

GOVT. NAVEEN COLLEGE TOKAPAL
PROGRAMME OUTCOME AND PROGRAMME SPECIFIC OUTCOME

DEPARTMENT OF BOTANY

Programme outcomes:

- The course highlighted to conserve and study the suitable development.
- Acquiring knowledge and develop the ability to work hard.
- Students are made aware of pollution problems and waste management and the importance of green environment.
- Student interact with the social activist in relation with maximum usefulness of bio-fertilizers
- Promotion of self study which enhance the ability to observe accurately and objectively.

Programme Specific Outcomes:

- To have knowledge about various plant groups from lower to higher groups.
- Important knowledge of science as basic objective of education.
- To make the student aware about bio diversity conservation and sustainable use of plants.
- Develop skill in practical work experiment equipment and laboratory use along with collection and interpretation of biological materials and data.
- A scientific attitude to make students create open minded and curiosity.

DEPARTMENT OF CHEMISTRY
PROGRAMME and PROGRAMME SPECIFIC OUTCOMES (POs & PSO) OF
UNDERGRADUATE COURSE IN CHEMISTRY

- After studying chemistry at graduate level, students will develop an understanding of key concepts, theoretical principles, and experimental findings.
- They will be able to correlate the theoretical and experimental findings that will enhance their understanding level.
- They can conduct experiments, analyze different data, and interpret the results.
- The experiments based on observation of results, enhance their observational power.
- They know the proper rules, regulations, and procedures for safe handling of chemicals.
- They understand the importance of safe handling of chemicals.
- They understand the role of chemistry in biological systems and in our daily life.
- They understand the basic principles of spectroscopic techniques such as UV-visible, I.R., Rotational, Raman, NMR, ¹³CNMR, and mass spectroscopy.
- They understand the importance of chemistry in industry, medicines, detergents, cosmetic products, etc.
- They understand that chemistry is core of science.
- They understand the role of different ions such as Mg²⁺, Ca²⁺, Na⁺, K⁺ ions etc. in our body.
- They understand the synthesis, mechanism, and applications of different compounds.
- They understand the tests and techniques of quantitative and qualitative analysis, and their applications in various industrial and medicinal fields.
- They understand the properties and applications of solids, liquids, gases, crystals, and nanomaterials.
- They understand the importance of chemistry in infectious diseases.
- These skills make them critical thinker, and efficient problem solver that are essential to be a potent chemist/scientist.
- They understand the importance of chemistry in society and try to be responsible persons of society.

Department of Commerce

PROGRAMME OUTCOME:

The students will be ready for employment in functional areas like accounting, taxation, banking, insurance, and corporate law. An attitude for working effectively and efficiently in a business environment. Learners will gain knowledge of various disciplines of commerce, business, accounting, economics and finance, auditing and marketing.

PROGRAMME SPECIFIC OUTCOME:

- The students can get the knowledge skills and attitudes during the end of the B.Com degree course.
- Students will prove themselves in different professional exams like C.A., C.S., CMA and PSC. As well as other courses.
- Students will be able to do their higher education and can make research in the field of finance and commerce.
- Students are able to play roles of businessmen, entrepreneur, managers, consultant, which will help learners to process knowledge and other soft confronted with critical decision making.

DEPARMENT OF ECONOMICS

PROGRAMME OUTCOME:

- After completion of B.A. program in Economics the students will understand the basic principles and key concepts of Economics.
- They will be able to develop economic way of thinking.
- They will be able to work efficiently in numerous fields of Economics, Statistics, and Banking.
- They develop effective oral communication for clearly expressing economic point of way.
- They secure different jobs related to Economics, Banking, and Statistics.

PROGRAMME SPECIFIC OUTCOME:

- An Economic student can pinpoint and understand critically the past and present economic conditions.
- He can predict the future course of changes through their knowledge of policies.
- His knowledge of mathematics, statistics, and economic principles can help him to compute and assess the real situation of economy.
- The students experience the knowledge of Markets and Financial Institutions, and discern the structure and functions of the banking.

Department of English

Programme Outcome and Programme Specific Outcome:

- Understand that those texts are culturally constructed in time, place and tradition.
- Understand those texts on the basis of careful close reading.
- Analyze instances of the variety of literary forms closely in terms of style, figurative language and convention.
- Participate in the critical and cultural discourses of English.

- Read, interpret and write about a diverse range of texts in English.
- Participate appropriately through multiple spoken and written forms.
- Understand those texts analytically and critically.
- Understand how those text inform culture.

DEPARTMENT OF HINDI

PROGRAMME OUTCOME:

Programme Name- B.A.

- हिन्दी व्याकरण के बुनियादी ज्ञान, संप्रेषण कौशल, सामाजिक संदेश एवं भाषायी प्राप्त करना।
- हिन्दी भाषा और साहित्य के उदभक विकास का सम्यक ज्ञान प्राप्त करना।
- हिन्दी साहित्य की विभिन्न विधाओं-कविता, कहानी उपन्यास नाटक-एकांकी, निबंध, व्यंग्य यात्रा आदि के प्रमुख रचनाकारों और उनकी रचनाओं के वैशिष्ट्य की ज्ञान प्राप्त करना।
- भाषा दसता के साथ साहित्य रचना की ओर उन्मुख होना तथा रोजगार प्राप्त करना।
- भाषा साहित्य के माध्यम से माननीय एवं मानवेत्तर संवेदना की विकास करना।

DEPARTMENT OF HISTORY

PROGRAMME OUTCOMES:

- After the completion of B.A., history scholars will be able to distinguish between primary and secondary sources and identify and evaluate evidence.
- They will be able to produce their own historical analysis of documents and develop the ability to think critically and historically when discussing the past.
- Students will offer multi-causal explanations of major historical developments based on a contextualized analysis of interrelated political, social, economic, cultural and intellectual processes.
- Students will present orally their research or a summary of another's research in an organized, coherent and compelling fashion.
- Students will demonstrate in discussion and written work their understanding of different peoples and cultures in past environment and of how those cultures changed over the centuries.
- The study of history will give them the ability to compare and contrast different processes, modes of thoughts and modes of expression from different historical time periods and in different geographical areas.
- Students will be able to write an original research paper that locates and synthesizes relevant primary and secondary sources and has a clear, coherent and plausible arguments, logical structure and proper references.

PROGRAMME SPECIFIC OUTCOMES:

- Students will be able to organize and express their thoughts clearly and coherently both in writing and orally.
- Students will have the ability to apply historical methods to evaluate critically the past and how historians and others have interpreted it.
- Students will be able to demonstrate broad knowledge of historical events and periods and their significance.
- Students will be able to recognize how different individuals, groups, organization, societies, cultures, countries and nations have affected history. History gave the students wisdom and foresight for the future.
- Students will be able to acquire basic historical research skills, including the effective use of libraries.

DEPARTMENT OF MATHEMATICS

PROGRAMME OUTCOME:

At the graduation in science faculty with mathematics students should have:

- Understand application mathematics in different fields.
- Been able to think creatively to propose novel ideas in explaining facts and figures or providing new solutions to the problems.
- Acquired the knowledge with facts and figures related to Mathematics, Physics and Chemistry.
- Been able to work in different Scientific Institution.
- Understand the basic concepts, fundamental principles and scientific theories related to various scientific phenomena and their relevance in the day-to-day life.
- Analyze given data and draw the conclusion.

PROGRAMME SPECIFIC OUTCOME:

Students of B.Sc. with major in mathematics should:

- Expounds upon the concept of Riemann integrability.
- Treat special types of Rings such as Euclidean domain and principal ideal domain.
- Be able to use the facility with mathematical and computational modeling of real decision making.
- Calculate definite integral using an appropriate numerical method.
- Understand the limit of functions; use to prove properties of continuous functions and derivative of functions.
- Use the methods to design experiments, analysis and interpretation of data and synthesize the information to provide valid conclusion.
- Demonstrate when a binary algebraic structure forms Group and Group properties.

DEPARTMENT OF PHYSICS

PROGRAMME OUTCOMES:

- Physics deals with a wide variety of systems, certain theories are used by all physicists.
- The theories are experimentally tested and found to be adequate approximation of nature.
- It uses mathematics to organize and formulate experimental results.
- Technologies based on mathematics, like computations have made computational physics an active area of research.

PROGRAMME SPECIFIC OUTCOMES:

- Classical mechanics describes the motion of objects, provided they are much larger than atoms and moving at much less than the speed of light.
- Solid state physics develop a basis for future learning and work experience.
- Nuclear physics develop familiarity with nuclear and particle physics, facilitating informed decisions as students pursue research projects, internships, careers, and graduate study.
- Quantum mechanics develop problem solving methods that will include mathematical as well as numerical computations and solutions.
- The course of Electronics will make the students to identify the electronic components and their working principles.

DEPARTMENT OF POLITICAL SCIENCE

PROGRAMME OUTCOMES AND PROGRAMME SPECIFIC OUTCOMES:

Students completing the requirements for a B.A. degree in Political Science will be able to:

- College students demonstrate competency with basic tools underlying modern social science research including competency in statistics and qualitative analysis.
- Students analyze political problems and frame policies
- Students discuss the major theories and concepts of political science and its subfields.
- They demonstrate critical thinking, including the ability to form an argument, detect fallacies, and marshal evidence, about key issues of public policy and politics.
- Students use internet and search local, state and national policy issues and present solution.
- Students will understand the purpose on issues of international and domestic politics.
- Identify key Political Philosophers and get inspired from.
- Distinguish between unitary and federal systems.
- Students deliver thoughtful and well articulated presentation of local issues and challenges.
- Understand theories of International Relations.
- Understand internal politics.

Course outcomes Department of botany B.Sc.-I

Subject- Science (Botany)

Paper –I BACTERIA, VIRUS, FUNGI, LICHENS, AND ALGAE

By studying this paper student learned:

1. Virus is the most primitive non-cellular, non-cytoplasmic organism which is considered to be the connecting link between living and non-living.
2. Fungi are chlorophyll-free thallophytic of which about 2000 species are used directly and indirectly as food.
3. Harmful bacteria can be destroyed by bacteriophages and the virus can be used for biological control in place of chemical toxic contaminants.

Paper –II

BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS, AND PALAEOBOTANY.

By studying this paper student learned:

1. Gymnosperms are vascular plant that produce pollen grains and seeds.
2. Paleobotany is the study of fossil plants A fossil plant is the remains or races of a once living plant.
3. Bryophytes are plants that grow in moist and shady places, which are called amphibians of the plant world.

B.Sc.II

Subject- Science (Botany)

Paper –I

PLANT TAXONOMY, ECONOMIC, BOTANY, PLANT ANATOMY, AND EMBRYOLOGY.

By studying this paper student learned

1. Plant taxonomy is the science that finds, identifies describes classifies, and names plants it is one of the main branches of taxonomy.
2. Economic botany is the study of the relationship between people (individuals and cullers) and plants. This link between botany and anthropology explores the ways human use plants for food, medicines and commerce.
3. Embryology is the branch of biology that studies the prenatal development of gametes fertilization and development of embryos and fetuses.

Paper –II

ECOLOGY AND PLANT PHYSIOLOGY.

By studying this paper student learned:

1. Ecology is a scientific approach to the study of the biosphere ecosystem are geared by the interrelationship between living organisms and the physical environments they inhabit (land, water, our).
2. Plant physiological understanding of crop plants plants provides the fundamental scientific base about various aspects of metabolism, growth and development.
3. plant physiology is immensely important for crop improvement or technology improvement in agriculture or horticulture.

B.Sc.III

Subject- Science (Botany)

Paper –I

**ANALYTICAL TECHNOLOGY, PLANT PATHOLOGY, EXPERIMENTAL EMBRYOLOGY,
ELEMENTARY, BIOSTATISTICS ENVIRONMENTAL POLLUTION AND CONSERVATION:**

By studying this paper student learned

1. Tissue culture produce many copies of the same plant with better physiological and biological outcome.
2. Environmental science gives us useful tools and ideas for understanding problems and new solutions to those problems.
3. An analytic technique is a method that is used to determine the identification or concentration of a chemical substance.

Paper –II

GENETICS, MOLECULAR BIOLOGY, BIOTECHNOLOGY AND BIOCHEMISTRY.

By studying this paper student learned

1. Molecular biology may have a relatively short history, but its impact on the human experience is already considerable.
Medicine modern agriculture forensic science, and many other endeavors rely on technology developed by molecular biologist.
2. Biotechnology has the potential to be the most transformation at technology in human history, it is currently revolutionizing healthcare agriculture and industrial manufacturing.
3. Biochemistry is proteins are one of the classes of bio-macromolecules, that make up constituents of living things. They are amongst the most actively studied molecule in biochemistry.

Department of Chemistry

B.Sc. I

Paper I-Inorganic Chemistry

After studying this paper students will learn:

- Bohr's theory, General idea of de-Broglie, Heisenber Uncertainty principle.
- Shrodinger wave equation, radial & angular wave functions, Hunds's rule
- Periodic properties: Ionization energy, Electron affinity, and Electronegativity.
- Chemical bonding-I: Ionic solids, Radius ratio and coordination number, Lattice defects, Born-Haber cycle.
- Valence & band theories and Fajans rule.
- Chemical bonding-II: Valence bond theory & its limitations, concept of hybridization, VSEPR.
- Shape of H₂O, NH₃, PCl₃, SF₆, etc.
- Molecular orbital diagrams.
- S-block elements: General concepts on group relations, comparative study.
- Derivatives of alkali & alkaline earth metals.
- P-block elements: General concepts on group relationships and gradation properties.
- Chemistry of Noble gases: Chemistry of Xenon, structure and bonding in xenon compounds.
- Theoretical principles in quantitative analysis: Basic principles.

Paper II-Organic Chemistry

After studying this paper students will learn:

- Hybridization, Electronic displacements, Dipole moment.
- Nucleophilicity & Basicity, Bond cleavage
- Generation, shape & relative stability of reaction intermediates.
- Introduction to stereochemistry: Chirality, Optical and geometrical isomerism.
- Nomenclature: Erythro & threos, R & S, E & Z., etc.
- Conformational analysis of alkanes: relative stability and energy diagrams.
- Chair, boat & twist boat conformation.
- Chemistry of aliphatic hydrocarbons: Carbon-carbon sigma bond, carbon-carbon pi bond
- Aromatic hydrocarbons: Huckel's rule, halogenations, nitration & sulphonation.

Paper III-Physical Chemistry

After studying this paper students will learn:

- Mathematical concepts for chemists: Logarithmic relations, linear graphs, differentiation & Integration.
- Gaseous state chemistry: Kinetic molecular model of a gas: postulates and kinetic gas equation, collision frequency.
- Joule Thompson effect, Liquification of gases.
- Liquid state chemistry: Viscosity and surface tension.
- Colloidal & surface chemistry: Classification, optical, kinetic & electrical properties of colloids.
- Solid state chemistry: General laws, symmetry elements.
- Bragg's law, rotating crystal and powder pattern method.
- Chemical kinetics: Rate of Rx. factors affecting, zero, first and second order reactions.
- Catalysis: Homogenous & Heterogeneous reactions, Catalysis & its types.

Lab course:

- Semi-micro qualitative analysis of mixtures.
- Acid base titrations.
- Redox titrations
- Iodo/Iodometric titrations.
- Purification of organic compounds
- Sublimation, distillation, determination of melting and boiling points.
- Qualitative analysis
- Physical chemistry: Surface tension measurement, Viscosity measurement.
- Chemical kinetics, colloids.

B.Sc. II

Paper 1-Inorganic Chemistry

After studying this paper students will learn:

- Chemistry of transition series elements: general characteristics, General comparative treatment of 4d and 5d elements with their 3d analogues.
- Oxidation & reduction: Redox potential, principles involved in extraction of elements
- Coordination compounds: Werner's theory, Isomerization.

- Chemistry of lanthanide elements
- Chemistry of actinides
- Acids and bases
- Non-aqueous solvents.

Paper II-Organic Chemistry

After studying this paper students will learn:

- Chemistry of organic halides, Alkyl halides, SN^1 , SN^2 , and SN^i .
- Alcohols: preparation, properties and reactions.
- Phenols: Structure & Bonding, Reimer-Tiemann reaction.
- Aldehydes and ketones: Preparation, properties and reactions.
- Oxidation and reduction, name reactions.
- Carboxylic acids: Preparation, structure and bonding.
- Effect of heat, Name reactions.
- Carboxylic acid derivatives: Acid chloride, ester, anhydride and amides.
- Organic compounds of nitrogen: Nitro compounds
- Amines: reaction and separation and basicity.

Paper III-Physical Chemistry

After studying this paper students will learn:

- Thermodynamics-I: Intensive and extensive properties, System and surroundings.
- Zeroth law, first law etc.
- Joule Thompson expansion, Inversion temperature
- Thermodynamics-II: Second law of thermodynamics, Concept of Entropy.
- Gibbs and Helmholtz free energy.
- Carnot cycle & Theorem.
- Chemical Equilibrium: K_p , K_c and K_c concept.
- Ionic equilibria: pH scale, Solubility and solubility product, Henderson equation.
- Phase equilibria: One component, Two component & Three component system.
- Nernst distribution law, Henry's law. Photochemistry: Laws of photochemistry, Jabloski diagram.

Lab course

- Qualitative semi-micro analysis
- Volumetric analysis
- Organic chemistry: detection of elements, preparation of organic compounds.
- Physical chemistry.
- Transition temperature
- Phase equilibria

B.Sc-III

Paper I-inorganic Chemistry

After studying this paper students will learn:

- Metal ligand bonding in transition metal complexes: Limitations of VBT and CFT.
- Thermodynamic and kinetic aspects of metal complexes.

- Magnetic properties of transition metal complexes.
- Types of magnetic behavior, d-d transitions
- Orgel diagrams.
- Organometallic chemistry
- Catalysis by Organometallic compounds.
- Bioinorganic chemistry: Nitrogen fixation, Hb and Mb
- Hard and soft acids and bases (HSAB)
- Inorganic polymers

Paper II-Organic Chemistry

After studying this paper students will learn:

- Classification, structure, and aromaticity of 5- and 6-membered heterocyclic compounds.
- Synthesis, reactions, and mechanism of substitution reactions of: Furan, Pyrrole, Thiophene, etc.
- Organometallic reagents: basic concepts.
- Organomagnesium, organozinc, and organolithium compounds.
- Biomolecules: Basic concepts.
- Carbohydrates: Monosaccharides, Disaccharides, and polysaccharides.
- DNA, RNA, and proteins.
- Synthetic polymers: Addition, free radical, condensation, and polymerization.
- Synthetic dyes: Chemistry and classification of dyes.
- Infra-Red Spectroscopy: Basic principle, IR absorption band, their position and intensity.
- Types of electronic transitions.
- Beer-Lambert's law, effect of conjugation.
- NMR Spectroscopy: basic principle, shielding & deshielding.
- ^{13}C -NMR principle and applications.
- Magnetic resonance imaging (MRI).

Paper-III

- Quantum mechanics-I, Black body radiations, Photoelectric effect, Compton effect.
- Operators: Hamiltonian, Laplacian, Angular momentum operator.
- Postulates of Quantum mechanics, Schrodinger wave equation.
- Quantum mechanics-II: LCAO approximation, Formation of H_2^+ ion.
- Comparison of M.O. and V.B models.
- Huckel theory: applications to ethane, propane, etc.
- Spectroscopy: Rotational spectra: basic concepts.
- Vibrational spectra basic concept.
- Raman spectra: fundamental concepts.
- Electrochemistry-I: Electrolytic conductance: Kohlrausch's law.
- Theories of strong electrolytes.
- Migration of ions.
- Electrochemical cell and Galvanic cell: single electrode potential
- Concentration cell and corrosion.

Lab Course

- Gravimetric analysis: Estimation of nickel(II) using Dimethylglyoxime (DMG).
- Estimation of copper as CuSCN .
- Estimation of Barium as BaSO_4 .
- Tetraamine copper (II) sulphate $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$

- Preparation of organic compounds: Acetylation of amines and phenols.
- Nitration of Acetanilide/nitrobenzene.
- Preparation of methyl orange.
- Analysis of carbohydrates: aldose and ketose, reducing and non-reducing sugars.
- Study of saponification of ethyl acetate.
- Determination of the strength of the of the given acid conductometrically using standard alkali solution.
- Absorption spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 MH_2SO_4) and determine maximum wavelength.

Department of Commerce

B.Com. Part I

Subject: Commerce

Financial Accounting

- On successful completion of this course the students are enabled with the knowledge in the practical applications of accounting, learn principles and concepts of Accountancy, basic concepts of Partnership Accounting, company accounts etc.

Business Mathematics

- To use and understand useful functions in business as well as the concepts of EMI.
- To learn the applications of matrices in business.
- To understand the students to solve LPP to maximize the profit and to minimize the cost.

Business Economics

- To provide students knowledge of Economic concepts and inculcate an analytical approach to the subject matter.
- To arouse the students interest by solving economic theories.
- To apply economic reasoning to solve business problems.

Business Regulatory Framework

- Provides a brief idea about the frame work of Indian business law.
- Familiarizes the students with case law studies related to business law.

Business Communication

- Corporate communication helps future managers and employees in performing managerial functions smoothly.
- Creates awareness imparts knowledge, shapes, attitudes and overall interaction between people.

Business Environment

- To make the students aware about the business and business environment.
- To develop entrepreneurial awareness among students.

B.Com. Part II

Subject: Commerce

Corporate Accounting

- This course aims to enlighten the students on the accounting procedures followed by the companies.
- Students' skills about accounting standard will be developed.
- To make aware the students about the valuation of shares.
- To impart knowledge about holding company, accounts, amalgamation, absorption and reconstruction.

Cost Accounting

- To understand Basic Cost Concepts, Elements of Cost and Cost Sheets.
- Providing knowledge about difference between financial accounting and cost accounting.
- Ascertainment of material and labor cost.

Company Law

- To impart students with the knowledge of fundamentals of Company Law and provisions of the companies and act of 2013.
- To apprise the students of new concepts involving in company law regime.

Business Statistics

- Students acquire new skills on the application of statistical tools and techniques in Business decision-making, Popular Quantitative Tools used in Business, Practical exposure on calculation of measures of average, correlation and regression.

Business Management

- To understand the concept and functions and importance of management and its application
- To make the students understand principles of functions and different management theories

Fundamentals of Entrepreneurship

- To motivate students to make their mind set for thinking entrepreneurship as career.
- Enable students to understand project formulation, Entrepreneurship Development awareness on various Entrepreneurship Development Programme.

B.Com. Part III

Subject: Commerce

Income Tax

- Students can understand Income Tax System properly and can get the knowledge of different tax provisions.
- To give knowledge about preparation of Audit report, submission of income tax return, advance tax and tax deducted at source, Tax collection authentication under the Income tax 1961.

Indirect Tax

- Enables learners to acquire the knowledge of Goods and Services.
- Explores the process of registration, Place and value of supply and computation of tax Liability.

Management Accounting

- Enables understanding of function, advantages, limitation of Management Accounting.
- Acquaints the students with basic techniques of analysis and interpretation of financial statements.

Auditing

- To develop an understanding of audit concepts.
- Enables understanding of the audit procedures and policies.
- Financial statements and execution of audit in companies.

Principles of Marketing

- Gain idea about marketing and its functions, consumers' behavior, product and its classification, pricing policies.

International Marketing

- Provides information regarding product planning and pricing decisions for International Marketing.

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International Marketing

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Department of Economics

B.A.-I

Subject: Economics

PAPER I-Micro Economics

Upon successful completion of this subject the student will be able to:-

- Study of scarce resources, money prices, and the supply and demand of goods and services.
- Microeconomics argues that human actors are rational and that they use scarce resources to accomplish purposeful ends.
- Elasticity of demand, marginal utility demand, elasticity of supply
- Values influence economic choices.
- Markets provides incentives and ration scarce resources.

PAPER-II Indian Economy

Upon successful completion of this subject the student will be able to:-

- These sections are, economic planning in India, The horizon of Indian Economy, Government schemes programs in India, /money and Banking and International Agencies and Trade.
- The economy of India is a middle income developing mixed economy.

- We can say India was rich country occupied by poor people and the status of India economy was poor, stagnant and backward.
- Role of industry and various policy decisions to induce industrial revolution in India.
- Importance of foreign sector and rationale behind export promotion schemes

B.A.-II

Subject: Economics

PAPER I-Macro Economics

Upon successful completion of this subject the student will be able to:-

- Economic growth, full employment (or low unemployment) and stable prices (or low inflation)
- Is the study of the whole economy
- Unemployment is a waste of resources and a demoralizing human experience.
- Inflation and unemployment are the "twin evils" of the macro economy
- Inflation is a rise of prices in general
- Government policies and actions can facilitate or impede economic growth.

PAPER II- Money, Banking and Public Finance

Upon successful completion of this subject the student will be able to:-

- Finance is a broad term that describes activities associated with banking, leverage or debt, credit, capital markets, money and investments.
- Basically, finance represents money management and the process of acquiring needed funds.
- Banks, their role in economy and central banking system.
- State and effect of its intervention in the economy.
- Sources of various revenues to state.
- Public debt and economics effects.

B.A.-III

Subject: Economics

PAPER: I: - Development and Environment Economics

Upon successful completion of this subject the student will be able to:-

- Provide global customer support.
- Migrate towards low cost operations.
- Reorganize operations to act globally.
- Profitable organic growth opportunities are tremendous.
- Various socio-economic issues affecting mankind.
- Environment, Growing importance of study of Environment Economy interplay.
- Population and Economy linkage, various perspective developments.

PAPER: II: - Statistical Method

Upon successful completion of this subject the student will be able to:-

- Mean, standard deviation, regression. Hypothesis, testing, and sample size determination.

- The topics include descriptive statistics and linear regression, probability theory, random variables and probability distribution, sampling distributions, estimation, confidence intervals, hypothesis testing.
- Statistics, data collection.
- Easement of various representative values.
- Measurement of representative values.
- Construction of index numbers and measurement.

COURSE OUTCOMES

B.A.-I

Subject: Economics

PAPER I-Micro Economics

Upon successful completion of this subject the student will be able to:-

- Study of scarce resources, money prices, and the supply and demand of goods and services.
- Microeconomics argues that human actors are rational and that they use scarce resources to accomplish purposeful ends.
- Elasticity of demand, marginal utility demand, elasticity of supply
- Values influence economic choices.
- Markets provides incentives and ration scarce resources.

PAPER-II Indian Economy

Upon successful completion of this subject the student will be able to:-

- These sections are, economic planning in India, The horizon of Indian Economy, Government schemes programs in India, /money and Banking and International Agencies and Trade.
- The economy of India is a middle income developing mixed economy.
- We can say India was rich country occupied by poor people and the status of India economy was poor, stagnant and background.
- Role of Industry and various policy decisions to induce industrial revolution in India.
- Importance of foreign sector and rationale behind export promotion schemes

B.A.-II

Subject: Economics

PAPER I-Macro Economics

Upon successful completion of this subject the student will be able to:-

- Economic growth, full employment (or low unemployment) and stable prices (or low inflation)
- Is the study of the whole economy
- Unemployment is a waste of resources and a demoralizing human experience.
- Inflation and unemployment are the "twin evils" of the macro economy
- Inflation is a rise of prices in general

- Government policies and actions can facilitate or impede economic growth.

PAPER II- Money, Banking and Public Finance

Upon successful completion of this subject the student will be able to:-

- Finance is a broad term that describes activities associated with banking, leverage or debt, credit, capital markets, money and investments.
- Basically, finance represents money management and the process of acquiring needed funds.
- Banks, their role in economy and central banking system.
- State and effect of its intervention in the economy.
- Sources of various revenues to state.
- Public debt and economics effects.

B.A.-III

Subject: Economics

PAPER: I - Development and Environment Economics

Upon successful completion of this subject the student will be able to:-

- Provide global customer support.
- Migrate towards low cost operations.
- Reorganize operations to act globally.
- Profitable organic growth opportunities are tremendous.
- Various socio-economic issues affecting mankind.
- Environment, Growing importance of study of Environment Economy interplay.
- Population and Economy linkage, various perspective developments.

PAPER: II - Statistical Method

Upon successful completion of this subject the student will be able to:-

- Mean, standard deviation, regression. Hypothesis, testing, and sample size determination.
- The topics include descriptive statistics and linear regression, probability theory, random variables and probability distribution, sampling distributions, estimation, confidence intervals, hypothesis testing.
- Statistics, data collection.
- Easement of various representative values.
- Measurement of representative values.
- Construction of index numbers and measurement.

Department of English

B.Sc. -I, B.Com-I, B.A.-I

FOUNDATION COURSE-ENGLISH LANGUAGE:

- To enhance language through a task-based & learner-centric syllabus
- To familiarize with various aspects of our new state of Telengana.
- To carry out LSRW skills.
- To channelize energy through soft skills and Value Orientation.

- To help them to learn good English to prosper in professional and personal lives.
- To make them proficient in English for global competency.

B.Sc. -II, B.Com-II, B.A.-II

FOUNDATION COURSE-ENGLISH LANGUAGE:

- To learn the use rather than usage of English.
- To develop their critical thinking capabilities focused through the course as an important need.
- To enhance practice in objective and subjective writing.
- To make them proficient in English for global competency.

B.Sc. -III, B.Com-III, B.A.-III

FOUNDATION COURSE-ENGLISH LANGUAGE:

- To expose to a range of contexts where the language is used to meet a variety of real life communication needs.
- To equip with the practical, emotional, intellectual and aspects of language by integrating knowledge and skills.
- To focus on readability, teach-ability and testability- to think beyond the text. The students can successfully pass the semester 3 exam at the undergraduate level by the Osmania University.
- To make them aware of British and American Vocabulary.

B.A.-II

ENGLISH LITERATURE

PAPER-I:- W.B. YEATS- A Prayer For My Daughter

- To recognize poetry from a variety of cultures, languages and historic periods.
- To understand and appreciate poetry as a literary art form.
- To help the students to improve their understanding of the world the poets lived in.
- To recognize the rhythms, metrics and other musical aspects of poetry.
- To kindle their critical thinking skills.
- To facilitate their writing skills.

PAPER-II:- DRAMA-John Galsworthy- Strife

- Interpret literary texts in English by nurturing and utilizing their ability to understand drama in a skilled, knowledgeable, and ethical manner.
- Conceptualize various types of drama viz. Tragedy, Comedy, Farce, Melodrama, Historical Plays through the prescribed texts and analyze the effect they create in the audience or readers.
- Gain knowledge in the development of English drama from 16th Century to 21st century viz. Shakespearean drama, Sentimental Comedy, Romantic Comedy, Shavian plays and One-act plays.
- Develop reading, writing and analytical skills and communicate their ideas critically, creatively, and persuasively through the medium of language in the current information-intensive society.
- Conceptualize the Genre of Novel and its types viz. Allegorical, Gothic, Historical, Epistolary, Picaresque, and Psychological.

B.A.-III

ENGLISH LITERATURE

PAPER-I:- Indian Writing In English

- Broadens the origin of English education during British Empire in India.
- Focuses on the role of English during freedom struggle.
- Analyses the cause for the decline of the British colonies.
- Emphasizes on the emergence and importance of Dalit Literature in India.
- Highlights the glory of Indian writings in English.
- Inculcate the essence of the Hindi writings/Indian Literature in English.

PAPER-II:- American Literature

- Instills the background of civil war and Transcendentalism.
- Emphasizes on the meaning and the significance of American Dream, then and now.
- Aids to comprehend the effects of racism.
- Extends an opportunity to study a brief history American Literature- Poetry, Drama and Fiction.
- Paves way to know the life, culture language and society through literature.
- Kindles to compare American writings with Indian writings with English.
- Inculcates interests among youth to study abroad, the need of the hour.

B.A.-II ENGLISH LITERATURE

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- Inculcates interests among youth to study abroad, the need of the hour.

Department of History

B.A.-I

SUBJECT: HISTORY

Paper: I: - Indian History

Upon successful completion of this subject the student will be able to:-

- Evaluate the features of Buddhism and Jainism.
- The Maurya Empire, Chandragupta Maurya, Maurya administration, Ashok and Ashoka's Dhamma. Mauryan society, Fall of Mauryan Empire, Greek Invasion and its Impact Indica..
- Shunga, Kushan, Satvahans, Society and Culture, Art, Architecture coinage.
- Sangam Age, Sangam Literature, Society, Culture and Foreign trade in.
- Gupta Art Architecture, Religion Literature and development of science and technology.

Paper: II: - World History

Upon successful completion of this subject the student will be able to:-

- Describe the Geographical discoveries and the Renaissance Movement in Europe.
- Realize the cause and results of French Revolution and the achievements of Napoleon Bonaparte.
- Visualize the importance of revolt of 1830 and 1848 in France and efforts of Bismarck for the unification of Germany.
- Discuss the causes for the American was of Independence.
- Realize the cause and results of French Revolution and the achievements of Napoleon Bonaparte.

B.A.-I I

SUBJECT: HISTORY

Paper: I: - Indian History

Upon successful completion of this subject the student will be able to:-

- Explain the Administration and art and architecture and Mughals.
- Early Turks, Khattris and Tughlaas, Invasion of Timus
- Analyze the rise of the Marathas and the contribution of Shivas.
- Recognize the socio-economic and religious conditions under Vijayanagar Empire.

Paper: II: - World History

Upon successful completion of this subject the student will be able to:-

- Learn the Russo-Japanese war of 1905..
- Analyze the arms and functions of UNO.
- Evaluate the cause of the cold war.
- Examine the Nazism and fascism in German and Italy.
- Understand the causes and results of Second World War and the establishment of UNO.

B.A.-III

SUBJECT: HISTORY

Paper: I: - Indian History

Upon successful completion of this subject the student will be able to:-

- Discuss the advent Europeans and their administration.
- Understand about the socio-religious reform movement in 19th Century.
- State the role of moderates and extremists in the freedom movement.

Paper: II: - History of National Movement

Upon successful completion of this subject the student will be able to:-

- Circumstances leading to First war of Independence, Geographical area of great upsurge, on 1857 and Impact on British Policies.
- Idea of Swadeshi, Swadeshi Movement and congress split at Surat and British response to the Swadeshi Movement.

Course Outcome

B.A.-I

SUBJECT: POLITICAL SCIENCE

PAPER-I: - POLITICAL THEORY

- To understand the various traditional and modern theories of political science.
- To understand the concept of Development and various views and Perspective relating to it. i.e. Liberal, Marxist, Sustainable Development.
- To understand the nature, scope and significance of political theory.
- Explaining the concept of Democracy relating to theory.
- To evaluate the theories of origin of the state.

PAPER-II: - INDIAN GOVERNMENT AND POLITICS

- Examining the Fundamental Rights and Duties of Indian Citizens with a study of the significance and status of Directive Principles.
- Evaluating the Electoral Process in India with focus on the Election Commission: Composition, Functions and Role.
- To understand the philosophy of Indian constitutions.
- Critically analyzing the important Institutions of the Indian Union: the Executive: President; Prime Minister, Council of Ministers; Governor, Chief Minister and Council of Ministers; The legislature: Rajya Sabha, Lok Sabha, Speaker, Committee system, State Legislature, The Judiciary: Supreme Court and the High Court: composition and functions- Judicial Activism.

Course Outcome

B.A.-II

SUBJECT: POLITICAL SCIENCE

PAPER-I: - POLITICAL THOUGHTS

- The paper shall introduce the most prominent Indian Political Thinkers like Manu, Kautilya.
- To help the students to develop and elaborate understanding of Marxian thoughts.
- To introduce the students to the political tradition, specifically to the ideas of Plato and Aristotle.
- It shall also explain the ideas of Mahatma Gandhi, B.R. Ambedkar and Deen Dayal Upadhyay.
- To explain the ideas of medieval and early modern political thinkers like Machiavelli. To familiarize the students with the exponents of the Social Contract Theory- Hobbes, Locke and Rousseau.

PAPER-II: - COMPARATIVE GOVERNMENT AND POLITICS

- Critically analyzing the features of a liberal democratic and socialist political system with focus on UK, Switzerland and the People's Republic of China.
- Discussing the features of a federal system with special reference to USA.
- Conducting and intensive comparative study of the Executive, Legislature, the Judiciary (UK, USA, Switzerland and China.)
- Investigating the meaning definition of Comparative Politics.
- Tracing the evolution, concept of Political Development, Political Socialization and Political Culture.

Course Outcome

B.A.-III

SUBJECT: POLITICAL SCIENCE

PAPER-I: - INTERNATIONAL POLITICAL AND FOREIGN POLICY OF INDIA

- The students will get an overview about the nature, evolution and scope of politics.
- Examining India Foreign Policy: Basic Principles, Evolution and Bilateral Relations. Analyzing the Foreign Policy of USA, China, Russia and Britain.
- Examining the issues of Underdevelopment, Terrorism, Regionalism and Integration.
- Studying the role of Diplomacy, Propaganda and Military capabilities in the making of foreign policy.
- Explaining certain basic concepts like Globalization in contemporary world order.

PAPER-II:- PUBLIC ADMINISTRATION

- Explaining the nature, scope and evolution of Public Administration; Private and Public Administration. Tracing the challenges in the discipline of Public Administration like New Public Administration, Comparative Public Administration.
- The students will also learn structure of organization and their intricacies.
- To introduce the concept of development administration and to the contributions of Fred W. Riggs.
- Examining the Institutions of Financial Administration in India.
- To explain the importance of citizens and administration and introduce institutions for the redressal of public grievances- Lokpal, Lokayukta, theories of bureaucracy etc.

Department of Sociology

SUBJECT: SOCIOLOGY

B.A.-I

PAPER-I

- Students get meaning and importance of sociology.
- Students know basic element of society.
- Students know about status and role.
- Better understanding of family marriage and kinship.
- Students know relation between man and society.
- Students know about social control
- Students learn social values and social norms.

PAPER: II

(A) Students well known about-

- Importance of Varna system
- Doctrine of Karma
- Dharm and Purusharth.
- Students know basic element of social structure.
- Students know differences about village and city.
- Students better known about tribes, Dalit caste and minorities.
- Students better understanding of caste systems functions and disfunctions.
- Students know about changing dimensions of joint family in India.
- Dowry problems causes and effect.
- Causes of Domestic violence and prevention by the Governmental Acts.
- Concept of Live-in-Relationship and its Evils
- Youth unrest causes and preventions.
- Basic reasons of corruption and ways of its preventions.

SUBJECT: SOCIOLOGY

B.A.-III

PAPER-I

- Main difference about tribes and caste.
- Basic characteristics of the tribe.
- Students know about different types of tribes.
- Students well known about shifting cultivates its importance in tribal lives.

- Life ways of hunter tribes.
- Students known basics cultural components and its importance in tribal life.
- Basic reasons of tribal movement and its effects in society.

PAPER: II

- Meaning and significance of social research.
- Importance of hypothesis.
- Observations and its types, significance in research.
- Many types of data collections, use and its importance.

B.A.-II

SUBJECT: SOCIOLOGY

PAPER-I

- Importance and dysfunctions of varn vayvastha
- **Types and Importance of Karm.**
- **Basic differences about village and city.**
- **Basic knowledge of Tribes, Dalits and womens problems.**
- **Basic Knowledge of Casteism.**
- **Basic knowledge of communalism.**

PAPER-II

- Concept and causes of rime
- Real causes of suicide
- Students known about causes and preventions of white color crime.
- Meaning and causes of terrorism.
- Purpose of punishment and its necessity.
- Why we needed parole and probation.
- Basic need of police and court society.

SUBJECT- ZOOLOGY
CLASS- B.Sc.-I

COURSE	OUTCOME
Non-chordata	1. Student will have learning about the basic taxonomy and systematics and classification of protozoa, porifera, cnidaria, pletyhelminthes, annelid, arthropoda, groups. 2. Students are able to understand the fundamental principles of systematics in which the animal are how to classify according to their characters. 3. Explain the diversity of lower invertebrates.
Pseudocoelomates	Pseudocoelomates parasites for their life cycles epidemiology pathology diagnosis symptoms and treatment they will also have knowledge about the basic of parasitology such as origin and evolution of parasitism, role of vectors.
Cell-Biology	Students will understand the structures positions and functions of plasma membrane and

	all cellular organelles in details.
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**SUBJECT- ZOOLOGY
CLASS- B.Sc.-II**

COURSE	OUTCOME
Comparative Anatomy of Vertebrates.	Students will have understood the structures of different systems such as integumentary skeletal digestive respiratory circulatory urinogenital nervous and sensory organs in comparative way among the vertebrate.
Endocrinology	1.This course will provide students with a deep knowledge in endocrinology 2.This paper gives an idea about the glands which works inside the body and secretes a chemical called hormone. 3.How it is classified how it works and the regulation of these hormones are discussed here.
Behavior	The behavioral patterns in animals.
Evolution	Different evidence and theories of organic evolution.
Applied Zoology	Economically important animal culture practices.

**SUBJECT- ZOOLOGY
CLASS- B.Sc.-III**

COURSE	OUTCOME
Ecosystem	Students will grasp the concept of interdependence and interaction of physical, chemical, and biological factor in environment and will lead to better understanding.
Biochemistry	1.Student will know the metabolism of carbohydrates , lipids and proteins in details 2.They will also learn about oxidative phosphorylation and redox reactions.
Ecology, Environmental Biology, Toxicology, Micro Biology and Medical zoology	1.know about the major ecosystems of world characteristics of population, type of population and their regulation conservation of natural resources. 2.Different type of chemical and biological toxicants their effects and prevention. 3.Importance of micro organism. 4.Study of pathogenic animals diseases and their symptoms and their preventions.

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DEPARTMENT OF ZOOLOGY

PROGRAMME OUTCOME:

- Students have option to go for higher studies M.Sc. Integrated ms. Ph.D and then do research work for the welfare of mankind.
- Zoology helps to understand the various biological cycles of environment.
- Study of zoology gives the information of hospital and paramedical field.
- Develop positive attitude towards sustainable development.

PROGRAMME SPECIFIC OUTCOME:

- There are different scopes in different areas like sericulture department as demonstrator care taker of the farm trainer for others etc.
- In the department of fisheries as extension officer, care taker Induced breeders' managements marketing.
- Develop skill in practical work experiment equipment and laboratory.

Department of Hindi

B.A.I

SUBJECT:- HINDI LITERATURE (हिन्दी साहित्य)

PAPER-I

- मध्यकाल में भक्तिकालीन साहित्य की विभिन्न संतकवियों का परिचयात्माज्ञान प्राप्त करना।
- भक्तिकालीन साहित्य के उपजीव्य एवं जीवन मूल्यों का ज्ञान।
- संतो के काव्य एवं जीवन दर्शन के माध्यम से आत्मिक शांति प्राप्त करना
- मध्यकालीन (भक्तिकालीन) साहित्य की विशेषताओं का ज्ञान प्राप्त करना।

PAPER-II

- हिन्दी गद्य साहित्य के विकास क्रम का ज्ञान प्राप्त करना
- हिन्दी के उपन्यास विधा के विकास का ज्ञान प्राप्त करना तथा प्रमुख उपन्यासकारों का ज्ञान प्राप्त करना।
- हिन्दी कहानी के इतिहास एवं विकास क्रम का ज्ञान प्राप्त करना
- नई कहानी आंदोलन तथा उसके प्रमुख कहानीकारों का ज्ञान

- नई कहानी की विशेषताओं का ज्ञान

COURSE OUT COME

B.A.II

SUBJECT:- HINDI LITERATURE (हिन्दी साहित्य)

PAPER-I

- आधुनिक काल की विभिन्न काव्यधाराओं एवं उसके कवियों का ज्ञान प्राप्त करना।
- राष्ट्रीय काव्यधारा, छायावाद, प्रगतिवाद, प्रयोगवाद, नई कविता की प्रवृत्तियों का ज्ञान प्राप्त करना।
- कविता और देशसमाज के परस्पर अंतः संबंध का ज्ञान प्राप्त करना।

PAPER-II

- हिन्दी निबंध नाटक एकांकी तथा अन्य गद्य विधाओं के उद्भव विकास को समझना
- हिन्दी कथा साहित्येतर अन्य विधाओं के प्रमुख रचनाकारों की रचनाओं और प्रवृत्तियों ज्ञान प्राप्त करना।
- गद्य रचनाओं के माध्यम से मानवीय संवेदना का विकास करना।

B.A.I.

SUBJECT- FC (HINDI LANGUAGE)

1. ईदगाह कहानी के माध्यम से मानवीय संवेदना की विकास तथा पारिभाषिक शब्दावली, पल्लवन, पत्राचार एवं हिन्दी पदनाम की ज्ञान
2. हिन्दी के विभिन्न प्रकार के शब्दों का ज्ञान तथा भाषा कौशल का विकास तथा देश प्रेम का विकास
3. देवनागरी लिपि की इतिहास एवं विशेषता हिन्दी में संक्षिप्तीकर एवं प्यंग्य विधा का ज्ञान
4. कम्प्यूटर की वर्तमान जीवन एवं ज्ञान एवं उपयोगता तथा हिन्दी में प्रयोग। पत्र विद्या के माध्यम से देशप्रेम
5. हिन्दी भाषा के मानक कप की ज्ञान एवं प्रयोग तथा विशेषताएँ। सामाजिक गतिशीलता की भारतीय परिप्रेक्ष्य में इतिहास

Department of MATHEMATICS

B.Sc.-FIRST YEAR (MATHS)

ALGEBRA AND TRIGNOMETRIC (PAPER-I)

Upon successful completion of this subject the student will be able to:-

- Mathematical formulas are used in algebra.
- Solution of linear equation by the matrix method.
- Solution of homogenous linear equations and the non-homogenous linear equations by the matrix method.
- Algebra including addition and multiplication of matrix.
- Solution of linear dependence and linear independence of matrix, rank of matrix, type of matrix, determinant of matrix, inverse of matrix.
- Use Cayley Hamilton theorem on matrix.

CALCULUS (PAPER-II)

Upon successful completion of this subject the student will be able to:-

- Calculus is a one of the most important branch of mathematics.
- Calculus is based on derivative and integral.
- Find the value of continuity and derivative of any function.
- Use of Leibnitz theorem, find n-th derivative of function.
- Expansion finding of the functions.

VECTOR ANALYSIS AND GEOMETRICS (PAPER-III)

Upon successful completion of this subject the student will be able to:-

- Able to apply the basic concept of partial derivative.
- Able to apply the concept of line integral, double integral, and triple integral in solving problems.
- Finding derivative and integral of vectors.
- Finding gradient, divergent and curl of the vectors.
- Vector product and scalar product of vectors.
- Able to apply Green theorem, Stokes theorem and Gauss theorem in solving problem.

B.Sc.-SECOND YEAR (MATHS)

ADVANCED CALCULUS (PAPER I)

Upon successful completion of this subject the student will be able to:-

- Find the convergence of the sequence, series, alternative series and arbitrary series.
- Finding the continuity of the one variable.
- Finding derivative of the function used by Darbo theorem.
- Finding the derivative, limit point and continuity of two variable functions.
- Maximum value and minimum value finding of function.

DIFFERENTIAL EQUATION (PAPER II)

Upon successful completion of this subject the student will be able to:-

- Solution of differential equation by power series.
- Explain basic of Laplace Transformation and also explain of inverse Laplace Transformation.
- Reality of Eigen values orthogonality of Bessel function of Legendre polynomial.
- Solution of differential equation of higher orders.
- Solution of partial differential equation of higher orders.
- Calculus of variations variational problem with fixed boundaries.
- Variational problem with moving boundaries functional dependent on one and two functions one sided variations.
- Sufficient conditions for extremum Jacobi and Legendre conditions.

MECHANICS (PAPER III)

Upon successful completion of this subject the student will be able to:-

- Mechanics is a part of physics
- We have study of analytical are equilibrium, stable and unstable equilibrium
- Forces in three dimension, point, central axis, line and planes
- Simple harmonic motions elastic string, velocities and accelerations and along radial

B.Sc.-FINAL YEAR (MATHS)

ANALYSIS (PAPER I)

Upon successful completion of this subject the student will be able to:-

- Studies of convergence of double series.
- Find the convergence of improper integral.
- Find Continuity and differentiability of complex function.
- Finding the Fourier Series of the function.
- Solution of Riemann integral of the closed interval.

ABSTRACT ALGEBRA (PAPER II)

Upon successful completion of this subject the student will be able to:-

- Explain of vector spaces, sub spaces, sum and direct sum of sub spaces, linear dependent and independent and their properties.
- Studies of Linear transformation and their representation as matrices the algebra of linear transformation.
- Explain ring theory, ring homomorphisms field, polynomial ring, and symmetric group.

- Study of Inner product space, Cauchy Schwarz inequality orthogonal vectors, sets bases and Gram-Schmidt orthogonalization process.

DISCRETE MATHEMATICS (PAPER III)

Upon successful completion of this subject the student will be able to:-

- Study applying basic and advanced principle of counting.
- Study of graph theories and relation and function.
- Use of Boolean Algebra.
- Use of logical notation on electronic signal.
- Study of Machines (finite state machine, equivalent machine, time complexity, complexity of problem).

Department of Physics

B.Sc.-I PHYSICS

Paper I: Mechanics oscillation and properties of matter. It helps to understand effect of centrifugal and Coriolis force due to the earth's rotation.

By studying this student will learn:

- In one with anticlockwise rotation, the force acts to right.
- Deflection of an object due to the Coriolis force is called the radial direction and proportional to the distance of the body from the axis of the rotating frame.
- The effect of the Coriolis force is an apparent deflection of the path of an object that moves within a rotating coordinate system.
- Rigid body motion rotational motion moments of inertia and their product principle moments and axes Euler.
- Motion under a central force, Kepler's laws, gravitation law and the field, potential due to spherical body

Paper-II Electricity magnetism and electromagnetic theory. It helps to understand different theories regarding electricity and magnetism.

By studying this student will learn:

- As noted above Maxwell formulated a quantitative theory that linked the fundamental phenomena of electricity and magnetism.
- Predicted electromagnetic waves propagating with speed.
- In this formulation of electromagnetism Maxwell described light as a propagating wave of electric and magnetic fields.
- More generally he predicted the existence of electromagnetic field travelling as waves at a speed equal to the known speed of light.
- Force on a moving charge Lorentz force equation and definition of B

B.Sc.-II PHYSICS

PAPER: I: Thermodynamics kinetic theory and statistical physics helps understand the laws of thermodynamics and statistical basis of thermodynamics.

By studying this student will learn:

- Thermodynamics deals with macroscopic state functions as well as microscopic ones statistical mechanics is purely concerned with statistical mechanics is actually a study in which thermodynamics states of a system such as pressure(p) volume(v) Temperature(T) are determined by using physical laws.
- Statistical physics is a very general term which comprises mechanics actually both mean same.
- Maxwell four equations with the help of thermodynamics potential.
- Maxwell Boltzmann law of distribution of velocity of molecules of a gas and explain its speed distribution for gas molecules.
- Relation between partition function and thermodynamics potential.

PAPER: II Acoustics and optics- Helps understand the speed of transverse waves on uniform string. Also helps understand interference of light.

By studying this student will learn:

- The colors in many of a humming bird's feathers are not to pigment. The iridescence that makes the brilliant colors that often appear on the throat and belly is due to an interference effect caused by structures in the feathers.
- The colors will vary with the viewing angle.
- Be sure to include both effects path length and phase change when analyzing on interference pattern resulting from a thin film.
- The possible phase change is a new feature that we did not need to consider for double-slit interference.
- Phase velocity and group velocity application of ultrasonic's waves, reflection of sound demonstrates experimentally.
- Reflection and refraction from the principal of Fermat's Lagrang's equation of magnification.

B.Sc.-III PHYSICS

PAPER I :-Relativity Quantum Mechanics atomic molecular and nuclear physics helps to understand theory of relativity and quantum theory.

By studying this student will learn:

- Quantum mechanics is a fundamental theory in physics that provides a description of the physical properties of nature at the scale of atom and subatomic particles.
- It is the foundation of quantum physics including quantum chemistry quantum field theory quantum technology and quantum information science.
- Quantum mechanics differs from classical physics in that energy, momentum, angular momentum.
- Raman Effect, Stokes and anti-Stokes lines complementary character of Raman and infrared spectrum.
- Quantum mechanical Schrödinger equation statistical interpretation of wave function

PAPER II: - Solid state physics helps understand atmosphere and crystalline solids and electron of symmetry.

By studying this student will learn:

- Solid state physics studies how the large scale properties of solid materials result from their atomic scale properties.
- Thus solid state physics forms a theoretical basis of materials science.

- It also has direct applications for example in the technology of transistors and semiconductors.
- Amorphous and crystalline solids, elements of symmetry seven crystal system, cubic lattices, crystal plan, Miller's Indices, laue's equation for x-ray deflection, Brillouin zone.
- Free electron model of metal, solution of one dimensional Schrödinger equation in a constant potential.