OFFICE OF PRINCIPAL
LAXMAN PRASAD BAIDH GOVT. GIRLS COLLEGE, BEMETARA
COLLEGE CODE -1706

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Laxman Prasad Baidh Govt. Girls College IQAC

प्राचार्य
लक्ष्मण प्रसाद वैद्य शासकीय
कन्या महाविद्यालय बेमेतरा

PO, PSO, CO FOR SSR

DEPARTMENT OF SCIENCE (F.C., CHEMISTRY, PHYSICS, MATHEMATICS)

	After successfully completion of three years degree program in (F.C., Chemistry, Physics, Mathematics) a student should be able to
PROGRAM OUTCOMES	PO1. Understand the methods of science. PO2. Apply appropriate methods to solve the problem. PO3. Articulate the relationship between different branches of science. PO4. Demonstrate, solve and an understanding of major concepts in all discipline of chemistry. PO5. Solve the problem and also think methodically, independently and draw a logical conclusion. PO6. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions. PO7. Be able to analyze, test, interpret and form independent judgements in both academic and non-academic contexts. PO8. To understand the basic laws and explore the fundamental concepts of physics. PO9. To understand the concepts and significance of the various physical phenomena. P10. To carry out experiments to understand the laws and concepts of Physics.
PROGRAM SPECIFIC OUTCOMES	PSO1: Gains complete knowledge about all fundamental aspects of all the element of chemistry, physics and mathematics. PSO2: To apply the theories learnt and the skills acquired to solve real time problems. PSO3: To acquire a wide range of problem-solving skills, both analytical and technical and to apply them. PSO4: To enhance the student's academic abilities, personal qualities and transferable skills this will give them an opportunity to develop as responsible citizens. PSO5: To produce graduates who excel in the competencies and values required for leadership to serve a rapidly evolving global community. PSO6: To motivate the students to pursue PG courses in reputed institutions. PSO7: Be familiar with different areas of Mathematics, Physics, Chemistry. PSO8: Engage her creativity in the quest for novel or elegant solutions. PSO9: Be a life-long learner who is able to expand knowledge in different areas of science.

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COURSE OUTCOME

NAME OF THE COURSE	OUTCOMES After Completion of this course students will be able to:
B.Sc. 1st year INORGANIC CHEMISTRY	CO1: Understand atomic structure and rules, principle related to it. CO2: Know the structure and bonding in molecules and ions and predict the structure of molecules/ions. CO3: Study the periodic elements of S-block, P-block and noble gases. CO4: Understand the basic principles of qualitative analysis.
B.Sc. 1st year ORGANIC CHEMISTRY	CO1: Distinguish between geometrical and optical isomerism. CO2: Learn the stereochemistry of organic compounds. CO3: Understand the basics of organic chemistry. CO4: Distinguish between aliphatic and aromatic hydrocarbons.
B.Sc. 1st year PHYSICAL CHEMISTRY	CO1: Learns Mathematics and solves problem related to it. CO2: Understand gaseous state chemistry, properties and laws. CO3: Write an expression for rate constant for first and second order equation. CO4: Solve the numerical problems on Chemical kinetics. CO5: Explain surface chemistry, liquid state chemistry. CO6: Understand the absorption of gases by solid isotherms.
B.Sc. 1st year Physics: mechanics, oscillations and properties of matter	CO1: learns the basic mechanics and laws of motion. CO2: learns the rigid body mechanics, simple and compound pendulum. CO3: learns the different types of oscillators, springs its time period and frequency, power absorption and resonance. CO4: learns about electromagnetic field and the motion of charges in this field, particle accelerator cyclotron, isotopes, spectrography. CO5: learns the0 basic of elasticity, deformation, the basic of kinematics of fluids.
B.Sc. 1st year Physics: electricity, magnetism and electromagnetic theory	CO1: learns the basic mathematical tools in physics. CO2: learns the electrostatics. CO3: learns the dielectrics, capacitors, claussius-mossotti equation, circuital law, impedance of series and parallel resonance, quality factor, power factor. CO4: Force on moving charge, bio savart law, ampere's law, magnetization vector, interpretation of a bar magnet. CO5: learns the electromagnetic induction, faraday's law, inductance self and mutual, wave equations, pointing vectors.
B.Sc. 1st year Mathematics: Algebra & Trigonometry	CO1: Solve the system of homogenous and non-homogenous linear equations by using concept of rank of matrix, finding eigen values and eigen vectors. CO2: Understand the qualitative analysis of system of linear equations. CO3: use of De-Moivre's theorem.

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	CO4: understand the basics of group theory. CO5: solve cubic and biquadratic equation.
B.Sc. 1st year Mathematics: Calculus	CO1: Define the basic concepts and principles of differential and integral calculus of real functions and sequences and series. CO2: Interpret the geometric meaning of differential and integral calculus. CO3: Apply the concept and principles of differential and integral calculus to solve geometric and physical problems: CO4: Organize solving of complex problems by combining the acquired mathematical concepts and Principles. CO5: Expand functions using Taylor's and Maclaurin's series, Leibnitz theorem and use their applications. CO6: Acquire the concept of asymptotes and envelopes. CO7: Extract the solution of differential equations of the first order and of the first degree by variables separable, Homogeneous and Non-Homogeneous methods. CO8: Find a solution of differential equations of the first order and of a degree higher than the first by using methods of solvable for p. x and y. C09: Solve first order differential equations utilizing the standard techniques for separable exact, linear, homogeneous, or Bernoulli cases. CO10: Student will have a working knowledge of basic application problems described by second order linear differential equations with constant coefficients.
B.Sc. 1st year Mathematics: Vector analysis & Geometry	CO1: Acquire the basic knowledge of vector differentiation and vector integration. CO2: Determine and apply, the important quantities associated with scalar fields, such as partial derivatives of all orders, the gradient vector and directional derivative. CO3: Determine and apply, the important quantities associated with vector fields such as the divergence, curl, and scalar potential. CO4: Calculate line integrals along piecewise smooth paths; interpret such quantities as work done by a force. CO5: Evaluate line, surface, double and triple integrals and use these integrals to verify the seminal integral theorems (Green's theorem in the plane, Gauss' divergence theorem and Stokes' theorem). CO6: Apply vector algebra techniques to analyze problems involving two and three entities - lines, curves, planes and surfaces. CO7: Use Green's theorem to evaluate line integrals along simple closed contours on the plane.
B.Sc. 2nd year INORGANIC CHEMISTRY	CO1: Understand chemistry of transition metal complexes. CO2: Learn oxidation and reduction process. CO3: Understand coordination chemistry and various theory related to it.

	CO4: Study of acid-base, non-aqueous chemistry. CO5: Learn properties of Lanthanide and actinides.
B.Sc. 2nd year ORGANIC CHEMISTRY	CO1: Understand chemistry of organic halides. CO2: Learn nomenclature preparations properties and relative reactivity of alcohols and phenols and named reactions. CO3: Learn structure, reactivity preparations and mechanism of named reactions of aldehydes and ketones. CO4: Understand properties structure, binding, and mechanism of named reactions of carboxylic acids. CO5: Learn Chemistry of nitrogen containing organic compounds.
B.Sc. 2nd year PHYSICAL CHEMISTRY	CO1: Know the meaning of Phase, Component and degree of freedom. CO2: Realize the concept related to chemical equilibrium and phase equilibrium. CO3: Learn the thermodynamic description of exact, inexact differential and state function. CO4: Understand thermodynamics terms and solve numerical problems related to it. CO5: Explain different laws of thermodynamic s. CO6: Study of photochemistry and phenomenon associated with it.
B.Sc. 2nd year PHYSICS: thermodynamics, kinetic theory and statistical physics	CO1: learns the laws of thermodynamics, work done on or by the system, carnot theorem, carnot engine, impossibility of attaining the absolute zero. CO2: Thermodynamics relationship, Maxwell's general relationship, Joule-Thomson effect, thermodynamic variables, Black body radiation and its different laws governing it. CO3: Maxwell distribution of speeds in a ideal gas, Doppler effect, transport phenomenon, liquification of gases. CO4: The statistical basis of thermodynamics, probabilities, ensemble, phase space, entropy relation, law of equipartition of energy, transition to quantum state, harmonic oscillators. CO5: Learns the statistics of BE, FD, MB, indistinguishability of particles, partition function.
B.Sc. 2nd year PHYSICS: waves, acoustics and optics	CO1: learns the behaviour of waves in different media, acoustic impedance of medium, transducer, principle of sonar system. CO2: Acquire the knowledge of fermat's principle, cardinal points, lagrangian equations, telescope, monochromatic aberrations, optical instruments. CO3: learns the interference of light, fringes, refractometer, interferometers. CO4: learns the Fresnel half-period zones, fraunhefer diffraction, phasor diagram, power of telescope and microscopic systems, diffraction grating, double refraction and optical rotation. CO5: learns the basics of laser system, spectral lines, types, applications of lasers.

B.Sc. 2nd year MATHEMATICS: advanced calculus	CO1: Acquire the concept of finding partial derivatives and associated rules. CO2: Develop competency in applying the idea of partial derivatives. CO3: Acquire the basic ideas of double and triple integral. CO4: Apply the techniques of double and triple integral to various problems of finding length of plane curves, surface areas and volumes of surfaces of revolution. CO5: Change variables in multiple integrals. CO6 Familiarized with different three-dimensional surfaces and their properties. CO7: Develop skill in finding the partial derivatives of functions of several variables and various rules associated. CO8 Apply the chain rule for functions of several variables. CO9: Use the Lagrange multiplier method to find extrema of functions with constraints. CO10: Apply the knowledge of Lagrange multipliers in finding the extreme values of functions. CO11: Make a comparative study of the extreme values of functions of a single independent variable with functions of several independent variable.
B.Sc. 2nd year MATHEMATICS: differential equations	CO1: Form partial differential equations and find the solution of First order partial differential equations for some standard types. CO2: Use inverse Laplace transform to return familiar functions and apply Laplace transform to solve second order linear differential equation and simultaneous linear differential equation. CO3: Apply various power series methods to obtain series solutions of differential equations. CO4: Compute all the solutions of second and higher order partial differential equations with constant coefficients. CO5: Understand the concept of functional. CO6: Understand the concept and applications of eigen value problems. CO7: Understand differential equations of Strum Liouville type.
B.Sc. 2nd year MATHEMATICS: mechanics	CO1: Define resultant, Component of a Force, Coplanar forces, like and unlike parallel forces, Moment of a force and Couple with examples. CO2: Prove the Parallelogram of Forces, Triangle of Forces, Converse of the Triangle of Forces, Polygon of Forces, Lami's Theorem, Varignon's theorem of moments. CO3: Find the resultant of coplanar couples, equilibrium of couples and the equation to the line of action of the resultant. C04: Discuss Friction, Forces of Friction, Cone of Friction, Angle of Friction and Laws of friction. CO5: Define catenary and obtain the equation to the common catenary.

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	CO6: Find the tension at any point and discuss the geometrical properties of a catenary. CO7: Define Projectile, impulse, impact and laws of impact and prove that the path of a projectile is a parabola. CO8: Define Simple Hormonic Motion and find its Geometrical representation and find the Composition of Simple Harmonic Motion and the differential equation of a central orbit
B.Sc. 3rd year INORGANIC CHEMISTRY	CO1: Understand nature of bonding in transition metal complexes. CO2: Learn magnetic and electronic properties of transition metal complexes. CO3: Get insight of organometallic chemistry. CO4: Distinguish between hard, soft acid and bases. CO5: Understand bioinorganic Chemistry.
B.Sc. 3rd year ORGANIC CHEMISTRY	CO1: Study of carbohydrates: introduction of sugars. CO2: Understand biomolecules proteins, amino acids and nucleic acids. CO3: Study of organometallic compounds. CO4: Study of Synthetic dyes and synthetic polymers. CO5: Learn instrumentation and features applications, working of several spectroscopic techniques.
B.Sc. 3rd year PHYSICAL CHEMISTRY	CO1: Learn the Molecular spectroscopy, Raman Electronic and vibrational spectroscopy and its application. CO2: Learns Postulates of quantum mechanics Schrodinger equations and its applications. CO3: Understand molecular orbital theory and Huckel's molecular orbital theory. CO4: Learns about various physical properties of molecules such as dipole moment magnetic property and relationship with molecular structure. CO5: Know the concept of polarizability. CO6: study of photochemistry its laws and phenomenon associated with it.
B.Sc. 3rd year PHYSICS: relativity, quantum mechanics, atomic molecular and nuclear physics	CO1: Understand the reference system, negative result of michelson morley experiment, galilean and lorentz transformation, time dilation, length contraction etc. CO2: Learns Origin of the quantum theory, inadequacy of classical mechanics, wave-particle duality, uncertainty principle. CO3: Learns the basis of quantum theory, schrodinger's equation, oscillators etc. CO4: Learns the basis of spectra, electronic energies, transition rules, Raman effect, stokes and antistokes lines, raman spectroscopy. CO5: Learn the particle accelerators, nuclear detectors, basic properties of nuclei and particle model.
B.Sc. 3rd year PHYSICS: solid state physics, solid state devices and electronics	CO1: Learns the basic properties of solids, lattices, diffraction, Specific heats of solid, Vibrational modes, dispersion relation, Brillouin zone.

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	CO2: Learns the electron model, solution of schrodinger equation in a constant potential, Energy bands in a solid, magnetism. CO3: Learns the basis of Semiconductors, diodes, transistors, characteristics and more. CO4: Learns the basis of rectifiers, Filters, power supply, amplifiers, oscillators. CO5: Introduction to the computer organization, introduction to c programming and application to simple problems.
B.Sc. 3rd year MATHEMATICS: analysis	CO1: Apply the fundamental concepts of Fourier series Fourier Cosine series to find series representation of irrational numbers. CO2: Learn the basic abstract ideas of analysis. CO3: Learn the basic ideas open sets, closed sets, limit point, isolated points, boundary points, subspace, product metric spaces and apply them to study the nature of sets. CO4: Learn the theorems on completeness, compactness, connectedness and use them to solve the problems identify the continuity of a function which is defined on metric spaces, at a given point and identify the set of points on which a function is continuous by using different theorems. CO5: Learn about analytic functions, Cauchy Riemann differential equations, harmonic functions Mobius transformations. CO6: Learn about Reimann integral. CO7: Ability to test the convergence of improper integrals.
B.Sc. 3rd year MATHEMATICS: abstract algebra	CO1: Introduction to vector space and subspace. CO2: Use the concept of basis and dimension of vector spaces linear dependence and linear independence, to solve problems. CO3: Use the concept of inner product spaces to find norm of vectors, distance between vectors, check the orthogonality of vectors, to find the orthogonal and orthonormal basis. CO4: Apply the properties of linear transformations to linearity of transformations, kernel and rank of linear transformations, inverse transformations to solve the problems of matrix transformations, change of basis. CO5: Identify the concept of Normal groups and Quotients groups. CO6: Analyze Permutation groups and Counting principle. CO7: Explain Sylow theorem and its applications. CO8: Use the concept of isomorphism and homomorphism for rings. CO9: Provide information on ideals and Quotient rings, Field of Quotient of an integral domain. CO10: Concentrate ring and other forms of Polynomial rings.

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B.Sc. 3rd year MATHEMATICS: discrete mathematics	CO1: Basic set theory, cardinal numbers, different concepts of infinity. CO2: Basic combinatorics, induction, inclusion exclusion, pigeon hole principle. CO3: More advance topics in combinatorics: recurrence relations, generating functions, graphs, trees, planar graph CO4: Describe the TF statements, connectives, atomic and compound statements. CO5: Illustrate Tautology, Tautological implication, Truth Tables, Normal Forms, Principal Normal Forms. CO6: Interpret Lattices, Boolean Algebra, Switching Circuits.

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DEPARTMENT OF SCIENCE (F.C., CHEMISTRY, BOTANY, ZOOLOGY)

	After successfully completion of three years degree program in (F.C., Chemistry, Botany, Zoology) a student should be able to
PROGRAM OUTCOMES	PO1. Understand the methods of science. PO2. Apply appropriate methods to solve the problem. PO3. Articulate the relationship between different branches of science. PO4. Demonstrate, solve and an understanding of major concepts in all discipline of chemistry. PO5. Solve the problem and also think methodically, independently and draw a logical conclusion. PO6. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions. PO7. Be able to analyze, test, interpret and form independent judgements in both academic and non-academic contexts. PO8. Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms. PO9. Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms. PO10. Understands the complex evolutionary processes and behaviour of animals. PO11. Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered. PO12. Apply the knowledge and understanding of Zoology to one's own life and work. PO13. Develops empathy and love towards the animals. PO14. Explain the chemical and physical underpinnings of life. PO15. Explain and integrate the key concepts of living systems such as biological diversity and its evolution, cellular organization, transmission of biological information, structure-function relationships, and functioning of ecological systems. PO16. Apply the scientific method including formulating a hypothesis, designing studies, and drawing conclusions.

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PROGRAM SPECIFIC OUTCOMES	PSO1: Gains complete knowledge about all fundamental aspects of all the element of chemistry, zoology and biology. PSO2: To apply the theories learnt and the skills acquired to solve real time problems. PSO3: To acquire a wide range of problem-solving skills, both analytical and technical and to apply them. PSO4: To enhance the student's academic abilities, personal qualities and transferable skills this will give them an opportunity to develop as responsible citizens. PSO5: To produce graduates who excel in the competencies and values required for leadership to serve a rapidly evolving global community. PSO6: To motivate the students to pursue PG courses in reputed institutions. PSO7: Be familiar with different areas of Zoology, Biology, Chemistry. PSO8: Engage her creativity in the quest for novel or elegant solutions. PSO9: Be a life-long learner who is able to expand knowledge in different areas of science. PSO10: Understand the basic concepts of lower group plants and morphology of higher groups. PSO11: Understand the evolution, classification, anatomical details of higher group plants. PSO12: Analyze the cell organelles and application of genetics, molecular biology in plant breeding. PSO13: Identify the bacteria, viruses and plant pathogen. PSO14: Analyze metabolic activities of plants. PSO15: Understand the application of genetic engineering for the improvements of plants. PSO16: Understand the basic concepts of ecology. PSO17: Perform the procedure of laboratory technique biochemistry, biotechnology and of plants.

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COURSE OUTCOME

NAME OF THE COURSE	OUTCOMES After Completion of this course students will be able to:
B.Sc. 1st year INORGANIC CHEMISTRY	CO1: Understand atomic structure and rules, principle related to it. CO2: Know the structure and bonding in molecules and ions and predict the structure of molecules/ions. CO3: Study the periodic elements of S-block, P-block and noble gases. CO4: Understand the basic principles of qualitative analysis.
B.Sc. 1st year ORGANIC CHEMISTRY	CO1: Distinguish between geometrical and optical isomerism. CO2: Learn the stereochemistry of organic compounds. CO3: Understand the basics of organic chemistry. CO4: Distinguish between aliphatic and aromatic hydrocarbons.
B.Sc. 1st year PHYSICAL CHEMISTRY	CO1: Learns Mathematics and solves problem related to it. CO2: Understand gaseous state chemistry, properties and laws. CO3: Write an expression for rate constant for first and second order equation. CO4: Solve the numerical problems on Chemical kinetics. CO5: Explain surface chemistry, liquid state chemistry. CO6: Understand the absorption of gases by solid isotherms.
B.Sc. 1st year BOTANY: Bacteria, viruses, fungi, lichens and algae.	CO1: Understand the basic concept of bacteria, viruses and mycoplasma. CO2: Describe the classification general characteristics of Algae. CO3: Analyze economic importance of bacteria, virus and algae. CO4: Discuss the life-cycle of micro-organism and algae.
B.Sc. 1st year BOTANY: Bryophytes, pteridophytes, gymnosperms and palaeobotany.	CO1: Compare lower group of plants with higher lower group. CO2: Identify the different plant diseases. CO3: Understand the economic importance of fungi, lichens and bryophytes. CO4: Discuss the classification of fungi and bryophyte. CO5: Explain the classification of ptendophyta and gymnosperm. CO6: Describe the economic importance of pterodophyta and gymnosperm
B.Sc. 1st year ZOOLOGY: Cell biology & Invertebrates	CO1: The cell structure in relation to function of cells the fundamental unit of life, are concerned in this course along with molecules present in cells. CO2: Apply the principles of cell biology in designing experiment, statistical analysis, and interpretation of results. CO3: Operate and solve exercise using computation statistics software. CO4: Get acquitted with basic approach in the research methodology.

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B.Sc. 1st year ZOOLOGY: Vertebrates & Embryology	CO1: Understand the basic concept of bacteria, viruses and protozoan. CO2: Analyze economic importance of bacteria and virus. CO3: Discuss the life cycle of protozoan.
B.Sc. 2nd year INORGANIC CHEMISTRY	CO1: Understand chemistry of transition metal complexes. CO2: Learn oxidation and reduction process. CO3: Understand coordination chemistry and various theory related to it. CO4: Study of acid-base, non-aqueous chemistry. CO5: Learn properties of Lanthanide and actinides.
B.Sc. 2nd year ORGANIC CHEMISTRY	CO1: Understand chemistry of organic halides. CO2: Learn nomenclature preparations properties and relative reactivity of alcohols and phenols and named reactions. CO3: Learn structure, reactivity preparations and mechanism of named reactions of aldehydes and ketones. CO4: Understand properties structure, binding, and mechanism of named reactions of carboxylic acids. CO5: Learn Chemistry of nitrogen containing organic compounds.
B.Sc. 2nd year PHYSICAL CHEMISTRY	CO1: Know the meaning of Phase, Component and degree of freedom. CO2: Realize the concept related to chemical equilibrium and phase equilibrium. CO3: Learn the thermodynamic description of exact, inexact differential and state function. CO4: Understand thermodynamics terms and solve numerical problems related to it. CO5: Explain different laws of thermodynamic s. CO6: Study of photochemistry and phenomenon associated with it.
B.Sc. 2nd year BOTANY: plant taxonomy, economic botany, plant anatomy and embryology.	CO1: Understand the paleobotany and geological time scale. CO2: Identify the different types of fossils. CO3: Explain the morphology and modification of plants Compare the types of inflorescence and fruits. CO4: Describe the parts of flower Describe general taxonomic rule of plant classification. CO5: Discuss the principles of botanical nomenclature. CO6: Criticize the classification of angiosperm.
B.Sc. 2nd year BOTANY: ecology and plant physiology	CO1: Preparation of herbarium. CO2: Analyze the floral formula of monocot and dicot families. CO3: Perform the procedure of cytological techniques. CO4: Analyze the biostatistics data. CO5: Understand and identify the plants under natural environment Compare the types of inflorescence and fruits. CO6: Describe the parts of flower.
	CO1: Students will be able to understand the various physiology life processes in animals.

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B.Sc. 2nd year ZOOLOGY: anatomy & physiology	CO2: They understand the role of various hormones, signaling compounds, thermodynamics and enzyme kinetics. CO3: During the course student will gain knowledge about the various mechanisms such as digestion, respiration circulation and reproduction.
B.Sc. 2nd year ZOOLOGY: vertebrate endocrinology, reproductive biology behaviour, evolution and applied zoology	CO1: After completion of the course the students are familiar with various physiology aspects involved in the plant development. CO2: Also the role of enzymes in it and mechanism of photosynthesis, respiration, nitrogen and lipid metabolism. CO3: The student are able to isolate starch, pectin and various nutritive products from the plants. CO4: Quantitative and quantification of the animal cell content and its biochemistry and mode/mechanism of synthesis etc.
B.Sc. 3rd year INORGANIC CHEMISTRY	CO1: Understand nature of bonding in transition metal complexes. CO2: Learn magnetic and electronic properties of transition metal complexes. CO3: Get insight of organometallic chemistry. CO4: Distinguish between hard, soft acid and bases. CO5: Understand bioinorganic Chemistry.
B.Sc. 3rd year ORGANIC CHEMISTRY	CO1: Study of carbohydrates: introduction of sugars. CO2: Understand biomolecules proteins, amino acids and nucleic acids. CO3: Study of organometallic compounds. CO4: Study of Synthetic dyes and synthetic polymers. CO5: Learn instrumentation and features applications, working of several spectroscopic techniques.
B.Sc. 3rd year PHYSICAL CHEMISTRY	CO1: Learn the Molecular spectroscopy, Raman Electronic and vibrational spectroscopy and its application. CO2: Learns Postulates of quantum mechanics Schrodinger equations and its applications. CO3: Understand molecular orbital theory and Huckel's molecular orbital theory. CO4: Learns about various physical properties of molecules such as dipole moment magnetic property and relationship with molecular structure. CO5: Know the concept of polarizability. CO6: study of photochemistry its laws and phenomenon associated with it.
B.Sc. 3rd year BOTANY: Analytical technology, plant pathology, experimental embryology, elementary biostatistics, environmental pollution and conservation.	CO1: Describe the plant growth and its growth regulators. CO2: Describe the seed-dormancy and methods to break-dormancy. CO3: Describe the plant defense and role of secondary metabolites. CO4: Discuss plant tissue culture technique and its application. CO5: Discuss the advantages and disadvantages of genetic engineering.

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B.Sc. 3rd year BOTANY: Genetics, molecular biology, biotechnology and biochemistry	CO1: Compare the various ecological successions. CO2: Explain different types of environmental pollution and its management. CO3: Understand about the renewable and non-renewable natural sources. CO4: Analyze the principle types, and application of instruments. CO5: Explain morphology utilization and chemical-constituents of different plants.
B.Sc. 3rd year ZOOLOGY: Ecology, environmental-biology, toxicology, microbiology and medical zoology	CO1: After successful completion of this course, students will be able to Acquaint with the concepts in prokaryotic, eukaryotic and viral genetics CO2: Explain central dogma of molecular biology (replication, transcription and translation). CO3: Enlist and explain types of mutation, gene regulation and transposable element. CO4. Conversant with laboratory techniques via, Microscopy, SEM and TEM, Ultracentrifugation, PCR.GISH, FISH and Immunochemical techniques. The flow cytometry and confocal microscopy in karyotype analysis. CO5: Isolation of plant DNA and its quantification Isolation of RNA and its quantitation Estimation of seed proteins.
B.Sc. 3rd year ZOOLOGY: genetics, cell physiology, biochemistry, biotechnology and biotechniques	CO1: Comprehend the diversity of lower cryptograms (Algae, Fungi, Bacteria, Phytoplasam and viruses.). Collection and study of algae, fungi, bacteria from different localities, identification up to generic level. CO3: Recognize the morphology, anatomy, physiology, reproduction and lifecycle pattern. CO3: Their diversification and familiarize with various ecological niche. CO4: Positive and negative values.

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DEPARTMENT OF ARTS (F.C., SOCIOLOGY, ECONOMICS, POLITICAL SCIENCE)

	After successfully completion of three years degree program in (F.C., Sociology, Economics, Political Science) a student should be able to
PROGRAM OUTCOMES	PO1: The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives. PO2: The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology. PO3: The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions. PO4: The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship. PO5: The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them. PO6: The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability. PO7: The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.
PROGRAM SPECIFIC OUTCOMES	PSO1: The students after the completion of this programme will be able to understand and apply the knowledge of Micro Economics. PSO2: The students after the completion of this programme will be able to understand and apply the knowledge of Indian Economy. PSO3: The students after the completion of this programme will be able to understand and apply the knowledge of Macro Economics. PSO4: The students after the completion of this programme will be able to understand and apply the knowledge of Money, Banking and Public Finance. PSO5: The students after the completion of this programme will be able to understand and apply the knowledge of Development and Environmental Economics.

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	PSO6: The students after the completion of this programme will be able to understand and apply the knowledge of Statistical Methods. PSO7: The students after the completion of this programme will be able to understand and apply the knowledge of Political Theory. PSO8: The students after the completion of this programme will be able to understand and apply the knowledge of Indian Government and Politics. PSO9: The students after the completion of this programme will be able to understand and apply the knowledge of Western Political Thought. PSO10: The students after the completion of this programme will be able to understand and apply the fundamentals of Comparative Politics and Government. PSO11: The students after the completion of this programme will be able to understand and apply the knowledge of International Politics. PSO12: The students after the completion of this programme will be able to understand and apply the knowledge of Public Administration.

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COURSE OUTCOMES

NAME OF THE COURSE	OUTCOMES After Completion of this course students will be able to:
B.A. 1st Year Sociology: INTRODUCTION TO INDIAN SOCIOLOGY	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize the nature and scope of sociology. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the basic concepts of society, community, institution, association etc. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize different social groups. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize various social processes.
B.A. 1st Year Sociology: FOUNDATION OF SOCIOLOGICAL THOUGHT	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize the classical view about Indian Society and Varna Vyavastha. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the structure and composition of Indian society.
B.A. 1st Year Economics: MICRO ECONOMICS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize the definitions, nature and scope of economics. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the theory of production and cost. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize the market structure. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize factor pricing. CO5: The students after the completion of this course will be able to contemplate and comprehend and recognize welfare economics.
B.A. 1st Year Economics: INDIAN ECONOMY	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize pre and post independent Indian economy. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in population and human development. CO3: The students after the completion of this course will be able

	to contemplate and comprehend and recognize the role of economics in agriculture. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in industry. CO5: The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in foreign external sector.
B.A. 1st Year Political Science: POLITICAL PRINCIPLE	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize the nature and scope of political theory. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the concept of state, nation and civil society. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize the meaning of organs of government and theory of separation of power.
B.A. 1st Year Political Science: STATE GOVERNMENT AND POLITICS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize the salient features in making of Indian Constitution. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize and appreciate the fundamental rights and duties and the directive principle of state policy. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize and evaluate the evolution, functioning and consequences of political parties in India.
B.A. 2nd Year Sociology: SOCIETY IN INDIA	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize various social problems like Casteism, Regionalism, and Communalism etc. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize various social problems like Dowry, Domestic Violence, Divorce etc. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize basic Institutions of society.
B.A. 2nd Year Sociology: CRIME AND SOCIETY	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize social structure and anomalies. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize meanings, causes, consequences and remedies of Terrorism.
B.A. 2nd Year Economics: MACRO ECONOMICS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize national income & social accounts.

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	CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in consumption function. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize the nature and characteristics of trade cycle. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in international trade. CO5: The students after the completion of this course will be able to contemplate and comprehend and recognize the functions of IMF, World Bank and WTO.
B.A. 2nd Year Economics: MONEY, BANKING AND PUBLIC FINANCE	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize basic concepts of money. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in commercial banking. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize the meaning and scope of public finance. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize the sources of public revenue and taxation. CO5: The students after the completion of this course will be able to contemplate and comprehend and recognize public debt and financial administration.
B.A. 2nd Year Political Science: WESTERN POLITICAL THOUGHTS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize the nature, methods and significance of political thought. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize and appreciate various social and political ideas of political thinkers. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize and demonstrate the knowledge of political thinkers and political concepts.
B.A. 2nd Year Political Science: COMPARATIVE GOVERNANCE AND POLITICS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize and critically assess presidential and parliamentary system. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the difference between federal and unitary systems of government.
B.A. 3rd Year Sociology: SOCIOLOGY OF TRIBAL SOCIETY	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize classification of tribal people. CO2: The students after the completion of this course will be able

	to contemplate and comprehend and recognize socio cultural profile of tribe. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize various tribal problems. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize various tribal movements.
B.A. 3rd Year Sociology: SOCIAL RESEARCH METODS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize & apply social survey and research. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize & apply research design. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize & apply techniques of data collection and statistics.
B.A. 3rd Year Economics: DEVELOPMENT AND ENVIRONMENTAL ECONOMICS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize economic growth and development. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the relationship between economics and population problem & growth. CO3: The students after the completion of this course will be able to contemplate and comprehend and recognize Harrods and Domar growth model. CO4: The students after the completion of this course will be able to contemplate and comprehend and recognize the relationship between economics and environment & ecology. CO5: The students after the completion of this course will be able to contemplate and comprehend and recognize the concept of intellectual capital.
B.A. 3rd Year Economics: STATISTICAL METHODS	CO1: The students after the completion of this course will be able to comprehend and apply statistical methods in economics. CO2: The students after the completion of this course will be able to comprehend and apply the measurement of central tendency in economics. CO3: The students after the completion of this course will be able to comprehend and apply the methods & tools of dispersion in economics. CO4: The students after the completion of this course will be able to comprehend and apply coefficient of correlation in economics. CO5: The students after the completion of this course will be able to comprehend and apply index number and measurement of trend in economics.

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B.A. 3rd Year Political Science: INTERNATIONAL POLITICS	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize and critically assess the international political system. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize the relations of India with neighboring countries.
B.A. 3rd Year Political Science: PUBLIC ADMINISTRATION	CO1: The students after the completion of this course will be able to contemplate and comprehend and recognize and critically assess the administrative system of the nation. CO2: The students after the completion of this course will be able to contemplate and comprehend and recognize various concepts in public administration.

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DEPARTMENT OF COMMERCE

PROGRAM OUTCOMES	After successfully completion of three years degree program in COMMERCE a student should be able to
	PO1: The students after the completion of this programme will be enabled to overcome the challenges and cash in the opportunities in the field of commerce. PO2: The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives. PO3: The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology. PO4: The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions. PO5: The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship. PO6: The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them. PO7: The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability. PO8: The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.
	PSO1: The students after the completion of this programme will become well versed with financial accounting. PSO2: The students after the completion of this programme will become well versed with business communication. PSO3: The students after the completion of this programme will be able to understand business mathematics. PSO4: The students after the completion of this programme will be able to understand business regulatory framework. PSO5: The students after the completion of this programme will be able to identify a business environment. PSO6: The students after the completion of this programme will be

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PROGRAM SPECIFIC OUTCOMES	able to understand the economics of a business. PSO7: The students after the completion of this programme will be able to understand the essentials of corporate accounting. PSO8: The students after the completion of this programme will be able to understand the essentials of company law. PSO9: The students after the completion of this programme will be able to understand the essentials of cost accounting. PSO10: The students after the completion of this programme will be able to understand the principles of business management. PSO11: The students after the completion of this programme will be able to understand the essentials of business statistics. PSO12: The students after the completion of this programme will be able to understand the fundamentals of entrepreneurship. PSO13: The students after the completion of this programme will be able to understand the principles of direct taxation – income tax. PSO14: The students after the completion of this programme will be able to recognize the procedures of auditing. PSO15: The students after the completion of this programme will be able to understand the essentials, principles and procedures of indirect taxation and GST. PSO16: The students after the completion of this programme will be able to understand the essentials of management accounting. PSO17: The students after the completion of this programme will be able to understand the principle of marketing. PSO18: The students after the completion of this programme will be able to understand the essential of international marketing.

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COURSE OUTCOMES

NAME OF THE COURSE	OUTCOMES After Completion of this course students will be able to:
B.Com. 1st Year Group 1: FINANCIAL ACCOUNTING	CO1: The students after the completion of this course will be able to impart the knowledge of various accounting concepts. CO2: The students after the completion of this course will be able to instill the knowledge about accounting procedures, methods and techniques & develop skills for computerized Accounting
B.Com. 1st Year Group 1: BUSINESS COMMUNICATION	CO1: The students after the completion of this course will be able to understand the concept, process and importance of communication. CO2: The students after the completion of this course will be able to develop awareness regarding new trends in business communication. CO3: The students after the completion of this course will be able to recognize various media of communication.
B.Com. 1st Year Group 2: BUSINESS MATHEMATICS	CO1: The students after the completion of this course will be able to prepare for competitive exams. CO2: The students after the completion of this course will be able to improve their calculating power & skills. CO3: The students after the completion of this course will be able to understand the concept of simple interest, compound interest & concept of EMI.
B.Com. 1st Year Group 2: BUSINESS REGULATORY FRAMEWORK	CO1: The students after the completion of this course will be acquainted with the basic concepts, terms & Provisions of mercantile & Business Laws. CO2: The students after the completion of this course will be able to develop the awareness regarding laws affecting business, trade & commerce.
B.Com. 1st Year Group 3: BUSINESS ENVIRONMENT	CO1: The students after the completion of this course will become aware about the Business Environment. CO2: The students after the completion of this course will be able to create entrepreneurial awareness. CO3: The students after the completion of this course will be able to motivate themselves for taking up entrepreneurship as career.
B.Com. 1st Year Group 3: BUSINESS ECONOMICS	CO1: The students after the completion of this course will be able to use various economic theories. CO2: The students after the completion of this course will be able to apply economic reasoning to problems of business. CO3: The students after the completion of this course will be

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	able to understand the basic micro economic concepts.
B.Com. 2nd Year Group 1: CORPORATE ACCOUNTING	CO1: The students after the completion of this course will be enabled to develop awareness about corporate accounting with the provisions of companies Act & Accounting as per Indian Accounting standards. CO2: The students after the completion of this course will be enabled to develop conceptual aspect of corporate accounting & develop skills about accounting standards.
B.Com. 2nd Year Group 1: COMPANY LAW	CO1: The students after the completion of this course will be able to impart the knowledge of fundamentals of company law. CO2: The students after the completion of this course will be able to update the knowledge of provisions of the companies Act of 2013.
B.Com. 2nd Year Group 2: COST ACCOUNTING	CO1: The students after the completion of this course will be enabled with the knowledge of Basic cost concepts, Elements of cost, Ascertainment of materials & costing. CO2: The students after the completion of this course will be able to understand various methods of costing & their applications.
B.Com. 2nd Year Group 2: PRINCIPLES OF BUSINESS MANAGEMENT	CO1: The students after the completion of this course will be able to understand about business management concept. CO2: The students after the completion of this course will be able to understand about various functions of business management.
B.Com. 2nd Year Group 3: BUSINESS STATISTICS	CO1: The students after the completion of this course will be able to understand & apply the concepts of mean, mode & median. CO2: The students after the completion of this course will be able to apply various methods of sampling & probability measurement.
B.Com. 2nd Year Group 3: FUNDAMENTALS OF ENTREPRENEURSHIP	CO1: The students after the completion of this course will be able to create entrepreneurial temper. CO2: The students after the completion of this course will be able to take up the cause of entrepreneurship.
B.Com. 3rd Year Group 1: INCOME TAX	CO1: The students after the completion of this course will be able to understand the basic concept & acquire knowledge about computation of Income. CO2: The students after the completion of this course will be enabled to submit Income Tax Returns, Advance Tax & Tax deducted at source. CO3: The students after the completion of this course will be able to identify the procedures of Tax collection authorities under Income Tax Act.
B.Com. 3rd Year Group 1: AUDITING	CO1: The students after the completion of this course will be able to acquaint themselves about concept & principles of

	Auditing, Audit process, Assurance standards & Tax Audit and Audit of computerized system. CO2: The students after the completion of this course will be able to prepare Audit Reports.
B.Com. 3rd Year Group 2: INDIRECT TAXES WITH GST	CO1: The students after the completion of this course will be able to understand and apply the concept of GST. CO2: The students after the completion of this course will be able to understand and apply the concept of Excise duty, CENVAT. CO3: The students after the completion of this course will be able to understand and apply the knowledge of Registration under GST including its procedures & the liable person for GST registration
B.Com. 3rd Year Group 2: MANAGEMENT ACCOUNTING	CO1: The students after the completion of this course will be able to understand and apply the basic knowledge of management accounting & its relevance in a business organization. CO2: The students after the completion of this course will be able to understand and apply managerial behavior & control structures prevalent under varied business environment.
B.Com. 3rd Year Group 3: PRINCIPLES OF MARKETING	CO1: The Subject provide the insight of Modern Marketing and other Marketing Concept. CO2: Make know the definition and significance of various marketing strategies such as modern marketing, global marketing, travel marketing etc. CO3: To make understand the marketing function. CO4: Demonstrate Consumer behavior and customer relations marketing. CO5: Describe the product mix and analysis various pricing objectives and strategies. CO6: Significance of channel of distribution.
B.Com. 3rd Year Group 3: INTERNATIONAL MARKETING	CO1: Students developed an understanding of major issues related to international marketing CO2: Students developed skills in researching and analyzing trends in global markets and in modern marketing practice. CO3: Be able to assess an organization's ability to enter and compete in international markets.

COURSE OUTCOMES (CO) OF THE COURSES COMMON TO ALL THE UG PROGRAMMES MENTIONED ABOVE

NAME OF THE COURSE	OUTCOMES
Foundation course English Language	CO1: The student will be able to write a paragraph with a topic sentence, support and concluding sentence. CO2: The student will be able to produce appropriate vocabulary and correct word forms. CO3: The student will be able to use grammatical structures accurately. CO4: The student will be able to broaden their vocabularies and develop an appreciation of language. CO5: The student will be able to be competent to write a report or idea expansion. CO7: The student will be able to summarize and paraphrase information in a text.
Foundation course Hindi Language	CO1: Understanding the origin of Hindi language. CO2: Identifying the dialects of Hindi language family. CO3: Analyzing the development of Khariboli Hindi. CO4: Develop Hindi reading & linguistic comprehension of students. CO5: Develop interest in literature story and poetry. CO6: Inculcate moral and human values within themselves. CO7: Understand the types of Hindi Short Story Writing. CO8: Students can get acquainted with the issues related to personality development along with society and national interest through the articles of famous and famous persons, and through the proposed course of scientific and language empowerment, from the point of view of competitive examinations while becoming familiar with the practical aspect of Hindi language. CO9: Keeping in view the basic knowledge of grammar, communication skills, social messaging and language proficiency is proposed.
Environmental Studies and Human Rights	CO1: The students after the completion of this course will be able to describe, recognize and practice multi-disciplinary nature of environmental studies, natural resources: renewable and non-renewable resources - forest resources, deforestation, timber extraction, mining, dams and their effects on forests and tribal people and relevant forest act, water resources, surface and ground water, floods drought, conflicts over water, dams benefits and problems and relevant act, mineral resources, environmental effects of extracting and using mineral resources, food resources, world food problems, effects of

	modern agriculture, fertilizer-pesticide problems, water logging, salinity, energy resources, renewable and nonrenewable energy sources, use of alternate energy sources, land resources, land degradation, man induced landslides, soil erosion and desertification. CO2: The students after the completion of this course will be able to describe, recognize and practice ecosystem - producers, consumers and decomposers, energy flow in ecosystem, ecological succession, food chains, food webs and ecological pyramids, structure and function of forest, grass, desert and aquatic ecosystem. CO3: The students after the completion of this course will be able to describe, recognize and practice biodiversity and its conservation, genetic, species and ecosystem diversity, bio-geographical classification of India, value of biodiversity: consumptive use, productive use, social ethics, aesthetic and option values, biodiversity at global, national and local levels, India as mega-diversity nation, hot spots of biodiversity, threats to biodiversity, habitat loss, poaching of wildlife, man-wild life conflict, endangered and endemic species of India, conservation of biodiversity: in situ and ex-situ conservation of biodiversity. CO4: The students after the completion of this course will be able to describe, recognize and practice pollution: causes, effect and control measures for – air, water, soil, marine, noise, nuclear pollution and human population, solid waste management, urban and industrial wastes, disaster management: floods, earthquake, cyclone and landslides, environmental management - from unsustainable to sustainable development, water conservation, rain water harvesting, water shed management, resettlement and rehabilitation of people, environmental ethics, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, wasteland reclamation, environment protection act, environmental legislation, information technology in environment and human health. CO5: The students after the completion of this course will be able to describe, recognize and practice concepts of human rights, classification of human rights, protection of human rights under the UNO charter, protection of human rights under the universal declaration of human rights, 1948 convention on the elimination of all forms of discrimination against women, convention on the rights of the child, 1989. CO6: The students after the completion of this course will be able to describe, recognize and practice human rights norms in India, human rights under the constitution of India,

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	fundamental rights under the constitution of India, directive principles of state policy under the constitution of India, enforcement of human rights in India, protection of human rights under the human rights act, 1993- national human rights commission, state human rights commission and human rights court in India, fundamental duties under the constitution of India.