Session 2021-22

Programme and Course Outcome

B.Sc Non-Medical

Multani Mal Modi College, Patiala

Program Outcomes (POs)

The student graduating with the B.Sc Non-Medical degree would be able to acquire and demonstrate the following:

1. **Core competency:** Students will attain core competency in the subjects of Chemistry, Physics and Mathematics.
   - Demonstrate comprehensible understanding of the fundamental concepts of chemistry, physics and mathematics including their different subfields.
   - Acquire technical knowledge that creates different types of professionals in the fields of chemistry, physics and mathematics and related fields such as pharmaceuticals, chemical industry, teaching, research and development, environmental monitoring, product quality, consumer goods industry, food products, cosmetics industry, material sciences and government/public service, in banking, insurance and investment sectors etc.
   - Utilize suitable approaches to perform organic/inorganic syntheses, understand the characterization of materials; physics and mathematical based analyses; and apply relevant knowledge and skills to find solutions to problems that arise from these fields of chemistry, physics and mathematics.
   - Students will be able to apply the basic principles of working of equipment and instruments and undertake hands on lab work and practical activities which enhances their problem solving abilities required for successful career in various fields or for higher degrees.
2. **Analytical ability:** Students will develop skills to pay attention to all elements and will be able to construct logical arguments related to their subjects. They will be able to design a hypothesis, collect data and analyze it critically to decipher if the data supports the hypothesis.
3. ***Disciplinary knowledge and skill***: Students will be able to demonstrate inclusive knowledge and understanding of all three subjects of chemistry, physics, and mathematics and utilize their lab and technical skills in interdisciplinary applications of these subjects.
4. C***ommunication skill***: On completion of this course, students would be trained to carefully listen, read and analyze the experimental data/research papers and express it through technical writing as well as orally in a concise manner.
5. ***Critical thinker and problem solver***: The course is designed in such a manner that it enables the students to develop critical thinking ability required to solve inter-disciplinary problems/numerical using basic knowledge and concepts.
6. ***Sense of inquiry***: The students are able to develop inquisitive characteristics such as investigative skills and independent investigation of subject-related

issues and problems through questioning, planning and reporting their investigation.

7. ***Team player***: The course is designed in such a way so as to train the students to work as a team player in a laboratory or industry and also to work independently for writing projects and carrying out research.
8. ***Skilled project manager***: A BSc non-medical graduate student will be capable of being a project manager by gaining knowledge about mathematics, chemistry and physics. Student will be efficient in planning, writing and studying the ethical standards and rules concerning to scientific project management.
9. ***Digitally literate***: The course enables the student to acquire digital skills and carry out data analysis using various apps and software, use library search engines and simulation software to carry out computational work.
10. ***Ethical awareness and reasoning strengthening***: A student after graduation in this course would be able to depict ethical awareness and reasoning. The student will be more objective and unbiased in all aspects of work and avoid unethical behavior such as fabricating or falsifying or misrepresenting any experimental data or commit any plagiarism; the student would be sensitized to appreciate intellectual property rights and other environmental and sustainability concerns.
11. ***Lifelong learner***: The syllabus is planned to instill a practice of continuous learning among the students through various tools and technique such as ICT, books and journals for individual academic growth and future jobs.

Course Outcomes (COs)

Course Outcomes: Mathematics
Semester-I

Paper-I	Calculus-I
Paper-II	Differential Equations
Paper-III	Co-ordinate Geometry

Semester-II

Paper-IV	Algebra- I
Paper-V	Partial Differential Equation
Paper-VI	Analytic Geometry

Course Outcomes: After Completion of the course the student will be able to:

Semester-I

Paper-I : Calculus-I

CO 1: Understand the concept of derivatives and use it to find curvature.

CO 2: Understand and apply the concept of limit, continuity of a function at a point to find Concavity and convexity, Asymptotes and Tracing of curves.

CO 3: Exhibit and recall previous learning in integrals and use to study Improper integrals.

CO 4: Apply and deduce Area and volume of two dimensional surfaces.

CO 5: Investigate convergence and divergence of Improper integrals, Dirichlet integrals and some special functions.

Paper-II: Differential Equations

CO-1: Recognize various definitions of linear homogeneous and nonhomogeneous differential equations.

CO-2: Understand various methods to solve second order linear differential equation with constant and variable coefficients.

CO-3: Obtain power series solutions of several important classes of ordinary differential equations including Bessel's, Legendre differential equations. Also able to derive the generating functions and recurrence relations, orthogonality properties and interpret their qualitative behaviour.

CO-4: Discover the use of Bessel, Legendre's, Hermite's equations in real-life problems.

Paper-III: Coordinate Geometry

CO-1: Understand and recall the importance of general equation of second degree in co-ordinate geometry.

CO-2: Obtain tangent, normal, chord of contact, and other geometrical properties.

CO-3: Apply above geometrical properties in real-life problems

CO-4: Investigate the nature of second degree equation of a curve.

CO 5: Demonstrate their knowledge of geometry and its applications in the real world.

Semester-II

Paper-IV: Algebra- I

CO 1: Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix, using rank.

CO 2: Find eigenvalues and corresponding eigenvectors for a square matrix

CO 3: Understand the importance of roots of polynomials and learn various methods of obtaining roots.

CO 4: Employ De Moivre's theorem in several applications to solve numerical problems.

CO 5: Execute their good understanding of the deeper concepts of linear algebra and abstract algebra.

Paper-V: Partial Differential Equation

CO 1: Solve the first-order linear PDE's with the aid of Lagrange's method and non-linear PDEs of first order with Charpits' method.

CO 2: Derive solutions of linear PDEs of second and higher order with constant coefficients.

CO 3: Use the method of separation of variables and other techniques to solve some basic hyperbolic, parabolic and elliptic partial differential equations.

CO 4: Execute their learning in solving heat, wave, Laplace equations.

CO 5: Solve PDE governing real life phenomenon arising in various fields of science and engineering.

Paper-VI: Analytic Geometry

CO 1: Understand and apply appropriate techniques, tools, and formulae to determine various geometrical parameters.

CO 2: Find Equation of a tangent plane, Condition of tangency, Angle of the intersection of two spheres, Length of a tangent, Radical plane, Coaxial system of spheres and other geometrical properties

CO 3: Analyze characteristics and properties of two- and three-dimensional geometric shapes and their geometric relationships.
CO 4: Relate and integrate geometry into real life contexts as well as into other disciplines.

Semester-III

Paper-I	Advanced Calculus
Paper-II	Analysis-I
Paper-III	Statics

Semester-IV

Paper-IV	Numerical Methods
Paper-V	Analysis-II
Paper-VI	Dynamics

Course Outcomes: After completion of the course the student will be able to:

Semester-III

Paper-I: Advanced Calculus

CO 1: Understand the concept of Limit, Continuity of Functions of several variables. Differentiability of real-valued functions of two variables.
CO 2: Understand the use of partial derivatives in Taylor's theorem, error estimation, and to Find Maximum and Minimum values of real-life situations.
CO 3: Exhibit and recall previous learning in Calculus of one variable
CO 4: Apply the concept of multiple Integrals to evaluate Areas, Volume, Centre of Gravity and Moments of Inertia and other physical quantities.
CO 5: Develop and execute their understanding to solve differential equations.

Paper-II: Analysis-I

CO 1: Understand the concept of Function of Bounded Variations and Riemann Integration

CO 2: Analyze and relate sequences and series of real values functions in terms of convergence in and divergence in R^2.

CO 3: Implement logical thinking to prove the basic results of real analysis.

CO 4: Relate the concept of infinite series and Improper Integrals.

CO 5: Develop and execute these concepts to probability theory, Fourier series, and other branches of mathematics.

Paper-III: Statics

CO 1: Understand the necessary conditions for equilibrium of particles acted upon by the number of forces.

CO 2: Understand the reduction of force system to a resultant force and a resultant couple.

CO 3: Define and determine the center of gravity of some materialistic systems.

CO 4: Demonstrate the concept of friction and identify types of friction.

CO 5: Formulate the knowledge of statics to higher courses like the theory of elasticity, fluid mechanics etc.

Semester - IV

Paper-IV: Numerical Analysis

CO 1: Understand the errors, source of error and its effect on any computation.

CO 2: Obtain numerical solutions of algebraic and transcendental equations.

CO 3: Tabulate the functions and data set using interpolation.

CO 4: Apply course knowledge to solve complicated physical problems by approximating to the desired accuracy.

Paper-V: Analysis-II

CO 1: Understand the Concept of Point-wise and Uniform convergence of sequence and series of functions with special reference to power Series.
CO 2: Identify and discuss the convergence of sequence and series of functions
CO 3: Evaluate Line, surface and volume integrals
CO 4: Identify and apply Greens Theorem, Stokes Theorem, and the Divergence Theorem.
CO 5: Investigate the Theory of Vector Calculus with relevant examples.

Paper-VI: Dynamics
CO 1: Understand the laws of motion and dynamics involved in projectile motion, Simple Harmonic function etc.

CO 2: Understand the concepts of work, power, energy, momentum and relative motion.

CO 3: Apply the laws of motion to solve physical problems.

CO 4: Investigate and formulate the concept of mathematical modeling in projectile motion.

CO 5: Use and derive some of the basic definitions and theorems related to dynamics.

Semester-V

Paper-I	Algebra-I
Paper-II	Discrete Mathematics-I
Opt-I	Mathematical Methods-I
Opt-II	Number Theory-I

Semester-VI

Paper-III	Algebra-II
Paper-IV	Discrete Mathematics-II
Opt-III	Mathematical Methods-II
Opt-IV	Number Theory-II

Course Outcomes: After completion of the course the student will be able to:

Semester-V

Paper-I: Algebra-I

CO-1: Determine whether a given set and binary operation form a group by checking group axioms

CO-2: Understand and Differentiate between homomorphism and isomorphism for groups and Rings.

CO-3: Differentiate between dihedral, symmetric and alternating groups, rings, derive the existence of groups of a specified small order

CO-4: Develop new structures based on given structures and compare the structures.

CO-5: Implement abstract and critical reasoning by studying logical proofs and the axiomatic method as applied to modern algebra.

Paper-II: Discrete Mathematics-1

CO-1: Understand and Define basic notations in graph theory & trees.

CO-2: Construct the Passwords by using the techniques of counting principles

CO-3: Use the shortest path algorithm to determine the fastest driving routes.

CO-4: Construct Model problems in Computer Science using graphs and trees.

CO-5: Learn how to work with some of the discrete structures which include sets, relations, functions, graphs and trees.

CO 6: Solve real-life problems using finite-state machines.
CO-7: Assimilate various graph theoretic concepts and familiarize them with their applications.

Opt-I: Mathematical Methods I

CO-1: Demonstrate their understanding of the Dirichlet conditions.

CO-2: Solve both real and complex forms of the Fourier series for standard periodic waveforms
CO-3: Know about piecewise continuous functions, Dirac delta function, Laplace transforms

and its properties

CO 4: Investigate the application of course in various engineering fields.

Semester-VI

Paper-III: Algebra- II

CO-1: Understand real vector spaces, subspaces, basis, dimension, and their properties

CO-2: Use the definition and properties of linear transformations and matrices of linear transformations.

CO 3: Obtain various variants of diagonalization of linear transformations.

CO-4: Apply the knowledge of linear algebra to solve the system of differential equations.

CO-5: Explain the use of linear algebra in coding theory, linear programming, and cryptography.

Paper-IV: Discrete Mathematics-II

CO 1: Understand and solve Binary relations and recurrence relations, direct and indirect proofs.

CO 2: Construct mathematical arguments using logical connectives and quantifiers.

CO 3: Validate the correctness of an argument using statement and predicate calculus.

CO 3: Develop an inductive way of thinking.

CO 4: Interpret and investigate applications of Boolean algebra and Boolean functions, logic gates, switching circuits in electronics.

Opt-III: Mathematical Methods-II

CO-1: Understand Fourier Transform and inverse Fourier transform.

CO-3: Determine the solution of differential equations with initial and boundary value problems by choosing the most suitable method.

CO-4: Apply Laplace transform techniques to solve Heat, Wave & Laplace equations.

CO 5: Apply and formulate integral transform techniques applied to various situations in physics, engineering, and other mathematical contexts.

Course Outcomes: Physics

Course Title: MECHANICS

The aim of the course is to acquaint students with the fundamentals of mechanics.

After completion of this course, students will be able to:

1. Understand various co-ordinate systems, reference frames, conservation laws, motion of rigid body and special theory of relativity.
2. Apply conservation laws to collisions in various frames and to kinematics of rigid bodies.
3. Analyze the problems in mechanics on motion and characteristics of trajectory.
4. Fix the problems faced in experiment handling and modeling computations for physical systems.

Course Title: Waves & Vibrations

This course aims to enhance the student's understanding regarding the theory of waves, vibrations and electromagnetism. At the end of the course, the student will be able to:

1. Understand different oscillators and their characteristic parameters, physical significance of Maxwell's equations, wave equations in different media and their solutions.
2. Analyze differential equations, stiffness of coupled oscillators, inductance coupling of electrical oscillators.
3. Gain an appreciation of the wide applicability of the presented concepts and acquire practical skills with experiments and related numerical problems, which are applicable to daily life and higher studies.

Course Title: ELECTRICITY & MAGNETISM

In this course, students attain the necessary knowledge, skills and general competency in Electricity & Magnetism. With the completion of the course the students will be able to:

1. Understand fundamental basics of electrical circuits, properties of simple, time-dependent electric & magnetic fields, induction, Maxwell's equations, electromagnetic waves.
2. Apply the basics to calculate forces and fields in various electricity & magnetism problems.
3. Analyze problems in electromagnetism using mathematical methods and compute currents and voltage drops in circuits.
4. Evaluate the importance of electricity & magnetism in society with regard to technological applications with concrete examples.

5. Have a basic grip on how experimental equipment can be used (this is achieved via lab-exercises). Students can familiarize with working of electrical circuits and storage devices. The theoretical and practical knowledge enables them to identify different communication techniques which will be useful in their daily life and higher studies.

Course Title: STATISTICAL PHYSICS AND THERMODYNAMICS

At the end of the course student will be competent to:

1. Understand various laws of thermodynamics, basics of probability, macrostates, microstates & distribution of particles, importance of quantum effects besides classical systems, concept of phase space, Maxwell Boltzmann, Bose Einstein, Fermi Dirac statistics and particles involved in reference to their spin.
2. Apply the laws to calculate the efficiency of idealized engines like Carnot Cycle.
3. Analyze the advancements in heat engines, refrigeration etc. and their application in daily life.
4. Evaluate the knowledge by performing lab experiments. Acquire a foundation for analyzing many body problems in advanced courses in physics.

Course Title: OPTICS & LASERS

The main objective of this course is to equip the students with deep understanding of various phenomena of wave optics and Laser technology. After the completion of the course, students will be able to:

1. Understand the physics involved in the wave optics phenomena: Interference, diffraction and polarization and their role in working of optical instruments.
2. Learn properties, construction and applications of different types of lasers. To equip with the basics of holography.
3. Apply the basics to calculate resolving power of optical devices and beam profile in lasers.
4. Analyze the problems of wave optics and progress in interferometry, laser technology and holography.
5. Evaluate the role of interference, diffraction and polarization in daily life and in nature with real examples.
6. Have an acquaintance on handling and use of optical instruments (exercised through lab practice). The theoretical and practical knowledge will facilitate them to decide a course for them in higher education or optoelectronic applications.

Course Title: QUANTUM MECHANICS

On successful completion of this course the student will be able to:

1. Understand the need and principles of quantum mechanics, duality of matter, Schrödinger's equations and Uncertainty principle.
2. Apply Schrödinger equation for study of one to three dimensional systems and develop reasoning for mathematical results. Employ concepts of angular momentum and spin to account for the phenomena involved in the Zeeman effect and LS coupling,
3. Analyze systems of identical particles based on quantum mechanics.
4. Use analytical and mathematical methods on quantum mechanical problems. Design and carry out experiments and compare results with theoretical predictions.

Course Title: CONDENSED MATTER PHYSICS

This course aims to enhance the student's basic knowledge in the discipline of Condensed Matter Physics. At the end of the course, the student will be able to:

1. Understand crystal structures, crystal planes, crystal diffraction, and experimental methods for crystal structure studies, concepts and various theories related to lattice vibrations, phonons, metals and semiconductors.
2. Apply theoretical knowledge in various problems of condensed matter physics.
3. Analyze the role of reciprocal lattices and Brillouin zones in crystallography.

Course Title: NUCLEAR AND PARTICLE PHYSICS

After the successful completion of this course the students will get well versed with the key concepts of nuclear and particle physics and will be able to

1. Learn fundamental aspects of nucleus & nuclear models, Radioactive decay, Nuclear Reactions and the interaction of radiation with matter, classification of elementary particles, detectors & accelerators.
2. Apply nuclear and particle physics concepts in kinematical computations, detectors.
3. Analyze various nuclear experiments to calculate nuclear parameters (lab exercise).

Course Title: ELECTRONICS (ELECTRONICS AND SOLID STATE DEVICES)

At the end of the course student will be able to:

1. Understand the concepts of semiconductor devices, biasing techniques and V-I characteristics, rectifiers, characteristics of different types of photoconductive devices.
2. Analysis of efficiency and ripple factor in filter circuits, different configurations of a transistor.
3. Evaluate the need of the circuitry, skills and technological tools and their advancements in relation to societal needs.
4. Design and operate electronics circuits.

Course Outcomes: Chemistry
Semester-I

Paper-I	INORGANIC CHEMISTRY
Paper-II	ORGANIC CHEMISTRY
Paper-III	PHYSICAL CHEMISTRY
Paper-I	PRACTICAL CHEMISTRY

Semester-II

Paper-I	INORGANIC CHEMISTRY
Paper-II	ORGANIC CHEMISTRY
Paper-III	PHYSICAL CHEMISTRY
Paper-II	PRACTICAL CHEMISTRY

Semester-I

Paper-I: INORGANIC CHEMISTRY

Students will be able to:

CO.1- Understand the Atomic Models by visualizing the interior of atoms and molecules and predict the properties of matter.

CO.2- Find the allowed energy levels of a quantum mechanical system and describe the quantum aspects of a system.

CO.3- Predict the periodic properties of different elements in terms of ionization energy, electronegativity, atomic and ionic radius and electron affinity.

CO.4- Classify the elements using periodic table into three categories: metals, non-metals and inert gases.

CO.5- Understand the chemical properties and stability of noble gases.

CO.6- Explain the uses of different noble gases in different fields.

CO.7- Describe the importance and limitations of valence bond theory and use them for predicting the shapes and hybridization of inorganic molecules and ions

CO.8- Understand the importance of VSPER theory and MO theory and determine the geometries of homonuclear and heteronuclear molecules.

PAPER II: ORGANIC CHEMISTRY

Students will be able to:

CO.1- Understand the structure and types of hydrogen bonding in simple organic compounds.

CO.2- Predict the aromatic character of organic compounds and study hyperconjugation and resonance in aromatic compounds.

CO.3- Learn about how a chemical reaction takes place using reactive intermediates and understand the methods to determine the reaction mechanism.

CO.4- Assign formal charges on intermediates and ionic species.

CO.5- Explain the method of preparation and physical properties of alkanes.

CO.6. Describe the orientation, reactivity, selectivity and mechanism of free radical halogenation of alkanes.

CO.7 Understand and describe the importance and limitations of strain theories (especially Bayer's strain theory) and use them for predicting the stability of cycloalkanes.

CO.8 Understand the mechanism involved in hydrogenation, electrophilic and free radical additions of alkenes.

CO.9 Identify the favourable alkene product in different chemical reactions using Saytzeff rule and hoffmann bromide rule.

CO.10 Recognize the role of Diels alder reaction in the formation of six membered rings with a good control over regio and stereochemical outcomes.

PAPER III: PHYSICAL CHEMISTRY

Students will be able to:

CO.1- Calculate slopes, maxima and minima and differentiate functions like kx, sin x, log x, ex, xn.

CO.2- Determine the accuracy of methods and analysis and calculate the numerical problems related to evaluation of analytical data.

CO.3- Understand the structure of liquids and structural differences between solids, liquids and gases.

CO.4- Classify liquid and solid crystals and understand the structure of nematic and eholestric phases.

CO.5- Understand the deviation of gases from ideal behaviour and study vanderwaals equation of state.

CO.6- Qualitatively discuss the Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter.

CO.7- Predict the dipole moments of complexes using different methods.

CO.8- Recognize the difference between paramagnetism, diamagnetism and ferromagnetism in complexes.

PRACTICAL CHEMISTRY - I

Students will be able to:

Qualitatively analyze, separate and identify the different cations and anions from Groups I, II, III, IV, V and VI present in a salt.

Semester-II

Paper-I: INORGANIC CHEMISTRY

CO.1- Understand different Ionic structures such as NaCl, Zinc blende, Wurtzite, CaF2 and antiflourite and use their properties to corelate other inorganic molecules.

CO.2- Differentiate between ionic and covalent bond using Fajan's rule.

CO.3- Explain the diagonal relationship between alkali and alkaline earth metals.

CO.4- Describe the solvation and complexation tendencies of alkali and alkaline earth metals and their functions in biosystems.

CO.5- Recognize the boron family and understand the properties of their hydrides, oxides, oxyacids and halides.

CO.6- Identify the carbon, nitrogen, oxygen and flourine families.

CO.7- Determine the properties and preparation of halogens, interhalogens and polyhalides.

PAPER II: ORGANIC CHEMISTRY

Students will be able to:

CO.1- Determine the absolute configuration of Organic compounds using sequence rules and R-S system

CO.2- Classify the geometric isomers using E-Z nomenclature.

CO.3- Understand the molecular chirality and optical activity of organic compounds and differentiate between enantiomers, diastereomers and meso compounds.

CO.4- Describe the different conformations of ethane, n-butane and cyclohexane.

CO.5- Explain the molecular formula, resonance structure and molecular picture of benzene and their stability.

CO.6. Recognize the role of activating and deactivating groups in electrophilic substitution reactions of benzene.

CO.7 Understand the mechanism involved in nitartion, halogenation, sulphonation, mercuration and friedel crafts reactions of benzene.

CO.8 Differentiate between SN1 and SN2 reactions and explain their energy profile diagram.

PAPER III: PHYSICAL CHEMISTRY

Students will be able to:

CO.1- Determine the methods of expressing the concentration of solutions, activity and activity coefficients.

CO.2- Explain the colligative properties including vapour pressure lowering, freezing point depression, osmotic pressure and boiling point elevation.

CO.3- Recognize the difference between sols, gels and emulsions.

CO.4- Explain the kinetics of a chemical reactions including their rate and factors affecting their rate.

CO.5- Determine the order of reactions using different methods.

CO.6- Understand and describe the importance and limitations of collision theory and transition state theory.

CO.7- Explain Homogenous catalysis, acid base and enzyme catalysis including their mechanism.

PRACTICAL CHEMISTRY II

Students will be able to:

CO.1- Determine the melting point and boiling point of different compounds.

CO.2- Synthesize and crystallize different organic compounds as phthalic acid from hot water, acetanilide from boiling water, benzoic acid from water and naphthalene from ethanol.

CO.3- Determine the specific reaction rate of the hydrolysis of methyl acetate/ethyl acetate catalyzed by hydrogen ions at room temperature.

CO.4- Study the effect of acid strength on the hydrolysis of an ester.

CO.5- Determine the Viscosity & Surface Tension of pure liquids.

CO.6- Determine Molecular weight by Rast method.

Semester-III

Paper-I	INORGANIC CHEMISTRY
Paper-II	ORGANIC CHEMISTRY
Paper-III	PHYSICAL CHEMISTRY
Paper-I	PRACTICAL CHEMISTRY

Semester-IV

Paper-I	INORGANIC CHEMISTRY
Paper-II	ORGANIC CHEMISTRY
Paper-III	PHYSICAL CHEMISTRY
Paper-II	PRACTICAL CHEMISTRY

Semester-III

Paper-I INORGANIC CHEMISTRY

1. The students would be familiar with general trends in the chemistry behind d and f-block elements.

2. The students will be able to understand the chemistry of first and second transition series.

3. The students will be able to understand the various uses of lanthanides elements in flash

light powders and in dying cotton.

4. The students will be able to understand about recently lanthanides have been used in

lasers.

5. The students will be able to know about actinides elements are used as nuclear fuels for

various purposes.

6. The students will able to understand the chemistry of separation of actinides.

Paper-II ORGANIC CHEMISTRY

To enable the students,

1. To study the chemistry of some selected functional groups

2. To develop proper aptitude towards the study of organic compounds and their reactions

3. To learn the chemistry of alcohols, phenols, aldehydes and ketones.

4. To understand and study Organic reaction mechanism and different types of Name Reactions.

5. To understand the method of formation of alcohols, phenols, aldehydes and ketones.

Paper-III PHYSICAL CHEMISTRY

After the completion of the course, Students will be able to

1. Recognize the basic terms of thermodynamic.

2. Able to predict the energy change in heat capacities at constant volume and pressure and

their relationship.

3. Able to drive Joule's law and its application.

4. Able to derive relationship between modification of distribution law when solute undergoes dissociation.

5. Able to understand various laws and concepts of thermodynamics thoroughly.

6. Recognise the concepts of chemical equilibrium in terms of equilibrium constant, various laws and concepts involved, reaction isotherm and Clausius-Claperyron equation.

Paper-I PRACTICAL CHEMISTRY

Semester-IV

Paper-I INORGANIC CHEMISTRY

1. The students will be able to explain the fundamental concepts in coordination chemistry

of transition metals.

2. Students will be able to understand the concept of oxidation reduction, redox potential data analysis, various redox stability diagrams and extraction of various elements from its ore extensively.

3. Students will be able to understand various concepts of acids and bases.

4. The Students would be familiar with the basic knowledge of the non-aqueous solutions

and applications of non-aqueous solvents in analytical chemistry.

5. The students will develop the ability of effective solving practical problem of analytical

chemistry of non-aqueous solutions.

Paper-II ORGANIC CHEMISTRY

To enable the students

1. To study the chemistry of some selected functional groups

2. To develop proper aptitude towards the study of organic compounds and their reactions

3. To learn the chemistry of carboxylic acids, derivatives of Carboxylic acids,ethers and epoxide, fats, oil and detergents.

4. To do the method of formation of carboxylic acids, derivatives of Carboxylic acids,ethers and epoxide, fats, oil and detergents

5. To understand and study Organic reaction mechanism

6. To understand the method of formation of nitro compounds, amines and their chemical reactions.

Paper-III PHYSICAL CHEMISTRY

After the completion of the course, Students will be able to

1. Understand the basic principles electrochemistry.

2. Mention and explain various methods for the determination of transport number.

3. Explain the concepts of electrolytic conduction and dilution

4. Understand the Phase equilibrium concept of one and two component systems.

5. Understand the various terms involved in phase diagram and Gibb's phase rule.

Paper-I PRACTICAL CHEMISTRY

Upon successful completion the students would be well versed with the following:

1. Detection of various elements and functional groups in simple organic compounds qualitatively.

2. determination of the solubility of benzoic acid at different temperatures and to determine ΔH of the dissolution process.

3.Determine the enthalpy of neutralisation of a weak acid/weak base versus strong base/strong acid

4. Determination of the enthalpy of ionisation of the weak acid/weak base and the enthalpy of solution of solid calcium chloride.

Semester-V

Paper-I	INORGANIC CHEMISTRY
Paper-II	ORGANIC CHEMISTRY
Paper-III	PHYSICAL CHEMISTRY
Paper-I	PRACTICAL CHEMISTRY

Semester-VI

Paper-I	INORGANIC CHEMISTRY
Paper-II	ORGANIC CHEMISTRY
Paper-III	PHYSICAL CHEMISTRY
Paper-II	PRACTICAL CHEMISTRY

Semester-V

Paper-I INORGANIC CHEMISTRY

Students will be able to:

CO.1- Understand and describe the limitations and importance of bonding theories (valence bond theory & Crystal Field Theory) and use them for predicting geometries and properties of coordination compounds.

CO.2- Calculate the CFSE and predict the experimental behaviour of transition metal complexes.

CO.3- Differentiate between kinetic and thermodynamic stability and recognize the factors affecting stability of complexes.

CO.4- Identify the substitution reaction mechanism involved in square planar complexes and the role of trans effect in governing the rate of these reactions.

CO.5- Predict the magnetic character of transition metal complexes and measure/calculate their magnetic moments by different methods

CO.6. Recognize the difference between paramagnetism, ferromagnetism, anti-ferromagtnetism and diamagnetism in complexes.

CO.7 Assign term symbols and determine the spectroscopic ground state.

CO.8 Predict the spectra of transition metal complexes using Orgel Energy level diagrams.

Paper-II ORGANIC CHEMISTRY

CO.1- Learn proton NMR spectroscopy and its applications to determine structure of simple organic molecules.

CO.2- Understand IR spectroscopy technique and its applications to determine structure of simple organic molecules.

CO.3- Learn UV-Visible spectroscopy and its application to identify common functional groups.

CO. 4- Learn assigning structures from their molecular formula using spectroscopic methods.

CO.5- Understand nature of organometallic compounds their methods of preparations and common reactions.

CO.6. Learn different organo-sulphur compounds their methods of preparation and common reactions.

Paper-III PHYSICAL CHEMISTRY

Students will be able to:

CO.1- Recognise the significance of quantum mechanics and quantization of energy.

CO.2- Derive Schrodinger wave equations for particle in a box and H-atom and apply the concept of quantization of energy to different orbitals and calculate the energy levels.

CO.3- Explain quantum numbers and derive radial wave functions and angular wave functions.

CO.4- Recognize different regions of electromagnetic radiation and explain how the absorption of energy by the molecules produces spectra which helps in structure determination and molecular identification.

CO.5- Calculate the energy levels of a diatomic molecule treated as a rigid rotor or a simple harmonic oscillator, explain their spectral intensity on the basis of selection rules and determine the bond length of molecules.

CO.6- Determine the qualitative relation of force constant and bond energies. Explain the isotope effect and get an idea of vibrational frequencies of different functional groups for molecular identification.

Paper-I PRACTICAL CHEMISTR Y

Students will be able to:

CO.1- Synthesize and recrystallize different types of inorganic complexes such as sodium trioxalatoferrate(III), Ni-DMG, copper tetra-ammine and cis-and trans-bis(oxalato)diaquachromate(III) ion.

CO.2- Synthesize and recrystallize different organic compounds as applications of different types of reactions such as Iodoform preparation, aromatic electrophilic substitution reaction of benzene to prepare p-nitroacetanilide and 2,4,6-tribromophenol, diazotization/coupling for preparing methyl orange and methyl red, reduction reaction for preparation of m-nitroaniline.

Semester-VI

Paper-I INORGANIC CHEMISTRY

Students will be able to:

CO.1- Understand and describe the limitations and importance of bonding theories (valence bond theory & Crystal Field Theory) and use them for predicting geometries and properties of coordination compounds.

CO.2- Calculate the CFSE and predict the experimental behaviour of transition metal complexes.

CO.3- Differentiate between kinetic and thermodynamic stability and recognize the factors affecting stability of complexes.

CO.4- Identify the substitution reaction mechanism involved in square planar complexes and the role of trans effect in governing the rate of these reactions.

CO.5- Predict the magnetic character of transition metal complexes and measure/calculate their magnetic moments by different methods

CO.6. Recognize the difference between paramagnetism, ferromagnetism, anti-ferromagtnetism and diamagnetism in complexes.

CO.7 Assign term symbols and determine the spectroscopic ground state.

CO.8 Predict the spectra of transition metal complexes using Orgel Energy level diagrams.

Paper-II ORGANIC CHEMISTRY

CO.1-Learn heterocyclic compounds such as pyrrole, furan, thiophene, pyridine, indole, quinoline, isoquinoline their methods of synthesis and reactions.

CO.2- Understand synthesis of polymers and their applications in various fields of daily life.

CO.3.- Learn about carbohydrates, their classification, structure, configuration and their reactions.

CO.4- Study structure of lactose, maltose, sucrose, starch and cellulose.

CO.5.- Learn amino acids their stereochemistry, methods of preparation, reactions and their importance in body.

CO.6. Learn proteins, their structure determination by end terminal analysis, levels of their structure, and structure of nucleic acids and DNA.

Paper-III PHYSICAL CHEMISTRY

Sem-VI Students will be able to:

CO.1- Use the concept of polarizability to explain pure rotational and pure vibrational Raman spectra of diatomic molecules.

CO.2- Recognize the basic rules of electronic spectroscopy and explain the concept of potential energy curves for bonding and anti-bonding molecular orbitals.

CO.3- Describe σ, π and n molecular orbitals and their energy levels with possible electronic transitions.

CO.4- Explain the three laws of crystallography, X-ray diffraction by crystals. Derive Bragg's equation and determine the crystal structure of NaCI, KCI and CsCI using Laue's method and powder method.

CO.5- Differentiate between thermal and photochemical processes. Apply Grothus-Drapper and Stark-Einstein laws of photochemistry to calculate quantum yield,

CO.6- Use Jablonski diagram to depict fluorescence and non- radiative processes (internal conversion, intersystem crossing).

CO.7- Identify photosensitized reactions- energy transfer processes. Explain and apply the concepts of Laser and Maser.

Paper-II PRACTICAL CHEMISTRY

Students will be able to:

CO.1- Apply column chromatography for separation of fluorescein and methylene blue and separation of leaf pigments from spinach leaves.

CO.2- Use conductometer for determining the strength of the given acids, solubility and solubility product of a given sparingly soluble electrolyte, study the saponification of ethyl acetate and determine the ionisation constant of a weak acid.

CO.3- Use pH- metre to determine the strength of the given acid solution, CO.4- Determine the molar refraction of methanol, ethanol and propanol.

CO.5- Study the distribution of benzoic acid between benzene and water, and ether and water.

Course Outcomes: English
SEMESTER -III

After completing this course the student will be able to:
CO-1: to learn the skills for reading and writing fiction and plays.

CO-2: to go with the field of screenplay and drama writing.

CO-3: to create a fictional short stories after going through fictional studies and prose.

CO-4: to learn the difference between real and reel world.

CO-5: to learn new communication skills with dialogues of the plays.

CO-6: to participate in theater programs and can also learn dialogue writing.

SEMESTER -IV

After completing this course the student will be able to:

CO-1: Learners will think critically, while they read anything in future.

CO-2: Learners will participate in essay writing and non-fiction writing competitions.

CO-3: Leaners will do official works easily and can work as an editor.

CO-4: Learners will elaborate any passage or sentence into a long work with the help of précis writing.

CO-5: Learner will communicate in more than one language with the help of translation portion.

Course Outcomes: Punjabi
ਬੀ.ਐਸ.ਸੀ. (ਨਾਨ-ਮੈਡੀਕਲ) ਭਾਗ ਪਹਿਲਾ ਸਮੈਸਟਰ ਪਹਿਲਾ ਦੀ ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ ਵਿਸ਼ੇ ਦੀ ਪੜ੍ਹਾਈ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੋਗਤਾ ਅਤੇ ਸਮਰਥਾ ਵਿਚ ਸਾਰਥਕ ਵਾਧਾ ਹੋਵੇਗਾ

1. ਸਾਹਿਤਕ ਰਚਨਾਵਾਂ ਦੇ ਮਾਧਿਅਮ ਨਾਲ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਦਾ ਵਿਕਾਸ ਹੁੰਦਾ ਹੈ।

2. ਭਾਸ਼ਾ ਦੀ ਸਿਧਾਂਤਕ ਜਾਣਕਾਰੀ ਨਾਲ ਵਿਦਿਆਰਥੀ ਦੀ ਭਾਸ਼ਾਈ ਸਮਰੱਥਾ ਵਿਚ ਵਾਧਾ ਹੁੰਦਾ ਹੈ
3. ਸਮਾਜਕ ਵਾਤਾਵਰਣ ਤੇ ਸਭਿਆਚਾਰਕ ਵਿਸ਼ਿਆਂ ਸਬੰਧੀ ਗਿਆਨ ਦੀ ਪ੍ਰਾਪਤੀ ਹੋਵੇਗੀ।
4. ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਆਲੋਚਨਾਤਮਕ ਤੇ ਸਿਰਜਣਾਤਮਕ ਸੋਚ/ਪਹੁੰਚ ਦਾ ਵਿਕਾਸ ਹੋਵੇਗਾ ਜਿਸ ਨਾਲ ਉਹ ਸਮਾਜ ਪ੍ਰਤੀ ਜਿੰਮੇਵਾਰ ਹੁੰਦੇ ਹਨ।
5. ਮਨੁੱਖੀ ਹੋਂਦ ਦੇ ਸੰਕਟਾਂ ਦੀ ਨਿਸ਼ਾਨਦੇਹੀ ਅਤੇ ਉਹਨਾਂ ਦਾ ਯੋਗ ਹੱਲ ਲੱਭਣ ਦੇ ਸਮਰੱਥ ਹੋਣਗੇ।
6. ਵਿਦਿਆਰਥੀ ਆਪਣੇ ਵਿਚਾਰਾਂ ਨੂੰ ਲਿਖਿਤ ਅਤੇ ਮੌਖਿਕ ਰੂਪ ਵਿਚ ਵਿਅਕਤ ਕਰਨ ਦਾ ਹੁਨਰ ਹਾਸਲ ਕਰਨਗੇ।
7. ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਵਿਆਕਰਨਕ ਮੁਹਾਰਤ ਨਾਲ ਕਿਸੇ ਵੀ ਹੋਰ ਭਾਸ਼ਾ ਨੂੰ ਆਸਾਨੀ ਨਾਲ ਗ੍ਰਹਿਣ/ਸਮਝਣ ਦੀ ਯੋਗਤਾ ਦਾ ਵਿਕਾਸ ਹੋ ਜਾਂਦਾ ਹੈ।

ਬੀ.ਐਸ.ਸੀ (ਨਾਨ-ਮੈਡੀਕਲ) ਭਾਗ ਪਹਿਲਾ ਸਮੈਸਟਰ ਦੂਜਾ ਦੀ ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ ਵਿਸ਼ੇ ਦੀ ਪੜ੍ਹਾਈ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੋਗਤਾ ਅਤੇ ਸਮਰਥਾ ਵਿਚ ਸਾਰਥਕ ਵਾਧਾ ਹੋਵੇਗਾ

1. ਵਿਆਕਰਨਕ ਪੱਧਰ ਉੱਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸ਼ੁੱਧ ਰੂਪ ਵਿਚ ਉਚਾਰਨ, ਲਿਖਣ ਅਤੇ ਪੜ੍ਹਨ ਦਾ ਹੁਨਰ ਪੈਦਾ ਹੁੰਦਾ ਹੈ।
2. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਸ਼ਬਦ ਨਿਰਮਾਣ ਪ੍ਰਬੰਧ ਦਾ ਗਿਆਨ ਹੁੰਦਾ ਹੈ।
3. ਵਾਰਤਕ ਨਾਲ ਸਬੰਧਿਤ ਵਿਸ਼ੇ ਪੜ੍ਹਨ ਕਰਕੇ ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਨਵੇਂ ਵਿਚਾਰ ਪੈਦਾ ਹੁੰਦੇ ਹਨ।
4. ਵੱਖ ਵੱਖ ਉਪਭਾਸ਼ਾਵਾਂ ਦੀ ਵੱਖਰਤਾ ਰਾਹੀਂ ਪੰਜਾਬ ਦੀ ਭਾਸ਼ਾਈ ਭਿੰਨਤਾ ਤੇ ਵਿਸ਼ਾਲਤਾ ਦਾ ਗਿਆਨ ਹੁੰਦਾ ਹੈ।
5. ਨਿਜੀ ਅਤੇ ਵਪਾਰਕ ਚਿੱਠੀ-ਪੱਤਰ ਰਾਹੀਂ ਸਰਲ ਪੇਸ਼ਕਾਰੀ ਅਤੇ ਸੰਚਾਰ ਯੋਗਤਾ ਦਾ ਵਿਕਾਸ ਹੁੰਦਾ ਹੈ।

ਬੀ.ਐਸ.ਸੀ. (ਨਾਨ-ਮੈਡੀਕਲ) ਭਾਗ ਦੂਜਾ ਸਮੈਸਟਰ ਤੀਜਾ ਦੀ ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ ਵਿਸ਼ੇ ਦੀ ਪੜ੍ਹਾਈ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੋਗਤਾ ਅਤੇ ਸਮਰਥਾ ਵਿਚ ਸਾਰਥਕ ਵਾਧਾ ਹੋਵੇਗਾ

1. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਗੌਰਵਮਈ ਇਤਿਹਾਸ ਦਾ ਗਿਆਨ ਹੁੰਦਾ ਹੈ।
2. ਸਾਹਿਤਕ ਰੂਪਾਕਾਰ ਨਾਵਲ ਰਾਹੀਂ ਜ਼ਿੰਦਗੀ ਦੀ ਵਿਸ਼ਾਲਤਾ ਨੂੰ ਸਮਝਣ ਦੀ ਯੋਗਤਾ ਦਾ ਵਿਕਾਸ ਹੁੰਦਾ ਹੈ।
3. ਵਾਕ ਬਣਤਰ ਦੇ ਗਿਆਨ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀ ਆਪਣੇ ਭਾਵਾਂ ਦਾ ਸੰਚਾਰ ਸੁਚੱਜੇ ਢੰਗ ਨਾਲ ਕਰ ਸਕਣਗੇ ਦੇ ਯੋਗ ਹੁੰਦੇ ਹਨ।

4. ਵਪਾਰਕ ਅਦਾਰਿਆਂ ਵਿਚ ਦਫ਼ਤਰੀ ਕੰਮਕਾਜ ਵਿਚ ਵਰਤੀ ਜਾਂਦੀ ਰਾਜ ਭਾਸ਼ਾ ਪੰਜਾਬੀ ਦੀ ਤਕਨੀਕੀ ਜਾਣਕਾਰੀ ਰਾਹੀਂ ਰੁਜ਼ਗਾਰ ਸੰਭਾਵਨਾਵਾਂ ਵ੍ਵਿਚ ਵਾਧਾ ਹੁੰਦਾ ਹੈ।
5. ਸਾਹਿਤਕਾਰ ਦੇ ਜੀਵਨ ਸਫ਼ਰ ਦਾ ਗਿਆਨ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਰਚਨਾਕਾਰ ਦੇ ਸਾਹਿਤਕ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਨੂੰ ਸਮਝਣ ਵ੍ਵਿਚ ਸਹਾਈ ਹੁੰਦਾ ਹੈ।

ਬੀ.ਐਸ.ਸੀ. (ਨਾਨ-ਮੈਡੀਕਲ) ਭਾਗ ਦੂਜਾ ਸਮੈਸਟਰ ਚੌਥਾ ਦੀ ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ ਵਿਸ਼ੇ ਦੀ ਪੜ੍ਹਾਈ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੋਗਤਾ ਅਤੇ ਸਮਰਥਾ ਵਿਚ ਸਾਰਥਕ ਵਾਧਾ ਹੋਵੇਗਾ

1. ਕਵਿਤਾ ਨੂੰ ਪੜ੍ਹਦਿਆਂ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਲਪਨਾ ਸ਼ਕਤੀ ਦਾ ਵਿਕਾਸ ਹੁੰਦਾ ਹੈ।
2. ਕਵਿਤਾ ਦੁਆਰਾ ਵਿਦਿਆਰਥੀ ਸ਼ਾਬਦਿਕ ਅਤੇ ਪ੍ਰਸੰਗਿਕ ਅਰਥਾਂ ਤੋਂ ਜਾਣੂੰ ਹੁੰਦੇ ਹਨ।
3. ਸਾਹਿਤਕ ਲਹਿਰਾਂ ਦਾ ਗਿਆਨ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰਲੇ ਸਾਹਿਤਕ ਸਿਰਜਣਾ ਦੇ ਹੁਨਰ ਨੂੰ ਨਿਖਾਰਦਾ ਹੈ।
4. ਅਖਬਾਰੀ ਰਿਪੋਰਟ ਤਿਆਰ ਕਰਨ ਦਾ ਹੁਨਰ ਸਿੱਖ ਕੇ ਵਿਦਿਆਰਥੀ ਪੱਤਰਕਾਰੀ/ਮੀਡੀਆ ਦੇ ਖੇਤਰ ਵਿਚ ਰੁਜਗਾਰ ਪ੍ਰਾਪਤ ਕਰਦੇ ਹਨ।
5. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਪਿਛੋਕੜ ਦਾ ਗਿਆਨ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਮਾਂ ਬੋਲੀ ਦੇ ਮਾਣਯੋਗ ਮੁੱਲਾਂ ਨਾਲ ਜੋੜਦਾ ਹੈ।
6. ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੀ ਵਿਕਾਸ ਪ੍ਰਕਿਰਿਆ ਬਾਰੇ ਪੜ੍ਹਦੇ ਹੋਏ ਵਿਦਿਆਰਥੀ ਭਾਸ਼ਾ ਅਤੇ ਲਿੱਪੀ ਦੇ ਆਪਸੀ ਸਬੰਧਾਂ ਨੂੰ ਸਮਝਦੇ ਹਨ।

ਬੀ.ਐਸ.ਸੀ. (ਨਾਨ-ਮੈਡੀਕਲ) ਭਾਗ ਤੀਜਾ ਸਮੈਸਟਰ ਪੰਜਵਾਂ ਦੀ ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ ਵਿਸ਼ੇ ਦੀ ਪੜ੍ਹਾਈ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੋਗਤਾ ਅਤੇ ਸਮਰਥਾ ਵਿਚ ਸਾਰਥਕ ਵਾਧਾ ਹੋਵੇਗਾ

1. ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਾਹਿਤ ਦੇ ਪ੍ਰਯੋਜਨ ਅਤੇ ਤੱਤਾਂ ਦੀ ਜਾਣਕਾਰੀ ਸਿਰਜਣਾਤਮਕ ਰੁਚੀਆਂ ਦਾ ਵਿਕਾਸ ਕਰਦੀ ਹੈ।
2. ਸਾਹਿਤਕ ਰੂਪਾਕਾਰ ਨਾਵਲ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਜ਼ਿੰਦਗੀ ਦੀ ਵਿਸ਼ਾਲਤਾ ਅਤੇ ਮਨੁੱਖੀ ਅਸਤਿਤਵ ਦੇ ਸਮਕਾਲੀ ਅਤੇ ਚਿਰਕਾਲੀ ਸੰਕਟਾਂ ਨੂੰ ਸਮਝਣ ਦੀ ਯੋਗਤਾ ਦਾ ਵਿਕਾਸ ਹੁੰਦਾ ਹੈ।
3. ਨਾਵਲ ਰੂਪਾਕਾਰ ਰਾਹੀਂ ਜੀਵਨ ਦੇ ਸਰੋਕਾਰਾਂ ਦੀ ਪੇਸ਼ਕਾਰੀ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਮਾਨਵੀ ਸੰਵੇਦਨਾ ਨੂੰ ਜਗਾਉਂਦੀ ਹੈ।

4. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਸਿਧਾਂਤਕ ਸੰਕਲਪਾਂ ਦੀ ਜਾਣਕਾਰੀ ਵਿਹਾਰਕ ਭਾਸ਼ਾ ਦੇ ਸੰਗਠਨ ਨੂੰ ਸਮਝਣ ਵਿਚ ਸਹਾਈ ਹੁੰਦੀ ਹੈ।
5. ਵਿਭਿੰਨ ਸਮਾਜਕ, ਸਭਿਆਚਰਕ ਤੇ ਵਾਤਾਵਰਣਿਕ ਵਿਸ਼ਿਆਂ ਦਾ ਗਿਆਨ ਮੁਕਾਬਲੇ ਦੀਆਂ ਪ੍ਰੀਖਿਆਵਾਂ ਵਿਚ ਸਹਾਈ ਹੁੰਦਾ ਹੈ।

ਬੀ.ਐਸ.ਸੀ (ਨਾਨ-ਮੈਡੀਕਲ) ਭਾਗ ਤੀਜਾ ਸਮੈਸਟਰ ਛੇਵਾਂ ਦੀ ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ ਵਿਸ਼ੇ ਦੀ ਪੜ੍ਹਾਈ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੋਗਤਾ ਅਤੇ ਸਮਰਥਾ ਵਿਚ ਸਾਰਥਕ ਵਾਧਾ ਹੋਵੇਗਾ

1. ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਦੀ ਸਿਖਲਾਈ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਖੋਜ-ਕਾਰਜ ਵਿਚ ਸਹਾਈ ਹੁੰਦੀ ਹੈ।
2. ਸਿਵਲ ਪ੍ਰੀਖਿਆਵਾਂ ਵਿਚ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਉਹਨਾਂ ਨੂੰ ਮਜਬੂਤ ਆਧਾਰ ਪ੍ਰਦਾਨ ਕਰਦਾ ਹੈ।
3. ਟੈਕਨਾਲੋਜੀ ਦੇ ਦੌਰ ਵਿਚ ਹੁੰਦੇ ਹੋਏ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਲੋਕਧਾਰਾਈ ਰੂਪਾਂਤਰਣ ਦਾ ਬੋਧ ਹੁੰਦਾ ਹੈ।
4. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬ ਦੀ ਲੋਕਧਾਰਾ/ਸਭਿਆਚਾਰ ਬਾਰੇ ਪ੍ਰਾਪਤ ਗਿਆਨ ਰਾਹੀਂ ਆਪਣੀਆਂ ਪਰੰਪਰਾਵਾਂ ਦਾ ਸਮਕਾਲ ਨਾਲ ਵਰ ਮੇਚ ਕੇ ਮੁਲਾਂਕਣ ਕਰਨ ਦੇ ਸਮਰੱਥ ਹੋ ਜਾਂਦੇ ਹਨ।
5. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਆਕਰਨਕ ਸੰਗਠਨ ਵਿਚ ਕਾਰਜਸ਼ੀਲ ਤਕਨੀਕੀ ਪੱਖਾਂ ਦੀ ਜਾਣਕਾਰੀ ਉਹਨਾਂ ਨੂੰ ਮਿਆਰੀ ਭਾਸ਼ਾ ਵਿਚ ਸਿਰਜਣਾ ਕਰਨ ਦੇ ਸਮਰੱਥ ਬਣਾਉਂਦੀ ਹੈ।