

## **B.Sc. 3 years Undergraduate programme**

### **Programme Outcomes (PO)**

PO1.After successful completion of three years degree programme in science a student should be able to demonstrate, solve and can bring out the innovative ideas or concepts so that the formulated model curricula in mathematics/physics/chemistry/botany/zoology incorporate new and rapid advancements self-sustaining and supportive learning.

PO2. After the completion of this program the students will be able to inculcate scientific temperament and also think methodically independently and draw a logical conclusion.


PO3.It is expected that undergraduate programme employ critical thinking and the scientific knowledge to design, carry out record and discuss and analyse the results.

PO4. The students will be able to communicate effectively throughspeaking and writing clearly and express themselves to the world by connecting with different ideas, people,media and technology which may develop leadership qualities in them.

PO5. The students will be able to express compassionate social concern and act with conscious awareness of issues to contribute in the society.

PO6. The students will be able to recognize and understand different value systems ethically and morally and accept responsibility of individual decisions and actions.

PO7. It is expected that the students will be able to understand global environmental issues and take appropriate actions for long term sustainable development.

  
**PRINCIPAL**  
Govt. College, Arjunda  
Distt. Balod (C.G.)

### **Programme Specific Outcomes (PSO)**

PSO1. The BSc programme is 3 years full time programme in order to make students more career oriented and nurturing their scientific temperaments students will get exposure to the depth of core understanding of various dimensions of science.

PSO2. After the completion of this programme students will gain the knowledge of mathematics/zoology/botany/physics/chemistry through theory and practical.

PSO3. After the completion of this programme students will develop research oriented skills.

PSO4 After the completion of this programme students will be able to understand and apply good laboratory practices and safety.

PSO5.The students after the completion of this programme will be able to understand major thrust areas of the science discipline.

PSO6.The students after the completion of this programme will develop strong understanding of fundamentals of scientific process at an advanced level.

PSO7. The practical work in various science discipline will provide breadth and depth of scientific knowledge.

### **Course- Physics (Code-)**

This course is aimed to provide the students with a solid understanding of all the fundamental concepts of physics necessary for the study of the more advanced or specialized courses that follow.

### **Course Outcomes (CO)**

After the completion of this course students will gain an understanding of -

CO1. laws of motion and their application to various dynamical situations, motion of inertial frames and concept of Galilean invariance. Learn the concept of conservation of energy and momentum.



CO2. expression for the moment of inertia about the given axis of symmetry for different uniform mass distributions.

CO3. principles of elasticity, viscosity and surface tension.

CO4. Kepler's law to describe the motion of planets and satellite in circular orbit, through the study of law of Gravitation.

CO5. explain the phenomena of simple harmonic motion and the properties of systems executing such motions.

### **Course 2: Physics (code-)**

This course is aimed to provide the students with a solid understanding of all the fundamental concepts of electricity, magnetism and electromagnetic theory necessary for the study of the more advanced or specialized courses that follow.

### **Course Outcomes (CO)**

After the completion of this course students will be able to-

CO1. demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges.

CO2. explain a working understanding of capacitors.

CO3. Understand the magnetic field produced by magnetic dipoles and electric currents and explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.

CO4. apply various network theorems and their applications.

**Course 3:** This course is designed to provide proper understanding of laws of thermodynamics, kinetic theory and statistical physics

### **Course Outcome**

After the successful completion of this course students will be able to-



CO1. describe the basic concepts of laws of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations.

CO2. Explain Maxwell's thermodynamic relations.

CO3. Assess basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law, equation of energies, mean free path of molecular collisions.

CO4. correlate real gas equations, Vander Waal equation of state, the Joule-Thompson effect etc.

#### **Course 4: Wave, Acoustics and Optics**

This course is designed to give useful information of Wave, Acoustics and Optics.

#### **Course Outcome**

After the completion of this course student will be able to

CO1. understand the principle of superposition of waves and thus describe the formation of standing waves.

CO2. apply basic knowledge of principles and theories about the behaviour of light and the physical environment to conduct experiments.

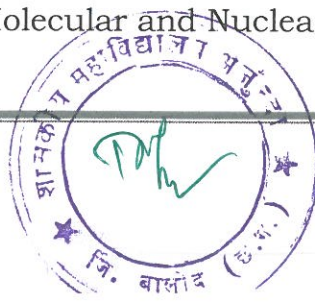
CO3. Familiar about the principles of wave motion and superposition to explain the physics of polarization, interference and diffraction.

CO4. demonstrate the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms.

CO5. Distinguish the spontaneous and stimulated emission of radiation, optical pumping and population inversion as well as Ruby laser and laser.

#### **Course 5: Quantum Mechanics, Atomic, Molecular and Nuclear Physics**

This course is aimed to provide all the fundamental concepts of Relativity, Quantum Mechanics, Atomic, Molecular and Nuclear Physics



### **Course outcome**

The students after the completion of this course will be able to

CO1. Understand the main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter. CO2 the theory of quantum measurements, wave packets and uncertainty principle.

CO3 explain the central concepts of quantum mechanics and the Schrodinger equations.

CO4.narrate the properties of nuclei and structure of atomic nucleus.

CO5. calculate the decay rates and lifetime of radioactive decays.

CO6. describe the fission and fusion as well as nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars.

### **Course 6: Solid State Physics, Solid State Devices and Electronics**

This course is aimed to provide all the fundamental concepts of Solid State Physics, Solid State Devices and Electronics

### **Course outcome**

The students after the completion of this course will be able to

CO1. describe the crystalline and amorphous substances and diffraction of X-rays by crystalline materials.

CO2. understand lattice vibrations, phonons and in depth of knowledge of Einstein and Debye theory of specific heat of solids.

CO3. describe the band theory of solids and must be able to differentiate insulators, conductors and semiconductors.

CO4. Understand the N- and P- type semiconductors, P-N junctions, application of PN junction for different type of rectifiers and voltage regulators.



CO5. Compare the PNP and NPN transistors and their applications as amplifiers and oscillators.

## **Subject Mathematics**

### **Course 7: Algebra & Trigonometry**

**Course Outcome-** After the completion of this course student is expected to-

CO1. describe function relation, properties of relation, types of relations beside that students are able to understanding the unary and binary operations with Group theory, Ring theory and related some useful theorems.

CO2. Get familiar with inverse of matrix, Canonical form and apply the Cayley – Hamilton theorem. CO3. The students after the completion of this course will be able to solve higher degree equation by Cardan's and Farri's method beside that the solution of complex roots by De Moivre's with some applications.

### **Course 8: Calculus**

**Course Outcome-** After the completion of this course student is expected to-

CO1. Test the continuity and differentiability of functions of one variable, successive derivative (Lebnitz methods), expansion of function by Talyor's and Macaluries theorem and behaviour of asymptotes.

CO2. Calculate and solve the definite and indefinite integrals with application in finding length of arc, area, volume of solid revolution.

CO3. Solve first order differential equation with simple application along with capable to solve higher order differential equation with constant coefficients and functional coefficients.



### **Course 9: Vector Analysis & Geometry**

**Course Outcome-** After the completion of this course student is expected to-

CO1. understand dot and cross product three of vector and scalar multiplication with application.

CO2. solve differentiation and integration of vectors and scalar with application like that Gauss, Green and Stokes theorem.

CO3. solve Cone, Sphere, Cylinder, Generating Lines, Straight line, Plane etc. in three dimension.

### **Course 10: Advanced Calculus**

**Course Outcome-** After the completion of this course student is expected to-

CO1 identify the convergence and divergence of series and apply the different types of test to identify the convergence and divergence of the series.

CO2. test continuity and differentiability of two variable problems, partial derivative, Euler theorem, Jacobian of two and three variables. With application of Maxima and minima of several function problems.

CO3. determine the Beta – Gamma functions and solve the double and triple integrations.

### **Course 11: Differential Equations**

**Course Outcome-** After the completion of this course student is expected to-

CO1. solve the ordinary differential equation with power series method and learn about special function like that Bessel's, Legendre's differential equation, beside that student able to formulate partial differential equation, and solution of equations with some application.



CO2. compute the Laplace and Inverse Laplace transformation with application in solving initial and boundary value ordinary and partial differential equations.

### **Course 12: Mechanics**

**Course Outcome-** After the completion of this course student is expected to-

CO1. find the velocity and acceleration of a moving particle.

CO2. compute the equilibrium condition of particle.

CO3. describe the attraction and potential of different particles (Moving and Static)

### **Course 13: Analysis**

**Course Outcome-** After the completion of this course student is expected to-

CO1. determine the Fourier series of full and half range with application.

CO2. apply Schwarz and Young's theorem for function of several variables.

CO3. learn about analytic function.

CO4. know about the distance function of real numbers with the properties dense set, open set closed set, cantor intersection theorems.

### **Course 14: Abstract Algebra**

**Course Outcome-** After the completion of this course student is expected to-

CO1. use various forms of "Sylow theorem" Groups, Sub-groups, Normal Sub-groups, and Semi-groups etc.

CO2. know about vector space linear transformation with some application of linear transformation.

CO3. discuss about the inner product space and some useful theorems related it .





### **Course 15(A) Discrete Mathematic structure**

**Course Outcome-** After the completion of this course student is expected to-

CO1. describe Graphs, Trees, Spanning Trees, Circuits, finite state machine and their types.

CO2. describe the difference between Mealy and Moore machine.

CO3. compute the output of a finite state machine corresponding to their next state of the given input.

### **Course 15 (B) :Programming in C with Numerical analysis**

**Course Outcome-** After the completion of this course student is expected to-

CO1. know various numerical method to approximate the solution of differential equation (like that Picard, Euler, RungeKutta ).

CO2. compute the approximate solution of Algebraic and transcendental equation by Bisection method, Newton method beside that student able to know interpolation method for equal and unequal interval.

CO3. know the programming in C language.

### **Course 16 (B Sc I): Inorganic Chemistry**

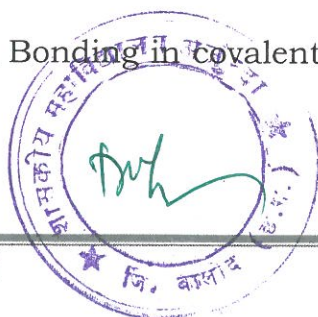
This course is aimed to provide the students with a solid understanding of all the fundamental concepts of inorganic chemistry. The topic discussed include atomic structure, periodic properties, S and P block elements.

#### **Course Outcome-**

After the successful completion of this course students will be able to-

CO1. describe and explain Atomic Structure, and Periodic Properties.

CO2, understand Chemical Bonding in covalent molecule as well as in ionic compounds.



CO3. explain chemistry of s-Block Elements, p- Block elements in special reference with chemistry of Noble Gases.

CO4. recognize principles of Inorganic Chemical Analysis.

### **Course 17 (B Sc I) : Organic Chemistry**

This programme is designed to provide basic idea of organic reaction of saturated and unsaturated hydrocarbons and their stereochemistry.

#### **Course Outcome**

The students after the completion of this course will be able to

CO1. describe electronic structure & bonding, mechanism of organic reactions.

CO2. explain stereochemistry of organic compounds.

CO3. describe aliphatic and aromatic ring compounds.

CO4. understand alkenes, dienes and alkynes.

CO5. understand arenes and aromaticity.

### **Course 18(B Sc I) : Physical Chemistry**

#### **Course Outcome**

The students after the completion of this course will be able to

CO1. describe Mathematical concepts for chemist and computer.

CO2. understand Molecular velocities , theory of gases, liquefaction of gases.

CO3. Get concept of Liquid state of matter.

CO4. describe Liquid crystals, colloidal state, and solid state.

CO5. Understand and explain Chemical kinetics, catalysis.



## **Course 19(B Sc II) : Inorganic Chemistry**

### **Course Outcome**

The students after the completion of this course will be able to

CO1. understand and explain the chemistry of elements of first, Second and third transition Series.

CO2. Understand Oxidation and Reduction and chemistry of Coordination Compounds,

CO3. describe extraction and application of Lanthanides and Actinides.

## **Course 20(B Sc II): Organic Chemistry**

### **Course Outcome**

The students after the completion of this course will be able to

CO1. describe synthesis and properties of Alcohols, phenols, epoxides.

CO2. describe Aldehydes and ketones.

CO3. familiar about Carboxylic acids, substituted carboxylic acids, and carboxylic acid derivatives.

CO4. explain Organic compounds of nitrogen.

CO5. understand Heterocyclic compounds, amino acids and peptides.

## **Course 21(B Sc II): Physical Chemistry**

### **Course Outcome**

The students after the completion of this course will be able to

CO1. Explain Laws of thermodynamics and Thermo chemistry.

CO2. describe Phase equilibrium.

CO3. understand Electrochemistry.

CO4. electrochemical cell or galvanic cell and corrosion.



### **Course 22(B Sc III) : Inorganic Chemistry**

#### **Course Outcome**

The students after the completion of this course will be able to

CO1. Understand the chemistry of Organometallic compounds.

CO2. Explain Bio Inorganic Compounds.

CO3. describe Metal-Ligand Bonding in Transition Metal Complexes and their magnetic behaviour

CO4. Get familiar with various theories of Acids and Bases and properties of Non Aqueous Solvents.

### **Course 23( B Sc III) : Organic Chemistry**

#### **Course Outcome**

The students after the completion of this course will be able to

CO1. describe organometallic compounds, organ sulphur compounds, and organic synthesis via emulates.

CO2. Explain Biomolecules, carbohydrates, proteins and nucleic acids.

CO3. describe Synthetic polymers, synthetic dyes.

CO4. Understand Spectroscopy, mass spectroscopy, infra-red spectroscopy, uv-visible spectroscopy, nmr-spectroscopy, cmr-spectroscopy, magnetic resonance imaging (MRI).

### **Course 24(B Sc III) : Physical Chemistry**

#### **Course Outcome**

The students after the completion of this course will be able to

CO11. Understand Quantum mechanics.

CO12. Quantum mechanical approach of molecular orbit theory and VBT.

CO13. Explain Spectroscopy, electromagnetic radiation, vibrational spectra, and Raman spectra.



CO14. Understand Electronic spectra, photochemistry.

CO15. describe Thermodynamics, physical properties and molecular structure, magnetic properties.

### **Course 25 Inorganic Chemistry Practicals**

#### **Course Outcome**

The students after the completion of this course will be able to

CO-1. Calculate molar and normal solution of various concentrations. CO2. Study the gravimetric and volumetric analysis of ores and alloy.

CO-3. Prepare a various inorganic complexes and determine its % purity.

CO-4. To study binary mixture with removal of interfering radicals.

CO-5. To understand the chromatographic techniques

### **Course 26 Organic Chemistry Practicals**

#### **Course Outcome**

The students after the completion of this course will be able to

CO-1. Perform the Binary mixtures.

CO-2. Preparation of organic compounds, their purifications and run TLC.

CO-3. Determination of physical constant: Melting point, Boiling point transition temperature.

CO-4. Different separation techniques.

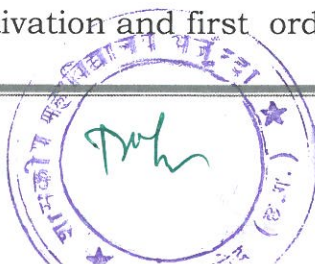
### **Course 27 : Physical Chemistry Practical**

**Course Outcome-** After the successful completion of practical course students are able to

CO1. Find out surface tension and viscosity of the solution.

CO-2. Determine specific rotations and percentage of to optically active substances by polarimetrically.

CO-3. Study the energy of activation and first order reaction.



CO-4. Study the stability of complex ion and stranded free energy change and equilibrium constant by potentiometry.

CO-5. Find out the acidity, Basicity and PKa Value on pH meter.

**Subject : Zoology**

**Course 1 : Cell Biology & Invertebrates Immunology**

**Course Outcomes (CO)** The students after the completion of this course will be able to

CO1. compare between Prokaryotic & Eukaryotic Cells.

CO2. explain Cell divisions (Mitosis & Meiosis).

CO3. describe general characteristics & classification of invertebrates.

CO4. differentiate Helminthes & Annelida.

CO5. recognize Mollusca, Protochordata. .describe concept of immunity, innate and acquired immunity, brief account of cells and organs of immune system, antigen and antigenicity, antibody structure and function, antigen-antibody reaction.

**Course 2: Vertebrates & Embryology**

**Course Outcomes (CO)** The students after the completion of this course will be able to

CO1. understand the origin and classification of Chordates.

CO2. describe Fishes, Amphibia&Reptilia.

CO3. differentiate Aves & Mammals.

CO4 understand Gametogenesis, Fertilization &Parthenogenesis, and Development of frog upto formation of three germ layers.

CO5. .describe development of Chick upto formation of three germ layers, Extra embryonic membranes, Placenta in mammals.



### **Course 3: Anatomy & Physiology**

**Course Outcomes (CO)** The students after the completion of this course will be able to

CO1. understand anatomy of various organ systems of vertebrates - Integument and its derivatives, structure of scales, hair and feathers; Alimentary canal and digestive glands in vertebrates; Respiratory Organs, Gills and lungs; Air-Sac in birds.

CO2. explain endoskeleton-limbs, girdles and vertebrae; Circulatory System - Evolution of heart and aortic arches; Urogenital System - Kidney and excretory ducts.

CO3. describe nervous system - general plan of brain and spinal cord; Endocrine glands - classification and histology; Gonads and genital ducts.

CO4. understand digestion and absorption of dietary components; physiology of heart, cardiac cycle and ECG; blood coagulation; respiration mechanism and control of breathing.

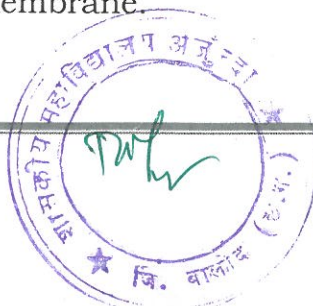
CO5. describe physiology of excretion, osmoregulation; physiology of muscle contraction; physiology of nerve impulse; synaptic transmission; ear and eye - structure and function.

### **Course 4: Vertebrate Endocrinology, Reproductive Biology Behaviour, Evolution and Applied Zoology**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. general characters of hormones, hormone receptors, biosynthesis and secretion of thyroid, adrenal, ovarian and testicular hormones, endocrine disorder due to hormones and other glands.

CO2. reproductive cycle in vertebrates, menstruation, lactation and pregnancy, mechanism of parturition, hormonal regulation of gametogenesis, extra embryonic membrane.



CO3. evidences of organic evolution, theories of organic evolution, variation, mutation, isolation and natural selection, evolution of horse.

CO4. ethology, patterns of behavior taxes, reflexes, drives and stereotyped behavior, reproductive behavioral patterns, hormones, drugs and behavior.

CO5. aquaculture, sericulture, apiculture, pisciculture, poultry keeping, elements of pest control - chemical control & biological control.

### **Course 5: Ecology, Environmental biology; Toxicology; Microbiology and Medical Zoology**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. aims and scopes of ecology, major ecosystems of the world, population- characteristics and regulation of densities, communities and ecosystems, biogeochemical cycles, air and water pollution, ecological succession.

CO2. environmental biology, laws of limiting factors, food chain in a freshwater ecosystem, energy flow in ecosystem-trophic levels, conservation of natural resources, environmental impact assessment.

CO3. toxicology, definition of toxicity, classification of toxicants, principle of systematic toxicology, toxic agents and their action-metallic and inorganic agents, animal poisons - snake-venom, scorpion and bee poisoning, food poisoning.

CO4. microbiology, general and applied microbiology, microbiology of domestic water and sewage, microbiology of milk and milk products, industrial microbiology.

CO5. medical microbiology, brief introduction to pathogenic micro-organisms, rickettsia, spirochaetes and bacteria, brief account of life history and pathogenicity of the following pathogens with reference to man; prophylaxis and treatment -pathogenic protozoans - entamoeba,





trypanosoma, and giardia, pathogenic helminths–schistosoma, nematode pathogenic parasites of man, vector insects.

### **Course 6: Genetics, Cell Physiology, Biochemistry, Biotechnology and Bio-techniques**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. genetics, linkage and linkage maps, varieties of gene expression - multiple alleles; lithogenesis; pleiotropic genes; gene interaction; epistasis, sex-chromosome systems, and sex-linkage, mutation and chromosomal alterations; meiotic consequences, human genetics - chromosomal and single gene disorders (somatic cell genetics).

CO2. cell physiology, general idea about pH and buffer, transport across membrane - cell membrane; mitochondria and endoplasmic reticulum, active transport and its mechanism; active transport in mitochondria and endoplasmic reticulum, hydrolytic enzymes - their chemical nature, activation and specificity.

CO3. biochemistry, amino acids and peptides - basic structure and biological function, carbohydrate and its metabolism - glycogenesis; gluconeogenesis; glycolysis, glycogenolysis; Kreb's cycle, lipid metabolism - oxidation of glycerol; oxidation of fatty acid, protein metabolism - deamination, transamination, transmethylation; biosynthesis of protein.

CO4. biotechnology - scope and importance, recombinant DNA and gene cloning, cloned genes and other tools of biotechnology, applications of biotechnology in pharmaceutical industry, and food processing industry.

CO5. biotechniques principles and techniques of pH meter, colorimeter, microscopy-light microscopes, phase contrast and electron microscopes, centrifugation, separation of biomolecules by chromatography and electrophoresis, biochemical methods for determination of protein, lipids, and carbohydrates.



## **Subject : Zoology**

### **Course 7: General Diversity of Microbes and Cryptogams**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. Viruses and Bacteria: General account of viruses and mycoplasma; bacteria structure; nutrition, reproduction and economic importance; general account of cyanobacteria.

CO2. Algae: General characters, classification and economic importance; important features and life history of Chlorophyceae-Volvox, Oedogonim, Coleochaete; Xanthophyceae- Vaucheria; Phaeophyceae- Ectocarpus, Sargassum; Rhodophyceae- Polysiphonia.

CO3. Fungi: General characters, classification and economic importance; important features and life history of Mastigomycotina Pythium, Phytophthora; Zygomycotina- Mucor, Ascomycotina-Saccharomyces, Eurotium, Chaetomium, Peziza; Basidiomycotina- Puccinia, Agaricus; Deuteromycotina-Cercospora, Colletotrichum; general account of Lichens.

CO4. .describe Bryophyta: Amphibians of plant kingdom displaying alternation of generations; structure, reproduction and classification of Hepaticopsida (e.g. RicciaMarchantia); Anthocerotopsida (e.g. Anthoceros), Bryopsida (e.g. Funaria)

CO5. Pteridophyta: The first vascular plants; important characteristics of Psilopsida, Lycopsida, Sphenopsida and Pteropsida; structure, Reproduction in Rhynia, LycopodiumSelaginella, Equisetum, Pteris and Marsilea.

### **Course8: Cell Biology and Genetics**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. the Cell: Envelope; Plasma membrane; bilayer lipid structure; functions; the cell wall, Ultra structure and function of nucleus: nuclear



membrane; nucleolus and other organelles: Golgi bodies, ER, peroxisomes, Vacuoles.

CO2. Chromosome organization: Morphology; centromere and telomere; chromosome alterations; deletions, duplications, translocations, inversions; variations in chromosome number aneuploidy, polyploidy; sex chromosomes, Cell division: Mitosis; meiosis.

CO3. DNA the genetic material: DNA structure; replication; DNA- protein interaction; the nucleosome model; genetic code; satellite and repetitive DNA, Extra nuclear genome: Presence and function of mitochondrial and plastid DNA; plasmids.

CO4. Gene expression: Structure of gene; transfer of genetic information; transcription, translation, protein synthesis; tRNA; ribosomes; regulation of gene expression in prokaryotes and eukaryotes; proteins - 1D, 2D and 3D structures.

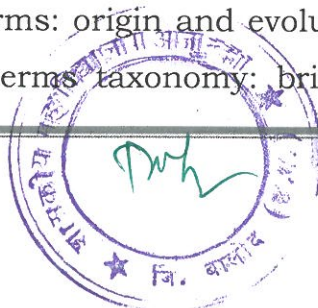
CO5. genetic Variations: Mutations, spontaneous and induced; transposable genetic elements; DNA damage and repair: Genetic inheritance: Mendelism; laws of segregation and independent assortment: linkage analysis; allelic and non-allelic interactions.

### **Course 9: Diversity of Seed Plants and their Systematics**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. .describe characteristics of seed plants; evolution of the seed habit; seed plants with (angiosperms) and without (gymnosperms) fruits; fossil and living seed plants, general features of gymnosperms and their classification; evolution and diversity of gymnosperms; geological time scale, fossilization and fossil gymnosperms.

CO2. .describe morphology of vegetative and reproductive parts; anatomy of roots, stem and leaf, reproduction and life cycle of Pinus, Cycas and Ephedra. CO3. .describe angiosperms: origin and evolution, some examples of primitive angiosperms, angiosperms taxonomy: brief history, aims and



fundamental components; identification, keys taxonomic literature, botanical nomenclature: principles and rules; taxonomic ranks; type concept; principle of priority.

CO4. .describe classification of angiosperms; salient features of the systems proposed by Bentham and Hooker and Engler and Prantl, major contributions of cytology, phytochemistry and taxometrics to taxonomy.

CO5. .describe diversity of flowering plants: general account of the families- Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

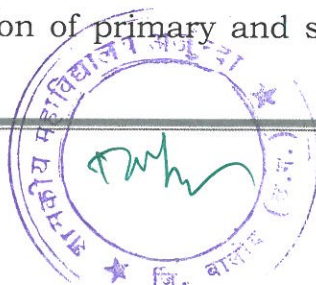
### **Course 10: Structure Development and Reproduction in Flowering Plants**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. .describe the basic body plan of a flowering plant: modular type of growth, diversity in plant form in annuals, biennials and perennials; convergence of evolution of tree habit in gymnosperms, monocotyledons and dicotyledons; trees-largest and longest-lived organisms.

CO2. .describe the shoot system: the shoot apical meristem and its histological organization; vascularization of primary shoot in monocotyledons and dicotyledons; formation of internodes, branching pattern; monopodial and sympodial growth canopy architecture; cambium and its functions; formation of secondary xylem, a general account of wood structure in relation to conduction of water and minerals; characteristics of growth rings, sapwood and heart wood; role of woody skeleton; secondary phloem – structure, function, relationships, periderm.

CO3. .describe leaf: origin, development, arrangement and diversity in size and shape; internal structure in relation to photosynthesis and water loss; adaptations to water stress; senescence and abscission, the root system: the root apical meristem; differentiation of primary and secondary tissues and



their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.

CO4. .describe flower: a modified shoot; structure, development and varieties of flower, functions, structure of anther and pistil, the male and female gametophytes; types of pollination; attractions and rewards for pollinators; pollen-pistil interaction, self incompatibility, double fertilization, formation of seed-endosperm and embryo; fruit development and maturation.

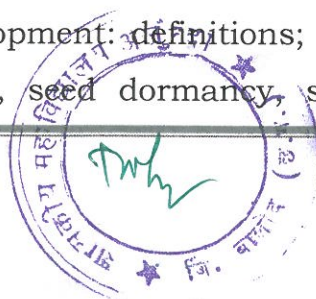
CO5. .describe significance of seed: suspended animation; ecological adaptation; unit of genetic recombination and replenishment, dispersal strategies, vegetative reproduction: vegetative propagation, grafting, economic aspects.

**Course 11: Plant Physiology, Biochemistry and Biotechnology Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. plant-water relations: importance of water to plant life; physical properties of water; diffusion and osmosis; absorption, transport of water and transpiration; physiology of stomata, mineral nutrition: essential macro and micro-elements and their role; mineral uptake; deficiency and toxicity symptoms.

CO2. transport of organic substances: mechanism of phloem transport; source-sink relationship; factors affecting translocation, basic of enzymology: discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and cofactors; regulation of enzyme activity, mechanism of action, photosynthesis: significance; historical aspects; photosynthetic pigments; Calvin cycle; C4 pathway; CAM plants; photorespiration. CO3. respiration: ATP - the biological energy currency; aerobic and anaerobic respiration; Krebs cycle, fatty acid biosynthesis;; saturated and unsaturated fatty acids;

CO4. .describe growth and development: definitions; phases of growth and development; kinetics of growth, seed dormancy, seed germination and



factors of their regulation; plant movements; the concept of photoperiodism; physiology of flowering; and mechanism of action; photomorphogenesis; phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.

CO5. .describe genetic engineering: tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; techniques of gene mapping and chromosome walking, biotechnology: functional definition; basic aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agrobacterium; vectors for gene delivery and marker genes; salient achievements in crop biotechnology.

### **Course 12: Ecology and Utilization of Plants**

**Course Outcomes (CO)** The students after the completion of this course will be able to describe

CO1. .describe plants and environment: atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota, Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes), temperature (thermoperiodicity), light (photoperiodism, heliophytes and sciophytes) and salinity.

CO2. .describe community ecology: community characteristics, frequency, density, cover, life forms biological spectrum; ecological succession, ecosystems: structure, abiotic and biotic components; food chain, food web, ecological pyramids, energy flow; biogeochemical cycles of carbon, nitrogen and phosphorus.

CO3. .describe population ecology: growth curves; ecotypes; ecads, biogeographical regions of India, Vegetation types of India: Forests and grasslands.



CO4. .describe utilization of plants food plants: rice, wheat, maize, potato, sugarcane, fibers: cotton and jute, vegetable oils: groundnut, mustard and coconut, general account of sources of firewood, timber and bamboos.

CO5. .describe Spices, Medicinal plants, Beverages- Tea and coffee, Rubber.

  
**PRINCIPAL**  
Govt. College, Arjunda  
Balod (C.G.)

GOVT COLLEGE ARJUNDA DISTT BALOD CG  
SYLLABUS AND OUTCOME  
GEOGRAPHY BA I first Paper

SL	SYLLABUS IN BRIEF	OUTCOME
	Physical Geography-structure of the earth	Make students to understand our planet and universe
	Geomorphic cycle of erosion	Enrich knowledge of physical Geography
	Formation of Landscapes	understand formation of various Landscape
	weathering and its effects	Topography helps in making plans
	Rocks - Types, Examples	

GEOGRAPHY BA II nd Paper

	Human Geography- Nature and scope of Human Geography	Effects of environment in Human economic and other activity
	Man environment relationship	Understand the problems of over population
	climate and its effect	climate and economic activity such as agriculture
	Population various aspect	Planning for food security
	Human settlement	





GOVT COLLEGE ARJUNDA DISTT BALOD CG  
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GOVT COLLEGE ARJUNDA DISTT BALOD CG  
SYLLABUS AND OUTCOME  
ENGLISH LANGUAGE BA, BSc,B.Com. I,II,III

SL	SYLLABUS IN BRIEF	OUTCOME
	Grammar	Student will highten their awareness of correct uses of English grammar and writing,
	Tense, voice, Narration	Improve english speaking capability
	Reading comprehension and vocabulary	Increase their reading speed and comprehension
	Paragraph writing, eassay writing, letter writing	student will strengh their ability to write academic papers,essays and summaring the process approach.
	Prescribed Test book by mp hindi granth Academy Bhopal	



GOVT COLLEGE ARJUNDA DISTT BALOD CG  
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BA I,II,III GEOGRAPHY PRACTICAL

BA I

SYLLABUS	OUTCOME
Scale simple, comparative, Diagonal etc.	Student learn to draw scale, Uses of scale in survey and Mapping.
Diagram and Graphs	Student learn to make various Diagram using Data related to Population, Production of minerals, other item
Relief Contour line,hachure method etc.	Student learn to draw Profile based on contour map. Student become capable to identify Relief of any particular area with contour lines.
Statistics - Mean, Median, Mode	Primary knowledge of Statistics- calculation of central tendency mean, median,mode calculation on various type of data.
Surveying - Chain Tape survey	Primary knowledge of survey of a small area, chain line,offset and Tie station. Student learn to draw map based on survey.

BA II

SYLLABUS	OUTCOME
Weather maps and its explanation	Student learn to interprete the Weather Maps.and learn about weather equipments.
Map Projection - simple cylindrical projections to make world maps.	Student learn to draw various cylindrical projections such as simple equ distant, equal area, Mercator Projections.
Diagram,bar diagram,pie chart,circle diagram	Student learn to geographical representation to statistical data
Statistics - Mean, Median, Mode,Standard deviation	Primary knowledge of Statistics- calculation of central tendency mean, median,mode calculation on various type of data.
Surveying - Prismatic Campass survey.open and closed tranverse	Primary knowledge of survey of a small area, learn to operate Prismatic Campass.Student learn to draw map based on survey.

BA III

SYLLABUS	OUTCOME
Map Projection - simple cylindrical projections,Conical,Bonn and Zenithal Projection	Student learn to draw various cylindrical projections Conical,Bonn and Zenithal Projection
Band graph,Hythergraph and Climograph,Squre root,Cube-Root and Vernier	Student learn to draw various Graph Band,Climograph,Squre root,Cube-Root and Vernier
Intepretation of Indian toposheet with respect to physical and cultural features.	Student learn to Intepretation of Indian toposheet with respect to physical and cultural features.
Field work-Village servey and Field report and Analysis.	Student learn to collect primay data and to analyse it.
Surveying - Plain table survey Including Intersection and resection.	Primary knowledge of survey of a small area, learn to operate Plain table.Student learn to draw map based on survey.



BA I,II,III GEOGRAPHY PRACTICAL

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PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND

COURSE OUTCOMES (B.Com)

**Programme Outcomes (PO)**

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 after the completion of this programme will become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors etc.

PO3. 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.

PO4. 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.

PO5. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO6. 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.



PO7. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO8. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO9. 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.

**Programme Specific Outcomes (PSO)**

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 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 fundamentals of insurance.

PSO18. The students after the completion of this programme will be able to understand the essentials of banking and money management.

### **Course Outcomes (CO)**

#### **Course 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 instil the knowledge about accounting procedures, methods and techniques & develop skills for computerized Accounting.





## **Course 2: 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.

## **Course 3: 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.

## **Course 4: Business Regulatory Framework**

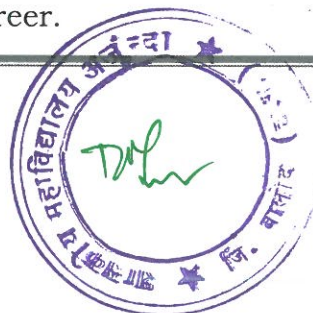
CO1. The students after the completion of this course will be acquainted with the basic concepts, terms & Provisions of mercantile & Business Laws. CO2. The students after the completion of this course will be able to develop the awareness regarding laws affecting business, trade & commerce.

## **Course 5: 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.



### **Course 6: 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 able to understand the basic micro economic concepts.

### **Course 7: 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.

### **Course 8: 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.

### **Course 9: 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.



### **Course 10: Principal 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.

### **Course 11: 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.

### **Course 12: 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.

### **Course 13: 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.



#### **Course 14: 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.

#### **Course 15: 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.

#### **Course 16: 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 behaviour & control structures prevalent under varied business environment.

#### **Course 17: International Marketing**

CO1. The students after the completion of this course will be able to grow our business and profits in market.

CO2. The students after the completion of this course will be able to understand and apply the knowledge of domestic and international marketing.



CO3. The students after the completion of this course will be able to understand and apply the functions marketing.

**Course 18: Principal of Marketing**

CO1. The students after the completion of this course will be able to understand and apply the fundamentals of marketing.

CO2. The students after the completion of this course will be able to understand and apply the marketing & practices.

CO3. The students after the completion of this course will be able to understand and apply the new concepts sale manager.



**B.A.– 3 years Undergraduate programme Programme Outcomes (PO)**

**PO1.** The undergraduate programme in Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science is aimed at providing the students necessary inputs so as to set forth the task of bringing about new and innovative ideas/concepts so that the formulated model curricula in Hindi Literature / Economics / Political Science / Sociology / Geography / / Home Science becomes in tune with the changing scenario and incorporate new and rapid advancements and multi-disciplinary skills, societal relevance, global interface, self-sustaining and supportive learning.

**PO2.**The undergraduate programme in Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science besides teaching the basic concepts of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science should in addition have broader vision for students so that the students therefore be exposed to societal interface of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science / and the role of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science in the development of arts and social sciences.

**PO3.** 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.

**PO4.** 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.

**PO5.** The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

**PO6.** 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.

**PO7.** The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

**PO8.** The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

**PO9.** 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.

### **Programme Specific Outcomes (PSO)**

**PSO1.** The students after the completion of this programme will be able to understand and apply the knowledge of Prachin Hindi Kavya.

**PSO2.** The students after the completion of this programme will be able to understand and apply the knowledge of Hindi Katha Sahitya.

**PSO3.** The students after the completion of this programme will be able to understand and apply the knowledge of Arwachin Hindi Kavya.

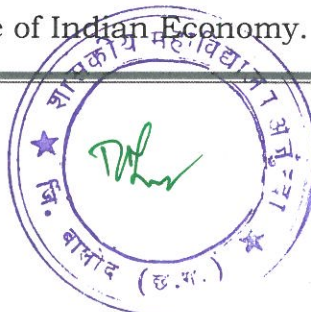
**PSO4.** The students after the completion of this programme will be able to understand and apply the knowledge of Hindi Nibandha Tatha Gadya Vidhayen.

**PSO5.** The students after the completion of this programme will be able to understand and apply the knowledge of Janpadiya Bhasha Sahitya (CHHATTISHGARHI)

**PSO6.** The students after the completion of this programme will be able to understand and apply the knowledge of Hindi Bhasha Sahitya ka itihās Tatha Kavyang vivechan.

**PSO7.** The students after the completion of this programme will be able to understand and apply the knowledge of Micro Economics.

**PSO8.** The students after the completion of this programme will be able to understand and apply the knowledge of Indian Economy.



**PSO9.** The students after the completion of this programme will be able to understand and apply the knowledge of Macro Economics.

**PSO10.** The students after the completion of this programme will be able to understand and apply the knowledge of Money, Banking and Public Finance.

**PSO11.** The students after the completion of this programme will be able to understand and apply the knowledge of Development and Environmental Economics.

**PSO12.** The students after the completion of this programme will be able to understand and apply the knowledge of Statistical Methods.

**PSO13.** The students after the completion of this programme will be able to understand and apply the knowledge of Political Theory.

**PSO14.** The students after the completion of this programme will be able to understand and apply the knowledge of Indian Government and Politics.

**PSO15.** The students after the completion of this programme will be able to understand and apply the knowledge of Western Political Thought.

**PSO16.** The students after the completion of this programme will be able to understand and apply the fundamentals of Comparative Politics and Government.

**PSO17.** The students after the completion of this programme will be able to understand and apply the knowledge of International Politics.

**PSO18.** The students after the completion of this programme will be able to understand and apply the knowledge of Public Administration.

**PSO19.** The students after the completion of this programme will be able to understand and apply the knowledge of Introduction to Sociology.

**PSO20.** The students after the completion of this programme will be able to understand and apply the knowledge of Contemporary Indian Society.

**PSO21.** The students after the completion of this programme will be able to understand and apply the knowledge of Society in India.

**PSO22.** The students after the completion of this programme will be able to understand and apply the knowledge of Crime and Society.

**PSO23.** The students after the completion of this programme will be able to understand and apply the knowledge of Sociology of Tribal Society.





**PSO24.** The students after the completion of this programme will be able to understand and apply the knowledge of Social Research Methods.

**PSO25.** The students after the completion of this programme will be able to understand and apply the knowledge of Physical Geography - Elements of Geomorphology.

**PSO26.** The students after the completion of this programme will be able to understand and apply the knowledge of Introduction to Geography and Human Geography.

**PSO27.** The students after the completion of this programme will be able to understand and apply the knowledge of Physical Geography - Climatology and Oceanography.

**PSO28.** The students after the completion of this programme will be able to understand and apply the knowledge of Regional Geography with Special Reference to North America.

**PSO29.** The students after the completion of this programme will be able to understand and apply the knowledge of Geography - Resources and Environment.

**PSO30.** The students after the completion of this programme will be able to understand and apply the knowledge of Geography of India (with special reference to Chhattisgarh).

**PSO31.** The students after the completion of this programme will be able to understand and apply the knowledge of Anatomy, Physiology & Hygiene

**PSO32.** The students after the completion of this programme will be able to understand and apply the knowledge of Home Science - Extension Education.

**PSO33.** The students after the completion of this programme will be able to understand and apply the knowledge of Fabric & Cloth Science.

**PSO34.** The students after the completion of this programme will be able to understand and apply the knowledge of Family Resource Management.

**PSO35.** The students after the completion of this programme will be able to understand and apply the knowledge of Home Science - Human Development.

**PSO36.** The students after the completion of this programme will be able to understand and apply the knowledge of Food & Nutrition Science.



## **Course outcomes(CO)**

### **Course 1.Prachin Hindi kavya**

**CO1.**The students after the completion of this course will be able to contemplate and comprehend --Kabir –kantikumar jain

**CO2.** The students after the completion of this course will be able to contemplate and comprehend-Jaysi-sankhipt Padmavat-Shyam sundardasnagmativiyog varnan.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend –Bhramar Geetsar- Sa Acharyaramchandra

**CO4.** The students after the completion of this course will be able to contemplate and comprehend .-Tulsi – Ramcharitmanas.

**CO5.** The students after the completion of this course will be able to contemplate and comprehend.Ghananand –sa Vishvanath Prasad Mishra.

**CO6.** The students after the completion of this course will be able to contemplate and comprehend .-Vidyapati.

**CO7.** The students after the completion of this course will be able to contemplate and comprehend .Rahim.

**CO8.** The students after the completion of this course will be able to contemplate and comprehend -Raskhan.

### **Course 2. Hindi Katha Sahitya.**

**CO1.**The students after the completion of this course will be able to contemplate and comprehend -Premchand -Gaban

**CO2.** The students after the completion of this course will be able to contemplate and comprehend -Premchand Kafan.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend –Aakashdip – Jay Shankar Prasad.



**CO4.** The students after the completion of this course will be able to contemplate and comprehend .-Fanishwar Nath Renu.

**CO5.** The students after the completion of this course will be able to contemplate and comprehend.Ghananand –Malbe ka Malik –Mohan Rakesh.

**CO6.** The students after the completion of this course will be able to contemplate and comprehend .-Bhisham Sahini – Chief ki Davat.

**CO7.** The students after the completion of this course will be able to contemplate and comprehend .Rajendra Yadav-Biradari Bahar.

**CO8.** The students after the completion of this course will be able to contemplate and comprehend –Raghey Raghav Gadai.

**CO9.** The students after the completion of this course will be able to contemplate and comprehend –Upendra Nath Ashak, Reddy, Shivani.

**Course 3. Arwachin Hindi Kavya.**

**CO1.**The students after the completion of this course will be able to contemplate and comprehend -Bharat Bharti ki Kavita- Maithili Sharan Gupta.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend –Sakhi Basant aaya, Var de vina vadini var de, Hindi ke suman ke prati, Todti Pathar.Raje ne Apni Rakhwali ki.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend –Sumitranandan pant Badal, Parivartan, Kholta edhar Janma Lochan, Aaj ka dukh, kalka alhad.Taj , Jhanjha, me nim, Bharatmata.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend-Makhan Lal Chaturvedi- Bali Panthi se , Sanjh aur Dholak ki thape, mai Dahi bech rahi hu, Ulahana, Nishashtra senani.



**CO5.** The students after the completion of this course will be able to contemplate and comprehend –Sachchidanand heeranand Vatsyayan Agyeya- Sabere Utha to Dhup Khili Thi, Samagri ka naivedya Dan, Ghar, Chandni ji lo, Durvachal.

**CO6.** The students after the completion of this course will be able to contemplate and comprehend-Ayodhya singh Upadhyaya.

#### **Course 4. Hindi Nibandh Tatha Gadya Vidhaye**

**CO1.**The students after the completion of this course will be able to contemplate and comprehend – Natak – Andher Nagri – Bartendu harishchandra,

**CO2.** The students after the completion of this course will be able to contemplate and comprehend –Nibandh – Krodh- Aacharya ramchandra shukla, Basant- Dr. Hazari Prasad dvedi, Us Amrai ne Ram-Ram kahi hai- Dr.Vidya niwas Mishra, Kavyeshunatyam, Babu Gulab rai, Beimani ki parat – Harishankar Parsai.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend –Akanki – Aurangzeb ki Aakhri Raat- Dr. Ramkumar Varma, Strike- Bhuneshwar, Ek din – laxmi narayan Mishra, Dash hazar- Uday shankra Bhatta, Mummy Thakurain- Dr. laxmi narayan lal.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend-Rahul Sanskriyatan, Mahadevi Verma, Habib Tanvir.

#### **Course 5. Janpadiya Bhasha Sahitya ( CHHATTISGARHI)**

**CO1.**The students after the completion of this course will be able to contemplate and comprehend – Rachnaye- Prachink visant, Dharmdas- Guru Paiya lago nam Lakhadijo Nain Aage Khyal Ghanera, Bhajan karo Bhai re, Aisan tan pay ke.



**CO2.** The students after the completion of this course will be able to contemplate and comprehend –Lakhan lal gupra ka Gadya- senpan.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend –Arwachin rachnakar- Dr. Satyabhama Adil Rachit Gadya-sikh sikh ke goth.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend-Dr. vinay pathak ki Kavitate-tai uth suruj uth, ek kisham ke niyav.

**CO5.** The students after the completion of this course will be able to contemplate and comprehend –Mukund koushal-Chhattishgarh Gajal, chai bita ke manke dekho se ....Machri man lakh lethe.

**CO6.** The students after the completion of this course will be able to contemplate and comprehend-Sundar lal Sharma, kavilnath Kashyap,Ramchandra Deshmuka (Rangkarmi)

### **Course 6. Hindi Bhasha Sahitya ka Itihas Tatha Kavyang Vivechan**

**CO1.**The students after the completion of this course will be able to contemplate and comprehend – Bhasha ka Swarup vikas- hindi ki utpatti, hindi ki mool Bhasha Tatha vibhinna Bhasao ka vikas, Hindi Bhasah ke vibhinna roop – Bolchal ki Bhasaha, Rachnatmaka Bhasha, Rashtra Bhasha, Raj Bhasha, Sampark Bhasha, sanchar Bhasha.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend –Hindi ka Shabda Bhandar-Tatsam, Tadbhava, Deshaj, Aagat Shabdavali.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend –Hindi Sahitya ka itihas-Aadikal, Purva Madhyakal, Uttar Madhyakal Aur Adhunik kal ki Samajik, sanskritik Prishthabhumi, Pramukh Yug Pravritiyan, vishishta rachnakar aur unki Pratinidhi Kritiyan, Sahityik Kavitate.



**CO4.** The students after the completion of this course will be able to contemplate and comprehend-Kavyang – Kavya ka swaroop aur prayojan. Rask e bhed, Vibhinna Anga, Vibhvadi tatha udaharan. Doha, Sortha, Choupai, Kundaliyan, Savaiya, Shabdalkar- Anuprash, Yamak, shlash, Vakrokti,Punrukti prakash.Arthalankar-upma, Rupak, Utpreksha, Aatishayokti, Bhrantiman.

**Course 07:**

**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.

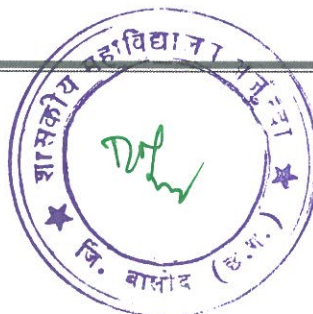
**Course 08:**

**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.

**Course 09:**

**Macro Economics**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize national income & social accounts.

**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.

**Course 10:**

**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.

**Course 11:**

**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.

**Course 12:**

**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.

**Course 13:**

**Political Theory**

**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.

**Course 14:**

**Indian 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.

**Course 15:**

**Western Political Thought**

**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.

**Course 16: Comparative Politics and Government**

**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. **Course 17:**

**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.

**Course 18:**

**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.

**Course 19:**

**Introduction to 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.

**Course 20:**

**Contemporary Indian Society**

**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.

**Course 21:**

**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.

**Course 22:**

**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.



**Course 23:**

**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.

**Course 24:**

**Social Research Methods**

**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.

**Course 25:**

**Physical Geography - Elements of Geomorphology**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the effect of rotation and revolution the earth.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the interior structure of the earth.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize theory regarding of origin of continents and oceans.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend and recognize the formation of rocks.



**CO5.** The students after the completion of this course will be able to contemplate and comprehend and recognize the work of internal and external forces and their associated land forms.

**Course 26:**

**Introduction to Geography and Human Geography**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the relationship of man and environment.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the races of man kinds.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize the modes of life of pigmy, Bushman, Eskimos, Masai, Gond and Nagar.

**Course 27:**

**Physical Geography - Climatology and Oceanography**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the weather and climate.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the atmospheric moisture.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize the air masses and fronts.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend and recognize the surface configuration of the ocean floor.

**CO5.** The students after the completion of this course will be able to contemplate and comprehend and recognize the circulation of oceanic water.

**CO6.** The students after the completion of this course will be able to contemplate and comprehend and recognize the marine deposits, coral reefs.



**Course 28:****Regional Geography with Special Reference to North America**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the regional concept, bases of regionalization.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the structure, relief, climate and soils of North America.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize the mineral and energy resources, Forests and North America.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend and recognize the Agriculture belts, line stock and dairy farming in North America.

**CO5.** The students after the completion of this course will be able to contemplate and comprehend and recognize the Industries and Regions of North America.

**Course 29:****Geography - Resources and Environment**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the resources: meaning, nature and components.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the distribution and utilization of resources.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize the man environment interrelations.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend and recognize the environmental conservation and management.



**Course 30:**

**Geography of India (with special reference to Chhattisgarh)**

**CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the geo-physical features of India.

**CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the drainage, climate of India.

**CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize the resources, geo-cultural features of India.

**CO4.** The students after the completion of this course will be able to contemplate and comprehend and recognize the geo-physical features, geo-cultural features of Chhattisgarh.

**Course 31:**

**Anatomy, Physiology & Hygiene**

**CO1.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of cell, tissue and their functions skeletal system - Types of bones, classification general structure & functions of bones, Muscular system - General structure, types and function.

**CO2.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of Circulatory system - General structure of organs and functions, composition of blood & function, Respiratory system - General structure of organs and functions.

**CO3.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of Digestive system - General introduction of Nutrients, Liver and spleen organs of digestion their general structure and function, Excretory system- organs of excretion, Kidney & skin - structure & function.

**CO4.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of Nervous system - Central nervous system structure and function, Senses and Sensory organs - ear and eye structure & function.



**CO5.** The students after the completion of this course will be able to describe and apply principles of Hygiene - Personal Hygiene, social Hygiene, Environmental and Industrial Hygiene, Water - its importance and purification, Air - its importance and purification, First aid home nursing - Principles, qualities of nurse, responsibilities, selection of sick room, care of the patient, some common accidents and their aid, poison, bleeding, burns and scalds, fracture sprain, dislocation.

**Course 32:**

**Home Science - Extension Education**

**CO1.** The students after the completion of this course will be able to describe, recognize and apply in Home Science - Concepts, goals and Areas of Home Science & their inter relationship with extension, Principles and methods of home science extension education general concepts of extension work, Objectives of extension education in qualities of extension workers, extension education process.

**CO2.** The students after the completion of this course will be able to describe, recognize and apply principles of community development organization and function of community development, Role of home scientists in community development, programmes of extension education for community, programmes of community development at central, state, district, block and village level, Family planning programme, Community problems, child marriage, Dowry system, pardapratha, rural indebtedness unemployment.

**CO3.** The students after the completion of this course will be able to describe, recognize and apply methods of learning - Discussion, demonstration, observation and their application to home science teaching, Extension Methods - their scope advantages and application, Scope and use in Home Science teaching, Extension Methods - their scope advantages and application. **CO4.**

The students after the completion of this course will be able to describe, recognize and apply in attitude towards Home Science, Motivation towards Home Science, Application of Home Science towards improvement in family living, Job opportunities in Home Science, National and International agencies and their collaboration with Home Science, Official organization Home Science





Association of India, W.H.O. FAG, CARE, ICAR, ICDS, ICSSR, ICMR, IRDP, Adult education.

**CO5.** The students after the completion of this course will be able to describe, recognize and apply basic concept of curriculum planning, components of curriculum planning, implementation, evaluation and improvement required in the existing system of H.Sc. education policy and its relevance to H.Sc. Programme planning-concept, principles, objectives and steps in programme planning.

**Course 33:**

**Fabric & Cloth Science**

**CO1.** The students after the completion of this course will be able to describe, recognize and apply in fabric science and its testing, cloth weaving and its styling.

**CO2.** The students after the completion of this course will be able to describe, recognize and apply textile ornamentation, selection of dyes and fabrics.

**CO3.** The students after the completion of this course will be able to describe, recognize and apply textile & cloth printing and its types, tie & dye methods.

**CO4.** The students after the completion of this course will be able to describe, recognize and apply laundry methods for various fabrics and cloth materials, stain removal.

**CO5.** The students after the completion of this course will be able to describe, recognize and apply dress designing, fashion designing according to personality types, types of dress designing & ornamentation.

**Course 34:**

**Family Resource Management**

**CO1.** The students after the completion of this course will be able to describe, recognize and apply in Home management process, role of home-maker, decision making.

**CO2.** The students after the completion of this course will be able to describe, recognize and apply in Home decoration, interior designing, selection of colors for home, furniture selection, flower decoration.



**CO3.** The students after the completion of this course will be able to describe, recognize and apply in family resource management, time management, manpower management, income management, family income and budget, family savings, standard of living, account / book keeping.

**CO4.** The students after the completion of this course will be able to describe, recognize and apply in Kitchen planning & management, modernization of kitchen and kitchen space, use of alternative energy sources like solar, water distribution system, ventilation, lighting and storage.

**CO5.** The students after the completion of this course will be able to describe, recognize and apply in simplification of work, process charts, tools and methods for saving time, energy, labor and money.

### **Course 35:**

#### **Home Science - Human Development**

**CO1.** The students after the completion of this course will be able to describe, recognize and apply in child growth and development, different aspects of growth, principles of development, factors affecting child development, heredity and environment.

**CO2.** The students after the completion of this course will be able to describe, recognize and apply in stages of development - Physiology of pregnancy, Prenatal - Reproductive system, Prenatal development, Infancy, Early infancy, Babyhood, Childhood, Early childhood, Late childhood, Adolescence, Early adolescence, Late adolescence, prenatal growth and development - Sources of studying prenatal life, Stages of growth prenatal and development, Factors affecting prenatal and development growth, Mother's food, Health of mother, Narcotics, Age of parents, Effect of season, Emotion of mother.

**CO3.** The students after the completion of this course will be able to describe, recognize and apply in effect of normal and caesarean delivery, Adjustment to new environment - Temperature, Respiration, Food consumption, Excretion, Physical development of infant-Physical proportion, Height, Weight, Pulse rate, Respiration rate, Bodytemperature, Frequency of hunger, Sensory development of infant - Light, Sound, Taste, Smell, Skin sensitivity, Motor activity of infants -Mass activities, Specific activities -Reflex activities, Advantages of reflex action,



Emotions of infants -Types of emotions, Significance of emotions, Characteristics of infant behavior- Dependency, Individual difference, Adjustment.

**CO4.** The students after the completion of this course will be able to describe, recognize and apply in childhood : Adolescence, Characteristics of this stage, Factors affecting growth and development during childhood and adolescence, Physical growth height, weight, body proportion, teeth, Growth and development of internal organs – Nervous, Mental, Circulatory system, Digestive system, Respiratory system, Tissues and muscles systems, Development of motor abilities, Types of motor abilities, importance and characteristics of motor abilities in childhood, Development of motor skills, Types of motor skills, Delayed motor development. **CO5.** The students after the completion of this course will be able to describe, recognize and apply in development of emotional behavior-characteristics special emotions (affection, anger, fear, jealousy and worries) factors affecting emotional behavior, Social developments stages - during infancy, nursery school period, elementary school period, Factor affecting social development, Development of intelligence - Types according to Thorndike, theories regarding intelligence.

**CO6.** The students after the completion of this course will be able to describe, recognize and apply in Play, work and play, theories of play, characteristics of children's play, types of play, factors effecting play and importance of play, Habits : Definition, Functions performed by habits, Habits and learning, Laws of habit formation-identical to laws of learning, Habit formation, Principles of habit formation, Rules for habit formation, Children delinquency-Types causes and remedial measures.



### **Course 36:**

#### **Food & Nutrition Science**

**CO1.** The students after the completion of this course will be able to describe, recognize and apply the principles and components of nutrition like carbohydrates, lipids, proteins, minerals, vitamins & water and their sources, RDA, metabolism and deficiency.

**CO2.** The students after the completion of this course will be able to describe, recognize and apply the principles and components of foods like food groups, cereals & grains, pulses & legumes, milk & dairy products, vegetables & fruits, egg, meat, fish & poultry, sugar, jiggery & honey, beverages & spices and their types, composition, nutrition, cooking and processing.

**CO3.** The students after the completion of this course will be able to describe, recognize and apply the principles and components of food preservation, food spoilage, food toxicity, food adulteration, food hygiene and food storage.

**CO4.** The students after the completion of this course will be able to describe, recognize and apply the principles and components of dietary management & menu planning, RDA, economics of menu planning, infant nutrition, pediatric nutrition, child nutrition, student & youth nutrition, nutrition during pregnancy and lactation, geriatric nutrition.

**CO5.** The students after the completion of this course will be able to describe, recognize and apply the principles and components of therapeutic nutrition, therapeutic nutrition for - diabetics, under-weight & over-weight, anemic, vitamin deficiency, protein energy malnutrition, liver diseases, peptic ulcer, indigestion, diarrhea, constipation, hypertension.



## **M.A. SOCIOLOGY – 4 Semesters Postgraduate programme**

### **Programme Outcomes (PO)**

PO1. Students would be able to think critically on societal issues and its national & global implications.

PO2. Students would be able to shoulder social and ethical responsibilities in its true form and hence develop into a better citizen.

PO3. Students would be able to perceive social issues both objectively and subjectively.

PO4. Students would be able to develop better social interaction skills for greater exchange of thoughts and ideas.

PO5. 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.

PO6. 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.

PO7. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO8. The students will be able to demonstrate compassionate social concern and act with a cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

PO9. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.



PO10. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO11. 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.

### **Programme Specific Outcomes (PSO)**

PSO1. The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Tradition. Students would be able to understand sociological phenomena of individuals, socio-ethnic structures, socio-cultural institutions and socio-economic inequality.

PSO2. The students after the completion of this programme will be able to contemplate and comprehend Philosophical and Conceptual Foundation of Social Research. Students would be able to effectively communicate and draft sociological concepts and theories associated with real life situations.

PSO3. The students after the completion of this programme will be able to contemplate and comprehend Social Change in India. Students would be able to perform analytical thinking on the basis of survey, census & research of qualitative and quantitative data & information.

PSO4. The students after the completion of this programme will be able to contemplate and comprehend Rural Sociology. Students would be able to become a thorough professional with social intellect so as to have career opportunities galore social welfare, rural development, public policy, governance, business, social foundations, NGO and academia.

PSO5. The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Thinkers.

PSO6. The students after the completion of this programme will be able to contemplate and comprehend and apply Quantitative Research Techniques in Sociology.

PSO7. The students after the completion of this programme will be able to contemplate and comprehend Sociology of Development.



PSO8.The students after the completion of this programme will be able to contemplate and comprehend Indian Rural Society.

PSO9.The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Theories.

PSO10.The students after the completion of this programme will be able to contemplate and comprehend Social Movements in India.

PSO11.The students after the completion of this programme will be able to contemplate and comprehend Perspectives of Study to Indian Society.

PSO12.The students after the completion of this programme will be able to contemplate and comprehend Industry and Society in India.

PSO13.The students after the completion of this programme will be able to contemplate and comprehend Criminology.

PSO14.The students after the completion of this programme will be able to contemplate and comprehend Modern Sociological Theories.

PSO15.The students after the completion of this programme will be able to contemplate and comprehend Comparative Sociology.

PSO16.The students after the completion of this programme will be able to contemplate and comprehend Contemporary issues in Industry.

### **Course Outcomes (CO)**

#### **Course 1: Classical Sociological Tradition**

CO1.Students will be able to make sense of modernity by identifying the emergence of sociology as a discipline.

CO2.Students will be able to understand critically and comparatively the methodological preferences of the founders of sociology.

#### **Course 2: Philosophical and Conceptual Foundation of Social Research**

CO1.Students will be able to recognize various issues in social research.

CO2. Students will be able to undertake research by selectively choosing and formulating a social research problem.



### **Course 3: Social Change in India**

CO1. Students will be able to perceive disciplinary & inter-disciplinary ideas about the sociology and social change in India.

CO2. Students will be able to recognize the various factors of sociology and social change in India.

### **Course 4: Rural Sociology**

CO1. Students will be able to assimilate the theoretical and empirical knowledge of the past and present rural scenario and approach in rural sociology.

CO2. Students will be able to identify with the various changes and development in rural sociology.

### **Course 5: Classical Sociological Thinkers**

CO1. Students will be able to explain the major themes of Marxian and Weberian perspectives on the social world.

CO2. Students will be able to compare and differentiate between Marxian and Weberian perspectives on the social world.

### **Course 6: Quantitative Research Techniques in Sociology**

CO1. Students will be able to assess, interlink, correlate and use the measures of central tendency and measures of variation involved in social research.

### **Course 7: Sociology of Development**

CO1. Students will be able to distinguish development theory from development as project and relate project development to environmental degradation and social use/abuse.

### **Course 8: Indian Rural Society**

CO1. Students will be able to absorb the theoretical and empirical knowledge of the past and present rural scenario and intricacies of social fabric in India.





### **Course 9: Classical Sociological Theories**

CO1. Students will be able to recognize the role of a sociological theory in the application of conceptual frameworks in a social research progress.

CO2. Students will be able to comprehend various sociological theories like structuralism and exchange theory.

### **Course 10: Social Movements in India**

CO1. Students will be able to understand the nature and types of social movements in India.

CO2. Students will be able to comprehend the theoretical perspectives of social movements in India.

### **Course 11: Perspectives of Study to Indian Society**

CO1. Students will be able to explain the major methods and concepts used in the systematic study of Indian society, its social classes, its social fabric and its sociological issues.

### **Course 12: Industry and Society in India**

CO1. Students will be able to identify the trends of Industrial disputes in Indian society and their impacts on Indian social classes & sociology.

### **Course 13: Criminology**

CO1. Students will be able to familiarize with mainstream criminological theories.

CO2. Students will be able to apply theories of crime and criminal justice to explain actual and hypothetical scenarios, behaviours and trends.

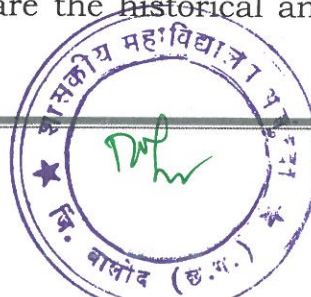
### **Course 14: Modern Sociological Theories**

CO1. Students will be able to debate on modern sociological theories.

CO2. Students will be able to identify the origin and development of modern sociological theories.

### **Course 15: Comparative Sociology**

CO1. Students will be able to compare the historical and social context of emergence of sociology.



CO2. Students will be able to identify various theoretical concerns in comparative sociology.

**Course 16: Contemporary issues in Industry**

CO1. Students will be able to ascertain the history, objectives and functions of trade unionism in India.

CO2. Students will be able to contemplate on Industrialization in the third world countries.



## **M.A. Political Science – 4 Semesters Postgraduate**

### **programme Outcomes (PO)**

PO1. Students would be able to think critically on political issues and its national & global implications.

PO2. Students would be able to shoulder socio-political responsibilities in its true form and hence develop into a better citizen.

PO3. Students would be able to perceive political issues both objectively and subjectively.

PO4. Students would be able to develop better socio-political awareness and interaction skills for greater exchange of political thoughts and socio-political ideas.

PO5. 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.

PO6. 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.

PO7. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO8. The students will be able to demonstrate compassionate social concern and act with a cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

PO9. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO10. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.



PO11. 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.

**Programme Specific Outcomes (PSO)**

PSO1.The students after the completion of this programme will be able to proactively contemplate and comprehend Indian Political Thought.

PSO2.The students after the completion of this programme will be able to proactively contemplate and comprehend Indian Government and Politics.

PSO3.The students after the completion of this programme will be able to proactively contemplate and comprehend Comparative Politics.

PSO4.The students after the completion of this programme will be able to proactively contemplate and comprehend International Organization.

PSO5.The students after the completion of this programme will be able to critically contemplate and comprehend Western Political Thought.

PSO6.The students after the completion of this programme will be able to proactively contemplate and comprehend and actively participate in state Politics in India.

PSO7.The students after the completion of this programme will be able to critically contemplate and comprehend Comparative Politics of Developing Countries.

PSO8.The students after the completion of this programme will be able to critically contemplate and comprehend Indian Foreign Policy.

PSO9.The students after the completion of this programme will be able to deeply contemplate and comprehend Principles of International Politics.

PSO10.The students after the completion of this programme will be able to proactively contemplate and comprehend and critically gauge Public Administration - I.

PSO11.The students after the completion of this programme will be able to proactively contemplate and comprehend and apply the principles of Research Methodology - I in political issues.



PSO12.The students after the completion of this programme will be able to proactively and critically contemplate and comprehend and perform a participatory role in Government and Politics of Chhattisgarh.

PSO13.The students after the completion of this programme will be able to critically contemplate and comprehend Contemporary of International Politics.

PSO14.The students after the completion of this programme will be able to proactively contemplate and comprehend and critically gauge Public Administration – II.

PSO15.The students after the completion of this programme will be able to proactively contemplate and comprehend and apply the principles of Research Methodology - II in political issues.

PSO16.The students after the completion of this programme will be able to critically and proactively contemplate and comprehend Political Ideologies and Modern Political Thought and choose the best suitable one for individual's, society's, state's and nation's uprising.

### **Course Outcomes (CO)**

#### **Course 1: Indian Political Thought**

CO1.The students will be able to critically contemplate and comprehend on Indian Political thought and philosophical thinkers. CO2.The students will be able to critically contemplate and comprehend about the new thinkers like Nehru, DeendayalUpadhyay, AbdulKalam etc.

#### **Course 2: Indian Government and Politics**

CO1.The students will be able to critically explain the politics, governance and authority of India.

CO2.The students will be able to critically assess the information about racism, regionalism, communalism, criminalization and corruption and be refrained from such politics and politicians.

#### **Course 3: Comparative Politics**

CO1.The students will be able to critically judge the useful information about the probable consequences of different political order.



CO2.The students will be able to critically assess the constitutions or party systems of different countries and voluntary participate to bring positive changes in Indian political atmosphere.

#### **Course 4: International Organization**

CO1.The students will be able to critically decide upon the scope and subject matter of International relation.

CO2.The students will be able to critically assess the basic concepts like Globalization in contemporary world order.

#### **Course 5: Western Political Thought**

CO1.The students will be able to critically understand the dominant feature of ancient western political thought.

CO2.The students will be able to critically assess features of medieval political thought.

#### **Course 6: State Politics in India**

CO1.The students will be able to critically understand the State Legislature and State Executives.

CO2.The students will be able to critically assess the demand for State Autonomy.

#### **Course 7: Comparative Politics of Developing Countries**

CO1.The students will be able to critically understand the classification of Government.

CO2.The students will be able to critically assess the political development, political Elites, Political socialization, Political Modernization.

#### **Course 8: Indian Foreign Policy**

CO1.The students will be able to critically ascertain the increasing India's influence in the international platform.

CO2.The students will be able to critically assess India's foreign policy and India's engagement with the rest of the world.



CO3.The students will be able to critically examine India's foreign relations with her neighbours.

### **Course 9: Principles of International Politics**

CO1.The students will be able to critically assess the evolution of International politics.

CO2.The students will be able to critically contemplate the theories of International politics.

CO3.The students will be able to critically examine the nature and developments in International politics.

### **Course 10: Public Administration – I**

CO1.The students will be able to critically ascertain the concept of administration in India.

CO2.The students will be able to critically compare traditional approach and new approaches.

CO3.The students will be able to critically examine the structure and operation of public organizations.

### **Course 11: Research Methodology – I**

CO1.The students will be able to critically ascertain and apply various research methods used in social science by drawing upon a range of theoretical and empirical research in survey studies of political science.

CO2.The students will be able to critically examine the theoretical aspects comprising an exploration of various theories, concepts and term that are part of the research methodology in survey studies of political science.

### **Course 12: Government and Politics of Chhattisgarh**

CO1.The students will be able to critically ascertain and comprehend the main determining factors and features of state politics in Chhattisgarh.

CO2.The students will be able to critically assess the various national movements in Chhattisgarh and major social reformist and political leaders.

### **Course 13: Contemporary of International Politics**

CO1.The students will be able to critically ascertain and comprehend the fundamental theories and themes of contemporary International politics.

CO2.The students will be able to critically think, analyze information, and express their ideas clearly in the practice of International politics.

#### **Course 14: Public Administration – II**

CO1.The students will be able to critically ascertain the importance of public administration in India.

CO2.The students will be able to critically examine the characteristics of public administration in India.

CO3.The students will be able to critically assess the operations of public organizations in India.

#### **Course 15: Research Methodology – II**

CO1.The students will be able to perform the critical review of published political science literature and research for advancement of new research and development in political science.

CO2.The students will be able to critically examine the research methodology used in survey studies of political science.

CO3.The students will be able to critically analyse the data used in survey studies of political science and comprehend the data based conclusive interpretations for political survey studies in India.

#### **Course 16: Political Ideologies and Modern Political Thought**

CO1.The students will be able to perform the critical comprehension, review and assessment of various concepts like Individualism, Existentialism, Feminism, Liberalism, Socialism etc prevalent in national and international political scene.

CO2.The students will be able to critically contemplate, assess and review of political thinkers like Antonio Gramsci, Jean Paul Sartre and their political views and opinions.





## **M.A. Economics – 4 Semesters Postgraduate programme**

### **Programme Outcomes (PO)**

PO1. The M.A. Economics semester wise programme offered by the College accomplishes the students to cash in on the opportunities and overcome the challenges in the field of economics by providing systematic learning of Economics – Micro, Macro, Quantitative, Indian, Industrial, Research, Indian policy, Labour, Growth, International, Public, Environmental, Demography, Development & Planning, Social sector and Viva-Voce. The students after the completion of this programme become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock-exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors, policy making etc.

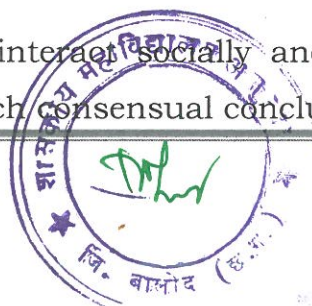
PO2. The students after the completion of this programme will be enabled to overcome the challenges and cash in the opportunities in the field of economics.

PO3. The students after the completion of this programme will become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stockexchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors, policy making etc.

PO4. 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.

PO5. 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.

PO6. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.



PO7. 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.

PO8. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO9. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO10. 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.

### **Programme Specific Outcomes (PSO)**

PSO1. The students after the completion of this programme will become well versed with Micro Economics-I.

PSO2. The students after the completion of this programme will become well versed with Macro Economics-I.

PSO3. The students after the completion of this programme will be able to understand Quantitative Methods.

PSO4. The students after the completion of this programme will be able to understand Indian Economy.

PSO5. The students after the completion of this programme will be able to identify Industrial Economics.

PSO6. The students after the completion of this programme will be able to understand the Micro Economics-II.

PSO7. The students after the completion of this programme will be able to understand the essentials of Macro Economics-II.

PSO8. The students after the completion of this programme will be able to understand the essentials of Research Methodology and Computer Application.



PSO9. The students after the completion of this programme will be able to understand the essentials of Indian Economic Policy.

PSO10. The students after the completion of this programme will be able to understand the principles of Labour Economics.

PSO11. The students after the completion of this programme will be able to understand the essentials of Economics of Growth.

PSO12. The students after the completion of this programme will be able to understand the fundamentals of International Trade.

PSO13. The students after the completion of this programme will be able to understand the principles of Public Finance.

PSO14. The students after the completion of this programme will be able to recognize the procedures of Environmental Economics.

PSO15. The students after the completion of this programme will be able to understand the essentials, principles and procedures of Demography.

PSO16. The students after the completion of this programme will be able to understand the principles of Economics of Development and Planning.

PSO17. The students after the completion of this programme will be able to understand the procedures of International Economics.

PSO18. The students after the completion of this programme will be able to understand the essentials and fundamentals of Public Economics.

PSO19. The students after the completion of this programme will be able to understand the essentials and fundamentals of Economics of Social Sector.

PSO20. The students after the completion of this programme will be able to do Viva-Voce in various fields of commerce studies.



## **M.Com. – 4 Semesters Postgraduate programme**

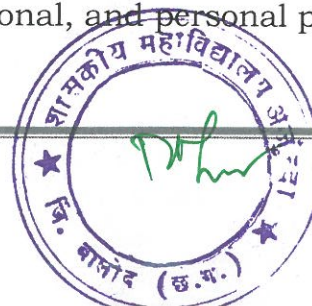
### **Programme Outcomes (PO)**

PO1. The Master of Commerce (M.Com.) semester wise programme offered by the College accomplishes the students to cash in on the opportunities and overcome the challenges in the field of commerce by providing systematic learning of managerial economics, advance accounting, income tax law & account, statistical analysis, corporate legal framework, business economics, specialized accounting, tax planning & management, advanced statistics, business law, management concept, organizational behaviour, advanced cost accounting, management accounting, accounting for managerial decisions, principles of marketing, advertising & sales management, marketing research, international marketing and research project work. The students after the completion of this programme become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock-exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors etc.

PO2. 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.

PO3. The students after the completion of this programme will become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors etc.

PO4. 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.



PO5. 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.

PO6. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO7. 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.

PO8. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO9. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO10. 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.

### **Programme Specific Outcomes (PSO)**

PSO1. The students after the completion of this programme will become well versed with Managerial Economics.

PSO2. The students after the completion of this programme will become well versed with Advance Accounting.

PSO3. The students after the completion of this programme will be able to understand Income Tax Law and Account.

PSO4. The students after the completion of this programme will be able to understand Statistical Analysis.

PSO5. The students after the completion of this programme will be able to identify a Corporate Legal Framework.



PSO6. The students after the completion of this programme will be able to understand the Business Economics.

PSO7. The students after the completion of this programme will be able to understand the essentials of Specialized Accounting. PSO8. The students after the completion of this programme will be able to understand the essentials of Tax Planning and Management.

PSO9. The students after the completion of this programme will be able to understand the essentials of Advanced Statistics.

PSO10. The students after the completion of this programme will be able to understand the principles of Business Law.

PSO11. The students after the completion of this programme will be able to understand the essentials of Management Concept.

PSO12. The students after the completion of this programme will be able to understand the fundamentals of Organizational Behaviour.

PSO13. The students after the completion of this programme will be able to understand the principles of Advance Cost Accounting.

PSO14. The students after the completion of this programme will be able to recognize the procedures of Management Accounting.

PSO15. The students after the completion of this programme will be able to understand the essentials, principles and procedures of Accounting for Managerial Decisions. PSO16. The students after the completion of this programme will be able to understand the Principles of Marketing.

PSO17. The students after the completion of this programme will be able to understand the procedures of Advertising and Sales Management.

PSO18. The students after the completion of this programme will be able to understand the essentials and fundamentals of Marketing Research.

PSO19. The students after the completion of this programme will be able to understand the essentials and fundamentals of International Marketing.

PSO20. The students after the completion of this programme will be able to do Project Work in various fields of commerce studies.



## **Course Outcomes (CO)**

### **Course 1: Managerial Economics**

CO1. The students after the completion of this course will be able to comprehend with the basic concepts, terms & provisions of managerial economics.

CO2. The students after the completion of this course will be able to determine the prices under different market forms.

CO3. The students after the completion of this course will be able to comprehend with the concepts of inflation, slowdown, deflation, stagflation and recession in an economy.

### **Course 2: Advance Accounting**

CO1. The students after the completion of this course will be able to comprehend with the basic accounting structure of companies.

CO2. The students after the completion of this course will be able to find out how a company can dissolve by liquidating its assets or through bankruptcy and insolvency.

CO3. The students after the completion of this course will be able to comprehend with the viable and operational accounting format of companies.

### **Course 3: Income Tax Law and Account**

CO1. The students after the completion of this course will be able to compute total income and define tax compliances & strictures.

CO2. The students after the completion of this course will be able to file IT return on individual basis.

CO3. The students after the completion of this course will be able to comprehend with the amendments made from time to time in finance Act.

### **Course 4: Statistical Analysis**

CO1. The students after the completion of this course will be able to independently calculate basic statistical parameters applied in commerce and accounting.



CO2. The students after the completion of this course will be able to comprehend probability theory and probability distributions in relation to general statistical analysis done in commerce and accounting.

### **Course 5: Corporate Legal Framework**

CO1. The students after the completion of this course will be able to comprehend the commercial and accounting concepts of a company and its shares for public listings.

CO2. The students after the completion of this course will be able to comprehend the use of M/A and prospectus in a company of commerce and accounting.

CO3. The students after the completion of this course will be able to get acquainted with the negotiable instruments (Cheque, Holder and Holder in due course).

### **Course 6: Business Economics**

CO1. The students after the completion of this course will be able to comprehend the causes and consequences of business cycle.

CO2. The students after the completion of this course will be able to comprehend the factors in commerce and accounting that contribute to and detract from long-term economic growth.

### **Course 7: Specialized Accounting**

CO1. The students after the completion of this course will be able to ascertain the knowledge of Banking and insurance companies accounts.

CO2. The students after the completion of this course will be able to comprehend the systems of double account system and maintenance accounts.

CO3. The students after the completion of this course will be able to get acquainted with the basic concepts of royalty and Investments account.

### **Course 8: Tax Planning and Management**

CO1. The students after the completion of this course will be able to ascertain the concepts of TDS and advance payment of tax.





CO2. The students after the completion of this course will be able to comprehend the provisions of various taxes rebates& reliefs and procedure to file IT return.

CO3. The students after the completion of this course will be able to get acquainted with the concept of recovery and refund of tax.

### **Course 9: Advanced Statistics**

CO1. The students after the completion of this course will be able to ascertain the concepts of the statistical decision theory & statistical estimations in commerce and accounting.

CO2. The students after the completion of this course will be able to comprehend the provisions of statistical quality control & the procedures of sampling Methodism commerce and accounting.

CO3. The students after the completion of this course will be able to interpret the meaning of the calculated statistical indicators in commerce and accounting.

### **Course 10: Business Law**

CO1. The students after the completion of this course will be able to ascertain the consumer rights under consumer protection Act 1986.

CO2. The students after the completion of this course will be able to comprehend the international trade concepts used in global market decisions.

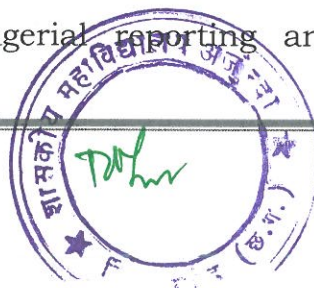
CO3. The students after the completion of this course will be able to comprehend and interpret the legal environments for security markets.

### **Course 11: Management Concept**

CO1. The students after the completion of this course will be able to ascertain the objectives of managerial reporting.

CO2. The students after the completion of this course will be able to fulfill the reporting requirements at different levels of management.

CO3. The students after the completion of this course will be able to get acquainted with the objectives of managerial reporting and reporting requirements.



CO4. The students after the completion of this course will be able to comprehend and interpret the requirements of management.

### **Course 12: Organizational Behaviour**

CO1. The students after the completion of this course will be able to develop an understanding regarding the role of leaders in decision making process.

CO2. The students after the completion of this course will be able to fulfil the requirements of communication skills at different levels of leadership.

CO3. The students after the completion of this course will be able to analyse the challenges and opportunities in the field of organizational behaviour.

### **Course 13: Advance Cost Accounting**

CO1. The students after the completion of this course will be able to develop the impact knowledge of basic cost concepts, elements of cost, ascertainment of materials and labour cost.

CO2. The students after the completion of this course will be able to analyse the various methods of costing and their applications.

CO3. The students after the completion of this course will be able to determine various levels of material cost i.e. – reorder level, minimum level, EOQ for managing working capital.

### **Course 14: Management Accounting**

CO1. The students after the completion of this course will be able to get acquainted with a separate branch of accounting.

CO2. The students after the completion of this course will be able to analyse the management accounting and its relevance in a business organization.

CO3. The students after the completion of this course will be able to familiarize with the management control system.

CO4. The students after the completion of this course will be able to fulfill the requirements of management sense and responsibilities.



### **Course 15: Accounting For Managerial Decisions**

CO1. The students after the completion of this course will be able to ascertain the applicability of certain techniques of management i.e. – Target costing, ABC costing, Value chain analysis.

CO2. The students after the completion of this course will be able to analyse the essentials of capital budgeting and use different techniques of capital budgeting.

CO3. The students after the completion of this course will be able to familiarize with contemporary issues in management.

CO4. The students after the completion of this course will be able to fulfil the requirements of accounting management sense and responsibilities.

### **Course 16: Principles of Marketing**

CO1. The students after the completion of this course will be able to ascertain the applicability of certain principle techniques and fundamentals of marketing.

CO2. The students after the completion of this course will be able to analyse product life-aide.

CO3. The students after the completion of this course will be able to familiarize with the significance & contribution of marketing to the business enterprise.

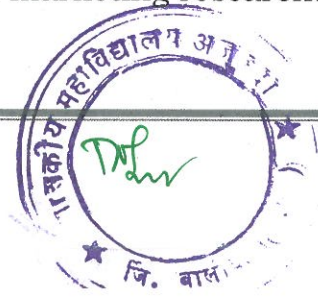
### **Course 17: Advertising and Sales Management**

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of advertising, media of advertising & its influence on buying habits of consumers.

CO2. The students after the completion of this course will be able to promote sales by applying the methods and techniques of sales promotion.

### **Course 18: Marketing Research**

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of marketing research.



CO2. The students after the completion of this course will be able to apply & promote marketing research procedures, methods & techniques.

CO3. The students after the completion of this course will be able to ascertain the significance, importance and requirements for introduction of new products and new markets.

### **Course 19: International Marketing**

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of EXIM policy, International transport system & International product life cycle.

CO2. The students after the completion of this course will be able to apply & promote themselves for employment as well as self-employment in international businesses dealing with variety of innovative products & services.

### **Course 20: Project Work**

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of Research and Research Methodology.

CO2. The students after the completion of this course will be able to represent data in tabular and graphic manner for convenient interpretation.

CO3. The students after the completion of this course will be able to familiarize with Research and Research problems.

CO4. The students after the completion of this course will be able to develop skills to write Research papers.





# कार्यालय प्राचार्य, शासकीय महाविद्यालय अर्जुन्दा

जिला – बालोद छ.ग.

Internal Quality Assurance Cell

NAAC grade B

E mail: [govtcollege.arjunda1988@gmail.com](mailto:govtcollege.arjunda1988@gmail.com) website : [www.gcarjunda.com](http://www.gcarjunda.com)

Department of Mathematics

Master of Science (Mathematics)

## OBJECTIVES OF THE PROGRAMME:

The college follows Hemchand Yadav University, Durg syllabus for M.Sc. course.


The objectives of the prescribed course are:

1. In their fields and the ability to apply their expertise to novel and emerging problems.
2. Able to state a research problem, apply research methods, tools for data collection, analyze and interpret research data.
3. Student can communicate their research clearly and professionally in both written and oral forms appropriate to the field through publications, conference papers, seminars etc.

## COURSE OUTCOME:

On completion of this course, the students will be able to: -

- Identify the concept of Normal groups and Quotients groups.
- Concentrate on a particular Euclidean ring and other forms of Polynomial rings.
- Study in detail the Mean value theorem and Taylor's theorem.
- Locate Sequence and Series comprising convergence sequences, upper and lower limits.
- Understand Local properties of Analytic functions.
- Analyze Analytic functions and exponential functions.
- Discuss and understand the importance of the concepts Graph and Lattice, Algebraic Structure.
- Study the properties of trees and connectivity.
- Understand the elements of Galois Theory.
- Discuss connected spaces, the components of a space and totally disconnected spaces.

  
PRINCIPAL  
Govt. College, Arjunda  
Distt. Balod (C.G.)

- Study Continuous linear transformations and the Hahn-Banach theorem.
- Understand the Open Mapping Theorem and its applications.
- Apply Duality to solve problems in Linear Programming.
- Study Assignment Problem and its applications.

### M.Sc. (Mathematics) Semester-I

There shall be five papers. Each paper shall have 100 marks. Overall tally of marks will be 500. Papers

Paper	Description	Theory	Sessional	Practical	Total Marks
I	Advance Algebra (I)	80	20	-	100
II	Real Analysis (I)	80	20	-	100
III	Topology	80	20	-	100
IV	Advance Complex Analysis	80	20	-	100
V	Advance Discrete Mathematics (I)	80	20	-	100

### M.Sc. (Mathematics) Semester -II

Paper	Description	Theory	Sessional	Practical	Total Marks
I	Advance Algebra (II)	80	20	-	100
II	Real Analysis (II)	80	20	-	100
III	General Algebraic and Topology	80	20	-	100
IV	Advance Complex Analysis-II	80	20	-	100
V	Advance Discrete Mathematics (I)	80	20	-	100



M.Sc. (Mathematics) Semester-III

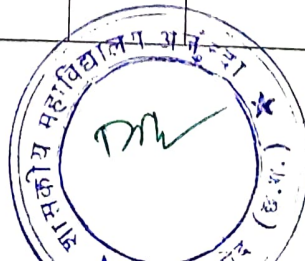
There shall be five papers. Two compulsory and three optional papers. Each paper shall have 100 marks. The paper which has theory and practical both, the theory part shall have 70 marks and practical part shall have 30 marks. Overall tally of marks in theory and practical will be 500

Paper	Description	Theory	Sessional	Practical	Total Marks
Compulsory papers					
I	Integration theory and Functional analysis (I)	80	20	-	100
II	Partial Differential equation and Mechanics (I)	80	20	-	100
Optional Papers					
III (C)	Fuzzy Set theory & its applications	80	20	-	100
IV (A)	Operation Research (I)	80	20	-	100
V (A)	Programming in C (with ANSI Features) (I)	70	-	30	100

M.Sc. (Mathematics) Semester-IV

There shall be five papers. Two compulsory and three optional papers. Each paper shall have 100 marks. The paper which has theory and practical both, the theory part shall have 70 marks and practical part shall have 30 marks. Overall tally of marks in theory and practical will be 500.

Paper	Description	Theory	Sessional	Practical	Total Marks
Compulsory papers					
I	Functional Analysis (II)	80	20	-	100
II	Partial Differential equation and Mechanics (I)	80	20	-	100
Optional Papers					
III (C)	Fuzzy Set theory & its applications	80	20	-	100
IV (A)	Operation Research (II)	80	20	-	100
V (A)	Programming in C (with ANSI Features) (II))	70	-	30	100



## PROGRAMME OUTCOME

On completion of the programme, the student will be able to:-

- Investigate and solve unacquainted mathematics problem.
- Develop the Knowledge of create Mathematical models to solve real world problem.
- Apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods.
- Demonstrate basic manipulative skills in algebra, operation Research, real analysis and functional analysis.
- Develop mathematical skill to solve problems
- Develop research skill.

## PROGRAMME SPECIFIC OUTCOMES

The course of M.Sc.(Mathematics) Semester-I has been divided into five papers.

### PSO-01: Advanced Abstract Algebra (I) paper code 309

- Gain Knowledge in Groups - Normal and Subnormal series.
- Study about Field theory- Extension fields, Algebraic and transcendental extensions.
- Gain Knowledge about Perfect fields, Finite fields and algebraically closed fields.
- Study about Automorphisms of extensions and Galois extensions.
- Solve polynomial equations by radicals and Insolvability of the general equation of degree 5 by radicals.

### PSO-02: Real Analysis (I), paper code 310

- Gain knowledge regarding Sequences and series and uniform convergence.
- Study the uniqueness theorem for power series, Abel's and Tauber's theorems.

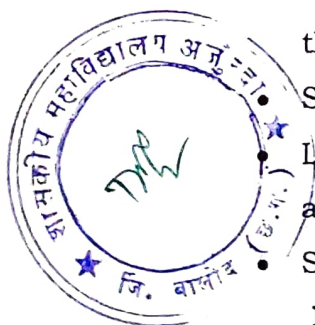
Solve functions of several variables and linear transformations.

Learn the concept Jacobians, extremum problems with constraints and Lagrange's multiplier method.

- Solve Partitions of unity, Differential forms and Stoke's theorem.

### PSO-03: Topology (I), paper code 311

- Understand Bases and sub-bases, Subspaces and relative topology.





- Gains knowledge regarding First and Second Countable spaces.
- Study Separation axiom their Characterizations and basic properties.
- Gain knowledge in the concept of Local compactness and one point compactification.
- Study Compactness in metric spaces and Equivalence of compactness.

**PSO-04: Complex Analysis (I), paper code 312**

- Understand Complex integration, Cauchy-Goursat and Higher order derivatives, Morera's Theorem.
- Learns about the Maximum modulus principle, Schwarz lemma and the argument principle, Rouché's theorem Inverse function theorem.
- Study will be Cauchy's residue theorem, Evaluation of integrals and branches of many valued functions.
- Knowledge gain about the bilinear transformations, their properties and classifications, Definitions and examples of conformal mappings.
- Solve Spaces of analytic functions, Hurwitz's theorem and Montel's theorem Riemann mapping theorem.

**PSO-05: Advanced Discrete Mathematics (I) paper code 313.**

- Students about the concept of Formal Logic-Statements and Symbolic Representation and Tautologies.
- Gains knowledge in the concepts of Homomorphism of semigroups and monoids, Congruence relation and Quotient Semigroups.
- Identify types of Lattices-Lattices as partially ordered sets, their properties, Lattices as Algebraic Systems, Sub lattices, Direct products, and Homomorphisms.
- Solve Applications of Boolean Algebra to Switching Theory (using AND, OR and NOT gates) and The Karnaugh Map Method.
- Learns about the Grammars and Languages-Phrase-Structure Grammars and Rewriting Rules, Derivations, Sentential Forms, Language generated by a Grammar.

**The course of M.Sc. (Mathematics) Semester-II has been divided into five papers:**

**PSO-06: Advanced Abstract Algebra (II), paper code 459**

- Gain knowledge Modules - Cyclic modules, Simple modules, Semi-simple modules and Schuler's Lemma.



- Study about the concept of Linear Transformations - Algebra of linear transformation.
- Learns the Canonical Forms - Similarity of linear transformations and Invariant subspaces.
- Understand Fundamental structure theorem for finitely generated modules over a Principal ideal domain.
- Study about the concept Rational canonical form and generalised Jordan form over any field.

**PSO-07: Real Analysis (II), paper code 460**

- Learns about the definition and existence of Riemann-Stieltjes integral and Properties of the Integral.
- Learns about the Lebesgue outer measure.
- Solve uniqueness of Extension, Integration with respect to a measure, Riemann and Lebesgue Integrals.
- Solve the four derivatives, Lebesgue Differentiation Theorem and Differentiation and Integration.
- Study the Functions of Bounded variation. The  $L$  -spaces. Convex functions.

**PSO-08: General and Algebraic Topology (II), paper code 461**

- Study the Tychonoff product topology in terms of standard sub-base and its characterizations.
- Gain Knowledge Product spaces, Connectedness and product spaces.
- Study about the Embedding and metrization, The Nagata-Smirnov metrization theorem.
- Identify types of Nets and filter. Topology and convergence of nets. Hausdorffness and nets.
- Learns the concept of the fundamental group and covering spaces- Homotopy of paths.

**PSO-09: Advanced Complex Analysis (II), paper code 462**

- Study about the Weierstrass' factorisation theorem, Gamma function and its properties and Riemann Zeta function.
- Learns the methods and properties analytic Continuation, Uniqueness of direct analytic continuation and Uniqueness of analytic continuation along a curve.



- Solve Harmonic functions on a disk, Harnack's inequality and theorem and Dirichlet Problem.
- Learns the concept of Canonical products, Jensen's formula and Poisson-Jensen formula.
- Student will be the range of an analytic function, Bloch's theorem and The Little Picard theorem.

**PSO-10: Advanced Discrete Mathematics (II), paper code 463**

- Gain knowledge Graph Theory-Definition of (Undirected) Graphs, Paths, Circuits, Cycles, and Subgraphs and Induced Subgraphs.
- Verify the Spanning Trees, Cut-sets, Fundamental Cut -sets, Cycle. Minimal Spanning Trees and Kruskal's Algorithm.
- Solve directed Graphs, In degree and Out degree of a Vertex, Weighted undirected Graphs and Dijkstra's Traversals.
- Understand Introductory Computability Theory-Finite State Machines and their Transition Table Diagrams.
- Able to solve finite Automata, Acceptors, Non-deterministic Finite Automata and equivalence of its power to that of Deterministic Finite Automata.

**The course of M.Sc. (Mathematics) Semester-III has been divided into five papers:**

**PSO-11: Integration Theory and Functional Analysis (I), paper code 612**

- Solve Signed measure, Hahn decomposition theorem, mutually singular measures. Radon-Nikodym theorem.
- Study about the Lebesgue-Stieltjes integral, product measures, Fubini's theorem, Differentiation and Integration.
- Identify types of Baire sets, Baire measure, continuous functions with compact support.
- Learns the method Riesz Lemma, basic properties of finite dimensional normed linear spaces and compactness.
- Gain knowledge normed linear spaces of bounded linear transformations, dual spaces with examples.

**PSO-12: Partial Differential Equations and Mechanics (I), paper code 613**



- Study about the concept of Mean Value Formulas, Properties of Harmonic Functions, Green's Function, energy Methods.
- Gain knowledge Heat Equation-Fundamental Solution, Mean Value Formula, Properties of Solutions and Energy Methods.
- Solve Energy equation for conservative fields and Hamilton's variables.
- Solve Poisson's Bracket, Poisson's Identity and Jacobi-Poisson Theorem.
- Solve Laplace and Poisson equations, Work done by self attracting systems.

**PSO-13: Fuzzy Set theory and its applications(I), Optional paper code 616 (C)**

- Study of Fuzzy sets-Basic definitions,  $\alpha$ -level sets. Convex fuzzy sets. Basic operations on fuzzy sets. Types of fuzzy sets. Cartesian products, Algebraic products. Bounded sum and difference, t-norms and t-conorms.
- To study of the Extension Principle- The Zadeh's extension principle. Image and inverse image of fuzzy sets. Fuzzy numbers. Elements of fuzzy arithmetic.
- To study of Fuzzy Relations on Fuzzy sets, Composition of Fuzzy relations. MinMax composition and its properties.
- To study of Fuzzy equivalence relations. Fuzzy compatibility relations. Fuzzy relation equations. Fuzzy graphs, Similarity relation.
- Possibility Theory-Fuzzy measures. Evidence theory. Necessity measure. Possibility measure. Possibility distribution. Possibility theory and fuzzy sets. Possibility theory versus probability theory.

**PSO-14: Operations Research (I), Optional paper(A), paper code 618**

Gain knowledge in advance Operations Research and its Scope, Necessity of Operations Research in Industry and Linear Programming-Simplex Method.

- Solve Other Algorithms for Linear Programming-Dual Simplex Method.
- Students will be familiar with the techniques Parametric Linear Programming.
- Solve Transportation and Assignment Problems.



- Study about the Minimum Cost Flow Problem, Network Simplex Method, Project Planning and Control I with PERT and CPM.

**PSO-15: Programming in C (with ANSI features) Theory and Practical (I), optional paper(A), paper code 620.**

- Solve Expressions, Assignment Statements, Formatting Source Files, Continuation Character and The Pre-processor.
- Study about Scalar Data Types-Declarations, Different Types of Integers and Different kinds of Integer Constants.
- Gain knowledge the break and continue Statements. The goto statement. Infinite Loops.
- Understand basic notions Binary Arithmetic Operators, Arithmetic Assignment Operators, Increment and Decrement Operators.
- Identify types Arrays -Declaring an Array, Arrays and Memory, Initializing Arrays, Encryption and Decryption.

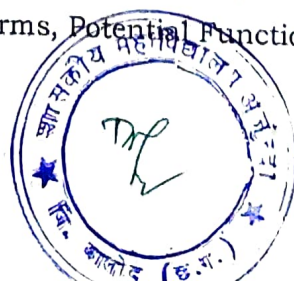
**The course of M.Sc. (Mathematics) Semester-IV has been divided into five papers: -**

**PSO-16: Functional Analysis (II), paper code 762**

- Gain Knowledge Uniform boundedness theorem and some its consequences, Open mapping and closed graph theorems.
- Develop the knowledge Solvability of linear equations in Banach spaces and the closed Range Theorem.
- Learns the method Complete orthonormal sets and Parseval's identity.
- Identify types of Adjoint of an operator on a Hilbert space and Reflexivity of Hilbert spaces.
- Abstract variational boundary-value problem and the generalized Lax-Milgram theorem.

**PSO-17: Partial Differential Equations and Mechanics (II), paper code 763**

- Understand Non-linear First Order PDE-Complete Integrals, Envelopes, Characteristics, Hamilton Jacobi Equations.
- Solve Fourier and Laplace Transform, Hopf-Cole Transform, Hodograph and Legendre Transforms, Potential Functions.



- Learns about Asymptotics (Singular Perturbations, Laplace's Method, Geometric Optics, Stationary Phase, Homogenization).
- Solve Jacobi's equations, Lee Hwa Chung's theorem, canonical transformations and properties of generating functions.
- Gain Knowledge Lagrange Brackets, and Condition of canonical character of a transformation in terms of Lagrange brackets and Poisson brackets.

**PSO-18: Fuzzy Set theory and its applications(II), Optional paper code 763 (C)**

- Study about the Fuzzy Logic, overview of classical logic, Multivalued logics, Fuzzy propositions. Fuzzy quantifiers. Linguistic variables and hedges. Inference from conditional fuzzy propositions, the compositional rule of inference.
- Approximate Reasoning-An overview of Fuzzy expert system. Fuzzy implications and their selection. Multiconditional approximate reasoning. The role of fuzzy relation equation.
- Study of Fuzzy Control-Fuzzy controllers. Fuzzy rule base. Fuzzy inference engine. Fuzzification.
- Defuzzification and the various defuzzification methods (the centre of area, the centre of maxima, and the mean of maxima methods).
- Decision Making in Fuzzy Environment-Individual decision making. Multiperson decision making. Multicriteria decision making. Multistage decision making. Fuzzy ranking methods. Fuzzy linear programming.

**PSO-19: Operations Research (II), Optional Paper, paper code 768**

- Understand Dynamic Programming-Deterministic and Probabilistic Dynamic programming.
- Solve Game Theory-Two-Person, Zero-Sum Games. Games with Mixed Strategies.
- Gain knowledge about Integer Programming-Branch and Bound Technique.
- Learns the basic concept of Applications to Industrial Problems-Optimal product mix and activity levels.
- Study Nonlinear Programming-One/and Multi-Variable Unconstrained Optimization, KuhnTucker Conditions for Constrained Optimization.



**PSO-20: Programming in C (with ANSI features) (II) Theory and Practical optional paper, paper code 770.**

- Study Storage Classes-Fixed vs, Automatic Duration, Scope, Global variables.
- Learns the basic concept of Pointers Pointer Arithmetic. Passing Pointers as Function Arguments
- Gain knowledge in Functions-Passing Arguments. Declarations and Calls. Pointers to Functions.
- Students learns about Structures and Unions-Structures, Dynamic Memory Allocation, Linked Lists.
- Gain knowledge in the concept of Input and Output-Streams, Buffering. The Header File, Error Handling, Opening and Closing a File, Reading and Writing Data, Selecting an I/O Method.



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