about quantum mechanics – Black body radiation, planck's radiation law, photoelectric effect, postulates of quantum mechanics, quantum operator, role of operator in quantum mechanics.
CHEM-302.2	Brief idea about physical property and molecular structure – clausius mossotti equation, dipole moment.
CHEM-302.3	Application of magnetic susceptibility.
CHEM-302.4	Discussion about spectroscopy-rotational, vibrational and raman spectrum.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-302.1	3	3	3	3	3	3	3	3	3	2	3
CHEM-302.2	3	3	3	3	3	3	3	3	3	3	3
CHEM-302.3	3	3	3	3	3	3	3	3	3	2	3
CHEM-302.4	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	2.5	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-302.1	3	3	3	3	3
CHEM-302.2	3	3	3	3	3
CHEM-302.3	3	3	3	3	3
CHEM-302.4	3	3	3	3	3
Average	3	3	3	3	3

B. Sc. 3rd Year (5th Semester) CHEMISTRY

Course Outcomes of Paper-XVII (CHEM-303) Organic Chemistry

Course Objectives:

CHEM-303.1	Discussion about Principal of NMR spectroscopy – simple problem on PMR spectroscopy for structure determination of organic compound.
CHEM-303.2	Understanding about classification of carbohydrates.
CHEM-303.3	An introduction of disaccharides and polysaccharides.
CHEM-303.4	Understanding about organometallic compounds such as Mg, Zn, Li.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-303.1	3	3	3	3	3	3	3	3	3	3	3
CHEM-303.2	3	3	3	3	3	3	3	3	3	2	3
CHEM-303.3	3	3	3	3	3	3	2	3	3	3	3
CHEM-303.4	3	3	3	3	3	3	3	3	3	2	3
Average	3	3	3	3	3	3	2.75	3	3	2.5	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-303.1	3	3	3	3	3
CHEM-303.2	3	3	3	3	3
CHEM-303.3	3	3	3	3	3
CHEM-303.4	3	3	2	3	3
Average	3	3	2.75	3	3

B. Sc. 3rd Year (6th Semester) CHEMISTRY

Course Outcomes of Paper-XVIII (CHEM-304) Inorganic Chemistry

Course Objectives:

CHEM-304.1	A brief discussion of organometallic chemistry-its preparation, properties and bonding of alkyls of Li, Al, Hg and Sn.
CHEM-304.2	Understanding about acids and bases, HSAB concept.
CHEM-304.3	Discussion about Bioinorganic chemistry, Nitrogen fixation.
CHEM-304.4	Understanding about Silicones and phosphazenes; their prepration, properties, structure and uses.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-304.1	3	3	3	3	3	3	3	3	3	3	3
CHEM-304.2	3	3	3	3	3	3	3	3	2	3	3
CHEM-304.3	3	3	3	3	3	3	3	3	3	2	3
CHEM-304.4	3	3	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	3	3	3	2.5	2.75	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-304.1	3	3	3	3	3
CHEM-304.2	3	3	3	3	3
CHEM-304.3	3	3	3	2	3
CHEM-304.4	3	3	3	3	3
Average	3	3	3	2.75	3

B. Sc. 3rd Year (6th Semester) CHEMISTRY

Course Outcomes of Paper-XIX (CHEM-305) Physical Chemistry

Course Objectives:

CHEM-305.1	Discussion about the concept of electronic spectrum, qualitative description of selection rules and Franck-Condon principle.
CHEM-305.2	Understanding about photochemical processes, loss of photochemistry, Jablonski diagram.
CHEM-305.3	Discussion about dilute solutions and colligative properties.
CHEM-305.4	Understanding about Phase equilibrium – Derivation of Gibbs phase rule, Phase equilibria of one and two component system.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-305.1	3	3	3	3	3	3	3	3	3	3	3
CHEM-305.2	3	3	3	3	3	3	3	3	2	3	3
CHEM-305.3	3	3	3	3	3	3	3	3	3	2	3
CHEM-305.4	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	2.75	2.75	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-305.1	3	3	3	3	3
CHEM-305.2	3	3	2	3	3
CHEM-305.3	3	3	3	3	3
CHEM-305.4	3	3	3	3	3
Average	3	3	2.75	3	3

B. Sc. 3rd Year (6th Semester) CHEMISTRY

Course Outcomes of Paper-XX (CHEM-306) Organic Chemistry

Course Objectives:

CHEM-306.1	Understanding about Heterocylic Coumponds – I, aromatic characters of pyrole, furan , Thiophene and pyridine.
CHEM-306.2	Introduction to Heterocylic Coumpounds – II, Introduction to condensed five and six membered heterocyles, Prepration and reactions of indole, quinolone and isoquinoline, organosulphur compounds.
CHEM-306.3	A brief discussion of organic synthesis via enolates.
CHEM-306.4	Understanding about synthetic polymers.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-306.1	3	3	3	3	3	3	3	3	3	3	3
CHEM-306.2	3	2	3	3	3	3	3	3	2	3	3
CHEM-306.3	3	3	3	3	3	3	3	3	3	2	3
CHEM-306.4	3	3	3	3	3	3	3	3	2	3	3
Average	3	2.75	3	3	3	3	3	3	2.5	2.75	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-306.1	3	3	3	3	3
CHEM-306.2	3	2	3	3	3
CHEM-306.3	3	3	3	3	3
CHEM-306.4	3	3	3	3	3
Average	3	2.75	3	3	3

B. Sc. 3rd Year (6th Semester) CHEMISTRY

Course Outcomes of Paper-XXI (CHEM-307) Practicals

Course Objectives:

CHEM-307.1	Inorganic-qualitative inorganic analysis, macro-analysis, analysis of acid radicals, interference among acid radicals, analysis of basic radicals.
CHEM-307.2	Physical-to determine the strength of given acid solution (conductometrically, potentiometrically), to standardize the given acid solution pH metrically.
CHEM-307.3	Organic-Steam distillation, column chromatography, thin layer chromatography.
CHEM-307.4	Synthesis of Organic compounds.

Mapping of CO with PO's

Cos#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CHEM-307.1	3	3	3	3	3	3	3	3	2	2	3
CHEM-307.2	3	3	3	2	3	3	3	3	3	3	3
CHEM-307.3	3	3	3	3	3	3	3	3	3	3	3
CHEM-307.4	3	3	3	3	3	3	3	3	2	2	3
Average	3	3	3	2.75	3	3	3	3	2.5	2.5	3

Mapping of CO with PSO's

Cos#	PSO1	PSO2	PSO3	PSO4	PSO5
CHEM-307.1	3	3	3	3	3
CHEM-307.2	3	2	3	2	2
CHEM-307.3	3	3	2	3	3
CHEM-307.4	3	3	3	3	3
Average	3	2.75	2.75	2.75	2.75

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