



Govt. College, Gharghoda, Dist. Raigarh (C. G.)

Email Id – pgncg2008@gmail.com

Website - <http://govtcollegegharghoda.in/>

PROGRAM AND COURSE OUTCOME

The program outcomes of the college are as follows:

B.A./B. Sc./B. Com.

➤ **Foundation Course –**

Hindi Language: To develop the national, cultural, and social spirit; unity and integrity in the students; to increase their level of understanding the Hindi Language and Grammar.

English Language: To enable the students in enhancing their reading, writing, and speaking skills of the language; to make students learn vocabulary, comprehension, and grammar so that they will be able to make use of English language in day-to-day life.

➤ **Environmental Studies and Human Resources:** To make students aware of the environmental issues and enlighten them about rules and laws regarding Human Rights.

B. A.

➤ **Hindi Literature:** To give a better understanding of various genres of Hindi and Chhattisgarhi Literature.

➤ **English Literature:** To provide learning of various genres of English, Indo-Anglian, and American Literature viz. poetry, prose, drama, and fiction. It incorporates a study of prominent writers and their works.

➤ **Political Science:** To develop an understanding of politics in India and the world. It gives a vast knowledge of different political theories, Indian government, democracy, fundamental rights and duties, election process, political parties, panchayati raj, constitution and the related topics. It also explains the political relations of our country with other nations of the world.

➤ **Geography:** To make students learn different aspects of Physical and Human Geography, Economic and Research Geography, and Geography of India.

➤ **Economics:** To explain the core economic terms, concepts and theories. It enhances the ability of students in learning the topics like money and finance, statistics, inflation, Indian economy, etc.

B.Com.

➤ **Commerce:** To provide knowledge about Industries, Banking, Insurance, Finance, Tax system, Accounting, Business Economics, Business Mathematics, Business Regulatory Framework, Business Statistics, etc.

B. Sc.

- **Botany:** To provide the ability to identify and classify the major groups of plants and compare their characteristics. To impart deep knowledge of Life Sciences and fundamental processes of plants.
- **Zoology:** To understand the fundamentals of animal science, the complex interactions among various living organisms, cell biology, genetics, etc.
- **Chemistry:** To make understand the chemical behaviour and physical properties of common substances and to describe the characteristics of solid, liquid and gases.
- **Physics:** To know about the basic laws of gravitational force, electromagnetic wave theory, interference, reflection, refraction, polarization etc.; to analyse and solve the numeric problems related to basic concept of physics.
- **Mathematics:** To make students learn different problems of Algebra, Trigonometry, Calculus, Geometry, and Discrete Mathematics.



The course outcomes of the college are as follows:

FACULTY OF ARTS

FOUNDATION COURSE – ENGLISH LANGUAGE

Program:

B. A. Part I, B. A. Part II, and B. A. Part III:

Program Outcome:

1. The course is designed to make a foundation of English Language for the development of communication skills in the students.
2. To have mastery of language for understanding the basic concepts of various subjects.
3. To generate among the students, the knowledge and awareness and modern outlook and total view of life.
4. To create general awareness about the cultural heritage of India in I year, Science and scientific approach in II year and the problems of Third World Countries in III year is the Program Outcome of English Language courses.

Course Outcome:

1. To read and write English Language comprehensively.
2. To learn the skill of constructing grammatically correct sentences.
3. To apply the basic grammatical rules in day-to-day conversations.
4. To become aware of the moral, social, cultural, national, and scientific values through the stories and chapters prescribed in the course.
5. To be able to write letters, paragraphs, essays, reports, precis, and expansion of ideas.

6. To enhance the vocabulary for linguistic aptitude and effective communication.

Learning Outcome:

1. Provides basic knowledge about Indian culture and tradition, ancient Indian science and scientists, and the problems of Third World Nations.
2. Improves reading ability, grammar, and vocabulary of students so that they can develop self-confidence.
3. Develops creative thinking and effective writing.

ENGLISH LITERATURE

Program:

B. A. Part I

Paper I: Literature in English (1550-1750)

Paper II: Literature in English (1750-1900)

B. A. Part II

Paper I: Modern English Literature

Paper II: Modern English Literature

B. A. Part III

Paper I: Indian Writings in English

Paper II: American Literature

Program Outcome:

1. To develop an ability to comprehend various literary genres and enhance the over-all view of life.
2. To demonstrate a critical aptitude and creative thinking to analyse the learning of English Literature.
3. To learn the basic skills of literary writing and analyses of poetry, prose, drama, and fiction.

Course Outcome:

1. To expose the students to a wide range of writings from British, American, and Indo-Anglican origin.
2. To make them familiar to the major writers (and their works) belonging to different ages of literature.
3. To let them understand the creative usage of language in Poetry, Drama, Fiction, and Prose to express the human experiences.
4. To make them learn various literary devices and figurative language used in literary texts.
5. To help them recognize not only the literary but the cultural and historical background of texts written in English.

Learning Outcome:

1. Provides an insight to understand the literary texts and analyse them in standard English.
2. Helps to evaluate the scholarly text, grasp the lesson told, and apply it in life.
3. Assists to develop the quality of thinking and imagination, thus giving the scope for creative writing.
4. Helps to learn effective communication by reading various language patterns, sentence structures, and dialogue forms.
5. Channelizes the students to select Literature as a subject for further studies.
6. Provides scope for becoming a better human-being by knowing social, cultural, emotional, psychological, and spiritual contexts of literature.

GEOGRAPHY

B. A. PART I

Paper I: Physical Geography

1. To understand the nature and scope of physical geography.
2. To learn about different type of Earth's Movement.
3. To learn about the Structural Components of Atmosphere.
4. To be able to classify climate according to "Koppen and Thornthwaite" classification.
5. To learn about the importance of Ocean.

Paper II: Human Geography

1. To learn about the relationship between man and Environment.
2. To learn about different kind of races of man kinds.
3. To understand the world population dynamics i.e., Growth, Density etc.
4. To know about different type of settlements.
5. To understand the Global warming, Climate Change, Deforestation, Desertification and Pollution.

B. A. PART II

Paper I: Economic and Research Geography

1. To become familiar with the main concepts of economic geography.
2. To understand the mineral resources, Power resources, resource conservation and principle crops.
3. To understand the agricultural region of the world (Derwent Whittersey), Theory of Von Thumen and Weber, major world industries.
4. To understand the world transportation, international trade blocks, LAFTA, EEC, ASEAN.
5. To understand the conservation of resources, policy making and sustainable developments.

Paper II: Geography of India

1. To understand the Physical structure of India, drainage system and climate origin.
2. To gain knowledge about Natural Resources present in India.
3. To understand about India's population, major crops and agricultural regions.
4. To know about industries localization, development and production.
5. To understand the regions of India, Kashmir valley, north east region, Nagpur plateau, Thar desert and Island of India.

B. A. PART III

Paper I: Resources and Environment

1. To become familiar with the nature and components of resources and environment.
2. To understand the distribution and utilization of resources like mineral resources, Power resources.
3. To understand the characteristics of population.
4. To understand the classification of environment.
5. To understand the emerging environmental issues.

Paper II: Geography of India

1. To understand the Physical structure of India, drainage system and climate origin and mechanism of monsoon.
2. To gain knowledge about India's natural resources.
3. To understand about India's Agriculture, industries, population, transport and foreign trade.
4. To know about Chhattisgarh physical features.
5. To know about Chhattisgarh agriculture, industries, population, tribes, transport and tourism.

ECONOMICS

B. A. PART I

Paper I: Micro Economics

1. Understand the Nature and Scope of Economics.
2. Understand the production concepts and Different Concepts of Cost.
3. Understand the Market Structure.
4. Understand the Factor Pricing.
5. Understand the Welfare Economics.

Paper II: Indian Economics

1. Learn about Pre and Post Independent Indian Economy.
2. Understand the Population and Human Development.
3. Understand the Agricultural Facts.
4. Learn about Industries.

5. Learn about the external sector and trends in Exporting and Importing.

B. A. PART II

Paper I: Macro Economics

1. Understand the National Income and Social Accounts.
2. Understand the function of Consumption.
3. Learn about Nature and Characteristics of Trade Cycle.
4. Understand the International Trade.
5. Learn about the function of IMF, WTO etc.

Paper II: Money, Banking and Public Finance

1. Understand the basic concepts of Money.
2. Understand the Commercial Banking.
3. Learn about the meaning and scope of Public Finance.
4. Understand the sources of public Revenue – Taxation.
5. Understand the Public Debt and Financial Administration.

B. A. PART III

Paper I: Development and Environmental Economics

1. Learn about the Economic Growth and Development.
2. Understand about population, problem and growth pattern of population along with various theories and model.
3. Learn about Harrod and Domar model, Neo Classic model, Joan Robinsons model etc.
4. Learn about the Environment and Ecology.
5. Learn about the concept of Intellectual Capital.

Paper II: Statistical Methods

1. Learn about statistical methods.
2. Learn the Central Tendency.
3. Understand Dispersion.
4. Understand and able to analyze coefficient of Correlation.
5. Understand the Index Number.

POLITICAL SCIENCE

Course Outcome:

B. A. PART I

Paper I: Political Theory

1. To Learn about fundamentals of political theory, Politics of specific human behaviour, Power, authority and influence, Traditional behaviouralism and Post-behaviouralism.
2. To learn about state and its essential elements, theories of the origin of states, Marxist theory and Organismic Theory.
3. To know about Sovereignty and Pluralistic criticism, Rights, Duties, Equality, and Liberty. Comprehensive study of Democracy, its merits and demerits, and challenges for its success.
4. To learn about various kinds of government: Unitary & Federal, Parliamentary and Presidential, Dictatorship; Organs of government: Legislature, Executive and Judiciary; Theory of Separation of Powers and Checks and Balances; Meaning and kinds of Constitution; and Theories of representation & Electoral process.
5. To learn about Public Welfare state, Party system, Pressure groups, and Social change with their meaning & characteristics; Theories of Feminism and Nationalism.

Paper II: Indian Government and Politics

1. To gain knowledge about Indian National Movement: First Independence Movement, Non-cooperation Movement, Civil Disobedience movement and Quit India Movement; Constitutional Development of India: Govt. of India Act of 1858, 1909, 1919 and 1935.
2. To learn about Constitution of India: its Characteristics, Preamble, Sources; Federal system, Fundamental rights and duties, Directive Principles of State Policy; and Constitution Amendment Process.
3. To learn about Union Executive: President, Vice President, Council of ministers and Prime minister; Union legislature: Parliament – Lok Sabha and Rajya Sabha, Parliamentary Procedure.
4. To learn about Union Judiciary: Supreme Court – its organization, jurisdiction, judicial review, & judicial activism; State Executive: Governor, Council of Ministers and Chief Minister.
5. To learn about State Legislature, Election Commission, Election reforms, National and Regional parties, and Major issues of Indian Politics like Caste, Religion, Language and Region; Panchayati Raj System.

Course Outcome:

B. A. PART II

Paper I: Western Political Thought

1. To learn about Plato's Ideal State: Justice, Education, Communism, Philosopher King; Aristotle's concept of State, Slavery, Citizenship, and Revolution.
2. To learn about Machiavelli: Religion and Morality, Duties and Conduct of King; Social Contract Theory of Hobbes, Locke, and Rousseau.
3. To learn about Bentham: Utilitarianism; Mill: Liberty and Representative Government; Political Thoughts of Green and Marx.
4. To know about features and criticism of Idealism, Individualism, Liberalism, Socialism and Fascism.

5. To know about Manu and Kautilya: Saptang Theory, King and Kingship, Rajyamandal; Gandhi: Concepts of Truth, Non-violence, Satyagrah and his Political thoughts; Political and Social thoughts of Ambedkar and Deen Dayal Upadhyay.

Paper II: Comparative Government and Politics

1. To learn about Evolution, Features, Legislature, Executive and Judiciary of British Constitution.
2. To learn about Features, Legislature, Executive, and Judiciary of U.S.A and theory of Separation of Powers and checks and balances.
3. To learn about Features, Legislature, Executive, and Judiciary system of Constitution of Switzerland; Direct Democracy.
4. To learn about Features, Legislature, Executive, and Judiciary of Constitution of China; Communist Party.
5. To learn about meaning and definition of Comparative Politics; Theory of David Easton; Structural-functional approach of Almond; Concept of Political Development, Political Socialization, & Political Culture.

Course Outcome:

B. A. PART III

Paper I: International Politics

1. To learn about nature, scope, and meaning of International Politics and approaches to the study: Realism, Idealism, New Realism.
2. To know about various theories of international politics: Bargaining theory, Balance of Power, Collective Security, Disarmament, Cold War, and Diplomacy.
3. To learn about Foreign Policy of India; and policy of Non-alignment.
4. To learn about India's relations with neighbouring countries like China, Pakistan, Nepal, Sri Lanka and its relations with Super Powers like USA, Russia, Britain and France.
5. To learn about some major issues of International Politics: Environmentalism, International Terrorism, Globalisation, Nuclear Disarmament and Human rights.

Paper II: Public Administration

1. To learn about meaning, scope, and nature of Public administrations; Public vs Private Administration, New Public Administration.
2. To know about principles of Organization: Hierarchy, Span of Control, Unity of Command, & Delegation; Chief Executive, Line and Staff Agencies, Public Cooperation, and Personnel Administration.
3. To learn about nature, issues and characteristics of Development Administration; Riggs Model; Good Governance & e-governance; Union Public Service Commission.
4. To learn about Financial Administration: Principles of Budget, Budget Procedure in India; Administrative reforms in India; Executive, legislative, judicial & public control on administration.
5. To learn about corruption in administration: Ombudsman, Lokpal and Lok Ayukta; Public Administration in the age of Globalisation & Liberalisation; Bureaucracy; and Public Relation.

FACULTY OF COMMERCE

Program:

B. Com. Part I, B. Com. Part II, and B. Com. Part III:

Program Outcome:

1. To develop business acumen, managerial skills and abilities, and cable of maintaining business accounts
2. Capability of the students to make decisions at personal & professional level will increase after completion of this course.
3. To gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, business communication, & computer.
4. To get the practical skills to work as an accountant, audit assistant, tax consultant, and computer operator as well as other financial supporting services.
5. To do the post-graduation in finance and commerce and take research in this area.

Course Outcome:

B. COM. PART I

Group I: Paper I Financial Accounting

1. Know the scope of Accounting and Standard Accounting
2. Be able to analyze the Final Accounts and Rectify Errors.
3. Understand the Depreciation, Provision and Reserves, Methods of Recording Depreciation, Standard Accounting, Provision and Reserve.
4. Understand the Special Accounting Areas.
5. Be able to maintain Partnership Accounts, Reconstitution of a Partnership Firm, and Admission of a Partners.

Group I: Paper II Business Communication

1. Understand the concept and significance of communication and become familiar with various theories of communication.
2. Understand the corporate communication, practices in business communication and group discussion.
3. Be able to stimulate the writing skills.
4. Be able to show progress in report writing and communication.
5. Evolve in effective listening, interview skill, modern form of communicating and informational communication.

Group II: Paper I Business Mathematics

1. Be able to solve Partial Derivation up to second order, Maxima and Minima.
2. Understand the matrices and determinants.
3. Understand the linear programming formation of L.L.P, transportation problem, ratio and proportion.

4. Be able to calculate Compound Interest and Annuities.
5. Be able to understand and calculate the average percentage commission, brokerage profit and loss.

Group II: Paper II Business Regulatory Framework

1. Learn the Law of Contract (1872).
2. Learn and understand the special contracts Indemnity, Guarantee, Bailment and Pledge agency.
3. Learn about the Sale of Goods Act (1930).
4. Learn about Negotiable Instrument Act (1881).
5. Gain knowledge on Consumer Protection Act 1986, Foreign Exchange Management Act 2000.

Course Outcome:

B.COM. PART II

Group I: Paper I Corporate Accounting

1. Be able to learn about Issue for Failure, Reissue of Share and Issues Redemption of Debenture.
2. Gain knowledge about the Final Accounts.
3. Be able to evaluate the Valuation of Goodwill and Shares.
4. Understand the Accounting for Amalgamation of Companies.
5. Be able to solve Consolidated Balance Sheet of holding companies with One Subsidiary only.

Group I: Paper II Company Law

1. Learn about Corporate Personalities.
2. Study about the Memorandum of Association.
3. Learn and Understand the Capital Management.
4. Be able to cognize about the Company Meetings.
5. Become familiar with the Majority Powers and Minority Rights.

Group II: Paper I Cost Accounting

1. Learn about the Nature and Scope of Cost Accounting, Method and Techniques.
2. Become familiar with the Accounting for Labor.
3. Learn about the Cost Ascertainment.
4. Learn about the Operating Costing, Process Costing, Inter Process Profit.
5. Become familiar with the Cost Records and Financial Accounts.

Group II: Paper II Principles of Business Management

1. Learn about the concept, nature significance of management.
2. Understand the planning of concepts, process and types, analysis and diagnosis.
3. Learn about organizing of concepts, nature, significance and organization structure.

4. Learn about motivating and leading people at work, also about various leadership theories.
5. Understand how to administer the managerial control and management of changes.

Group III: Paper I Business Statistics

1. Learn about the introduction of statistics, types of data analysis of university.
2. Know about the dispersion and their measures.
3. Learn about the Analysis of Bivariate Data.
4. Understand the Index Number, Analysis of time series and link relative methods.
5. Understand the forecasting and methods.

Group III: Paper II Fundamentals of Entrepreneurship

1. Learn about the entrepreneur, emergence of entrepreneurial class theories of Entrepreneurship.
2. Know about the promotion of a venture raising of funds and documentation required.
3. Gain information about the Entrepreneurial development program
4. Understand the Entrepreneurial behavior.
5. Learn about the role of Entrepreneur.

Course Outcome:

B. COM. PART III

Group I: Paper I Income Tax

1. Learn about basic concepts- Income, Agriculture income, casual income, assessment year.
2. Know about the head of income, salaries, income of house property.
3. Understand the profit and gains of business or profession, including provision relating to specific business.
4. Learn about computation of tax liability, aggregation of income.
5. Become familiar with the tax management, tax evasion, tax avoidance and tax planning.

Group I: Paper II Auditing

1. Understand the objects of auditing, type of audit, audit note.
2. Learn the internal check system.
3. Learn about the process of Auditing in the limited companies.
4. Learn about the investigation, audit of non-profit companies.
5. Understand the recent trends in auditing nature and significance of cost audit.

Group II: Paper I Indirect Tax

1. Become familiar with the central excise, act and excisable goods.
2. Understand the state excise, CENVAT study of state excise during calculation of tax.
3. Understand the role of customs in international trade.
4. Learn about the central sales tax Act 1956, Exemption of Subsequent sales.

5. Understand the state commercial tax (C.G) and collection of tax penalties and prosecution calculation of tax.

Group II: Paper II Management Accounting

1. Become familiar with the nature, scope and function of Management Accounting, Ratio Analysis, Limitation of Accounting Ratio.
2. Understand the fund flow and cash flow statement.
3. Know about the Absorption and marginal costing.
4. Learn about the budgeting for Profit Planning and Control and Control Ratio.
5. Understand about the standard costing and variance analysis and overheard variances.

Group III: Paper I Principles of Marketing

1. Learn about the nature and scope of marketing along with marketing environment.
2. Understand the consumer behavior and market segmentation.
3. Learn about the product of concept, planning and development, packaging role and functions.
4. Learn about the distribution's channels, physical distribution and inventory controls.
5. Become familiar with the promotion, methods of promotion, advertising media and personal selling.

Group III: Paper II International Marketing

1. Learn about the nature and scope of International Marketing.
2. Understand the identification and selection of foreign market.
3. Understand about the promotion of products or service abroad, mail and sale literature.
4. Know about the International distribution and logical decision selection and appointment of foreign sale agents.
5. Learn about the export policy and practices of India.

FACULTY OF SCIENCE

MATHEMATICS

Course Outcome:

B. SC. PART I

Paper I: Algebra and Trigonometry

1. Be able to understand the elementary operations on matrices, rank of matrices, the Eigen values and Eigen vectors of matrix.
2. Understand the application of matrices to system of linear (both homogeneous and non-homogeneous) equations and various theorem's.
3. Understand about Mappings, Equivalence relations and Partitions, along with various theorems.

4. Understand the Homomorphism and Isomorphism of groups, ring, integral domain and field.
5. Learn about the De-Moivre's theorem and its applications, direct and inverse circular, hyperbolic functions, logarithm of complex quantities, expansion of trigonometric functions (Gregory's series, summation Series).

Paper II: Calculus

1. Become familiar with the Basic Properties of Limits and Continuity, Differentiation and Fundamental Theorem in Differentiation and Rules.
2. Understand the curvature, concavity and convexity, tracing of curves in different coordinates
3. Understand the integration of transcendental functions, reduction formulae, definite integrals, area under plane curves, quadrature, lengths of curves, rectification, volumes and surfaces of solid of revolution.
4. Learn about the degree and order of differential equations.
5. Learn about the linear differential equations of second order.

Paper III: Vector Analysis and Geometry

1. Learn about the scalar and vector product.
2. Become familiar with the integration of vectors and various theorems.
3. Understand general equation of second degree.
4. Become familiar with cone, sphere and cylinder.
5. Learn about the reduction of second degree equations.

Course Outcome:

B. SC. PART II

Paper I: Advanced Calculus

1. Learn about (a) convergence of sequences and related theorem, (b) series and convergence of series of non-negative terms and alternating series.
2. Understand the continuity of functions of one variable, Differentiability.
3. Learn about the limit and continuity of functions of two variables.
4. Learn about the envelopes, evolutes, maxima, minima and saddle points of functions of two variables.
5. Become familiar with the beta and gamma functions.

Paper II: Differential Equations

1. Learn about the series solutions of differential equations.
2. Become familiar with the Laplace transformation – theorems, differentiation and integration.
3. Know the partial differential equations of the first order.
4. Understand the partial differential equations of second and higher orders.
5. Understand the Calculus of variations, problems with various types of boundaries, derivations and variables.

Paper III: Mechanics

1. Understand the analytical conditions of equilibrium & its types.
2. Understand the forces in three dimensions.
3. To understand simple harmonic motion, velocities and accelerations.
4. To understand Kepler's law of motion, velocities and acceleration.
5. Understand the motion in a resisting medium.

Course Outcome:

B. SC. PART III

Paper I: Analysis

1. Understand the series of arbitrary terms and double series, partial derivation, differentiability of function of two variables and Fourier series.
2. Understand the Riemann integral, improper integrals and their test of convergence, integral as a function of a parameter.
3. To understand complex numbers and their geometrical representation, continuity and differentiability of complex functions, analytic functions and the Mobius transformation.
4. To understand metric spaces, contraction principle, construction of real numbers from rational.
5. Understand the metric spaces, continuous functions, compactness and connectedness.

Paper II: Abstract Algebra

1. Understand the Group-Automorphisms and their computations, conjugacy relation, class equation of a finite group and abelianizing of a group, Sylow's theorems and structure theorem.
2. Understand the ring theory and modules and their uses.
3. To understand the vector spaces, subspaces and their properties.
4. To understand the linear transformations and their representation as matrices, rank nullity theorem, Dual and Bidual spaces, Adjacent, Eigenvalues and eigenvectors of a linear transformation.
5. Understand the Inner product spaces – Cauchy-Schwarz inequality.

Paper III: Discrete Mathematics

1. Understand the mathematical induction, principle of inclusion and exclusion, compatibility and formal languages.
2. Understand the relations and functions, graphs and planner graphs and trees.
3. To understand the finite state machines and their uses in daily life for processing of information through a machine and discrete numeric functions and generating functions.
4. To understand the recurrence relations and recursive algorithms and homogeneous solutions.
5. Understand the Boolean Algebras: lattices and algebraic structures, Boolean functions and expressions; the propositional calculus, design and implementation of digital networks, switching circuits.

PHYSICS

Course Outcome:

B. SC. PART I

Paper I: Mechanics, Oscillations and Properties of Matter

1. Understand the motion of planets and its related rules, & some fundamental force.
2. To know the rigid body, pendulum and oscillator in various cases.
3. Understand the oscillations in oscillator and its motions.
4. Understand the electric and magnetic fields, its basic theory and application.
5. Elasticity and viscosity with experiments.

Paper II: Electricity, Magnetism and Electromagnetic Theory

1. To know integrals of a function of more than one variable and its related theorem.
2. Understand the electricity, its fundamental formula and rules, Gauss's law, its application, capacitors, electrostatic field energy.
3. Understand the Dielectric constant, Polar and Non Polar dielectrics, currents and LR, CR, LCR circuits, AC circuits.
4. Study the magnetization current and magnetization vector M, Biot-Savart's law and Ampere's law.
5. Understand the electromagnetic induction.

Course Outcome:

B. SC. PART II

Paper I: Thermodynamics, Kinetic Theory and Statistical Physics

1. Understand the law of thermodynamics.
2. To know the thermodynamic function and using equations.
3. Maxwellian distribution of speeds in an ideal gas and behavior of real gas.
4. Understand the statistical basis of thermodynamics.
5. To know indistinguishability of particles and its consequences and partition function.

Paper II: Waves, Acoustics and Optics

1. Understand the waves in media and reflection, refraction and diffraction of sound.
2. Understand light path rules in optical system and lens and know optical instruments.
3. To know interference of light and its application.
4. Diffraction and its types.
5. Understand laser system and its applications.

Course Outcome:

B. SC. PART III

Paper I: Relativity, Quantum Mechanics, Atomic, Molecular and Nuclear Physics

1. Understand the special theory of relativity.
2. To know origin of the quantum theory and De Broglie's hypothesis for matter waves.
3. Understand quantum mechanics and its related derivation.
4. Understand the Atomic molecular physics theory.
5. Understand nuclear physics.

Paper II: Solid State Physics, Solid State Devices and Electronics

1. Understand the solid state physics and solid state devices.
2. To study the basic concept of electromagnetic physics.
3. To know the semi-conductor devices and its structure, working circuit diagram in electronic physics.
4. Understand the power supply, its working and amplifier.
5. Learn the basic introduction of computer organization and introduction of C Programming.

BOTANY

Course Outcome:

B. SC. PART I

Paper I: Bacteria, Viruses, Fungi, Lichens and Algae

1. Learn about a Virus, its character, and their types along with their economic importance.
2. Gather information regarding character of Bacteria and their economic importance.
3. Able to classify Fungi, they gain knowledge about their habit and habitat, and importance.
4. General characters, range of thallus organization, Gaidukov phenomenon, reproduction, life cycle patterns and economic importance.
5. General account, types, structure, nutrition, reproduction and economic importance.

Paper II: Bryophytes, Pteridophytes, Gymnosperms and Palaeobotany)

1. General characteristics, affinities, range of thallus organization, general classification and economic & ecological importance of Bryophyta.
2. General characteristics, affinities, economic importance of Pteridophyta.
3. Morphology and reproductive feature of Pteridophytes.
4. General characteristics, affinities, economic importance and classification, Morphology, anatomy and reproduction of Gymnosperm.

5. What is Geological time scale, types of fossils and fossilization, Rhynia, study of some fossil gymnosperms.

Course Outcome:

B. SC. PART II

Paper I: Plant Taxonomy, Economic Botany, Plant Anatomy and Embryology

1. Bentham and Hooker system of classification, Binomial Nomenclature, International Code of Nomenclature for Algae, Fungi, and plants (IUCN), Typification, numerical Taxonomy and chemotaxonomy.
2. Systematic position, distinguishing characters and economic importance of the following families, Ranunculaceae, Magnoliaceae, Brassicaceae, Rosaceae, Papaveraceae, Caryophyllaceae.
3. Economic Botany: Botanical name, family, part used and uses of the economically important plants, fiber & timber yielding plants, medicinal plants, beverages.
4. Plant Anatomy: Root and shoot apical meristems theories of root and shoot apex organization
5. Embryology: Flower as a reproductive organ, anther, microsporogenesis, types of ovules, reproduction.

Paper II: Ecology and Plant Physiology

1. Learn about scope of ecology, Population and community characteristics.
2. Concept of ecosystem, trophic levels, flow of energy in ecosystem, food chain and food web, concept of ecological pyramids, Biogeochemical cycles.
3. Plant water relations: diffusion, permeability, osmosis, imbibition, plasmolysis.
4. Photosynthesis: light reaction mechanism of ATP synthesis, C₃, C₄ CAM pathway of carbon reduction.
5. Plant growth hormones: Auxin, Gibberellin, Cytokinin, Ethylene and Abscisic acid.

Course Outcome:

B. SC. PART III

Paper I: Analytical Technology, Plant Pathology, Experimental Embryology, Elementary Biostatistics, Environmental Pollution and Conservation

1. Understand principle and applications of analytical instrumentation.
2. Understand the basics of plant tissue culture.
3. Understand plant pathology and general symptoms of fungal, bacterial and viral diseases.
4. Environmental pollution, green-house gases, Ozone depletion and conservation strategies.
5. Elementary biostatistics, Mean, Median, Mode, Standard deviation, and Standard error.

Paper II: Genetics, Molecular Biology, Biotechnology and Biochemistry

1. To learn about cell & cell organelles, organisation & morphology of chromosomes.
2. Structure and forms of DNA/RNA, genetic code and properties, regulation of gene expression.
3. Recombinant DNA, DNA Fingerprinting, PCR, gene cloning.
4. Structure of protein, carbohydrate and fat.
5. Enzymes: nomenclature & classification, components, and theories of enzyme action.

ZOOLOGY

Course Outcome:

B. SC. PART I

Paper I: Cell Biology and Non-Chordata

1. Understand the types of Cell – Prokaryotic and Eukaryotic and their Organization.
2. Understand Cell division, Immunity and their types, Immune System and elementary idea of Cancer cells.
3. Classification and Characterization of prototype of phylum Protozoa, Porifera and Coelenterata.
4. Classification and Characterization of prototype of phylum Platyhelminthes, Nematelminthes, Annelida and Arthropoda.
5. Classification and Characterization of prototype of phylum Mollusca and Echinodermata.

Paper II: Chordata and Embryology

1. Classification and Characterization of prototype of phylum Hemichordata, and Chordata.
2. Fishes, Amphibia, and Reptilia.
3. Birds, Mammals, Aquatic Mammals and their adaptations.
4. Fertilization, Gametogenesis, Cleavage, Parthenogenesis.
5. Embryonic induction, differentiation and regeneration.

Course Outcome:

B. SC. PART II

Paper I: Anatomy and Physiology

1. Integument and its derivatives, Alimentary canal and digestive glands in vertebrates.
2. Endoskeleton, Circulatory System, and Urinogenital System.
3. Nervous system, Structure and function of ear and eye.
4. Digestion, Physiology of heart, Blood Coagulation and Respiration.
5. Excretion, Physiology of muscle contraction and nerve impulse, Synaptic transmission.

Paper II: Vertebrate Endocrinology, Reproductive Biology Behaviour, Evolution and

Applied Zoology

1. Structure and function of Endocrine glands, Hormone receptor, Biosynthesis and secretion of thyroid, ovarian and testicular hormones.
2. Reproductive cycle in vertebrates, Hormonal regulation of gametogenesis.
3. Evidences and theories of organic evolution.
4. Concept of Ethology, Reproductive behavioural patterns.
5. Prawn culture, Sericulture, Apiculture, Pisciculture, Poultry keeping, and elements of Pest Control.

Course Outcome:

B. SC. PART III

Paper I: Ecology, Environmental Biology: Toxicology, Microbiology and Medical

Zoology

1. Aims and Scopes of Ecology, Major ecosystems of the world, and Ecological succession.
2. Environmental biology and conservation of natural resources.
3. Classification of Toxicants and basic concept of Toxicology, Heavy metal toxicity, Animal poisons and food poisoning
4. General and Applied Microbiology, Microbiology of domestic water, milk & milk products and industrial microbiology.
5. Medical Zoology: Pathogenic microorganisms, Life history & pathogenicity of pathogens with reference to man, Pathogenic protozoans, Pathogenic helminthes.

Paper II: Genetics, Cell Physiology, Biochemistry, Biotechnology and Bio techniques

1. Genetics: Sex determination and linkage, Gene interaction, Mutation, and Human genetics.
2. Cell Physiology: General idea about pH & buffer, Transport across membrane, Active transport in mitochondria & endoplasmic reticulum, Classification and action of enzymes.
3. Biochemistry: Amino acids & peptides, Carbohydrates & its metabolism, Lipid metabolism, Protein Catabolism.
4. Application of Biotechnology, Recombinant DNA & gene cloning.
5. Bio techniques and principles of pH meter, Colorimeter, Microscopy, Centrifuge, chromatography and electrophoresis.