RAYAT SHIKSHAN SANSTHA'S

SHREE SADGURU GANGAGEER MAHARAJ SCINCE, GAUTAM ARTS & SANJIVANI COMMERCE COLLEGE, KOPARGAON DIST AHMEDNAGAR

Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Botany

Program outcome :M.Sc. (Botany)	
PO1	• Student can identify and classify all plant groups from algae to angiosperms, also understand the evolutionary relationship and their taxonomic aspects.
PO2	• Knows the concept, process, physiology, and molecular basis of plant development. Also knows the methods of cultivation & economic importance of various species, millets, leguminous plants, fruits, essential oils, vegetables etc.
PO3	• Students know about economically important algae, their cultivation and applications and also methods of preparation and application of algal products.
PO4	• Understand the application of Biopesticides; know about sources, methods and production of biofuel.
PO5	• Acquired knowledge of fermentation technology and production of fermented products.
PO6	• In seed technology student gain knowledge about seed structure development, chemical composition, seed production, processing, seed testing, quality control, seed certification and new hybrid variety.
PO7	• Student learns the basic biostatistics, experimental statistics and bioinformatics.
PO8	• Students understood plant organism interaction,
PO9	• To inculcates the scientific temperament in the students and outside the scientific community

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Botany

Program Specific outcome: M.Sc. (Botany)	
PSO1	• Students acquired knowledge through practical work in fields as well as in laboratory.
PSO2	• Students are exposing to various industrial process by industrial training.
PSO3	• Project helps for creating research attitude among the post graduate students

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Botany
Course Outcomes of M.Sc. (Botany)

Class	Course	Outcome
M.Sc. I	BO.1.1 CryptogamicBotany:	• To study the classification of Bryophytes and Pteridophytes. • Understand the evolutionary relationships between plant groups. • Know about systematic classification & nomenclature. • Knows about taxonomic aspects of Cryptogamic plants.
M.Sc. I	BO.1.2 PLANT PHYSIOLOG Y AND BIOCHEMIST RY:	• Knows about plant water relations, Transport of solute • Understand physiological aspects of plants. • Study metabolism of plants. • Study plant growth regulators. Flowering, fruiting • Know about agro-Electronics • Know about Enzymes and Biomolecules such as amino acids, carbohydrates, Proteins
M.Sc. I	Genetics and Plant Breeding	• Study of Classical genetics • Study of recombination, Linkages and Mutations • Study of Microbial Genetics and Cytogenetics • Study of Different Techniques of Plant Breeding.
M.Sc. I	BO.1.4 Botanical Techniques	• Study of microscopy • Study of chromatographic, electrophoretic techniques • Spectroscopic and radioactive techniques • Centrifugation, Electrochemical techniques and immunological techniques

M.Sc. I	BOTANY. BO.2.1 Cryptogac	• To study the classification of Algae and Fungi. • Understand the evolutionary relationships between plant groups. • Know about systematic classification & nomenclature. • Knows about taxonomic aspects of Cryptogamic plants.
M.Sc. I	BO.2.2 Cell And Molecular Biology:	• Knows about cell structure and cell organelles • Cell Signalling and Cell cycle. • Study of Evolution, Cellular and Miolecular evolution.
M.Sc. I	Bo. 2.3 Molecular Biology and genetics Engineering	• Study of Structure and properties of Nucleic acid. • Study of Gene structure, Transcription and Translation. • Study of Recombinant DNA technology • Isolation of Gene plant genetic Eng. And different Blotting methods
M.Sc. I	BO.2.4 Plant Ecology and Phytogeography	• Study of Relations of Plant with environment • Study of population ecology • Study of ecosystem types. • Study of Phytogeography
M.Sc. II	BOTANY. BO.3.1 SPERMATOPH YTIC BOTANY:	• To study the classification o gymnosperm & angiosperms. • Understand the relationship between living & non-living fossil gymnosperms • Know about systematic classification & nomenclature. • Knows about taxonomic aspects of angiosperms.
M.Sc. II	BO.3.2 DEVELOPME NT AND ECONOMIC BOTANY:	• Knows the concept, features & process of plant development. • Understand embryological aspects of development. • Know about the polyembryony, apomixis, parthenogenesis etc. • They also understand physiology, molecular basis of development • Know about various spices, millets, leguminous crop plants and their economic importance.

M.Sc. II	BO.3.3 INDUSTRIAL BOTANY-1	• Gain idea about economically important algae their cultivation & application. • Gain knowledge about methods of preparation & applications of biopesticides. • Understand floriculture & its importance. • Get ideas about different types of fruits. • Knows methods, processing of preservation of fruits.

M.Sc. II	BO.3.4 ADVANCED ANGIOSPERMS	• Gain scientific knowledge of modern trends in Angiosperm taxonomy • Understanding Phytogeography, ecology, genetics and taxonomy related to angiosperms. • Gain knowledge about molecular systematics, ultrasystematics • Study of morphological variations, systematic position, interrelationships of different plant families
M.Sc. II	BO.4.1- COMPUTATIONAL BOTANY	• Know the basic terms and test of hypothesis in biostatistics. • Understand the technical experimental statistics. • Know the concept of bioinformatics. • To know the concept of sampling methods and analysis of biostatical data in Botany.
M.Sc. II	Bo.4.2 Plant Organism Interaction	• Understand various kinds of plant-plant interaction like epiphytic plant, parasitic plant and Plant association. • Understand the interaction between herbivorus, carnivorus, and omnivores organisms. • Know the symbiotic association between various organism lke lichen, mycorrizae etc. • Understand the mechanism of seed dispersal and pollination.

M.Sc. II	BO.4.3- Industrial Botany-II	• Know the concept, scope and importance of herbal technology. • To study the various type of plants such as Aromatic, medicinal etc. • Understand the floriculture and its importance. • Get ideas of gardening methods and landscaping. • Gain knowledge about Plant tissue culture techniques. • Know the ideas about fruit preservations.
M.Sc. II	BO.4.4- PLANT PATHOLOGY	• Know the concept, scope and importance of Plant pathology. • Understand courses of disease development. • Account of Plant disease classification.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Botany

Program outcome: Ph.D. (Botany)	
Ph.D. (Botany)	1 Ph.D. in Botany is 3-year doctorate degree in Botany. Botany is a branch of biological science that focuses on the study of plants and how they survive and interact with other living and nonliving components of the environment. At undergraduate and graduate levels, the curriculum of the course typically consists of lecture-based lessons, lab sessions, and field research. Doctoral programs however, focus more on research. 2. **Ideal candidates for the course would possess:** • Data-handling skills such as recording, collating, and analyzing data using appropriate techniques and equipment. • Written communication skills • Presentation and oral communication skills such as to present research findings and make presentations in a clear, succinct way. • Project management skills, such as organizing and undertaking research projects, experiments, etc. (including budgeting, contingency planning, andtime management). • Good understanding of information technology • Ability to work both independently and as part of a team. **3. On completion of the programme, students will be able to:** • Demonstrate critical understanding, at an advanced level, of up-to-date knowledge and research methodology of a particular field • Implement effective academic and personal strategies for carrying out research projects independently and ethically • Contribute original knowledge in response to issues in their specialist area • Communicate research findings at a diverse range of levels and through a variety of media • Evaluate one's own research in relation to important and latest issues in the field **4. Engage in critical intellectual enquiry** • Critically evaluate information and ideas from multiple perspectives Integrate knowledge at the forefront of a particular field **5. Demonstrate a thorough understanding of research methodologies and techniques at an advanced level** • Develop, design and implement research projects competently and Independently.

Ph.D. (Botany)	**6. Conduct innovative, high-impact and leading edge research** • Engage in original research that takes a new technological, methodological, or theoretical approach **7. Provide novel solutions to complex problems** • Identify and define emerging problems Offer innovative and original solutions to problems and issues in novel situations **8. Demonstrate adherence to personal and professional ethics** • Maintain the highest standards of personal and academic integrity Understand complex ethical and professional issues **9. Demonstrate leadership and advocacy skills** • Articulate analyses and propose solutions in response to social issues Communicate and disseminate research findings effectively in the academiccommunity and to stakeholders in society **10. Work with others and make constructive contributions** • Engage in intellectual exchange with researchers from other disciplines to address important research issues Collaborate effectively with researchers from different cultures **JOB OPPERTUNITIES** **Taxonomist** -Taxonomists research about, and sub-divide types of plants into classifications, subsequent to observing their species and grouping them based on similitudes **Agronomist** -Agronomist are soil and plant researchers who work to enhance the yield of field crops like grain and cotton. They develop techniques that help farmers in creating more yield and avoiding harvest-failures **Ecologists** -Ecologists observe and research on plants' relationship and behavior with the soil and with other living beings. They research on the biological categories of plants with the objective of explaining their life phenomena. **Mycologists**- Mycologists consider growth patterns and how harming living beings harms vegetation. Mycologists are a kind of Microbiologists that observeand analyze microscopic organisms and green growth in relation to microorganisms. **Plant Breeders** -Plant Breeders apply customary hybridizing and crossbreeding methods, instead of hereditary building, to enhance plants for human use, with focus on nature's conservation. Plant Breeders are a type of Plant Geneticists, and • Geneticists work directly in the science of plant genomes.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Botany

Program Outcome :B.Sc. (Botany)	
PO1	• Students know about different types of lower & higher plants their evolution in from algae to angiosperm & also their economic and ecological importance.
PO2	• Cell biology gives knowledge about cell organelles & their functions
PO3	• Molecular biology gives knowledge about chemical properties of nucleic acid and their role in living systems.
PO4	• Genetics provides knowledge about laws of inheritance, various genetic interactions, chromosomal abrasions & multiple alleles.
PO5	• Structural changes in chromosomes.
PO6	• Student can describe morphological & reproductive characters of plant and also identified different plant families and classification.
PO7	• They knows economic importance of various plant products & artificial methods of plant propagation
PO8	• Use modern Botanical techniques and decent equipments.
PO9	• To inculcates the scientific temperament in the students and outside the scientific community
PO10	• Industrial Botany: By studying this course students can apply this knowledge in various industries such as Mushroom cultivation, biofertilizer production, biopesticide, etc. They can also set up their own industries.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Botany

Program Specific outcome: B.Sc. (Botany)	
PSO1	• Students acquire fundamental Botanical knowledge through theory and practical's.
PSO2	• To explain basis plant of life, reproduction and their survival in nature. PSO-3. Helped to understand role of living and fossil plants in our life.
PSO4	• Understand good laboratory practices and safety.
PSO5	• To create awareness about cultivation, conservation and sustainable utilization of biodiversity.
PSO6	• To know advance techniques in plant sciences like tissue culture, Phytoremediation, plant disease management, formulation of new herbal drugs etc.
PSO7	• Students able to start nursery, mushroom cultivation, biofertilizer production, fruit preservation and horticultural practices

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Botany
Course Outcomes of B.Sc. (Subject)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	Fundamentals of Botany	• Study of morphology & Anatomy of lower plants • Know about life cycle of different plant groups i.e. cryptogams and phanerogams • Evolutionary study of plants • Study of Classification of plants
F.Y.B.Sc. (Paper-II)	Industrial Botany	• Introduction to plant resources • Floriculture industry – study of important floriculture crops, Green house technology, cultivation practices • Concept and types of nursery and propagation methods • Study of plant tissue culture industry • Study of organic farming, Seed industries • Study of Mushroom cultivation and commercial production
F.Y.B.Sc. (Paper-III)	Practical based on theory paper I& II	• Study of anatomy and morphology of different plants • Study of artificial plant propagation techniques • Study of techniques in plant tissue culture • Cultivation of mushrooms • Study of biofertilizers and biopesticides • Preparation of jams, squash,etc.
F.Y.B.Sc. (Paper-I)	Fundamentals of Botany	• Study of morphology & Anatomy of higher plants • Know about different types of infloroscences and parts of typical flower • Types of fruits and seeds • Tissue differentiation and different types of tissues • Internal origination of primary plant body

FYBSc-(Paper-II)	Industrial Botany	• Introduction, production and advantages of Bio-fuel industries • Study of bio-pesticides, IPM, concept of Biocontrol 3. Biofertilizer concept , types, products and commercial significance • Fruit processing industries, cold storages, types of processing • Study of ayurvedic formulations using specific plants and use of plants as neutraceuticals and pharmaceuticals
F.Y.B.Sc. (Paper-III)	Practical based on theory paper I& II	• Study of anatomy and morphology of different plants • Study of artificial plant propagation techniques • Study of techniques in plant tissue culture • Cultivation of mushrooms • Study of biofertilizers and biopesticides • Preparation of jams, squash,etc.
S.Y.B.Sc. (Paper-I)	Taxonomy of Angiosperms	• Know principals of taxonomy, methods in taxonomy • Types of taxonomy, Sources of data for taxonomy • Methods of preparation of Herbarium, E-Herbarium etc.
S.Y.B.Sc. (Paper-II)	Plant Physiology	• Applications of plant physiology, Mechanism of Absorption of water, Transpiration • Plant growth and growth regulators, Nitrogen Metabolism in plants • Physiology of flowering
S.Y.B.Sc. (Paper-I)	Plant Anatomy and Embryology	• Know different tissue systems in plants • Normal secondary growth and different types of anomalous secondary growth • Study of male and female gametes in angiosperms, Process of fertilization and types of endosperms and structure of embryo.
S.Y.B.Sc. (Paper-II)	Plant Biotechnology	• Know various application of biotechnology like Enzyme technology, Fermentation technology • Single Cell Proteins and Environmental biotechnology • Know Basics of Plant Genetic Engineering, Methods of gene transfer in plants and applications of plant genetic engineering in crop improvement • Knowledge about Nanotechnology and its applications in Agriculture

S.Y.B.Sc. (Paper-III)	Practical based on theory paper I & II	• Know practical knowledge of plant family of angiosperms • Study of different ecological groups and methods to study vegetations in forests • Study different parameters of plant physiology like WHC, DPD, Rate of transpiration and Different instruments used in physiology • Study of Different tissue systems and normal and anomalous secondary growth • Study of fermentation techniques, Spirullina cultivation for SCP
T.Y.B.Sc. (Paper-I)	Cryptogamic Botany	• Systematics and Taxonomy • Evolution from Cryptograms to phanerogams • Classification, economic and ecological importance.
T.Y.B.Sc. (Paper-II)	Cell and Molecular Biology	• Cell biology gives the knowledge of Internal organization of the cell • Cellular signaling, transport and trafficking, Cellular Processes. • Molecular biology provides the Gene structure and Function • DNA: Structure, Functions and Damage
T.Y.B.Sc. (Paper-III)	Genetics and Evolution	• Genetics provides knowledge regarding Classical Genetics, Microbial Genetics & Cytogenetics • Plant Breeding • Evolution provides Information about Darwin theory and lamark's theory
TYBSc (Paper-IV)	Spermatophyta and Palaeobotany	• SPERMATOPHYTA gives knowledge of general characters, economic importance and classification of Gymnosperm and Angiosperm. • PALAEOBOTANY provides the information regarding the Fossils.
T.Y.B.Sc. (Paper-V)	Horticulture and Floriculture	• Understand economic importance of plant and plant product. • Know the methods of plant propagation. • Understand the fruit & vegetables production technology, scope & importance of floriculture. • Methods of cultivation of different flowering plants.

T.Y.B.Sc. (Paper-VI)	Computational Botany	• Study the scope & importance of biostatistics. • Know scope and some basic commonly used terms like sampling, data, dispersion, population, central tendency etc. • Knowledge to apply statistical analysis to biological data for testing different hypothesis.
T.Y.B.Sc. (Paper-I)	Plant Physiology and Biochemistry	• Plant physiology and Biochemistry give knowledge regarding the Photosynthesis, Respiration, Translocation of organic solutes • Carbohydrates, Amino acids and proteins, Secondary Metabolites
T.Y.B.Sc. (Paper-II)	Plant Ecology and Biodiversity	• Know the biotic and abiotic components of ecosystem. • Food chain & food web in ecosystem. • Understand diversity among various groups of plant kingdom. • Understand plant community & ecological adaptation in plants. • Scope, importance and management of biodiversity.
T.Y.B.Sc. (Paper-III)	Plant Pathology	• Study scope and importance of plant pathology. • Know disease cycle and disease development, • Effect of plant diseases on economy of crops. • Know the methods of studying plant diseases. They can identify the plant diseases like bacterial, nematode, and fungal, disease forecasting. • Study prevention and control measures of plant diseases.
T.Y.B.Sc. (Paper-IV)	Medicinal and Economic Botany	• Understand scope and importance of pharmacognosy. • Know the cultivation, collection, processing & importance of various herbal drugs and scope of economic botany. • Know the botanical resources like non wood forest products and study the concept of Ayurvedic pharmacy.

T.Y.B.Sc. (Paper-V)	Plant Biotechnology	• Study of Plant tissue culture Technology and Recombinant DNA technology • Understand Role of microbes in agriculture, medicine & industry. • Study the concept of bioinformatics & genomics proteomics.Understand technical germplasm & cryopreservation.
T.Y.B.Sc. (Paper-VI)	Plant Breeding and Seed technology	• Study the scope & importance of plant breeding. • Study the technique of production of new superior crop varieties, heterosis, hybrid vigor etc. • Know the process of hybrid variety, development & their release. • Know about seed germination, processing , production etc.
T.Y.B.Sc. (Paper-VII)	Practical I	• Study of Vegetative and Reproductive structure of Algae, Fungi, Bryophytes and Pteridophytes • Study techniques of cytology, Mitosis, Meiosis, Chromosome morphology • Estimation of DNA and RNA • Estimate Chlorophyll, TLC, Proteins and Amino acids • Study of advanced biotechnological techniques
T.Y.B.Sc. (Paper-VIII)	Practical II	• Study plant families • Study structural heterozygote's, Gene mapping, • Study of Vegetative and Reproductive structure of gymnosperms and Pleobotany
T.Y.B.Sc. (Paper-IX)	Practical III	• Study techniques in Horticulture and floriculture like cutting, Layering, Budding, Grafting • Calculating Mean mode median, methods of graphical presentations • Study different plant diseases like fungal, bacterial, microbial etc. • Study medicinal plants and methods of preparation of extracts and quantitative analysis of alkaloids, tannins etc.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program Outcome : M.Sc. (Analytical Chemistry)	
PO1.	• Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry.
PO2.	• Solve the problem and also think methodically, independently and draw a logical conclusion.
PO3.	• Create an awareness of the impact of chemistry on the society, and development outside the scientific community.
PO4.	• Become professionally trained in the area of Industry, material science, lasers and Nano-Technology
PO5.	• Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Chemistry experiments
PO6.	• To inculcate the scientific temperament in the students and outside the scientific community.
PO7.	• Apply modern methods of analysis to chemical systems in a laboratory setting.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program Specific outcome : M.Sc. (Analytical Chemistry)	
PSO1.	• Learn about the potential uses of analytical industrial chemistry.
PSO2.	• Carry out experiments in the area of organic analysis, estimation, separation, derivation process, conduct metric and potentiometric analysis.
PSO3.	• Learn the classical status of thermodynamics.
PSO4.	• Gathers attention about the physical aspects of atomic structure, various energy transformation, molecular assembly in nano level and significance of electrochemistry.
PSO5.	• Understand good laboratory practices and safety.
PSO6.	• Introduce advanced techniques and ideas required in developing area of Chemistry.
PSO7.	• Make aware and handle the sophisticated instruments/equipments.
PSO8.	• Enhance students‟ ability to develop mathematical models for physical systems

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program Outcome : M.Sc. (Organic Chemistry)	
PO1.	• Determine molecular structure by using UV, IR and NMR.
PO2.	• Study of medicinal chemistry for lead compound.
PO3.	• Improve the Skill of student in organic research area.
PO4.	• Synthesis of Natural products and drugs by using proper mechanisms.
PO5.	• Study of Asymmetric synthesis.
PO6.	• Determine the aromaticity of different compounds.
PO7.	• Solve the reaction mechanisms and assign the final product.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program Specific Outcome : M.Sc. (Organic Chemistry)	
PSO1.	• Know the structure and bonding in molecules/ ions and predict the Structure of molecule/ions.
PSO2.	• Understand the various type of aliphatic, aromatic, nucleophilic substitution reaction.
PSO3.	• Understand and apply principles of Organic Chemistry for understanding the scientific phenomenon in Reaction mechanisms.
PSO4.	• Learn the Familiar name reactions and their reaction mechanisms.
PSO5.	• Understand good laboratory practices and safety.
PSO6.	• Study of organometallic reactions.
PSO7.	• Study of free radical, bycyclic compound, conjugate addition of Enolates and pericyclic reactions.
PSO8.	• Study of biological mechanisms using amino acids

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Chemistry

Course Outcomes of M.Sc.(Analytical, Organic Chemistry)

Class	Course title	Outcome
M.Sc. I (Organic and Analytical Chemistry)	CHP-110 Physical Chemistry	• Realize the terms ionic strength, activity coefficient, DHO equation. • Know the Eigen function, Eigen value, operator and postulates of quantum mechanics. • Learn two and three dimensional box, mechanics of particle. • Understand the adsorption of gases by solid type of isotherms • Recognized the Fricke and cerric sulphate Dosimeter.
	CHI-130 Inorganic Chemistry	• 1 Determine and Learn about Dipole moment and bond order ofThe inorganic molecule. • Learn about geometry and shape of the molecule. • Known the preparation and properties of transition metal carbonyls • To understand the 18 electron rule and its application. • Find out the point group of inorganic molecules. Learn molecular orbital and its orientation.
	CHO-150 Basic organic Chemistry	• Learn SN1, SN2 and SNi Mechanism and stereochemistry • Learn classical and non-classical carbocation, • NGP by pi and sigma bonds. • Solve the elimination problems. • Distinguish between type of addition, elimination and substitution reaction • Learn E and Z nomenclature inC,N,S,P containing compound ,Stereochemical principal, enantiomeric relationship R and S.
	CHA-190 General Chemistry	• Study the importance of safety and security, responsibility types of hazards and risk in chemical laboratory. • Understand the use of personal protective and other safety equipments, handling of chemical in laboratory. • Understand the route of explores for toxic chemicals • Learn good laboratory practices and its applications

M.Sc. I (Organic, Analytical Chemistry)	CHP-210 Physical Chemistry	• Learn the thermodynamic description of exact, inexact differential and state function. • Know the qualitative properties of solution, the depression in freezing point, elevation in boiling point and osmotic pressure.
	CHI-230 Inorganic Chemistry	• Understand the mechanism in transition metal complexes, Born Habercycle to calculate lattices energy. • Learn the use of catalyst, radius ratio rule of coordination number 3 • Study the structure of atom, Hunds rule, term symbol, calculation of microstate and selection rule.
	CHO-250 Name reaction, synthetic Organic Chemistry and spectroscopy	• Study the various name reaction with examples. • Learn the mechanism of rearrangement reaction, use synthetic reagent of oxidation and reduction for solving the problems. • Understand the factors affecting UV-absorption spectra, Interpret IR spectra on basic values of IR-frequencies. • Discuss the problem of UV, IR and NMR.
	CHA-290 General Chemistry	• Study the instrumentation, sample injection system, columns for HPLC and GC, Solvent treatment system and choice of mobile phase. • Learn instrumentation of mass spectrometry, fragmentation, structure determination • Solve mean and standard deviation problems. • Understand the accuracy and precision and classification error. • Learn distillation, solvent extraction, crystallization, and other separation techniques.
	CHP-107 Physical chemistry practical's	• Calculate molar and normal solution of various concentrations. • Determine specific rotations and percentage of optically active substances by polorimetricall • Study the energy of activation and second order reaction. • Study the stability of complex ion and stranded free energy changeand equilibrium constant by potentiometry. Find out the acidity, Basicity and PKa Value on pH meter
	CHI-147 Inorganic chemistry practical's	• Study the gravimetric and volumetric analysis of ores and alloy. • Prepare a various inorganic complexes and determine its % purity. Preparation of nonmaterial.

M.Sc. I (Organic, Analytical Chemistry)	CHO-247 Organic chemistry practical's	• Perform the ternary mixtures, preparation of organic compounds, their purifications and run TLC. • Determination of physical constant: Melting point, Boiling point, different separation techniques.
M.Sc. II (Organic Chemistry)	CHO-350- Organic Reaction Mechanism	• Learn the reaction mechanism of nucleophile with elecrophile • Learn the acidity and basicity in organic compounds
	CHO-351- Organic Spectroscopy	• Understand the PMR and CMR values and their predictions • Understand the prediction of 2-D spectra
	CHO-352- Organic Spectroscopy	• Understand the 3-D way view of cyclohexane and related cyclic compounds • Learn to stereo-chemical principles with stereochemistry • Able to find out Cotton effect of different cyclic and acyclic molecules
	CHO-353- Photochemistry, Pericyclic and Heterocyclic chemistry	• Understand the electronic movements in thermal and photochemical excitations, their effects in reactions • Learnt about aromatic electrophilic and nucleophic substitution reactions involving variety of heterocycles such as prrrole, furan, thiophene, quinoline, isoquinoline, etc. • In addition, various syntheses have been studied.
	CHO-347- Single Stage Preparation	• Get the idea about reaction set up • Understand the importance of purification techniques recrystallization during TLC and physical const. determination
M.Sc. II (Analytical Chemistry)	CHA-390 Electro analytical and radio analytical methods of analysis	• Study of colorimeter, Faraday 1st law, Faraday 2nd law. • Study of voltametry and paleographic method of analysis, • heterodynamic voltametry, plus paleography and cyclic voltametry. • Study of ampherometry and their application
	CHA-391 Pharmaceutical analysis.	• Study of apparatus for test and assay, cleaning of glassware, role of FDA in pharmaceutical industry. • Learn biological test and assay, microbiological test and assay, physical test, determination, limit test sterilization. • Analysis of vegetable drug, sources of impurities in pharmaceutical row materials and finished products. • Learn standardization and quality control of different row materials.
	CHA-392 Advanced analytical techniques	• Study the classical approach for aqueous extraction, solid phase extraction, micro extraction and SFE. • Learn: AAS, FES, ICPAES, and DCP. • Study atomic fluorescence, resonant ionization and LASER based enhanced ionization • Study of different detectors and their applications.

M.Sc. II (Analytical Chemistry)	CHA-380 Geochemical and alloy analysis and analytical method development and validation.	• To understand assay validation and inter laboratory transfer. • Study the statistical analysis and analytical figure. • Learn the analysis of geological materials and alloys. • Study the analysis of soil, sampling, chemical analysis as a measure of soil fertility
M.Sc. II (Organic Chemistry)	CHO-450-Natural Products	• Learn the idea of protection and deprotection for the synthesis of large, multistep organic compounds • Learn the use of naturally occurring small precursors for synthesis of big molecules
	CHO-451-Advanced Synthetic Organic chemistry	• Understand synthesis of C-C ,C=C bond formations using organometallic compounds • Understand the multicomponent reactions,click chemistry, importance of B and Si in organic synthesis
	CHO-452-Carbohydrates, Chiron approach and medicinal chemistry	• Learn the idea of protection and deprotection for the synthesis of multistep, large organic compounds • Learn the use of naturally occurring small precursors for synthesis of big drug molecules • iii) Importance of naturally occurred chiral precursors in medicinal and drug development
	CHO-453-Designing Organic Synthesis and asymmetric synthesis	• Learnt about the protection and deprotection concept in organic synthesis. Various protecting groups of hydroxyl, amine, ester, and aldehyde and ketones were studied. Also learnt about retrosynthetic approaches.
	CHO-447-Double Stage Preparation	• Get the idea about monitoring of organic reactions using TLC technique • Understand about importance of quality of product by TLC and physical constant
	CHO-448-Green Chemistry/ Biochemical expts.	• Understand about the product purification by recrystallization • Understand the importance of green reagents and methods in organic synthesis
M.Sc. II (Analytical chemistry)	CHO-490 Analytical spectroscopy	• Study of ESCA, Detectors and their applications. Learn X-ray method of analysis, numerical problems. • Understand an introduction to microscopy, its applications. • Study of chemiluminescences, Fluorescence and phosphorescence. • Study of NMR spectroscopy

M.Sc. II (Analytical chemistry)	CHO-491 Analytical methods for analysis of fertilizer detergent, water and polymer paint and pigments.	• Study of analysis of fertilizer, sampling and sample preparation, kjeldal's method. • Understand the analysis of soap and detergents, UV-spectroscopic analysis of detergent. • Study of water pollution and analysis of polluted water
	CHA-492 Pollution monitoring and control and analysis of body fluid.	• Study of pollution monitoring, removal of heavy toxic metals Cr, Hg, Cd, Pb, As. • Learn the removal of particulate matters, SO2 and NOx. • Study the collection of specimen blood, urine, faeces. • Learn the analysis of blood and urine, Vitamin in body fluid. • Study the liver function and kidney function test.
	CHA-481 Analytical toxicology and food analysis.	• Study of acute poisoning, clinical toxicology. • Learn the isolation, identification and determination of narcotics, stimulants and depressants. • Study the classification function, analysis of carbohydrate, Protein, lipid. • Study the food preservatives, identification determination, and composition.
	CH-A-387 Analysis of materials	• Study the gravimetric and volumetric analysis of ores and alloy. • Prepare a various inorganic complexes and determine its % purity. • Preparation of nonmaterial. • To understand the chromatographic techniques. • Estimation of Iron by Various methods.
	CH-A-487 Instrumental Analysis	• Spectral analysis best on instrumental techniques • Photometric determination. • Study of Conductometer, FES, Polarography. • Analysis of riboflavin by photoflurometry. • To Study the spectroscopic techniques. • To study the terbidometry and Neflometry
	CH-A-488 Single stage preparations by Green synthesis.	• Study the dissolution of tablet. • Learn the spectroscopic techniques. • Study Volumetric and gravimetric estimation. • Analysis of Quinine sulphate by photoflurometry

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program outcome : B.Sc. (Chemistry)	
PO1.	• Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
PO2.	• Solve the problem and also think methodically, independently and draw a logical conclusion.
PO3.	• Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
PO4.	• Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
PO5.	• Find out the green route for chemical reaction for sustainable development.
PO6.	• To inculcate the scientific temperament in the students and outside the scientific community.
PO7.	• Use modern techniques, decent equipments and Chemistry software's

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program Specific outcome : B.Sc. (Chemistry)	
PSO1.	• Gain the knowledge of Chemistry through theory and practical's.
PSO2.	• To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.
PSO3.	• Identify chemical formulae and solve numerical problems.
PSO4.	• Use modern chemical tools, Models, Chem-draw, Charts and Equipments
PSO5.	• Know structure-activity relationship.
PSO6.	• Understand good laboratory practices and safety.
PSO7.	• Develop research oriented skills.
PSO8.	• Make aware and handle the sophisticated instruments/equipments.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Course Outcomes of B.Sc. (Chemistry)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	CH-101Physical chemistry	• Learn the thermodynamic principles, calculation of different types of energies Exergonic and Endergonic reaction, Gas equilibrium • Concept of PH of different salts, buffer solution, common ion effect
F.Y.B.Sc. (Paper-II)	CH-101 Organic chemistry	• To learn fundamentals principles and developments of organic chemistry • Learn the confirmation .cis –trans • Learn difference in alkane ,alkene and alkyne
F.Y.B.Sc. (Paper-III)	CH-103 Chemistry Practical	• Chemical safety and Lab safety • Determination of thermochemical parameters • Techniques of pH measurements , Preparation of buffer solutions • Elemental analysis of organic compounds, Chromatographic Techniques for separation of constituents of mixtures
F.Y.B.Sc. (Paper-I)	CH-201 Inorganic chemistry	• Various theories and principles of atomic structure • Origin of quantum mechanics , Schrodinger equation, Significance of quantum numbers, Shapes of orbitals • To learn periodic table ,properties trends • learn chemical bonding of different molecule
F.Y.B.Sc. (Paper-II)	CH-202 Analytical chemistry	• Introduction to Analytical Chemistry • Relation between molecular formula and empirical formula • Purification techniques for organic compounds. • Theoretical background for Paper and Thin Layer Chromatography • Applications of pH meter
F.Y.B.Sc. (Paper-III)	CH-203 Chemistry Practical	• Inorganic Estimations using volumetric analysis • Synthesis of Inorganic compounds • Analysis of commercial products • Purification of organic compounds. Preparations and mechanism of reactions involved

S.Y.B.Sc. (Paper-I)	CH-211 Physical & Analytical Chemistry	• Introduction to Analytical Chemistry, Chemical analysis and its applications, Sampling, Common techniques, Instrumental methods and other techniques, Choice of method. Basic principles in qualitative analysis , Meaning of common ion effect, Role of common ion effect and solubility product
S.Y.B.Sc. (Paper-II)	CH-212 Organic & Inorganic Chemistry	• In Organic Chemistry, Students learnt about the Stereochemistry, where they have dealt with chirality, optical activity and polarimetry, enantiomers, absolute configuration, R/S system nomenclature. In addition, they learnt about Baeyer strain theory and cyclohexane's conformations and geometrical isomerism. Also organic reaction and mechanism. Substitution and elimination reactions also have been studied. • (i) Definition of corrosion. ii) Types of corrosion. iii) Mechanism of corrosion. iv) Factors affecting corrosion. v) Methods of prevention of metal from corrosion. vi) Meaning of passivity. vii) Different theories of passivity. viii) Galvanising, Tinning
S.Y.B.Sc. (Paper III)	CH-221 Physical & Analytical Chemistry	• Meaning of equivalent weight, molecular weight, normality, molality, primary and secondary standards. Different way to express concentrations of the solution, Preparation of standard solution, Calibrate various apparatus such as burette, pipette, volumetric flask, barrel pipette etc. • Types instrument
S.Y.B.Sc. (Paper- IV)	CH-222 Organic & Inorganic Chemistry	• Learnt about oxidation and reduction concept. Catalytic hydrogenation were studied, where Birch reduction, Resenmund's reduction were studied.
S.Y.B.Sc. (Paper-V)	Practical Course in Chemistry CH – 223	• Verify theoretical principles experimentally • Interpret the experimental data • Improve analytical skills • Correlate the theory and experiments and understand their importance
T.Y.B.Sc. (Paper-I)	CH-331 Physical Chemistry	• Write an expression for rate constant K for third order reaction • Solve the numerical problems based on Rate constant • Understand the term specific volume, molar volume and molar refraction • Know the meaning of phase, component and degree of freedom • Derive the expression for rotational spectra for the transition from J to J+1

T.Y.B.Sc. (Paper-II)	CH-332 Inorganic Chemistry	• Know the meaning of various terms involved in co- ordination chemistry • To understand Werner's formulation of complexes and identify the types of valences • Know the limitations of VBT • Know the shapes of d-orbital's and degeneracy of d- orbital's • Draw the geometrical and optical isomerism of complexes
T.Y.B.Sc. (Paper-III)	CH-333 Organic Chemistry	• Define organic acids and bases. • Distinguish between geometrical and optical isomerism. • Discuss kinetics, mechanism and stereochemistry of SN1 and SN2 reactions. • Compare between E1 and E2 reactions. • Understand the evidences, reactivity and mechanism of various elimination and substitution reactions.
T.Y.B.Sc. (Paper- IV)	CH-334Analytical Chemistry	• Know the principles of common ion effect and solubility product. • Study the methods of thermo-gravimetric analysis. • Understand the principles of Spectro-photometric analysis and properties of electromagnetic radiations. • Study the Voltammetry and Polarography as an analytical tool. • Measure the absorbance of atoms by AAS.
T.Y.B.Sc. (Paper-V)	CH-335 Industrial Chemistry	• Know the importance of chemical industry. • Classify various insecticides. • Study the nutritive aspects of food constituents. • Understand the characteristics of some food starches. • Study the manufacture of cement, dyes, Glass, Soap and Detergents by modern methods.
T.Y.B.Sc. (Paper- VI)	CH-336-EEnvironmental Chemistry	• Know the role of environmental chemistry and its potential • Understand the basic concept of properties of soil & its classification on the basis of pH. • Know the different plant nutrients, their functions and deficiency symptoms. • Identify the problematic soil pollution, air, water pollution. • Have the knowledge of various pesticides, insecticides, fungicides and herbicides and their impact

T.Y.B.Sc. (Paper-I)	CH-331 Physical Chemistry	• Understand Mechanics of system of particles. • Know the Redox reaction. • Study the Nuclear Chemistry. • Solve the cell reaction and calculate EMF.. • Calculate interplanar distance. • Understand De-Broglie hypothesis and Uncertainty principle • Derive Schrodinger's time dependent and independent equations
T.Y.B.Sc. (Paper-II)	CH-332 Inorganic Chemistry	• Study the electronic configuration of lanthanides and actinides. • Get knowledge of Crystalline solid. • Understand different operation in stoichiometric molecule. • Study the Bio-inorganic chemistry. • Understand the p-type semiconductor and n-type semiconductor
T.Y.B.Sc. (Paper-III)	CH-333 Organic Chemistry	• To study UV, IR and NMR spectroscopy. • Discuss different types of rearrangement reactions. • Determine structure of compound by spectroscopic methods. • Understand the difference between carbocation and carbanion. • To study alkaloids, Ephedrine, citral molecule with their properties and application.
T.Y.B.Sc. (Paper- IV)	CH-334Analytical Chemistry	• Know the different analytical techniques. • To understand different types of separation techniques. • To study principle, construction and working of GC and HPLC. • To give an extended knowledge about chromatographic techniques used for separation of amino acids. • Discuss the problem based on distribution coefficient and extraction techniques.
T.Y.B.Sc. (Paper-V)	CH-335 Industrial Chemistry	• Know the various pharmaceutical drugs, their application and synthesis. • To study the waste management. • To understand the function of dyes, paints and pigments. • To study the various type of surfactants. • To know about molasses and bagasse. • To study the different types of polymer.

T.Y.B.Sc. (Paper- VI)	CH-336-EEnvironmental Chemistry	• Know the various environmental issuesand their solution. • To study the waste management. • To understand the function of chemicals and application of green chemistry. • To study the various type of surfactants. • To know natural sources of energy. • To study the different types of hazardous and toxic chemicals.
T.Y.B.Sc. (Paper- VII)	CH-347 Physical chemistry practical's	• Calculate molar and normal solution of various concentrations. • Determine specific rotations and percentage of optically active substances by polarimetrically. • Study the energy of activation and second order reaction. • Study the stability of complex ion and stranded free energy change and equilibrium constant by potentiometry. • Find out the acidity, Basicity and PKa Value on pH meter.
T.Y.B.Sc. (Paper- VIII)	CH-348Inorganic chemistry practical's	• Study the gravimetric and volumetric analysis of ores and alloy. • Prepare a various inorganic complex and determine its % purity. • To study binary mixture with removal of borate and phosphate. • To understand the chromatographic techniques
T.Y.B.Sc. (Paper- IX)	CH-349 Organic chemistry practical's	• Perform the Binary mixtures. • Preparation of organic compounds, their purifications and run TLC. • Determination of physical constant: Melting point, Boiling point. • Different separation techniques.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Commerce

Program outcome: M.Com.	
PO1.	• Practical Exposure that would equip the students to face the challenges in modernera in commerce and business.
PO2.	• The course offers a number of values based and job oriented skills to ensure thatstudents become enables to feet for every challenging situation.
PO3.	• Proficiency for completing various professional courses like Management,CA.,CMA.,CS.,MBA and Law
PO4.	• Ability to recognize the role of businessman, entrepreneurs, consultants etc.
PO5.	• Thorough knowledge of fundamentals of Commerce, Trade, Economics, Management etc.
PO6.	• Expertise in way to contribute towards the development of new practices and procedure of Administration, Banking and finance, Entrepreneurship, Marketing, Insurance, Computers, Laws, Accountancy etc.
PO7.	• Students become competent to demonstrate the role of Accountant, Manager, Advisor, Analyzer etc. in society and business.
PO8.	• Learners will be able to do higher education and advance research in the field ofcommerce and finance.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Commerce

Program Specific outcome: M.Com.	
PSO1.	• Enriched knowledge with new ideas and techniques essential for business andmanagement
PSO2.	• Mastery over specific skills in business.
PSO3.	• Capability to acquire and handle any position in business.
PSO4.	• Develop analytical interpretative and presentation skill regarding research in business andmanagement.
PSO5.	• Acquaintance with recent trends in commerce and management

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Commerce
Courses Outcome: M.Com

Class	Course	Outcomes
M.Com I	101 Management Accounting	• Students will enable to explain the relationship between cost accounting-financial accounting and managerial accounting. • They can answer the importance of management accounting for businesses.
		• Students will get the knowledge about the budgeting and operating budgets concepts. • They can Prepares both the operating and financial budgets
	103 Advanced Accounting and Taxation Special Paper I	• Students can able to apply the theoretical foundation of Accounting and Accounting Standards in practical approach. • They can gain ability to solve problems relating to Company Accounts, Valuations and special types of situations.
	104 Advanced Accounting and Taxation Special Paper II	• Students can able to compute the taxable income of individual and partnership firm. • Students can apply the knowledge of Income Tax and use it in filling the Income Tax Return of 'Individual', 'Hindu Undivided Family' and 'Firm' assesses.
	107 Advanced Cost Accounting and Cost System Special Paper I	• Students will enable explain the costing concept and methods and Analyse the unit cost and job costing, process costing with normal and abnormal loss. • They can be able to analyse standard costing methods and prepare the reconciliations statements
	108 Advanced Cost Accounting and Cost System Special Paper II	• Students Explain equip the students for designing and implementing cost control, cost reduction programme and different cost system. • They can implement the Cost Accounting Standard in practice with the level of knowledge with Advanced Techniques of Costing

M.Com I		• The students can differentiate between Cost Accounting and Global Competitive environment. • They also enable to learn application of different methods of costing in Manufacturing and Service Industry.
	113 Business Administration Special Paper I	• Students will able to explain and critically analyze the basic concepts & techniques of Production and operations management.
	114 Business Administration Special Paper II	• The post graduate students can take the decisions of Investment with the help of Financial Statements. • They also able to analyse the Financial Statements.
	201 Financial Analysis & Control	• Students can acquire sound knowledge of concepts, methods and techniques of management accounting and to make the students develop competence with their usage in managerial decision making and control.
	203 Advanced Accounting and Taxation Special Paper III	• Develop competency of students to solve problems relating Special areas in accounting including accounting for Services Sector and also the knowledge of Financial Reporting Practices. • They will be familiarize the student with procedure of accounting for Taxation.
	204 Advanced Accounting and Taxation Special Paper IV	• They can understand the concept of Direct Taxes including Rules pertaining thereto and their application to different business situations and principles underlying the Service Tax, basic concepts of VAT, Excise Duty and Customs Duty.
	207 Advanced Cost Accounting and Cost System Special Paper III.	• The post graduate students can use the knowledge on advanced cost accounting practices and Relevant Cost Accounting Standard are to be studied.
	208 Advanced Cost Accounting and Cost System Special Paper IV	• The students will be answer and design the implement cost control, cost reduction programme and different cost systems and Relevant Cost Accounting Standards are to be studied.
	213 Business Administration Special Paper-III.	• They will get the Knowledge about the chambers of commerce and trade, Associations, Public enterprises and Public utilities.

M.Com II	301 Business Finance	• Students will acquire sound knowledge of concepts, nature and structure of business finance.
	302 Research Methodology for Business	• Students will enable to get the knowledge about the areas of Business Research Activities and capabilities of students to conduct the research in the field of business and social sciences. • Students will acquaint, in developing the most appropriate methodology for their research studies and familiar with the art of using different research methods and techniques.
	303 Advanced Accounting and Taxation Special Paper V	• They will get the knowledge and develop understanding of methods of auditing and their application
	304 Advanced Accounting and Taxation Special Paper VI	• Students will enable to answer and develop the methods of audit in Specialized areas
	307 Advanced Cost Accounting and Cost System Special Paper V	• Students can acquire adequate knowledge on Cost Audit Practices. Level of Knowledge.
	308 Advanced Cost Accounting and Cost System Special Paper VI.	• The students with the knowledge of the techniques and methods of planning and executing the Management Audit. • Level of Knowledge.
	313 Business Administration Special Paper V	• The students understand various concepts of organisation behaviour and depth knowledge about process of formation of group behaviour in an organization set up
	314 Business Administration Special Paper VI	• The students get with in-depth knowledge of HRM and understanding about recent trends in HRM
	401 Capital Market and Financial Services	• Students can acquire sound knowledge, concept and structure of capital market and financial services.

M.Com II	403 Advanced Accounting and Taxation Special Paper VII.	• The students familiarise with latest developments in the Subject and inculcate the habit of referring to various periodicals and publications in the given subject, apart from text books and reference books • They will be able to read, understand, interpret and Summarize various articles from newspapers, journals etc.
	407 Advanced Cost Accounting and Cost System Special Paper VII	• Get the knowledge on recent advances in cost accounting and cost systems
	413 Business Administration Special Paper VII.	• The students will familiarise with the recent advancements in business administration and understanding about tools and their application in the business.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Commerce

Program outcome: B.Com.	
PO1.	• Practical Exposure that would equip the students to face the challenges in modernera in commerce and business.
PO2.	• The course offers a number of values based and job oriented skills to ensure thatstudents become enables to feet for every challenging situation.
PO3.	• Proficiency for completing various professional courses like Management,CA.,CMA.,CS.,MBA and Law
PO4.	• Ability to recognize the role of businessman, entrepreneurs, consultants etc.
PO5.	• Thorough knowledge of fundamentals of Commerce, Trade, Economics, Management etc.
PO6.	• Expertise in way to contribute towards the development of new practices and procedure of Administration, Banking and finance, Entrepreneurship, Marketing, Insurance, Computers, Laws, Accountancy etc.
PO7.	• Students become competent to demonstrate the role of Accountant, Manager, Advisor, Analyzer etc. in society and business.
PO8.	• Learners will be able to do higher education and advance research in the field ofcommerce and finance.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Commerce

Program Specific outcome: B.Com.	
PSO1.	• To develop numerical abilities of students
PSO2.	• To develop business language abilities of students
PSO3.	• To inculcate writing skills and Business correspondence.
PSO4.	• To create awareness of Law and Legislations related to commerce and business.
PSO5.	• To introduce recent Trends in Business, Organizations and Industries.
PSO6.	• To inform about Business Environment of Country as well as World
PSO7.	• To acquire practical skills related with commerce, trade, banking and finance.
PSO8.	• To provide a platform for overall development of students and develop knowledgelevel and awareness of students about Recent Trends of World.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Commerce

Courses Outcome: B.Com

Class	Course	Outcomes
F.Y.B.Com.	102 Financial Accounting.	• Students acquainted with the knowledge of various accountingconcepts. • Students become knowledgeable about accounting procedures,methods and techniques. • Acquaint them with practical approach to accounts writing by using software package e.g. Tally ERP-9, SAP etc.
	104 (A) Business Mathematics and Statistics	• Students are prepared for competitive examinations by inculcatingthem with the concept of Simple interest, compound interest and the concept of EMI. • Imparted the concept of shares and to calculate Dividend, conceptof population and sample. • They knew how to calculate various types of averages and variations along with the application of profit and loss in business.
	104 (B) Computer Fundamentals	• Students get knowledge about the Computer environment and the basics of Operating System, basics of Network, Internet and relatedconcepts. • Students become aware about applications of Internet inCommerce. • Enable students to develop their own web site.
	105 Organizational Skill Developments	1. On successful completion of this subject the students acquires the Knowledge about the various types of business organizations,office management and related practices.
	106 Essentials of E-Commerce	• Students become familiar with the mechanism of conductingbusiness transactions through electronic media. • Students are able to explain various components of e-commerce, understand the dynamics of e-commerce, appreciate the Internet technology and its utility in commercial activities, understand themethodology of online business dealings using e-commerce infrastructure

	106 B Insurance and Transport	• Students become knowledgeable on various insurance aspects and the importance of transport facility to a business.
F.Y.B.Com.	106 C Marketing and Salesmanship (Fundamentals of Marketing)	• On successful completion of this course the students should get thepractical knowledge and the tactics in the marketing
	106 D Consumer Protection and Business Ethics	• The students have understood consumer motivation and perception, Learnt consumer protection act 1986.
	106 E Business Environment & Entrepreneurship	• With this subject students are motivated to make their mind set fortaking up entrepreneurship as a career.
S.Y.B.Com.	201 Business Communication	• Students will able to communicate in the language of business. • Developing intellectual, personal and professional abilities throughеffective communicative skills; ensuring high standard of behavioural attitude through literary subjects and shaping the students socially responsible citizens.
	202 Corporate Accounting	• To enable the students to be aware on the Corporate Accounting inconformity with the provision of the Companies Act 2013. • After the successful completion of the course the student should have a through knowledge on the accounting practice prevailing in the Corporate world.
	204 Business Management	• The students get the understandings of Principles & functions ofManagement, Process of decision making, and modern trends in management process.
	205 Elements of Company Law	• Enlighten the students' knowledge on Companies Act 2013 andSecretarial practices.
	206 A Business Administration	• Students are inculcated with the basic knowledge about variousforms of business organizations, business environment and its implications thereon. • They will be able to aware with the latest trends in business.
	206 E Cost and Works Accounting	• Enables the students to inculcate knowledge on Cost sheet, Material issues, Labour cost, Financial statement analysis, Budgeting etc.
	206 G Business Entrepreneurship	• The student will be well versed in Concept relating to entrepreneur and knowledge in the finance institution.
	206 H Marketing Management	• Enable the student to understand the Principles of marketing management, market segmentation Product life cycle, pricing, branding etc.
	206 K Insurance Transport and Clearance	• Aquatint skills needed to manage insurance business, theimportance of insurance and tourism

		to a business.
	206 L Computer Programming and Application	• Students learn to use VBScript, transform Web pages from statictext and images into functional, interactive, and dynamic e- commerce tools. • They Learn to embed VBScript code in an HTML document, useVBScript operators; write code that makes decisions based on existing conditions, using control structures and loops, Web page visitor using Message and Input boxes, use the DOM to control the layout of HTML pages, add effects, and get information from users.

Class	Course	Outcomes
T.Y.B.Com.	301 Business Regulatory Framework (Mercantile Law)	• Enables to inculcate knowledge on various laws relating to business such as law of contract, law of sale of goods, law of agency, Negotiable Instruments Act etc.
	302 Advanced Accounting.	• Providing entire coverage of advanced accountancy. • Acquired knowledge on preparation of departmental accounts with respect to Apportionment of overheads.
	304 Auditing & Taxation	• Creating basic conceptual knowledge about the auditing principles. • Understanding the basic concepts and to acquire knowledge about Computation of Income, Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961.
	305 A Business Administration Special Paper II	• Acquaint the students with basic concepts & functions of HRD and nature of Marketing functions of a business enterprise
	305 E Cost and Works Accounting Special Paper II	• The students get a thorough knowledge on the cost accounting principles and the methods of cost accounting.
	305 G Business Entrepreneurship Special Paper II	• Acquainted the students with the basic concepts of entrepreneurship and preparing a business plan to start a small industry and developed the Knowledge and understanding in creating and managing new ventures.

T.Y.B.Com.	305 H Marketing Management Special Paper II	• Enable the students to understand the Principles of marketing management, market segmentation Product life cycle, pricing, branding, advertising, sales promotions, marketing research and CRM.
	305 K Insurance Transport and Clearance Special Paper II	• Promoting the awareness of Insurance Business & practices by making they learn the various regulations relating to Life Insurance & General Insurance.
	305 I Computer Programming and Application Special Paper II	• Inculcate knowledge on Networking concepts and technologies like wireless, broadband and Bluetooth. • Meet the security requirements of the SLAs and other external requirements further to contracts, legislation and externally imposed policies.
	306 A Business Administration Special Paper III	• Acquaint the students with the basic concepts in finance and production functions of a business enterprise
	306 E Cost and Works Accounting	• Imparted the knowledge regarding costing techniques, concepts, procedures and legal Provisions of cost audit
	306 G Business Entrepreneurship Special Paper III	• Students are aware to develop the Knowledge and understanding of behavioural aspects of entrepreneurship. Through studying the autobiographies of various entrepreneurs.
	306 H Marketing Management Special Paper III	• Enable to inculcate the knowledge of brand and Distribution Management in marketing plus making them aware about importance of control on marketing activities
	306 K Insurance Transport and Clearance Special Paper III	• Students understand the significance of travel and tourism industry. • They study the functions and working of various Travel Organizations. • Understand the concept of marketing mix and recent trends with Global Tourism and Transport Business.
	306 I Computer Programming and Application Special Paper III	• Students understand the software project management and project planning also show how graphical schedule representations are used by project management and the risk management process.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Computer Science

Program outcome : B.Sc. (Computer Science)	
PO1.	• Train students in algorithmic and programming skills
PO2.	• Build the necessary skill set for developing computer based solutions for real life problems.
PO3.	• Develop problem solving abilities using a computer
PO4.	• Provide quality software development practices.
PO5.	• Create awareness about process and product standards
PO6.	• Train students in professional skills related to Software Industry.
PO7.	• Prepare necessary knowledge base for research and development in Computer Science
PO8.	• Help students build-up a successful career in Computer Science

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Computer Science

Program Specific outcome : B.Sc.(Computer Science)	
PSO1.	• Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems
PSO2.	• Design, implements, test, and evaluate a computer system, component, or algorithm to meet desired needs and to solve a computationalproblem

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Program Outcomes, Program Specific Outcomes and Course Outcome

Course Outcomes of B.Sc. (Computer Science)

Class	Course title	Outcome
F.Y.B.Sc. (CS)	CS 101 Problem Solving using computer and C programming	• To develop Problem Solving abilities using computers with C programming
	CS-102 File Organization and databases	• To teach basic organization of data using filesand databases
S.Y.B.Sc. (CS)	CS-211 Data Structureusing C	• To understand the different methods of organizing large amount of data in computer memory
	CS-212: Relational Database Management System	• To teach database management operations
	CS-221: Object Oriented Concepts using C++	• Acquire an understanding of basic object oriented concepts and the issues involved in effective class design with C++
	CS-222:Software Engineering	• To teach basics of System Analysis and Design as well as Software engineering
T.Y.B.Sc. (CS)	CS-331 Systems Programming	• To understand the design structure of all system software such as compiler, linker, assembler, loader and editor.
	CS-332 Theoretical Computer Science	• To have knowledge of turing machine, finite automata, context grammer
	CS-333 Computer Networks -I	• Understand different types of networks, various topologies and application of networks
	CS-334 Internet Programming I	• Learn web development programming languagelike PHP
	CS-335 Programming in Java-I	• Understand core programming in Java

T.Y.B.Sc. (CS)	CS-336 Object Oriented Software Engineering	• Understanding importance of Object Orientation in Software engineering
	CS-341 Operating Systems	• To understand design issues related operating system and services
	CS-342 Compiler Construction	• To understand design issues of a lexical analyzer and use of Lex tool, parser, and use ot yaac tool.
	CS-343 Computer Networks -II	• Understand wired and wireless networks, its types, functionality of layer.
	CS-344 Internet Programming II	• Learn advanced programming in web development
	CS-345 Programming in Java-II	• Learn advance knowledge of java programming
	CS-346 Computer Graphics	• To learn concepts in graphics under Computer Programming
	CS-347 Lab Course I System Programming & Operating System	• To design and develop system software
	CS-348 Lab Course II Programming in Java	• To design and develop programs in Java language
	CS-349 Lab Course III Programming in PHP & Project	• To design and develop web based applicationsand projects

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Geography

Program outcome: B.A./B.Com (Geography)	
PO1.	• Define and develop the interdisciplinary approach through the study of Geography
PO2.	• Enhance employability and entrepreneur skills among the students.
PO3.	• Demonstrate and appreciate the importance of diverse cultural, economic, regional, and resources perspective.
PO4.	• Realization the importance of relation between Geography and various branches of Humanities, mental moral sciences.
PO5.	• Demonstrate and understand the important concept and theories in the field of Geography.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Geography

Program Specific outcome: B.A. (Geography)	
PSO1.	• Demonstrate knowledge of physical and cultural features of the earth surface.
PSO2.	• Define basic disciplines of Geography and its sub branches.
PSO3.	• Discuss the basic concepts and terminologies used in Geography like interior of the earth, plate tectonic, sea floor spreading, population growth, disasters, composition and structure of atmosphere, hydrosphere, etc.
PSO4.	• Distinguish between minerals and rocks, weather and climate, interior of the earth, basic industries, farming etc.
PSO5.	• Describe the causes and effects of local, national and international problems like global warming, acid rain, ozone depletion, soil degradation, deforestation etc.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Geography
Course Outcomes of B.A. (Geography)

Class	Course title	Outcome
F.Y.B.A.	Gg-110 (A) Physical Geography	• Define the terms • Explain the concepts and components of Physical • Geography • Learn the structure of earth. • Explain the theories to understand the earth structure. • Learn the components of atmosphere. • Learn the components of Hydrosphere.
F.Y.B.A.	Gg-110 (B) Human Geography	• Define the terms • Explain the concepts and components of Human Geography • Explain the factors influencing the distribution of Population. • Types of rural settlement and identify various pattern of settlement. • Explain the factors affecting on agricultural activity. • Solve the problems of Indian agriculture.
F.Y.B.Com.	115C(I) & 125 C(II) Elements of Commercial Geography	• Study the Human Economic Activities • Explain the Weber theory of Industrial Location • Understand the mineral and power resources • Study conventional and non-conventional energy resources • Study of the distribution of Iron and Steel, Automobile, Cotton Paper and Ship Building Industries in India • Get knowledge about types of agriculture, trade and Transport. • Aware the student about need of conservation and • Protection of natural resources. • Study of Transport and Trade • Understand the concept of Privatization, Globalization • and Liberalization • Cartographic Techniques of Data Representation and Maps

Class	Course title	Outcome
SYBA	Gg-201 Practical Geography (I) (Scale & Map Projections) (II) (Cartographic Techniques, Surveying and Excursion / Village / Project Report)	• Define map scale and projection • Apply practical skill to use the map scale and projection • Learn the new techniques, accuracy and the skills of map making • Acquired the Plan Table and Prismatic Compass Surviving techniques. • Known the components and function of GPS • Acquired Skills of handling GPS and Conducted GPS Survey • Measure Map Scales, conversion of scales • Understand types of projections • Preparation of various graphs and diagrams • Get knowledge about Statistical Methods. • Understand the different surviving techniques like, Plane Table, prismatic survey. • Acquire knowledge of preparation of drawing of profile with the help of Dumpy level. • Understand the socio economic condition of the villages.
SYBA	GG 210-A and B Economic Geography	• Study the Human Economic Activities • Explain the Weber theory of Industrial Location • Understand the mineral and power resources • Study conventional and non-conventional energy resources • Study of the distribution of Iron and Steel, Automobile, Cotton Paper and Ship Building Industries in India • Get knowledge about types of agriculture, trade and Transport. • Aware the student about need of conservation and • Protection of natural resources. • Study of Transport and Trade • Understand the concept of Privatization, Globalization and Liberalization
SYBA	GG220 A & B Population Geography- (I & II)	• To understand the history of population • Introduced the basic concept of Population geography • Introduced the types of population data.

TYBA	Gg.310 A&B Geography of Disaster Management- (I&II)	• To introduce students the concept of disaster & its relation with Geography. • To acquaint the students with the utility & application of hazards in different areas & its management. • To make the students aware of the need of protection & disaster management • To make the awareness among the students about the climatic disaster and their Management. • To understand the students about the geological and geomorphic disaster • To understand the students about the anthropogenic disaster and their management • To understand the students regarding the global issues
TYBA	Gg.320 - A &B- (DSE 1C& D) Geography of India- (I &II)	• To acquaint the students with geography of our Nation. • To make the student aware of the magnitude of problems and Prospects at National level. • To help the students to understand the inter relationship between the subject and the society. • To help the students to understand the recent trends in regional studied
TYBA	Gg-301-A &B- (DSE 2 C& D) Techniques of Spatial Analysis (I&II)	• To make students aware of techniques of geographical analysis, skill of SOI Toposheet Interpretation. • To make students aware of Aerial Photographs and satellite Images and interpretation with help of Computer software. • Students understand the Observation and Identification of Geographical Features and preparation of a Brief Report on it. • To make aware about the open source software and techniques of visualization. • To make students aware of techniques of geographical analysis. • To make students aware of Geographical data and basic analysis of data. • To understand the Central Tendency and Application of test in geographical data. • To understand the Observation of Geographical Problem/Socio economic condition and prepare a report on it.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Geography

Program outcome: M.A./M.Sc. (Geography)	
PO1.	• Study the types of land and processes
PO2.	• Understand the structure, composition of different spheres of the earth and its Atmosphere.
PO3.	• Understand importance of oceans, rivers and water and find the ways of their conservation
PO4.	• Understand the Function and types of Biogeography.
PO5.	• Understand the science of Remote Sensing Make use of GIS & GPS software

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Geography

Program Specific outcome: M.A./M.Sc. (Geography)	
PSO1	• **Govt. Department**: A geographer can avail job opportunities in government departments (like planning and developmental commissions, forestry, environmental, and disaster management departments etc.), travel agencies, manufacturing firms, text book and map publishers, media agencies, etc.
PSO2	• **Cartographer:** Many people choose to work as a cartographer who is a person with extensive knowledge about maps and is involved in making maps, charts, globes, and models of Earth and other planets.
PSO3	• **Surveyor:** Many others with a degree in geography also opt to work as a surveyor.
PSO4	• **GPS Surveyors:** In recent days even the fields of GIS as well as Remote Sensing are providing job opportunities to people with the educational background in geography and related specializations
PSO5	• **GIS and Remote Sensing Fields:** Geography as a career provides multiple job options.
PSO6	• **Drafter:** He/she associate closely with engineers and architectures. It involves planning, housing and development projects in terms of their location and utilization.
PSO7	• **Government employer:** Central government agencies employ geographers for mapping, intelligence work and remote sensing interpretation. State and local governments employ geographers on planning and development commissions.
PSO8	• **Urban and regional planner:** Concerned with planning, housing and Development projects with respect to their location and utilization of available land-space.
PSO9	• **GIS specialist:** City governments, county agencies and other government agencies and private groups are often in need of experienced GIS professionals.

PSO10	• **Climatologist:** Agencies viz. National Weather Service, news media, the Weather Channel and other government entities occasionally need climatologist.
PSO11	• **Transportation manager:** The regional transit authorities or shipping, logistics and transportation companies requires in transportation geography.
PSO12	• **Researcher:** Many Government and non-government institutes along with research centre offer several career options for qualified geographers with numerous specializations.
PSO13	• **Teacher/Professor:** The college teachers, school teachers and university teacher. Depending upon the experience and degrees obtained
PSO14	• **Demographer:** In government and research organizations.
PSO15	• **Government officer:** Geographical Survey of India/State and Central government provides job opportunities
PSO16	• It is learn that in the NET/SET, MPSC/UPSC and other competitive examinations.
PSO17	• Digitizers in GIS Company

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Geography

Course Outcomes of B.A. (Geography)

Class	Course	Outcomes
M.A. I	GGUT-111 Principles of Geomorphology	• Define the terms • Explain the concepts and theories of Geomorphology • Learn the scale of time • Explain different concepts, theories and models for landscape evolution • Explain the processes in the landscape and importance • Identify materials of the earth crust, rock type, type of weathering
M.A. I	GGUT-112 Principles of Climatology	• Explain the principles, terms and concepts of Climatology • Describe the compositions and structure of earth atmosphere • Explain electromagnetic spectrum and effect on earth atmosphere. • Explain basic concepts of temperature, air pressure and its measurement • Explain basic concepts of wind and wind measurement. • Describe scales of Atmospheric Motion and Models of air circulation • Explain basic concepts of the hydrological cycle, condensation and evaporation. • Describe the concept of Lapse Rate, Atmosphere, Air Masses and Fronts.
M.A. I	GGUT-113: Principles of Economic Geography	• Define the terms in Economic Geography • Identify the types of hypotheses in economic geography. • Explain economic landscape, theories and models. • Identify resources and explain significance of natural and human resources. • Discuss pre and post-independence economic development in India.

M.A. I	GGUT-114: Principles of Population and Settlement Geography	• Explain Evaluation of settlement and population geography • Describe factors influencing the growth and distribution of Population • Identify various patterns of settlement using toposheets. • Evaluate the effects of technology on shelter and pattern of settlement. • Analyze factors influencing the dispersion and nucleation • Measure the degree of dispersion and nearest neighbour using Toposheet. • Apply the concepts.
M.A. I	GGUP-115: Practical in Physical and Human Geography	• Define the terms. • Demonstrate Horton and Strahler's methods of stream ordering. • Describe drainage network analysis and drainage basin relief analysis • Explain the relationship between stream order and number • Demonstrate climatic diagrams • Describe the Koppen's climatic classification. • Calculate crop combination and crop diversification. • Apply gravity model and nearest neighbour analysis, calculation of centrality
M.A. I	GGUT-121: Geoinformatics-I	• Define the terms. • Explain the concepts and principles, components of space and time • Describe history and objectives of GIS, Elements of GIS and Tasks of GIS • Apply knowledge Spatial and non-spatial data analysis
M.A. I	GGUT-124: Agricultural Geography	• Define the terms. • Explain the nature and scope and recent trends of Agriculture. • Explain the determinants • Explain different types of agriculture. • Discuss problems and prospects of agriculture with Indian examples • Evaluate allied areas in agriculture and agricultural development.

M.A. I	GGUT-128: Industrial Geography	• Explain nature and scope and importance of industries in India. • Discuss the factors of industrial location. • Explain the models in industrial Geography. • Discuss problems and prospects of industries.
M.A. I	GGDT-130: Geography of Tourism	• Explain the concepts, importance and impact on tourism on Indian economy. • Give classification of tourism, and factors influencing on tourism. • Give the impact of accommodation on tourism.
M.A. I	GGDP-131: Practical in Surveying	• Explain methods used in surveying • Make a list of surveying instruments and field survey methods. • Use the computer methods in surveying
M.A. I	GGUP-134: Practical in Statistical Techniques for Geography	• Define descriptive and inferential statistics. • Explain Geographical data and scales of measurement. • Analyze measures of central tendency and dispersion. • Calculate the correlation and regression. • Explain Time series analysis, calculation and plotting moving Average. • Collect the data and write a report.
M.A.-II	GGUT-235 Geoinformatics-II	• Explain the concept and principles of Remote Sensing. • Explain the history and development of Remote Sensing in India • Discuss the EM Radiation and EM Spectrum. • Describe the various Platforms and Satellites • Explain the types and characteristics of different sensors and scanners. • Analyze the types of Resolution. • Explain the Image Interpretation Techniques.
M.A.-II	GGDT 241 Practical in Geoinformatics	• Explain use of photographs and satellite images. • Describe GIS-concepts, GIS- definition, application and data models. • Apply GIS operations- digitization, raster and vector overlay. • Use o e of Digit from a toposheet quadrant. • Apply knowledge of map algebra and spatial interpolation.

M.A.-II	GGDT243 Watershed Management	• Give fundamentals concepts. • Explain the physical parameters. • Apply knowledge of digitization • Create DEM with the help of software. • Plot a Hypsometric curve and calculate Hypsometric Integral
M.A.-II	GGUP-247 Practical in Economic Geography	• Make a list of Techniques in Agricultural Geography • Make a list of Techniques in Industrial Geography. • Use of techniques in Trade and Transportation Geography. • Use of Choropleth Maps in Economic Geography. • Use of GIS in Economic Geography. • Conduct a visit.
M.A.-II	GGUT-249 Geography of India	• Define geographical location, economic position and geological structure. • Identify the location and position of India. • Explain physiographic divisions and drainage system of India. • Learn climatic regions and seasons of India using climatic data. • Learn soil types and their distribution in India by using geographical maps. • Explain major forest types, crops and their distribution and production in India • Make a list of mineral power resources and major Industries distribution in India • Evaluate population growth and distribution in India.
M.A.-II	GGUT-250 Oceanography	• Define the terms. • Explain concept and theories of Oceanography. • Identify the nature, scope and development. • Describe the origin of the ocean Basins. • Describe the movements of sea water. • Explain sediments on the ocean floor
M.A.-II	GGUT-251 Research Methodology	• Make a list of surveying instruments and field survey methods • Use of surveying instruments • Apply knowledge of statistical methods in geographical research • Apply GIS Techniques in geography • Apply knowledge of field sampling, measurements and mapping • Plan field work and write reports

M.A.-II	GGUT-254 Political Geography	• Define the terms. • Define Concepts of Nations and State. • Identify the origin of state and its elements. • Explain frontiers & boundaries. • Make a list of contemporary issues related to India.
M.A.-II	GGDP-257 Interpretations of Topographical Maps and GPS Survey	• Learn the topographical maps. • Interpret Survey of India topographical maps. • Interpret ordnance Survey topographical maps. • Identify different methods of Relief Representation.
M.A.-II	GGUP-258 Dissertation/ Research Project	• Identify different patterns of drainage network, vegetation, settlements and land. • Conduct a project with respect to locational village • Identify the regional /local problems. • Give the solutions of the particular problems. • Give examples.

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Program Outcomes, Program Specific Outcomes, Course Outcomes

Department of Mathematics

Program outcome : M.Sc. (Mathematics)	
PO1.	• Inculcate critical thinking to carry out scientific investigation objectively without being biased with preconceived notions.
PO2.	• Equip the student with skills to analyze problems, formulate an hypothesis, evaluate and validate results, and draw reasonable conclusions thereof.
PO3.	• Imbibe effective scientific and/or technical communication in both oral and writing.
PO4.	• Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences

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Program Outcomes, Program Specific Outcomes, Course Outcomes

Department of Mathematics

Program Specific outcome : M.Sc. (Mathematics)	
PSO1	• Understanding of the fundamental axioms in mathematics and capability of developing ideas based on them.
PSO2	• Inculcate mathematical reasoning.
PSO3	• Prepare and motivate students for research studies in mathematics and related fields
PSO4	• Provide knowledge of a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains.
PSO5	• Nurture problem solving skills, thinking, creativity through assignments, project work
PSO5	• Assist students in preparing (personal guidance, books) for competitive exams e.g.NET, GATE, etc.

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Course Outcomes of MSc (Mathematics)
Department of Mathematics

Class	Course title	Outcome
M.Sc. I (I)	Complex Analysis	• Analyze sequence and series of analytic functions and types of convergence • Represent complex numbers pictorially and geometrically • Apply concept and consequences of analyticity and C-R- equations • Compute complex contour integrals and applying the Cauchy's integral various versions. • Understand geometric interpretations of complex numbers
	General Topology	• Understand various basic topologies • Understand the core ideas of countability and uncountability • Understand the theory of compactness, connectedness and completeness • Understand the heridatory topological properties • Understand the thms on normal spaces, regular spaces and relation between them
	Linear Algebra	• Use the concept of basis and dimension of vector spaces linear dependence and linear independence to solve problems. • Apply the properties of linear transformations to linearity of transformations, kernel and rank of linear transformations, inverse transformations to solve the problems of matrix transformations, change of basis. • Solving linear equations, working with matrices, in particular eigenvalues and eigenvectors, and applying the techniques to real life problems like graph theory, computer science, Electronics and applied Mathematics

Class	Course title	Outcome
M.Sc. I	Ring Theory	• Analyze and demonstrate examples of ideals and quotient rings • Use the concept of isomorphism and homomorphism for rings • Assess properties implied by the definitions of rings and modules • Confidently apply algebraic concept
	Partial Differential Equations	• Solve examples on Charpit‟s and Jacobi‟s method • Solve wave equations, heat equations, boundary value problems, Lapalce equations, Cauchy problem, Dirichlet and Neumann problem for different regions. • Classify the various second order partial differential equations.

Class	Course title	Outcome
M.Sc. I (II)	Complex Analysis	• Understand the basic algebraic properties of complex numbers. • Compute integrals by using Cauchy integral formulae. • Understand the theorems on analytic functions and sufficient conditions for differentiability. • Solve the numerical problems based on Cauchy-Riemann equations. • Identify the convergence of sequences and series.
	General Topology	• Understand various basic topologies. • Understand the core ideas of countability and uncountability. • Understand the theory of compactness, connectedness and completeness. • Understand the heridatory topological properties. • Understand the thms on normal spaces, regular spaces and relation between them.
	Rings and Modules	• Assess properties implied by the definitions of rings and modules. • Generalize the rings on the basis of their binary operations. • Compare two rings on the basis of isomorphism criterion. • Use the concept of isomorphism and homomorphism for rings. • Analyze and demonstrate examples of ideals and quotient rings.
	Numerical Analysis	• The students will not only learn how to use the finite element method, but also how to formulate and code a finite element method for any given set of partial differential equations. Thus, the finite element method is developed as a tool for the numerical solution of partial differential equations, and not confined only to structural mechanics applications the way it is typically taught. • The students will learn how to solve the Ordinary differential equation by various methods. • The students will learn how to find the Integration & Derivative by various methods • The students will learn how to find the roots of the equation by various methods

	Partial Differential Equations	• Solve examples on Charpit's and Jacobi's method • Solve wave equations, heat equations, boundary value problems, Lapalce equations, Cauchy problem, Dirichlet and Neumann problem for different regions. • Classify the various second order partial differential equations. • Know the Families of Equipotential Surfaces.

Class	**Course title**	**Outcome**
M.Sc. II (III)	Combinatorics	• Understand the ideas of permutations and combinations • Understand the addition and multiplication principles for counting • Understand how to apply combinatorial ideas to real life problems • Use generating functions to solve variety of combinatorial problems
	Field Theory	• Understand basic notions in the theory of field extensions • Apply the thms of algebraic extensions, splitting fields, separable and insepa. Extensions to find the various examples of extensions. • Relate the group theory and Galois theory in finding the Galois extension and Galois group. • Understand basic theory of composite extensions, simple extensions and cyclotomic extensions
	Functional Analysis	• Student learns the basics of functional analysis. • They learn to treat the vector spaces which have the additional property of being topological spaces. • Blending of these two structures brings them an exposure to higher mathematics. Important theorems like the Hahn- Banach theorem are taught here. These theorems stand a student in good stead throughout his mathematical life. • The student having seen basic analysis and linear algebra is expected to learn how these topics play a significant role, first in multi-variate calculus which then naturally leads to calculus on manifolds. • The intimate relationship between analysis and geometry should become apparent at the end of this course.

M.Sc. II	Topics in Analysis -I	• Explain the Fundamental concepts of the Theory of Integral Equation. • Distinguish the difference between Differential Equations and Integral Equations,singular integral equation. Convert he differential equation into an integral equation and vice versa. • Solve the problems on Fredholm integral equations by Adomian decomposition memthod, direct computation method and on Volterra integral equations equations by Adomian decomposition methodseries solution method successive approximation method. • Find the solution of the problems on Fredholm Integro differential equation, Volterra Integro differential equation. • Learn the methods and properties of Laplace transform and Inverse Laplace Transform; apply them to solve Linear Differential equations. • Apply the fundamental concepts of Fourier transform,Fourier Sine Transform, Fourier Cosine Transform to Evaluate Improper Integrals.
	Topics in Algebra	• Understand various basic topologies • Understand the core ideas of countability and uncountability • Understand the theory of compactness, connectednessand completeness • Understand the heridatory topological properties • Understand the thms on normal spaces, regular spaces andrelation between them

Class	Course title	Outcome
M.Sc. II (IV)	Number Theory	• Solve various problems on properties of integers and use the basic concepts of divisibility, congruence and their applications in basic algebra. • The students are able to Free Open Learn course, Introduction to number theory, as well as becoming proficient at modular arithmetic, you should find that you are increasingly able to communicate mathematical ideas and apply your knowledge and understanding to mathematics in everyday life, in particular to applications, such as the prevention of errors in ID numbers
	Differential Geometry	• Recognize different types of graphs and its level sets • Understand basic notions related vector fields, tangentspaces and surfaces • Understand core ideas of orientation, geodesics, paralleltransport, Weingarten map and Curvatures • Solve examples on curvatures, arc lengths and line integrals, curvature of surfaces

M.Sc. II (IV)	Fourier Analysis and Boundary Value Problems	• Find the Fourier series representation of a function of onevariable • Find the solution of Wave equation, Lapalce equation.Heat equation using the fourier series
	Discrete Mathematics	• Understand the language of graphs and model • Understand the use of graphs as model

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Program Outcomes, Program Specific Outcomes, Course Outcomes

Department of Mathematics

Program outcome : B.Sc. (Mathematics)	
PO1	• Solve and an understanding of concepts in all disciplines of Mathematics
PO2	• Solve the problem and also think methodically, independently and draw a logical conclusion
PO3	• Be well grounded in the basic manipulative skills level of algebra, geometry, trigonometry and beginning level calculus
PO4	• Be able to transmit mathematics ideas both orally and in writing.
PO5	• Apply the underlying unifying structures of mathematics (i.e. sets, relations and functions, logical structure) and the relationships among them
PO6	• Gain experience investigating the real world problems and learn to how to apply Mathematical ideas and models to those problems.

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Program Outcomes, Program Specific Outcomes, Course Outcomes

Department of Mathematics

Program Specific outcome : B.Sc. (Mathematics)	
PSO1	• Think in a critical manner.
PSO2	• Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
PSO3	• Formulate and develop mathematical arguments in a logical manner
PSO4	• Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.
PSO5	• Understand, formulate and use quantitative models arising in social science, business and other contexts.

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Course Outcomes of BSc (Mathematics)
Department of Mathematics

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	Algebra and Geometry	• Solve various problems on properties of integers and usethe basic concepts of divisibility, congruence and their applications in basic algebra. • Apply factor theorem, remainder theorem to solve problems on polynomials and by using given relationsbetween roots he will find the roots of polynomials • Solve the system of homogeneous and non-homogeneouslinear of m equations in n variables by using concept of rank of matrix, finding eigen values and eigen vectors. • Solve the problems of lines in three dimension, planes,spheres, and cylinders and how geometry is related to algebra by using their algebraic equations
F.Y.B.Sc. (Paper-II)	Calculus and Differential Equations	• Identify algebraic and order properties of real numbers. • Identify and apply the function properties of real numbersystem such as the completeness property • Verify the values of limit of a function at a point using thedefinition of a limit • Students will be familiar with the techniques of integration and differentiation of function with realvariables • Identify and apply the intermediate value thm, Meanvalue thm and L"Hospital's rule • Identify types of differential equations and solve differential equations such as Exact, homogeneous, non-homogeneous, and linear and Bernoulli differential equations etc.

Class	Course title	Outcome
S.Y.B.Sc. (Paper-I) (I)	Multivariable Calculus I	• Students learn analysis of multivariable functions, continuity, and differentiability. • learn the concepts of multiple integrals and their application to area and volumes
S.Y.B.Sc. (Paper-II) (I)	Laplace Transforms and Fourier Series	• Learn the methods and properties of Laplace transform and Inverse Laplace Transforms, apply them to solve Linear Differential equations. • Apply the fundamental concepts of Fourier series, Fourier Sine series, Fourier Cosine series to find series Representation of irrational numbers.
	Discrete Mathematics	• Understand the addition and multiplication principles for counting • Understand how to apply combinatorial ideas to real life problems • Use generating functions to solve variety of combinatorial problems
S.Y.B.Sc. (Paper-I) (II)	Linear Algebra	• Use the concept of basis and dimension of vector spaces linear dependence and linear independence, to solve problems. • Use the concept of inner product spaces to find norm of vectors, distance between vectors, check the orthogonality of vectors, to find the orthogonal and orthonormal basis. • Apply the properties of linear transformations to linearity of transformations, kernel and rank of linear transformations, inverse transformations to solve the problems of matrix transformations, change of basis.
S.Y.B.Sc. (Paper-II)	Multivariable Calculus II	• Students develop knowledge in the limit, continuity, differentiation of vector functions. • Use the various techniques of solving Integral problems of vector valued functions.

	Numerical Analysis	• The students will not only learn how to use the finite element method, but also how to formulate and code a finite element method for any given set of partial differential equations. Thus, the finite element method is developed as a tool for the numerical solution of partial differential equations, and not confined only to structural mechanics applications the way it is typically taught. • The students will learn how to Solve the Ordinary differential equation by various methods • The students will learn how to find the Integration & Derivative by various methods • The students will learn how to find the roots of the equation by various methods
T.Y.B.Sc. (Paper-I) (I)	Metric Spaces	• Learn the basic abstract ideas of analysis • Learn the basic ideas open sets, closed sets, limit point, isolated points, boundary points, subspace, product metric spaces, and apply them to study the nature of sets.
T.Y.B.Sc. (Paper-II)	Real Analysis-I	• Learn the theorems on completeness, compactness, connectedness, and use them to solve the problems. • Identify the continuity of a function which is defined on metric spaces, at a given point and identify the set of points on which a function is continuous by using different theorems. • Know sequence and series of real numbers and their convergence and divergence.
T.Y.B.Sc. (Paper-III)	Group Theory	• Identify the various algebraic structures with their corresponding binary operations. • Generalize the groups on the basis of their orders, elements, order of elements and group relations • Compare two groups of same orders on the basis of isomorphism Criteria. • Compute the possible subgroups of given group of specific orders and will recognize them.
T.Y.B.Sc. (Paper-IV)	Ordinary Differential Equations	• Solve linear differential equations with constant coefficients, non-homogeneous differential equations, system of first order equations, solution of differentialequations by Power series method

T.Y.B.Sc. (Paper-V)	Operations Research	• Formulate and model a LPP from a word problem and solve them graphically in 2-D. • Modify a primal problem and use the LPP to identify the new solution • Understand basic notions like feasibility, infeasibility, basic solutions, unbounded solutions etc.
T.Y.B.Sc. (Paper-I) (II)	Complex Analysis	• Solve problems on basic concepts of modulus, argument of a complex number, de Moiver's theorem and use them to find roots of an algebraic equation. • Define continuity and differentiability for complex functions • Prove the Cauchy-Riemann equations and apply them to complex functions in order to determine whether a given continuous function is complex differentiable • Evaluate integrals along a path - directly from the definition and also via the Fundamental Theorem of Contour Integration and Cauchy's Theorem, • Compute the Taylor and Laurent expansions of simple functions, determining the nature of the singularities and calculating residues • Prove the Cauchy Residue Theorem and use it to evaluate integrals
T.Y.B.Sc. (Paper-II)	Real Analysis-II	• Know convergence of sequence and series of functions, Riemann integrals, Improper integrals and its applications,
T.Y.B.Sc. (Paper-III)	Ring Theory	• Assess properties implied by the definitions of rings • Use various canonical types of rings • Analyze and demonstrate examples of ideals and quotient rings • Use the concept of isomorphism and homomorphism for rings
T.Y.B.Sc. (Paper-IV)	Partial Differential Equations	• Form the partial differential equations and Solve the problems on Pfaffian differential equations. • Solve the problems on first order and higher degree partial differential equations and its applications.

T.Y.B.Sc. (Paper-V)	Optimization Techniques	• Solve the project management related problems by using the concepts of CPM, PERT so as to find out the project completion time • Fond the optimal solutions of Game theory problems, optimal solution of two person zero sum game, Solution of mixed strategy games, graphical solution of games, linear programming solution of game. • Solve the problems on Replacement policy after failure, how to process the n jobs on two machines or three machines in minimum time so that the machines remain idle for short time. • Solve the optimization unconstrained the optimization problems and constrained optimization problems of Multivariable functions.
T.Y.B.Sc. (Paper-VI)	Computational Geometry	• Design, analyze and develop algorithm and method for solving geometric problems efficiently • Assess theoretical and practical problems that involves geometry • Generalize basic notions of reflection, rotation, projection with real life examples

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Economics

Program Outcomes: M.A. Economics	
PO1	• Ability to apply the concepts of micro economics such as demand, supply, revenue, cost, elasticity, etc.
PO2	• Ability to analyse and demonstrate knowledge of the basic theories/laws in economics- law of demand, law of supply, production function, etc.
PO3	• Ability to recognize, apply and analyze concepts and theories in public economics.
PO4	• Ability to appraise and assess the theory of public economics in real life situations.
PO5	• Ability to understand the concepts of international economics such as comparative cost, terms of trade, trade policies and trade agreements
PO6	• Ability to interpret and apply theory relating to understand international trade
PO7	• Ability to discuss and debate the effects of trade policy, trade agreements, exchange rate policies on the world economy/trade
PO8	• Ability to analyse and evaluate the subject with reference to various aspects of agrarian economies.
PO9	• Ability to develop an understanding of agriculture with its intricacies and imperfections and to be able to construct intellectual dialogue on the challenges of agriculture.
PO10	• Ability to apply the concepts of micro economics such as demand, supply, revenue, cost, elasticity, etc.
PO11	• Ability to compare and contrast various market structures and understand concept of equilibrium, price determination
PO12	• Ability to understand, apply and analyze concepts-public debt, budget, fiscal policy in public economics.
PO13	• Ability to interpret the theories relating to public economics in real life situations.
PO14	• Ability to discuss and debate on the public finance and policies w.r.t. India
PO15	• Ability to understand and interpret the concepts such as Balance of Payments, Exchange Rates, Foreign Exchange transactions, International capital flows, etc.
PO16	• Ability to critically analyse the effects of deficits, exchange risk, role of foreign capital on the world economy/trade

PO17	• Ability to discuss and debate on subjects related to international trade and finance w.r.t the Indian Economy
PO18	• Ability to analyse and evaluate the subject with reference to various aspects of Labour economics.
PO19	• Ability to develop an understanding of the labour with its intricacies and imperfections and to be able to construct intellectual dialogue on the challenges of labour w.r.t. the Indian Economy.
PO20	• Ability to analyze and demonstrate knowledge of the basic theories/laws in macroeconomics.
PO21	• Ability to apply the concepts of economic growth and compare international comparison of economic development, etc.
PO22	• Ability to analyze and demonstrate knowledge of the economic growth and development theories of economic growth and development
PO23	• Ability to develop, demonstrate and examine topics under Economics to pursue research.
PO24	• Ability to evaluate and examine subject areas in economics and explore possibilities of research.
PO25	• Ability to develop, demonstrate and examine various topics under Industrial Economics.
PO26	• Ability to evaluate and examine subject areas in economics bringing out the relation to industry and industrial development.
PO27	• Ability to analyze and demonstrate knowledge of the basic theories/laws in economics- general equilibrium psychological law of consumption, etc.
PO28	• Ability to analyse and demonstrate knowledge of the economic growth and development theories of economic growth and development
PO29	• Ability analyse, evaluate and apply the growth and development concepts, role of human capital, etc. in real life situations
PO30	• Ability to analyse and evaluate the subject with reference to various aspects of the economics of environment.
PO31	• Ability to develop an understanding of the economics of environment and various analytical tools to comprehend environmental issues
PO32	• At the end of the course, the student should be able to evaluate microeconomic concepts, models and its use in real life situations.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Economics

Program Specific Outcomes: M.A. Economics	
PSO1	• To provide the students with a unique opportunity of obtaining a professional
PSO2	• Qualification in economics focusing on the advanced practical areas.
PSO3	• Understand basic concepts of economics and to analyze economic behaviour in practice.
PSO4	• Understand the economic way of thinking.
PSO5	• The ability to analyse historical and current events from an economic perspective.
PSO6	• The ability to write clearly expressing an economic point of view.
PSO7	• Students will be able to effectively communicate economic ideas.
PSO8	• Be exposed to alternative approaches to economic problems through exposure to coursework in allied fields.
PSO9	• To create students ability to suggest of the various economic problems.
PSO10	• To develop comprehensive understanding of interdisciplinary issues and aspects of society.
PSO11	• Economics majors will be able to apply advanced microeconomic and macroeconomic theories to explain the behavior of individuals, businesses, and industries in market-based systems and the challenges of developing economies.
PSO12	• Economics majors will be able to explain the role of government in the economy, including taxing, spending, regulating and producing.
PSO13	• Predict the impact of fiscal and monetary policy – use of deficits, changes in the money supply, etc. – on overall economic performance.
PSO14	• Explain and discuss the determinants of economic growth.
PSO15	• Discuss the costs and causes of unemployment, and assess public policies to ameliorate it.
PSO16	• Students will be able to formulate informed opinions on policy issues and recognize the validity of opposing viewpoints.Discuss economic globalization and the inter-connectedness of nations.
PSO17	• To prepare the students for variety of challenging careers through Innovation in teaching and research.
PSO18	• To prepare the students for scientific research in economics

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Economics
Course Outcomes: M.A. Economics

Class	Course	Outcome
M.A. I	Micro Economic Analysis - I	• To provide a thorough understanding of the principles of economics • To enable students to apply micro economic concepts in various contexts • To enable understanding the basic theories in microeconomics such as demand theory, production theory, market structures • To discuss the modern developments in micro economics such as Modern Demand theories.
M.A. I	Public Economics - II	• To develop an understanding of the changing role of the government and the fiscal functions of the modern governments. • To discuss and deliberate on the concepts and theories in public economies like public policy, principles of taxation, theories of public expenditure, etc. • To develop an understanding of various policies in public economics like fiscal policy, taxation policy, public debt policy, public expenditure policy etc
M.A. I	International Trade	• To develop an understanding of the theoretical concept in international trade. • To analyze international economics with reference to terms of trade, trade policy, trade agreements etc. • To provide knowledge to students regarding recent developments and changes in international banking, international banking agreements etc. • To make the students understand role of international economic organization and global crisis development.
M.A. I	Agricultural Economics	• To develop an understanding of agricultural economics in the theoretical as well as practical context. • To discuss and debate the various issues and challenges faced by agrarian economies w.r.t. production, productivity, efficiency, employment, etc.

M.A. I	Micro Economic Analysis - II	• To provide a thorough understanding of the principles of economics. • To enable students to apply micro economic concepts in various contexts. • To enable understanding the basic theories in microeconomics such as demand theory, production theory, market structures. • To discuss the modern developments in micro economics such as Game Theory.
M.A. I	Public Economics - II	• To develop an understanding of various policies in public economics like fiscal policy, public debt policy, fiscal finances, etc. • To help the students to understand the normative policies and compare it with the policies framed and followed by Indian economy. • To impart information to the students about the reforms like taxation reforms in India
M.A. I	International Finance	• To develop an understanding of the theoretical concept in international finance, Balance of Payments, exchange rate policies, capital flows, etc. • To compare and contrast the scenarios on international trade in India vis-à-vis the world economy. • To provide knowledge to students regarding recent developments and changes in international banking, international banking agreements etc. • To make the students understand role of international economic organization and global crisis development.
M.A. I	Labour Economics	• To develop an understanding of labour economics in the theoretical as well as practical context. • To discuss and debate the various issues and challenges faced by labour with reference to division of labour, employment, wage determination, etc. • To demonstrate on the various aspects of labour dynamics and labour relations w.r.t. India.
M.A. II	Macro Economics Analysis - I	• To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in real-life situations. • To discuss the modern developments in macroeconomics.
M.A. II	Growth & Development - I	• To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc. • To analyze and evaluate the obstacles in the process of economic growth and development
M.A. II	Research Methodology	• To enable an understanding of Research and its methods under various areas of economics. • To demonstrate the practical and the applied aspects of research in relation to Economics.

M.A. II	Industrial Economics	• To provide an understanding of Industry, Industrial sector and growth and its relation to various economic issues and challenges. • To demonstrate the practical and the applied aspects of Industrial economics and the study of Industry and its relation to Economics.
M.A. II	Macro Economics Analysis - II	• Provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in various contexts. • To discuss the modern developments in macroeconomics.
M.A. II	Growth & Development - II	• To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc. • To analyze and evaluate the obstacles in the process of economic growth and development
M.A. II	Research Project	• To enable an understanding of Research and its methods under various areas of economics. • To demonstrate the practical and the applied aspects of research in relation to Economics.
M.A. II	Economics of Environment	• To develop an understanding of the economics of environment in the theoretical as well as practical context • To discuss various analytical tools to comprehend various environmental issues.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Economics

Program Outcome: B.A./B.Com (Economics)	
PO1	• **Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO2	• **Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
PO3	• **Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	• **Effective Citizenship**: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO5	• **Ethics**: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO6	• **Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development.
PO7	• **Self-directed and Life-long Learning**: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Economics

Program Specific Outcomes: B.A. (Economics)	
PSO1	• **Knowledge of Economic System:** An ability to understand economic theories and functioning of basic microeconomic and macroeconomic systems.
PSO2	• **Statistical and Mathematical Skills:** Acquaint with collection, organization, tabulation and analysis of empirical data. Ability to use basic mathematical and statistical tools to solve real economic problems.
PSO3	• **Econometric Applications:** Acquaint with basic and applied econometric tools and methods used in economics. The aim of this course is to provide a foundation in applied econometric analysis and develop skills required for empirical research in economics. It also covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models.
PSO4	• **Development Perspectives:** Delineate the developmental policies designed for developed and developing economics. The course also acquaint with the measurement of development with the help of theories along with the conceptual issues of poverty and inequalities.
PSO5	• **Environmental Strategy and Management:** This course emphasizes on environmental problems emerging from economic development. Economic principles are applied to valuation of environmental quality, quantification of environmental damages, tools for evaluation of environmental projects such as cost-benefit analysis and environmental impact assessments.
PSO6	• **Perspectives on Indian Economy:** Acquaint with basic issues of Indian economy and learn the basic concept of monetary analysis and financial marketing in Indian financial markets. This course reviews major trends in economic indicators and policy debates in India in the post-Independence period.
PSO7	• **Knowledge of Banking and Financial System:** To develop a deep understanding of financial system and theories to work proficiently with financial markets, institutions, instruments and regulatory framework. Inculcate skills for practical application in the field of corporate finance, investment banking & management, financial services, risk management etc.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Economics

Class	Course	Outcome
F.Y.B.A.	Indian Economic Environment	• Understand nature, Basic Characteristics and Major issues of Indian economy • Understand population & economic development • Understand Poverty and Unemployment Concepts and their trends in Indian economy • Understand role of agriculture, industrial sector in Indian economy. • Understand economic planning in India • Understand Salient Features of Economy of Maharashtra. • Understand Role of Co-operative in Economic Development of Maharashtra. • Understand Regional Imbalance Causes & Preventive Measures.
S.Y.B.A.	Financial System	• Create the awareness among the students of Modern Banking System. • Understand commercial banking system in India • Understand working & operation of RBI • Understand new development in Indian financial system periods • Understand cooperative and rural banking in India • Understand non-banking financial institutions & financial services in India • Understand the Indian money market • Understand the Indian capital market • Able to understand international aspects of the Indian financial system
S.Y.B.A.	Micro Economics	• Student is expected to understand the behaviour of an economic agent, namely, a consumer, a producer, a factor owner and the price fluctuation in a market. • To understand nature and scope of economics, the theory of consumer behaviour, analysis of production function and equilibrium of a producer, the price formation in different markets structures and the equilibrium of a firm and Industry. • Understand concept of Revenues and cost of Production. • Understand Linear & Non- Linear functional relationship • Understand price determination of factors (Rant, wages, interest and Profit.) • Understand meaning of social welfare function.

S.Y.B.A.	Macro Economics	• Understand macro-economic analysis • Understand of national income • Understand classical & Keynesian theories of output and employment • Understand consumption & Investment function • Understand process of credit creation by commercial banks • Understand Quantity theory of money. • Understand various macroeconomic problems. • Understand various macroeconomic policies
T.Y.B.A.	Indian Economic Development	• Understand the differences between Economic growth and Development, Indicators of Economic Development. • Understand Characteristics of Developing Countries. • Understand Constraints on Development Process. • Understand theories and Approaches of economic development. • Understand some growth models • To understand macroeconomic policies, roll of foreign capital and economic planning etc. in developing countries.
T.Y.B.A.	International Economics	• Understand Nature, Scope and Importance of International Economics • Understand theories international trade. • Understand gains from international trade & their measurements • Understand theory of intervention in trade • Understand the theory of regional blocks • Understand trade policies in India • Understand international financial institutions • Understand foreign direct investments • Understand foreign exchange market
T.Y.B.A.	Public Finance	• Understand Functions and Role of Government in Economy and Meaning, Nature, Scope & Importance's of public finance. • To understand various Approaches about Role of Government and Principle of Maximum Social Advantage- Dr. Dalton. • Understand concept of public expenditure • Understand concept of public revenue • Understand incidence & approaches of taxation • Understand concept of public debt • Understand concept of budget & deficit finance • Understand taxation & public debt of India • Understand fiscal federalism in India

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Electronic Science

Program outcome : B.Sc. Electronic Science	
PO1:	• Student acquires adequate knowledge of Analog systems design, digital system design, communication systems, basics of nanotechnology, nanoelectronics
PO2:	• Student design and test Analog and design digital system
PO3:	• Student learns various methods to analyse working of systems
PO4:	• Students learn the applications of various circuit blocks
PO5:	• Student learn some consumer products block diagrams, working and specifications,
PO6:	• Students write the program in C language and uses MATLAB tool to solve different task
PO7:	• Students acquire more practical knowledge and circuit building skill by completing their project.
PO8:	• Use modern techniques, equipments, devices and software's to design, develop and test their projects

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Electronic Science

Program Specific outcome : B.Sc. (Electronic Science)	
PO1:	• Gain the knowledge of Electronics through theory and practical's.
PO2:	• Students design, build, test and explain the working of electronic analog and digital circuits.
PO3:	• Students learn the analysis using different theorems.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Electronic Science

Course Outcomes of BSc. (Electronic Science)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	EL-101: Principles of Analog Electronics	• Students are able to understand importance of Electronics in day today life • Student could identify different parameters/functions/specifications of components used in electronic circuits • Students are able to solve problems based on differentlaws and network theorems. • Students performed simulations using simulator for analyzing network performance • Student aware of basics of Semiconductor Devices-Diode, Transistor, MOSFET etc. • Students are able to build and test the circuits like streetlight controller using electronic devices • Students are able to know basics of operational amplifier and opamp applications. • Students get familiar with operating principle of IC 555 and types of DAC/ADC and their performance.
F.Y.B.Sc. (Paper-II)	EL- 102: Principles of Digital Electronics	• Student studied different number systems and codes • To understand logic gates and truth tables • Students are able to understand combinational logical circuits and sequential logical circuits. • Students are able to reduce the expression using Boolean theorems • Students get familiar with applications of counters likering counter or event counter • Student acquired the skill to design the UP/DOWN counters. • Student get familiar with different integration technology and logic families.

F.Y.B.Sc. (Paper-III)	EL-103 Practical	• Students are able to identify different components anddevices as well as their types • Understood basic parameters associated with device-diode, transistor. • Studied the operation of different instruments used in the laboratory • Student could connect circuit and did requiredperformance analysis • Students learn amplifier, rectifier experiments. • Acquired knowledge of basic logic gates, derived logicgates, interconversion. • Learn half adder, full adder, half substrctor etc. logiccircuits. • Students are ready to assemble analog and digital circuits using bread board.

Course Outcomes of BSc. (Computer Science)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	EL-101:Paper-I Principles of Analog Electronics	• Students get familiar with basic circuit elements and passive components. • Student understood DC circuit theorems and their use in circuit analysis. • Student studied various active components. • They studied elementary electronic circuits. • Students studied semiconductor materials. • Students studied various semiconductor devices & their characteristics. • Students studied operational amplifier basic & application.
F.Y.B.Sc. (Paper-II)	ELC 102: Principles of Digital Electronics:	• Familiar with concepts of digital electronics • Learned number systems and their representations • Understood basic logic gates, Boolean algebra and K-maps • Studied arithmetic circuits, combinational circuits and sequential circuits • Students are able to design digital circuit designed • Student are able to make short projects on digital electronics circuits

F.Y.B.Sc. (Paper-III)	ELC 103: Practical	• Students are able to connect opamp circuits and analyzed the output • Studied application circuits of opamp • Student designed the IC 555 as astable/monostable multivibrator. • Students are able to compare simulated and actual results of given circuit. • Students get familiar with various instruments & components in the LAB. • Conducted small practical competitions during practical sessions, has improved skills of students.
S.Y.B.Sc. (Paper-I)	EL211: Analog Circuit Design	• Understand the working of various analog circuits and frequency response of analog circuits • Know about the various types of amplifier like Voltage amplifier, power amplifier and multistage amplifier , and its applications like PA System • Know the concept of feedback, concept of feedback amplifiers and their characteristics and applications • Design the different oscillator circuit. • Applications of Operational Amplifiers like Adder, Subtractor, Integrator, Differentiator, Log amplifiers , Comparator etc.
S.Y.B.Sc. (Paper-II)	EL212: Digital Circuit Design	• Develop a Digital logic and apply it to solve real life problems. • Analyse, Design and implement combinational logic circuits like Adder, Subtractor, Parity generator, magnitude comparator. • Analyse, Design and implement sequential logic circuits like Counters, shift registers etc. • Use of k-maps in the design of combinational circuits. • Understand the design and working of various data converters • Applications of counters like Auto-parking System, totalizer , Digital clock, bank token display • Interfacing of LED's, single and multi digit 7 segment • display/ driver, Switches, Keypad, Thumb, wheel switches with digital systems

S.Y.B.Sc. (Paper-I)	EL221: Electronic Instrumentation	• Students can design Volt meter, Current meter, Ohm meter, multi-range meters, multi-meter, AC Voltmeter. • Use of signal generation for testing various communication and instrumentation circuits, fault finding in the circuits • Students design various sensor based instruments like PH meter, energy meter, digital thermometer, Lux meter etc. • Students can manufacture different types of power supplies.
S.Y.B.Sc. (Paper-II)	EL222: Communication Electronics	• Understand different blocks in communication system and how noise affects communication system using different parameters. Block diagram of Telephone system. • Distinguish between different modulation schemes like AM, FM, PM etc. With their advantages, disadvantages and applications. • Understand basics of AM and FM Receivers. • Identify differet Radio receiver circuits and role of AGC • Understand the digital communication system and its • application like FDM,TDM,MODEM, Set Top Box etc.
S.Y.B.Sc. (Paper-III)	EL 203	• Students use the basic concepts for building different electronic circuits. • They understand design procedures of different electronic circuit. • Student able to build experimental setup and test the circuits. • They acquired the skills of analyzing test results of experiments.
S.Y.B.Sc. (Paper-I)	ELC 211: Digital System Hardware	• To study the applications of logic gates. • Students are able to design different digital circuit design using K-maps. • Understands basics of microprocessors • Students are able to understand fundamentals of multi- core technology.
S.Y.B.Sc. (Paper-II)	ELC 212: Analog Systems	• Understood basics of analog electronics • Leaned different types of sensors • Understood different types of signal conditioning Circuits • Studied data conversion techniques • Now can apply knowledge of analog systems in different applications

SYBSc (Paper-I)	ELC 221: The 8051 Architecture, Interfacing & Programming	• Studied the basics of 8051 microcontroller • Students are able to study the Programming and interfacing techniques of 8051 • Students are able to apply knowledge of 8051 to design different application circuits • Studied basic concepts of advanced Microcontrollers.
S.Y.B.Sc. (Paper-II)	ELC 222: Communication Principles	• Understood basics of communication systems. • Understood modulation, demodulation and multiplexing of signals. • Learned digital communication techniques • Familiar with concepts in advanced wireless communication.
S.Y.B.Sc. (Paper-III)	ELC-203: Practical Course	• Students developed basic concepts for building various applications in electronics. • Understood design procedures of different electronic circuits as per requirement. • Students learned to build experimental setup and test the circuits. • Developed skills of analyzing test results of given experiments.
T.Y.B.Sc. (Paper-I)	EL331:Advance d Digital System Design	• Student studied the Verilog HDL Code of different digital system • They could design different combinational and sequential circuits • Student studied the PLDs and its applications.
T.Y.B.Sc. (Paper-II)	EL332: Microcontrollers	• Student learnt architecture of 8-bit microcontroller. • Students are able to use instruction set and addressing modes of microcontroller. • Student developed assembly language programming skills. • Students are able to interface memory and I/O devices.
T.Y.B.Sc. (Paper-III)	EL333: Analog Circuit Design and Applications of ICs	• Students study the practical design aspects while using Op-amps • Learns the basic application circuits of Op-Amps • Learns the specifications and selection criterion for • linear ICs • Students acquired the information about different special purpose ICs and their applications • Students refer and understand data manuals.

T.Y.B.Sc. (Paper-IV)	EL334: Principles of Semiconductors Devices	• Students can grow the crystal on substrate • They are able to understand the structure with reference to semiconductors. • Understood the theory of metal-semiconductor and p-n junctions • Understood the working of semiconductor devices like BJT , FETs MOSFETs etc.
T.Y.B.Sc. (Paper-V)	EL335: C programming	• Students become familiar with fundamentals of C language, which is powerful tool in industry. • Developed algorithm/flowcharts for problem solving and writing programs. • They learn various tools to use functions, arrays, pointers and file handling in C language. • They studied different types of algorithm. • C-subject is skilled based, industrial oriented.
T.Y.B.Sc. (Paper-VI)	EL336: Fiber Optic Communication	• Understand basic laws of optical communication and working of various types of optical components. • Understand FOC link structure, propagation and transmission properties of OF. • Learned about various types of optical sources, detectors and fiber types and their suitability/ choice for any applications. • Estimate the losses and analyze the propogation characteristics of an optical signal in optical fiber. • Design FOC link based on budgets. • Learned about different optical test instruments.
T.Y.B.Sc. (Paper-I)	EL341: Advanced Communication Systems	• Student studied the various types of antenna and its parameters • They could identify the AM and FM transmitter and receiver. • Student studied the digital modulation techniques like ASK, FSK, Delta modulation, QPSK, QAM.
T.Y.B.Sc. (Paper-II)	EL342: Microcontroller and its Applications	• Student used ‘C’ language for programming the microcontrollers • Learnt to use Timers, Interrupts and Serial Communication in Microcontroller. • Student are able to apply the knowledge in real world applications

T.Y.B.Sc. (Paper-III)	EL343: Power Electronics	• Students learns the basics of power electronics and • familiar with Power Electronic Devices, circuits and applications • Learns about power devices and protections of devices. • Learns various types of power circuits such as rectifiers using thyristers, Inverters, Converters etc. • Learns the applications of power electronics
T.Y.B.Sc. (Paper-IV)	EL344: Foundations of Nanoelectronics	• Understood the concept of cyclotron and its use • Understood the Hall effect and use of to find the types of semiconductor. • Understood the Use of Maxwell's Equations and laws of Electrodynamics, Equation of continuity, Pointing vector theorem. • Students know how to find energy transferred from sun to earth.
T.Y.B.Sc. (Paper-V)	EL345: Mathematical Methods and Circuit Analysis using MATLAB	• MATLAB is powerful scientific engineering tool for various designing. • Students learned features of MATLAB as a programming tool. • MATLAB used to promote new teaching model, which is used to develop programming skills and technique to solve mathematical problems. • Revision of Laplace Transform and Fourier series and its applications. • Students introduced with MATLAB as a simulation tool. • MATLAB is skilled based, industrial oriented
T.Y.B.Sc. (Paper-VI)	EL346: Industrial Automation	• Identify the various parameters that are measurable in electronic instrumentation. • Select appropriate passive/active transducers and ac and dc bridges for relevant physical parameter measurement • Get complete view of strategies for process control and process automation. • Understand the terms like Process Characteristics: Process equation, Process load, Process lag, self regulation • Understand Control system parameters: Error, Variable range, control parameter range, control lag, dead time, cycling.

T.Y.B.Sc. (Paper-VII)	EL347: Practical -I	• Students referred the various datasheets of the electronic devices and integrated circuits • They learnt how to select the devices, sensors, actuators and ICs for a particular application • Developed the basic skills required to handle the various instruments • Students acquire designing skill of analog and digital circuits/ systems
T.Y.B.Sc. (Paper-VIII)	EL348: Practical -II	• Student learnt the basic C-Programming & Verilog HDL to design basic combinational and sequential circuits • Student get familiar with structural, data flow and behavioural modelling • Student learnt assembly level language of 8051 microcontroller • They used cross compiler to develop C-programs for microcontroller • Student studied the various interfacing circuits to 8051 microcontroller
T.Y.B.Sc. (Paper-IX)	EL 349: Project course (Practical)	• Students developed projects related to Robotics, sensor based Pollution parameter measurements. • Students designed and developed projects using MATLAB tools. • Students participated in different project competitions.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of English

Program Outcome: M.A./M.Sc./M.Com. (English)	
PO1	• Communicate in English language fluently and effectively.
PO2	• Demonstrate the knowledge and understanding of English language and texts in English.
PO3	• Understand literary texts in English
PO4	• Understand and apply critical theories and texts in English.
PO5	• Understand the phonology, morphology, syntax, semantics and pragmatics of English language.
PO6	• Understand the advanced discourses in English.
PO7	• Understand the advanced linguistic and stylistic theories.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of English

Program Specific Outcome: M.A./M.Sc./M.Com. (Subject)	
PSO1	• Communicate in English language fluently and effectively.
PSO2	• Demonstrate the knowledge and understanding of English language and texts in English.
PSO3	• Understand literary texts in English
PSO4	• Understand and apply critical theories and texts in English.
PSO5	• Understand the phonology, morphology, syntax, semantics and pragmatics of English language.

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of English

Course Outcomes of M.A/M.Sc (English)

Class	Course title	Outcome
M.A.	English Literature from 1550-1798	• Students have understood major movements and literaryfigures • Students have developed literary responsibility and sense of appreciation • Students have become adept to employ innovative methods in writing
M.A.	English Literature from 1798-2000	• Students have understood major movements and literaryfigures • Students have developed sense of appreciation
M.A.	Contemporary Studies in English Language	• Students have understood the basic tools of language • Students have understood the different concepts oflanguage • They have understood different perspectives of language and its application in real life
M.A.	Literary Criticism and Theory	• Students have understood the basic functions of criticism • Students have been introduced to various critical approaches • Students have developed logical thinking
M.A.	English Literature from 1550-1798	• Students have understood major movements and literary figures • Students have developed literary responsibility and sense of appreciation • Students have become adept to employ innovative methods in writing
M.A.	English Literature from 1798-2000	• Students have understood major movements and literary figures • Students have developed sense of appreciation
M.A.	Contemporary Studies in English Language	• Students have understood the basic tools of language • Students have understood the different concepts of language • They have understood different perspectives of language and its application in real life

M.A.	Literary Criticism and Theory	• Students have understood the basic functions of criticism • Students have been introduced to various critical approaches • Students have developed logical thinking
M.A.	Indian Writing in English	• Students have understood major movements and literary figures • Students have developed literary sensibility • Students have learnt to use language in an innovative manner • Students have developed humane values • Literary tastes of students have improved
M.A.	ELLT	• Can teach English at primary, secondary, and Higher secondary level • Understand various theories of language acquisition • Learned how to teach English • Acquired skills for teaching English at various levels
M.A.	Drama	• Students have been exposed to Elizabethan dramas • Students have developed literary sensibility • Students have developed human concern • Literary tastes of students have improved
M.A.	American Literature	• Students have learnt about selected texts in American literature • Students have understood the difference between old world and new world literature • Students have developed human concern for fellow beings • They have developed aesthetic sense for literature
M.A.	Indian Writing in English	• Students have understood major movements and literary figures • Students have developed literary sensibility • Students have learnt to use language in an innovative manner • Students have developed humane values • Literary tastes of students have improved
M.A.	ELLT	• Can teach English at primary, secondary, and Higher secondary level • Understand various theories of language acquisition • Learned how to teach English • Acquired skills for teaching English at various levels
M.A.	Drama	• Students have been exposed to Elizabethan dramas • Students have developed literary sensibility • Students have developed human concern • Literary tastes of students have improved

M.A.	American Literature	• Students have learnt about selected texts in American literature • Students have understood the difference between old world and new world literature • Students have developed human concern for fellow beings • They have developed aesthetic sense for literature

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of English

Program outcome: B.A./B.Sc./B.Com/B.Voc. (English)	
PO1	• Communicate in English language fluently and effectively.
PO2	• Demonstrate the knowledge and understanding of English language and texts in English.
PO3	• Understand literary texts in English
PO4	• Understand and apply critical theories and texts in English.
PO5	• Understand the phonology, morphology, syntax, semantics and pragmatics of English language.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of English

Program Specific Outcome: B.A./B.Sc./B.Com/B.Voc. (English)	
PSO1	• Communicate in English language fluently and effectively.
PSO2	• Demonstrate the knowledge and understanding of English language and texts in English.
PSO3	• Understand literary texts in English
PSO4	• Understand and apply critical theories and texts in English.
PSO5	• Understand the phonology, morphology, syntax, semantics and pragmatics of English language.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of English

Course Outcomes of BA (Subject)

Class	Course title	Outcome
F.Y.B.A.	Compulsory English	• Students have acquainted with prose and poem • Students have been exposed to different cultural experiences and developed humane values • Students have improved their linguistic skills in English • Students have learnt various communication skills
F.Y.B.A.	Optional English (I)	• Students have understood literary devices employed in short story • Students have learnt the components of a literary piece and approaches of literature • Students have been familiarized with different genres of short story • They have followed technical aspects of short story writing
F.Y.B.Com.	Compulsory English	• Students have acquainted with prose and poem • Students have been exposed to different cultural experiences and developed humane values • Students have improved their linguistic skills in English • Students have learnt various communication skills
F.Y.B.Com.	Additional English	• Students have acquainted with prose and poem • Students have been exposed to different cultural experiences and developed humane values • Students have improved their linguistic skills in English Literary sensibilities

S.Y.B.A.	Compulsory English	• Students have developed competence for self-learning • Students have familiarized with prose and poetry in English • Students have developed interest in literary pieces • Students have developed humane values • Students have learnt advanced Grammatical Concepts • Students have also mastered important written skills such as paragraph writing, report writing & letter writing
S.Y.B.A.	Optional English-I	• Students have understood literary devices employed in short story • Students have learnt the components of a literary piece and approaches of literature • Students have been familiarized with different genres of short story • They have followed technical aspects of short story writing • Students have learnt advanced concepts in linguistics
S.Y.B.A.	Special English-I	• Students have been acquainted with Shakespearean plays esp.tragi-comedy with reference to The Merchant of Venice • Students have understood features of Naturalistic and Realistic Theatre with reference to ADoll's House • Students have learnt about Indian Dramas in English
S.Y.B.A.	Special English-II	• Students have learnt new terminology in poetry criticism • Students have learnt to appreciate poems • Students' aesthetic sense have improved • Students are able to read, appreciate and critically evaluate the poetry independently
S.Y.B.Sc. (Paper-I)	Additional English	• Students have acquainted with prose and poem • Students have been exposed to different cultural experiences and developed humane values • Students have improved their linguistic skills in English • Students have learnt various communication skills
S.Y.B.Sc. (Computer Science)	Compulsory English	• Students have acquainted with prose and poem • Students have been exposed to different cultural experiences and developed humane values • Students have improved their linguistic skills in English • Students have learnt various communication skills

T.Y.B.A.	Compulsory English	• Students have understood the difference in language of prose and poem • Students have been mesmerized by the communicative power of literature • Different stories from varied cultures have created awareness about variegated cultural experiences through literature • Students have learnt how to understand poetry • Soft skills of students have improved their communicative skills, presentation Skills have also improved

T.Y.B.A.	Optional English-I	• Students have understood the difference in language of prose and poem • Students have been mesmerized by the communicative power of literature • Different stories from varied cultures have created awareness about variegated cultural experiences through literature • Students have learnt how to understand poetry • Soft skills of students have improved • Their communicative skills, presentation Skills have also improved
T.Y.B.A.	Special English III	• Students have understood the elements of novel • Students have acquainted with different genres of short stories • Students have understood various revolutionary movements and philosophy of life • Students have learnt what is novel through examples of novels viz. The Old Man and the Sea and The Guide
T.Y.B.A.	Special English-IV	• Students have understood the basic principles,nature and function of criticism • Students have learnt the development of criticism through ages • Students have acquired critically analyzing skills of poetry • Students have learnt new terms in literature

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Hindi

Program outcome: M.A. (Hindi)	
PO1.	• Realized the importance of literature in creating aesthetic, mental, moral, intellectual development of an individual and society.
PO2.	• Students are able to write on various aspects in literature, social, economic political, environmental issues in the form of story, poetry, research articles, reports, etc. in various periodicals & journals.
PO3.	• Students are able to know social issues in order to create social awareness with the help of literature.
PO4.	• Gained the ability to criticise the literature and to understand social issues and able to suggest remedies to improve social life.
PO5.	• Understand the co-relation of society and literature.
PO6.	• Able to express social values in the form of articles, novels, stories, etc.
PO7.	• Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Hindi

Program Specific Outcome: M.A. (Hindi)	
PSO1.	• Develop attitude of literary forms. (Hindi Poetry& Fiction)
PSO2.	• Develop reading, writing & communication skills of students.
PSO3.	• Get information about the history of ancient, medieval and modern Hindi literature.
PSO4.	• Understand the basic concept and trends of literature.
PSO5.	• Get information about modern trends of literature.
PSO6.	• Develop various skill of Hindi Language.
PSO7.	• Applications of translation and Prayojanmulak Hindi concepts.
PSO8.	• To enhance language and skill.
PSO9.	• The latest development of literary works in the world and within the country.

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Hindi
Course Outcomes of M.A. (Hindi)

Class	Course	Outcomes
M.A.I	10501 Madhyayugin Kavya	• Understand the basic forms of fiction and poetry. • Get information about Sant poet & their Literature. • Get information Well Known poet Sant Kabeer, Jayasi, Tulsidas, Surdas, Mirabai, Rahim, Bihari . • Get information Well Known Madhyakalin Kavya and Poet.
M.A.I	10502 Katha Sahitya	• Understanding story writing • Get information about the Novel Literature. • Understanding the definition and elements of the story • Familiarity with Hindi story writers. • Familiarize yourself with Hindi stories.
M.A.I	10503 Bhartiya Kavyashastra	• Know Indian Poetry structure in ancient and modern era. • Know the importance of criticism • Increase vision regarding literary value. • Know the concept and process of literature.
M.A. I	10505 Natkkar Mohan Rakesh	• Introducing playwright Mohan Rakesh • Introducing the plays of Mohan Rakesh. • Understanding the elements and nature of drama
M.A.I	20501 Kathetar Gadya Sahitya	• Understand the basic forms of fiction and Hindi Prose. • Get information about Hindi Novel. • Get information Well Known writer Premchand, Prasad, Yashpal, etc.
M.A.I	20502 Shodh Pravidhi	• To understand research methodology. • Types of Research. • Comparative Research of various languages.
M.A.I	20503 Pachhyatya Kavyashastra	• Know western Poetry structure in ancient and modern era. • Know the importance of criticism • Increase vision regarding literary value. • Know the concept and process of literature.
M.A. I	20505 Vaikalpik – Hindi Upnyas Sahitya	• Introducing novel writer Bhishm Sahani, Ranendra, etc. • Introduction of Tamas, Chhappar, Giligadu, Global Gaon ke Devta. • Understanding the elements and nature of novel.

Class	Course	Outcomes
M.A.II	30501 Aadhunik Kavya	• Understand the types of Hindi Short story writing. • Develop literary tendencies • Introduce to the minor genres such as Poem, Story and Hindi Prose. • Get introduction of Hindi writer.
M.A.II	30502 BhashaVidyan	• Get acquainted with Hindi grammatical forms and functions. • Get acquainted with morphological concepts and processes. • Get acquainted with the basic concepts in syntactic and semantic levels of Hindi language. • Know the importance of language in human life. • Understand the communication process and method
M.A.II	30503 Hindi Sahitya Ka Itihas	• Introduce to the minor genres such as One Act Play, Essay and Hindi Prose • Study Grammar which acquainted them to the correct usage language. • Use literature to develop their social and moral sense in life.
M.A II	30504 Hindi Aalochna	• Get information about the Hindi Aalochna. • Understand Socio-Cultural & Political Impact on Hindi Literature. • Get information Well Known Hindi critics writer in Hindi • Know the gender equality among the literature.
M.A.II	40501 Aadhunik Kavita	• Understand the types of Hindi Short poem writing. • Develop literary tendencies. • Introduce to the minor genres such as Poem. • Get introduction of Hindi writer.
M.A.II	40502 Hindi Bhasha ka Vikas	• Get acquainted with Hindi grammatical forms and functions. • Get acquainted with morphological concepts and processes. • Get acquainted with the basic concepts in syntactic and semantic levels of Hindi language. • Know the importance of language in human life. • Understand the communication process and method
M.A.II	40503 Hindi Sahitya Ka Itihas	• Introduce to the minor genres such as One Act Play, Essay and Hindi Prose • Study Grammar which acquainted them to the correct usage language. • Use literature to develop their social and moral sense in life.

M.A II	40504 Bhartiya Lok Sahitya	• Get information about the Bhartiya lok Sahitya. • Understand Socio-Cultural & Political Impact on Bhartiya lok Sahitya. • Various forms of loksahitya. • Know the gender equality among the literature.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Hindi

Program outcome: B.A./B.Com (Hindi)	
PO1.	• Realized the importance of literature in creating aesthetic, mental, moral, intellectual development of an individual and society.
PO2.	• Students are able to write on various aspects in literature, social, economic political, environmental issues in the form of story, poetry, research articles, reports, etc. in various periodicals & journals.
PO3.	• Students are able to know social issues in order to create social awareness with the help of literature.
PO4.	• Gained the ability to criticise the literature and to understand social issues and able to suggest remedies to improve social life.
PO5.	• Understand the co-relation of society and literature.
PO6.	• Able to express social values in the form of articles, novels, stories, etc.
PO7.	• Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Hindi

Program Specific Outcome: B.A. (Hindi)	
PSO1.	• Develop attitude of literary forms. (Hindi Poetry& Fiction)
PSO2.	• Develop reading, writing & communication skills of students.
PSO3.	• Get information about the history of ancient, medieval and modern Hindi literature.
PSO4.	• Understand the basic concept and trends of literature.
PSO5.	• Get information about modern trends of literature.
PSO6.	• Develop various skill of Hindi Language.
PSO7.	• Applications of translation and Prayojanmulak Hindi concepts.
PSO8.	• To enhance language and skill.
PSO9.	• The latest development of literary works in the world and within the country.

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Hindi
Course Outcomes of B.A. (Hindi)

Class	Course	Outcomes
F.Y.B.A.	11091 Vaiklpik Hindi	• Develop interest in literature, fiction and poetry. • Develop Hindi reading and linguistic comprehension of students. • Make special use of language for their expression. • Understand the basic forms of fiction and poetry. • Introduce to the minor genres such as Internet, Facebook, Computer, What sup, Twitter. • Know the new trends study of Advertisement writing.
F.Y.B.A.	12092 Vaiklpik Hindi	• Develop interest in literature, fiction and poetry. • Develop Hindi reading and linguistic comprehension of students. • Make special use of language for their expression. • Understand the basic forms of fiction and poetry.
F.Y.B.com	117C Optional Hindi	• Develop the comprehensive ability. • Inculcate moral and human values within themselves. • Introduce to the minor genres such as Internet, Facebook, and Computer. • Get information about Hindi Literature Forms.
F.Y.B.com	127C Optional Hindi	• Develop the comprehensive ability. • Inculcate moral and human values within themselves. • Introduce to the minor genres such as Internet, Facebook, and Computer.
S.Y.B.A	23093 Aadhunik Kahani Kayva tatha Vyavaharik Hindi	• Understand the types of Hindi Short story writing. • Develop literary tendencies • Introduce to the minor genres such as Poem, Story and Hindi Prose. • Get introduction of Hindi writer.
S.Y.B.A	24093 Aadhunik kavya Vyangya sahitya tatha Vyavaharik Hindi	• Understand the types of Vyangya Sahitya writing. • Develop literary tendencies. • Introduce to the minor genres such as Poem, and hindi Prose.

S.Y.B.A	23092 Madhyayugin Kavya tatha Upnyas Sahitya	• Understand the basic forms of fiction and poetry. • Get information about Sant poet & their Literature. • Get information Well Known poet Sant Kabeer, Mirabai • Get information Well Known Writer Mamta Kaliya.
S.Y.B.A.	24092 Madhyayugin kavya tatha Natak Sahitya	• Understand the basic forms of poetry and drama. • Get information about Sant poet & their Literature. • Get information Well Known poet Rahim, Bihari . • Get information Well Known Writer Mannu Bhandari.
S.Y.B.A	23091 Kavyashastra	• Know Indian Poetry structure in ancient and modern era. • Know the importance of criticism • Increase vision regarding literary value. • Know the concept and process of literature.
S.Y.B.A.	24091 Sahitya Ke Bhed	• Know Indian Poetry structure in ancient and modern era. • Know the importance of criticism • Increase vision regarding literary value. • Know the concept and process of literature.
T.Y.B.A	35091 Hindi Sahitya Ka Itihas	• Introduce to the minor genres such as One Act Play, Essay and Hindi Prose • Study Grammar which acquainted them to the correct usage language. • Use literature to develop their social and moral sense in life.
T.Y.B.A	36091 Hindi Sahitya Ka Itihas	• Introduce to the minor genres such as One Act Play, Essay and Hindi Prose • Study Grammar which acquainted them to the correct usage language. • Use literature to develop their social and moral sense in life.
T.Y.B.A	35092 BhashaVidyan	• Get acquainted with Hindi grammatical forms and functions. • Get acquainted with morphological concepts and processes. • Get acquainted with the basic concepts in syntactic and semantic levels of Hindi language. • Know the importance of language in human life. • Understand the communication process and method
T.Y.B.A	36092 Hindi Bhasha or Uska Vikas	• Get acquainted with Hindi grammatical forms and functions. • Get acquainted with morphological concepts and processes. • Get acquainted with the basic concepts in syntactic and semantic levels of Hindi language. • Know the importance of language in human life. • Understand the communication process and method

T.Y.B.A.	35093 Kathetar Vidhayen	• Introduce the modern forms of hindi prose-Rekhachitr. • Introduce the modern forms of hindi prose-Sansmaran. • Get introduction of Hindi writer. • To know and improve importance of summery writing skill.
T.Y.B.A.	36093 Gajhal Vidyayen Or Patrachar	• Introduce the modern forms of hindi prose-Hindi Gajhal. • Deference in Hindi and Urdu Gajhal. • Get introduction of Hindi Gajhal Poet. • To know forms and importance of official letters.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of History

Program Outcome: B.A. (History)	
PO1.	• The students acquire knowledge in the field of social sciences, literature and humanities which make them sensitive and sensible enough
PO2.	• The B.A. graduates will be acquainted with the social, economic, historical, geographical, political, ideological and philosophical tradition and thinking
PO3.	• The program also empowers the graduates to appear for various competitive examinations or choose the post graduate programme of their choice.
PO4.	• The B. A. program enables the students to acquire the knowledge with human values framing the base to deal with various problems in life with courage and humanity.
PO5.	• The students will be ignited enough to think and act over for the solution of various issues prevailed in the human life to make this world better than ever
PO6.	• Programme provides the base to be the responsible citizen

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of History

Program Specific Outcome: B.A. (History)	
PSO1.	• Demonstrate thinking skills by analyzing, synthesizing, and evaluating historical information from multiple sources.
PSO2.	• Develop the ability to distinguish between fact and fiction while understanding that there is no one historical truth.
PSO 3.	• To learn foundation of Delhi Sultanate and Sultanate Administration.
PSO 4.	• It will enable students to develop the overall understanding of the Modern World.
PSO 5.	• The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World.
PSO 6.	• It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of History

Course Outcomes of B.A. (History):

Class	Course	Outcome
F.Y.B.A	GENRAL PAPER (G-1) Early India: From Prehistory to the Age of the Maurya's	• Students will be able to examine institutional basis of Ancient India. • Student will learn the sources of the history of ancient India. • Student will learn about the Paleolithic life. • Student will learn about social, economic, religious and political life in ancient India. • Student will learn about art, architecture and scientific progress in ancient India.
	GENRAL PAPER (G-1) Early India: Post Mauryan Age to the Rashtrakutas	• Student will learn the sources of the history of ancient India. • Student will learn about the concept of 'state' in ancient India. • Student will learn about social, economic, religious and political life in ancient India. • Students will be able to illustrate the development of empire.
S.Y.B.A	GENRAL PAPER (G-2) History of the Marathas: (1630-1707)	• Students will be able to explain the Socio - economic, cultural and Political background of 17th Century Maharashtra • Student will develop the ability to analyses sources for Maratha History. • Student will learn significance of regional history and political foundation of the region. • It will enhance their perception of 17th century Maharashtra and India in context of Maratha History. • Appreciate the skills of leadership and the administrative system of the Marathas.
	GENRAL PAPER (G-2) History of the Marathas: (1707-1818)	• Students will be able to analyze the Marathas policy of expansionism and its consequences. • They will understand the role played by the Marathas in the 18th century India. • They will be acquainted with the art of diplomacy in the Deccan region. • It will help to enrich the knowledge of the administrative skills and profundity of diplomacy.

Class	Course	Outcome
S.Y.B.A	SPECIAL PAPER (S-1) Medieval India: Mughal Period	• Draws comparisons between policies of different rulers. • Understanding Role of Akbar in the consolidation of Mughal rule in India. • Understand Aurangzeb's conflict with Rajput as, Maratha and weakening Mughals age. • Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)
	SPECIAL PAPER (S-2) Glimpses of the Modern World – Part II	• It will enable students to develop the overall understanding of the Modern World. • The students will get acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences. • It will enhance their overall perception of the history of the Modern World. • It will enable students to understand the significance of the strategic political developments in the Modern World.
T.Y.B.A	GENRAL PAPER (G-3) INDIAN NATIONAL MOVEMENT (1885-1947)	• It will enable students to develop an overall understanding of Modern India. • It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students. • Students will understand various aspects of the Indian Independence Movement and the creation of Modern India.
T.Y.B.A	INDIAN NATIONAL MOVEMENT (1947-1990)	• Students understood the Socio economic, cultural and Political background of Modern India • Students have understood the process of healthy Nationalism and Secularism by studying work of social reformer and freedom fighters. • Students will understand various aspects of the Indian politics and economic, agriculture, industrial development.
T.Y.B.A	SPECIAL PAPER (S-3) INTRODUCTION TO HISTORY	• To orient students about how history is studied, written and understood. • To explain methods and tools of data collection • To understand the meaning of Evolution of Historiography. • To study the Various Views of Historiography. • To study the approaches to Historiography.

Class	Course	Outcome
T.Y.B.A	APPLIED HISTORY	• To study the types of Indian historiography. • To describe importance of inter-disciplinary research. • To introduce students to the basics of research. • To acquaint the student with the recent research in History. • Learn how to use sources in their presentation.
T.Y.B.A	SPECIAL PAPER (S-4) HISTORY OF MAHARASHTRA IN 19TH CENTURY	• Students got knowledge of concept History of modern Maharashtra. • Modern Maharashtra history is useful to student for MPSC examination. • National and social movement in Maharashtra Introduced to students • Student got knowledge of Maharashtra Philosophers and their philosophy
T.Y.B.A	HISTORY OF MAHARASHTRA IN 19TH CENTURY	• Students have understood the regional history within broad national framework. • Students have understood institutional experiments in socio-religious reformism. • Students have understood the contribution of Maharashtra in Indian National Movement. • Students understood the importance of Samyukta Maharashtra Movement.

RAYAT SHIKSHAN SANSTHA'S

SHREE SADGURU GANGAGEER MAHARAJ SCINCE, GAUTAM ARTS & SANJIVANI COMMERCE COLLEGE, KOPARGAON DIST AHMEDNAGAR

Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Marathi

Program outcome: M.A. (Marathi)	
PO1.	• Understanding literary transactions in two languages
PO2.	• To understand various written literary practices in Marathi languages.
PO3.	• Understanding different language skills in program combination

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Marathi

Program Specific Outcome: M.A. (Marathi)	
PSO1.	• Demonstrate the critical theories and their knowledge
PSO2.	• Show the research attitude and abilities
PSO3.	• Demonstrate creative impulse in writing works of literature
PSO4.	• Apply linguistic knowledge of Marathi language

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Marathi

Course Outcomes of M.A. (Marathi)

Class	Course	Outcome
M.A. I	Bhasha Vyavhar Aani Bhashik Koushlye	• Practical knowledge of the language can be acquired. • Skills for money laundering like money laundering will be acquired. • There will be a discussion on scientific conduct and publication matters. • Techniques and skills of interviewing will be imparted through medium.
	Marathi Sahityacha Itihas	• Identify the motivations and motivations behind sustainable development. • Social and economic changes in the period 1818 to 1920 will be identified. • There will be an introduction to political and educational reforms. • There will be a discussion of the newly learned forms of Marathi language.
	Aitihasik Bhasha Vidnyan	• Different approaches to language learning will be discussed. • Origin of Marathi language and development period of Marathi will be discussed. • It will help to know the rich history and tradition of Marathi language. • Relation of Marathi language to global linguistic community and understanding of the language will help
	Gramin Sahitya	• After 1960, Savhatya Prihas will be discussed. • Motivation and support behind rural sustainable development will be assessed. • Sociology of rural culture and literature will be introduced. • Rural poetry in rural poetry will be discussed.

Class	Course	Outcome
M.A Marathi Part II	Prasar Madhyme Aani Lekhan Koushale	• A practical knowledge of the language can be acquired. • Skills for money laundering like money laundering will be acquired. • Media writing skills can be acquired. • The importance of mass media in society can be explained.
	Sahitya Samiksha	• Slow, critical thinking skills will be developed. • This concept of review is understandable. • The critical concepts in the review process can be discussed. • Understand the rationale behind various review methods. • The tradition of Marathi literary critics and researchers can be understood. • Vision and ability to review can be developed.
	Nemlelya Madhyyugin Kalakrutincha Bhyas	• Medieval works will be discussed. • Continuity in the Middle Ages will be noted. • Concepts and formats can be understood. • The characteristics of co-activities can be increased
	Loksahityachi Multattve Aani Marathi Loksahitya	• Basic Principles of Folklore will be introduced. • Promote collection, research and evaluation of folklore in Marathi. • It will help to understand the nature, extent and comprehensiveness of folklore. • Various types, forms and special understandings of folklore.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Marathi

Program outcome: B.A./B.Com (Marathi)	
PO1.	• Understands the motivational trends behind literature in the context of a particular period.
PO2.	• Develops the ability to study medicine.
PO3.	• A variety of writing skills are developed
PO4.	• Develops the eye's ability to taste.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Marathi

Program Specific outcome: B.A. (Marathi)	
PSO1.	• Learn the field of humanities and language with conceptual clarity.
PSO2.	• Secure employment/self-employment (entrepreneurship) opportunities.
PSO3.	• Learn and adopt Communication and Soft Skills properly.
PSO4.	• Make his overall personality development.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Marathi

Course Outcomes of B.A. (Marathi)

Class	Course	Outcome
F.Y.B.A.	Marathi General Paper-1 (G1)	• Get introduced to Marathi literature, language and culture. • Create interest in Marathi literature. • Develop the literary taste • Get ability to appreciate literature. • Connect literature to real life experience. • Understand various branches and movements of Marathi literature. • Develop linguistic skills to meet the requirements in the age of globalization.
S.Y.B.A.	Marathi General Paper-2 (G2)	• Get introduced to standard writing practices. • Develop the skill of translation. • Understand aspects of Biography and Autobiography. • Develop ability to appreciate and evaluate selected Biographies and Autobiographies in modern Marathi literature.
S.Y.B.A.	Marathi Special Paper-1 (S1) Marathi Sahityatil Vividh Sahityaprakar	• Get basic knowledge of Marathi literature. • Get introduced to literary classics of different historical periods. • Create and cultivate taste in Marathi literature. • Understand to analyze, evaluate and appreciate literary texts. • Develop ability for in-depth study of literature.
S.Y.B.A.	Marathi Special Paper-2 (S2)	• Understand the history of Marathi literature. • Get the concept of literary history Clarified. • Get introduced to the nature, source and types of Marathi literature from 1818 to 1960. • Get acquainted to the major Marathi writers and their works from 1818 to 1960.

T.Y.B.A.	Marathi General Paper-3 (G3)	• Get acquainted to various movements in Modern Marathi literature. • Generate interest in modern Marathi literature • Get introduced to media. • Develop skill in preparing materials for media including Newspaper, Radio and TV.
	Marathi Special Paper-3 (S3)	• Understand the nature and function of literature. • Understand the nature of the process of literary creation and the concept of literary genus. • Acquire ability to analyze the process of literary appreciation. • Get acknowledged to some fundamental concepts in literary appreciation.
	Marathi Special Paper-4 (S4)	• Understand the original development of Marathi language in the light of linguistic theories. • Understand the evolution of Marathi language. • Get acquainted to the basic features of Marathi language. • Get introduced to historical and descriptive linguistics

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SHREE SADGURU GANGAGEER MAHARAJ SCINCE, GAUTAM ARTS & SANJIVANI COMMERCE COLLEGE, KOPARGAON DIST AHMEDNAGAR

Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Physics

Program outcome: M.Sc. (Physics)	
PO1.	• Get substantial knowledge in physics, basic knowledge in mathematics, and understanding of the interconnectedness of different disciplines;
PO2.	• Get some research experience within a specific field of physics, through a project work;
PO3.	• Get ability to apply knowledge of physics to the real world problems;
PO4.	• Be familiar with contemporary research within various fields of physics;
PO5.	• Use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
PO6.	• Have the background and experience required to model, analyze, and solve advanced problems in physics;
PO7.	• Use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
PO8.	• Be able to employ up-to-date and relevant knowledge and skills in several disciplines.
PO9.	• Able to enter new problem areas that require an analytic and innovative approach
PO10.	• Be able to understand the role of physics in society and has the background to consider ethical problems.
PO11.	• Know the historical development of physics, its possibilities and limitations, and understands the value of lifelong learning.
PO12.	• Get an ability to participate in constructive discussions and debates.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Physics

Program Specific outcome: M.Sc. (Physics)	
PSO1.	• Demonstrate and understanding of principles and theories of physics. These include: Classical Mechanics, Statistical Mechanics, electrodynamics electronics, optics, nuclear physics, quantum mechanics, Material Science;
PSO2.	• Apply vector algebra, complex algebra, differential and integral calculus as well as graphical methods to solve physics problems;
PSO3.	• Demonstrate ability to apply knowledge learned in classroom to plan, undertake, and report on a programme of original work; including the planning and execution of experiments, the analysis and interpretation of experimental results;
PSO4.	• Take research work at the higher degree level in the field of nanotechnology, computational physics and material science

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Physics

Course Outcomes of M.Sc. (Physics)

Class	Course	Outcomes
M.Sc. I	PHCT-111 Mathematical Methods in Physics	• Generate Legendre, Hermite, Laguerre polynomials and Bessel functions of first kind. • Determine Laplace transform of standard functions. • Classify methods to obtain Laplace transform and inverse Laplace transform. • Illustrate the examples of vector spaces. • Solve problems on Fourier series, Fourier transform and Fourier integral • Solve problems on linear dependence and linear independence by using different methods. • Explain orthogonally of Legendre, Hermite, Laguerre polynomials and Bessel functions of first kind. • Define Hermitian, Orthogonal and Unitary matrices.
	PHCT-112 Classical Mechanics	• Formulate the Lagrange's and Hamilton's equation of motion for different systems. • Choose an appropriate set of generalised coordinates to describe the system. • Classify and handle the problem related to motion in non-inertial and inertial frames. • Solve problems on poisons brackets and canonical transformations. • Apply Variational Principle to real physical problem. • Explain the concept of symmetry and Galilean Invariance. • Define generalized momenta and cyclic coordinates. • Recall Poisson's and Lagrange identities.

M.Sc. I	PHCT-113 Electronics	• Recall basic knowledge of electronics. • Define Astable, monostable multi vibrator, Op-amp, voltage regulators, Boolean identities and expression, counter and shift register, basics of digital and binary conversions. • Discuss IC 555, types of voltage regulators, types of counters and shift registers and types of ADC and DAC. • Perform working of ICs (IC 555 in astable and monostable mode, IC78xx/IC79xxand ICLM317 of 3 pin regulators, IC 7490,IC 7495,VCO IC 566, PLL IC 565) • Apply the working of according to their applications. • Designs and performs ICs. • Assemble the ICs • Communicate, demonstrate and write effectively the needs in industrial fields.
	PHOT-114C4 Lasers and Applications	• Explain the interaction of radiation with matter, Gaussian beam and their properties. • Illustrate the absorption, spontaneous and stimulated emission with appropriate diagrams. • Derive the Einstein's coefficients, g-parameters of laser cavity. • Distinguish between ordinary light and laser light. • Analyse the merits and demerits of three and four level laser system. • List the characteristics of laser light. • Categorize the different types of lasers. • Discuss the applications of lasers in various fields
	PHCP-115 Physics Lab-I	• Design skills of electronic circuits. • Handling of electronic instruments. • Understand of basic concepts of electronic devices.

M.Sc. I	PHCT-121 Electrodynamics	• Define electric charge, charge density (λ, σ, ρ). • Apply the laws of electromagnetism and Maxwell's equations in different forms and different media • Explain the fundamental concepts of special relativity and their physical consequences, such as the Lorentz transformation, invariant quantities, the metric, and four-vectors and more general tensors, as well as their use in covariant formulations of physical laws. • Discuss origin of Maxwell's equations in magnetic and dielectric media and understand transport of energy and Poynting vector. • Calculate the magnetic forces that act on moving charges and the magnetic fields, due to currents (Biot-Savart and Ampere laws) • Solve multipole expansions of electrostatic fields. • Analyze propagation, reflection and transmission of plane waves • Evaluate radiation energy losses by passage through the matter.
	PHCT-122 Atoms and Molecules	• Recite atomic structure, quantum number Calculate the ground state, apply Hund's rule. Diagram the fine and hyperfine structure • Explain Zeeman effect Solve problems on Zeeman effect for different materials in Zeeman effect • Identify different regions of spectra & Summarize types of spectra with regions • Classify different molecular spectra &analyse band structure • Determine dissociation energy and dissociation product for explanation of ESR &NMR • Predict the band head position in rotational fine structure to solve problems on ESR&NMR. • Define X-ray diffraction, Explain SC, FCC, BCC HCP structure and calculate atomic structure factor of SC, FCC, BCC, HCP and diamond structure. • Explain different modes of vibration. Simplify atomic scattering factor. Relate Acoustic & optical modes of vibration

M.Sc. I	PHCT-123 Quantum Mechanics	• Recall the main aspects of the historical development of quantum mechanics by replacing the classical mechanics and able to discuss wave properties of matter. • Understand Schrodinger's equation, uncertainty principle, representation of states, relation between quantum mechanics and linear algebra. • Solve Schrodinger's equation in one to three dimensions, Eigen function of operator, uncertainties as well as their physical interpretations. • Solve problems by applying Dirac notations. • Simplify angular momentum and spin, their rules for quantization and additions, Clebsch-Gorden coefficients in simple cases. • Explain Zeeman Effect, spin- orbit coupling. • Solve Schrodinger equation using various approximation methods. • Develop an understanding of both analytic and numerical methods and solutions are important in quantum mechanics.
	CBOP II, PHOT-124D4 Physics of Semiconductor Devices	• Recognize the physical characteristics such as electronic structures, optical and transport properties of semiconductors and IV characteristics of semiconductor devices. • Discuss the transport and optical properties of semiconductors. • Relate the electronic structures of semiconductors to their atomic and crystal characteristics. • Relate to fundamental physics process with device characteristics. • Apply fundamental principles and processes to operational semi-conductor devices and their uses. • Analyse and model some semiconductor properties, processes and device characteristics using equations. • Evaluate and analyse device characteristics in terms of the material properties and structural parameters. • Design junction device and calculate its various junction parameters.
	PHCP-125Physics Lab-II	• Perform Experiments. • Develop skills of independent working. • Designing of physics/electronics experiments

M.Sc. II	PHUT-231 Statistical Mechanics	• Define basics of thermodynamics, states of the system, statistical ensemble, partition function, and equipartition theorem, postulates of Maxwell-Boltzmann, Bose Einstein and Fermi-Dirac distributions and discuss black body radiation • Describe specification of state of system, types of ensembles, Gibb's paradox. • Calculate phase space trajectory, mean energy of the system, simple application of equipartition theorem and solve Einstein derivation of Plank's law, Bose condensation, and specific heat of fermions • Criticize state of system classically, categorized between types of ensembles, classify distribution of particles by Maxwell-Boltzmann, Bose-Einstein and Fermi Dirac statistic, analyse Einstein and Debye model of solids. • Determine density of states, mean energy by using types of ensembles, Fermi energy and mean energy at absolute zero, compare mean values of velocities byusing Maxwell Boltzmann distribution. • Develop some problems dealing with statistical ensemble and Fermi energy, to solve some examples on particles by using particle distribution statistics. • Demonstrate understanding of various aspects of statistical mechanics. • Communicate, write, and make effective presentation on industrial needs of thermodynamics and statistical mechanic
	PHUT-232 Solid State Physics	• Calculate thermal and electrical properties in the free-electron model – know Bloch's theorem and what energy bands are • Apply the free electron theory to solids to describe electronic behaviour & explain the origin of energy bands, and how they influence electronic behaviour. • Discuss basic models of magnetism & Explain the classical, Langevin & quantum theory of Para magnetism. • Compare the magnetic properties of rare earth ions & iron group ion with graphical representation • Explain Wises theory, saturation magnetism with temperature dependence.

	PHUT-232 Solid State Physics	• Understand the anti-ferromagnetism, Neel temperature & susceptibility. • Distinguish between perfect conduction and perfect diamagnetism, and give qualitative description of the Meissner effect & explain how observation of a persistent current can be used to estimate an upper limit on the resistivity of superconductor, and perform calculations related to such estimates • Show how the London equations and Maxwell's equations lead to the prediction of the Meissner effect.
M.Sc. II	PHCT-233Experimental Techniques in Physics-I	• Define signals, vacuum, vacuum measurement units, gas transport phenomenon. • Classify signals and systems as discrete/continuous, linear/non-linear, causal/no causal, time variant/invariant, etc., errors in signals and pipe flows, vacuum pumps. • Interpret signals with correlation function of random processes. • Explain need of vacuum and gas transport properties. • Solve problems based on kinetic theory of gases and the application of the momentum and energy equations as well as various parameters of fluid mechanics • Convert vacuum measurement units from one unit to another unit. • Describe different vacuum gauges and vacuum pumps with their working principle, range of measurement, advantages and drawbacks. • Apply vacuum principles in preparation of thin and thick film.
	PHCT-234H4 Energy Studies-I	• Know Energy Sources. • Understand the Solar Radiation and Its Measurements. • Understand the Heat and Thermodynamics. • Know the types of energy storage systems
	PHCP-235 Physics Laboratory -III	• Know how to write program. • Develop skills of independent working. • Know how to execute program.

M.Sc. II	PHCT-241 Nuclear Physics	• Classify elementary particles and nuclear states in terms of their quantum numbers. • Describe the role of S-O coupling in the shell structure of atomic nuclei and predict the properties of nuclear ground and excited states based on the shell model. • Describe the properties of strong and weak interactions. • Explain the different processes by which ionising radiation interacts with matter and the construction and applications of detectors for radioactivity. • Determine the basic properties of nucleus. • Calculate the kinematics of various reactions and decay processes. • Analyse production and decay reactions for fundamental particles by applying conservation principles. • Evaluating: Evaluate radiation energy losses by passage through the matter.
	PHCT-242 Experimental Techniques in Physics-II	• List of required characterization techniques for fundamental research in material science and nanotechnology. • Identify the crystal structure, crystalline nature of any material by using X-ray diffraction technique. • Provide phase transition, absorption, chemical changes as temperature changes by using thermal analysis methods. • Make use of spectroscopic analysis for identification of materials i.e. which type of material is present by analysing their UV-Vis, IR, FTIR, DRS spectroscopies. • Study morphology, topography of any material by using SEM, TEM, and FESEM. • Find various applications like industrial, biomedical etc. by using magnetic characterization. • Apply the knowledge of characterization techniques for research. • Compile the information of characterization together to confirm the proposal in research work.

M.Sc. II	CBOP IV PHOT-243A4 Physics of Thin Films	• Recognize the various aspects of different thin film deposition, fundamental properties and various measurement techniques • Relate effect of various deposition parameters to growth of thin films and their typical uses for applications. • Discuss the differences and similarities between techniques and fundamental properties of thin film deposition. • Asses the relation between deposition technique, film structure and film properties. • Analyse effect of film growth on properties. • Evaluate and use models for nucleating and growth of thin films. • Motivate selection of deposition techniques for various applications. • Design novel thin film material synthesis by modified growth technique.
	PHOT-244H4 Energy Studies–II	• Know about Solar photovoltaic (SPV) Conversion. • Understand Photo-thermal Applications of Solar Energy. • Get knowledge of Hydrogen Energy.
	PHCP-245 Project	• Develop skills of independent working • Learn Literature survey • Designing of physics/electronics experiments • Develop writing and presentation skills

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Department of Physics

Program outcome: B.Sc. (Physics)	
PO1.	• Transfer and apply the acquired fundamental knowledge of physics, including basic concepts and principles of 1) classical mechanics, electrodynamics, quantum mechanics, Statistical Mechanics and thermodynamics;(2) mathematical (analytic and numerical) methods and experimental methods for physics to study different branches of physics
PO2.	• Demonstrate the ability to translate a physical description to a mathematical equation, and conversely, explain the physical meaning of the mathematics, represent key aspects of physics through graphs and diagrams, and use geometric arguments in problem-solving
PO3.	• Apply and demonstrate knowledge of concepts of physics, to analyze a variety of physical phenomena
PO4.	• Demonstrate the learned laboratory skills, enabling them to take measurements in a physics laboratory and analyse the measurements to draw valid conclusions
PO5.	• Capable of oral and written scientific communication, and will prove that they can think critically and work independently.
PO6.	• Communicate effectively using graphical techniques, reports and presentations within a scientific environment.
PO7.	• Use and apply professional software for scientific data analysis and presentation
PO8.	• Respond effectively to unfamiliar problems in scientific contexts
PO9.	• Plan, execute and report the results of a complex extended experiment or investigation, using appropriate methods to analyze data and to evaluate the level of its uncertainty
PO10.	• Integrate and apply these skills to study different branches of physics.
PO11.	• Work comfortably with numbers and analyzing an issue quantitatively, acquire knowledge effectively by self-study and work independently, present information in a clear, concise and logical manner and apply appropriate analytical and approximation methods
PO12.	• Willingness to take up responsibility in study and work Confidence in his/her capabilities Capacity to work effectively in a team Motivation for learning and experimentation

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Department of Physics

Program Specific Outcome: B.Sc. (Physics)	
PSO1.	• Demonstrate and understanding of principles and theories of physics. These include: Newtonian Mechanics, thermodynamics, atomic and Molecular physics, electrodynamics, electronics, optics, nuclear physics, quantum mechanics.
PSO2.	• Apply vector algebra, differential and integral calculus as well as graphical methods to solve physics problems.
PSO3.	• Demonstrate ability to apply knowledge learned in classroom to set and perform simple laboratory experiments.
PSO4.	• Solve physics problems using the appropriate methods in mathematical, theoretical and computational physics.

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Department of Physics

Course Outcomes of B.Sc. (Physics)

Class	Course	Outcomes
F.Y.B.Sc	PHY111: Mechanics and Properties of Matter	• Demonstrate an intermediate knowledge of Newton's Laws and the equations of motion • Analyse the forces on the object and apply them in calculations of the motion of simple systems using the free body diagrams • Determine whether using conservation of energy or conservation of momentum would be more appropriate for solving a dynamics problem • Apply the concepts of elasticity to real world problems. • List fundamental forces in nature, applications and factors affecting surface tension. • Define and conceptualize different laws of fluid mechanics and related quantities like steady, turbulent flow and concept of Reynolds number • Demonstrate different applications of Bernoulli's theorem, laws of elasticity, surface tension.
	PHY112: Physics principles and applications	• Define absorption, spontaneous emission and stimulated emission process and describe Laser action describe different atomic models in order to understand atomic structure • Classify different types of bonding & their properties. • Draw electromagnetic spectrum showing different regions and analyze vibrational& rotational spectra of diatomic molecule. • Study the properties of Laser and its applications. • Quote essential principles of operation of radar system and develop the radar for any given frequency • Describe principle and construction of solar cell & to calculate efficiency and fill factor of solar cell.
	PHY-113 :Physics Laboratory-IA	• Acquire technical and manipulative skills in using laboratory equipment's, tools and materials. • Understand of laboratory procedures including safety and scientific techniques**.** • Skill development in collaborative learning and teamwork in lab setting.

F.Y.B.Sc	PHY121: Heat and Thermodynamics	• Define laws of thermodynamics, entropy, thermodynamic processes etc. • Describe Andrew's experiment, Amagat's experiment, Carnot engine concept of entropy. • Derive expression for efficiency of heat engine (Otto cycle, Diesel cycle, and Carnot cycle), latent heat equation, adiabatic relations for perfect gas, work done during isothermal and adiabatic change. • Determine critical constants using Vander Waal's gas equation Reduced equation of state • Compare reversible and irreversible processes, adiabatic and isothermal process, • Illustrate that work is a path dependent function using PV diagram and to solve entropy for reversible and irreversible process. • Apply first law of thermodynamics to solve problems. • Categorize thermometers and state its applications
	PHY122: Electromagnetics	• Define the basic terms such as electric field, electric potential, magnetic intensity, magnetic induction, magnetic susceptibility and electric and magnetic flux. • State and conceptualise basic laws in electromagnetic. • Explain the superposition principle, gauss's law in dielectrics and relation between three electric vectors. • Solve numerical problems using Coulombs Law ,Gauss's law, Biot-Savart's law,Ampere circuital law and principle of superposition • Determine the electric field and potential due to an electric dipole and different types of charge distribution. • Determine magnetic induction due to various current distributions • Derive the relation between three magnetic vectors and compare different types of magnetic material. • Describe soft and hard magnets on the basis of hysteresis loop.
	PHY123: Physics Laboratory-IB	• Demonstrate an ability to collect data through observation • Acquire technical and manipulative skills in using laboratory equipment, tools and materials • Experimentation and interpreting data. • Demonstrate an understanding of laboratory procedures including safety, and scientific methods.

	PHY123: Physics Laboratory-IB	• Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. • Acquire the complementary skills of collaborative learning and teamwork in laboratory settings
S.Y.B.Sc	PHY231: Mathematical Methods in Physics	• Define the basic operations in complex numbers; • Explain graphical representation of complex numbers and calculate roots of complex numbers; • Solve partial differential equations in Physics; • Discuss vector algebra required in Physics; • Define and calculate the gradient, divergence and curl of a field; • Define order, degree and homogeneity of ordinary differential equation; • Explain singular points of ordinary differential equation; • Develop problem-solving skills of identifying strategies to solve unfamiliar problem
	PHY232: Instrumentations	• Understand the concept of measurement. • Understands Static and dynamic characteristics: • Understands Temperature Measurement Techniques • Understands Measurement of Pressure • Understand the performance of measuring instruments. • Design experiments using sensors.
	PHY233: Physics Laboratory-2A	• Use various instruments and equipment. • Design experiments to test a hypothesis and/or determine the value of an unknown quantity. • Describe the methodology of science and the relationship between observation and theory. • Set up experimental equipment to implement an experimental approach. • Analyse data, plot appropriate graphs and reach conclusions from your data analysis. • Work in a group to plan, implement and report on a project/experiment. • Keep a well-maintained and instructive laboratory logbook. • Express their knowledge and ideas through oral and written language.

S.Y.B.Sc	PHY241: Oscillations, Waves and sound	• Define periodic and oscillatory motion; • Setup and solve differential equations of motion for simple harmonic, damped, and forced oscillators; • Describe oscillatory motion with graphs and equations, and use these descriptions to solve problems of oscillatory motion; • Discuss phenomenon of resonance and apply in different applications; • Set and solve differential equation for wave motion for longitudinal and transverse waves; • Calculate the phase velocity, energy and intensity of simple harmonic waves; • Discuss the Doppler effect, and predict in qualitative terms the frequency change that will occur for relative motion between source and observer or listener; • Explain in qualitative terms how frequency, amplitude, and wave shape affect the pitch, intensity, and quality of tones produced by musical instruments.
	PHY242: Optics	• Describe the geometrical formation of images by thin lenses, lens equation and lens makers formula using fundamental laws of geometrical optics. • Use mathematical analysis to calculate properties of image, formed by combination of lenses and applies theory of optics to calculate the cardinal points of an optical system and design optical devices • Describe optical aberrations produced in image by lenses and methods of their removal. • Describe the construction and operation of optical devices, including, eyepieces, compound microscope, grating, polarizers etc. • Use mathematical analysis to find bright and dark fringes in an interference pattern of thin and wedge shaped film and find a wavelength of light using newton's rings • Interpret a diffraction pattern to determine resolution of an optical system and grating • Demonstrate an ability to solve problems using 'paraxial' optics-based formulae, numerical calculations and graphical drawings. • Geometrical determination of polarization of light and concept and determine a polarization state of light by interpreting polarizer

S.Y.B.Sc	PHY243: Physics Laboratory-2B	• Use various instruments and equipment. • Design experiments to test a hypothesis and/or determine the value of an unknown quantity. • Describe the methodology of science and the relationship between observation and theory. • Set up experimental equipment to implement an experimental approach. • Analyse data, plot appropriate graphs and reach conclusions from your data analysis. • Work in a group to plan, implement and report on a project/experiment. • Keep a well-maintained and instructive laboratory logbook. • Express their knowledge and ideas through oral and written language.
T.Y.B.Sc	PHY351: Mathematical methods of Physics	• Define and generate a general equation for gradient, divergence, curl & laplacian in an orthogonal curvilinear coordinate system & their applications in physics. • Interpret relative motion, Galilean & Lorentz transformation equations. • Define proper time , minkowskis space ,Time dilation , length contraction • Describe Michelson Morley experiment & its negative result. • Convert commonly occurring partial differential equations in physics into ODE's • Illustrate the problems on Frobenius method of series solution and to differentiate point of expansion of given differential equations. • Evaluate & plot Legendre polynomials, Hermite polynomials, Bessel functions of first kind. • List the most important special functions in physics and to solve different properties related to special functions.
	PHY352: Solid State Physics	• Define crystal structure to develop it in 2D as well as 3D and to determine Indices for 'Directions' and 'Planes' in a crystal structure. • Give original examples of crystal structures and to analyze them with packing fraction, coordination number, number of atoms per unit cell etc. • Derive Bragg Diffraction condition in direct lattice and to relate it in reciprocal lattice using Ewald construction.

T.Y.B.Sc	PHY352: Solid State Physics	• Classify the crystal structure by XRD diffraction and to simplify formula for interplaner distance. • Illustrate various experimental techniques for characterization of material. • Apply free electron theory to restate thermal and electrical properties • Explain superconductivity and Meissner effect • Define magnetic properties of material and to derive susceptibility formula for different magnetic materials using Lange vein theory.
	PHY353: Classical Mechanics	• Solve advanced problems involving the dynamic motion of classical mechanical systems with an intermediate knowledge of Newton's laws of motion • Apply the concept of centre of mass and mechanics of system of particles and conservation of energy, linear and angular momentum to solve dynamics problems • Demonstrate an intermediate knowledge of central-force motion and the concept of converting two body problems to single body problem and apply advanced methods to complex central-force motion problems. • Demonstrate an Intermediate knowledge of concept of laboratory frame and centre of mass frame and their use to calculate results of scattering experiments. • Apply the concept scattering to get important information regarding the nature of interaction between atomic and subatomic particles through experiments • Derive Lagrange and Hamilton's equations, and represent the equations of motion for simple mechanical systems such as: the Atwood's machine, Simple pendulum using these formulations of classical mechanics. • Acquire working knowledge of the methods of Hamiltonian Dynamics and compute the Hamilton equations of motion for mechanical systems
	PHY354: Atomic and Molecular Physics	• Derive the formulae for total energy of an atom so that energy level diagram can be drawn and also able to obtain the expression for spin orbit interaction energy. • State laws, postulates in atomic and molecular Physics and able to compare various models of atomic structure. • Calculate quantum state of electrons in an atom, spectral notation and electronic configuration of atom.

T.Y.B.Sc	PHY354: Atomic and Molecular Physics	• Obtain formulae for Zeeman shift, wavelength of emitted X-ray s, Raman shift, rotational and vibrational energy for diatomic molecule and apply it. • Explain origin of line spectra and able to compare continuous spectra, characteristic spectra and can differentiate between rotational, vibrational and electronic spectra. • Explain application of Duane and Hunt's rule, Moseley's law and its importance, applications of X-rays, Raman Effect and Auger effect. • Draw and explain X-ray spectra, spectrum with and without magnetic field (Zeeman effect),Raman spectra and molecular spectra using quantum treatment • Explain experimental arrangement to produce X-ray,, to observe Raman effect and Zeeman effect.
	PHY355: Computational Physics	• Define types of programming languages and their uses; • Gain basic competency with a widely used C-language for both general and scientific programming; • Define operators and expression in C-programming and navigate commands; • Explain control statements and loops as well as capable of writing C-program to solve problems; • Describe arrays and pointers and apply them in C program; • Critically present different numerical methods to solve different types of physical and technical problems; • Implement numerical algorithms into C-program and visualize the results of the computations • Demonstrate the ability to estimate the errors in the use of numerical methods
T.Y.B.Sc	PHY356(B): Elements of Material Science	• Define and outline the rules of solubility, deformation in metals, basic concepts in phase diagram, molecular phases and the concept of smart materials. • Explain the imperfections in solids, mechanism of plastic deformation by slip, properties of ceramic materials, the importance and objective of phase diagram. • Calculate and solve problems on stress and strain of materials, CRSS of single phase metals, weight in percentage of compositions using lever rule. • List the defects in solids, diffusion mechanisms and types of phase diagram. • Classify between elastic deformation and plastic deformation, linear polymers and cross linked polymers.

	PHY356(B): Elements of Material Science	• Derive the CRSS of metals and the lever rule for phase diagrams. • Discuss the types of smart materials, properties of smart materials and their applications. • Summarize the concept of polymers and the process of polymerization.
T.Y.B.Sc	PHY-357 Physics Laboratory-3A	• Describe the underlying theory of experiments in the course. • Perform derivations of theoretical models of relevance for the experiments in the course. • Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics. • Document their results, using correct procedures and protocols. • Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. • Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. • Calculate permissible standard error in any physics experiment • Derive conclusions from the analysis of own data. • Assess the language used to describe physics experiments and how it can alter perceptions of the method and results
	PHY-358 Physics Laboratory-3B	• Describe the underlying theory of experiments in the course. • Perform derivations of theoretical models of relevance for the experiments in the course. • Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics. • Document their results, using correct procedures and protocols. • Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. • Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. • Calculate permissible standard error in any physics experiment • Derive conclusions from the analysis of own data. • Assess the language used to describe physics experiments and how it can alter perceptions of the method and results

	PHY-359 Project-I	• Design and test hypothesis • Describe the underlying theory of experiments in the course. • Perform derivations of theoretical models of relevance for the experiments in the course. • Document their results, using correct procedures and protocols. • Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. • Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. • Write a project report with literature review. • Defend the outcome of project work in scientific manner.
T.Y.B.Sc	PHY-3510 (I) Energy studies	• Students become capable of conducting energy audits and give consultancy in that field. • Students can design different types of solar heaters for small domestic as well as large scale community level applications. • Students acquire skills to implement solar P-V systems at domestic levels as well as for office premises and educational institutions. Students become able to start their own enterprise in net metering. • Students get ideas and hence become self-employed in the field of design , production, commissioning and implementation of bio-mass energy sources , bio-gas plants, gasifiers, wind mills, hybrid systems etc. • Students can go for research in the fields of super-capacitors, battery technologies, fuel cells andmaterial synthesis for implementation of these technologies. • Students become successful entrepreneurs in the energy field. • Students strive to make the regions where they live and work self-sufficient in generating and fulfilling theirown energy needs using different energy solutions.
	PHY-3511(L) Physics Workshop Skill	• To get idea of various aspects of instruments and their usage through hands-on mode. • After completion of this course students will able to handle and test various instrument

T.Y.B.Sc	PHY361: Classical Electrodynamics	• Define the Biot-savart law, Amperes law, Coulombs law, Electric field, Electric susceptibility, Magnetic field &Faradays law. • Explain method of electrical images, equation of continuity, Magnetic vector potential, B.H curve, Maxwell's equation &wave equations. • Solve numerical problem on coulombs force, magnetic induction, magnetic permeability and induced voltage, magnitude of electric &magnetic vectors. • Determine work done by charges, total charge, force on the wire in different symmetry. • Summarize pointing vector, polarization, reflection &refraction. • Apply Biot Savart law in different symmetry problem. • List the applications of Amperes law, Biot Savart law, Poynting theorem. • Elaborate magnetic properties of the material.
	PHY362: Quantum Mechanics:	• Outline the historical aspects of development of quantum mechanics; • Explain the differences between classical and quantum mechanics; • Describe matter waves, wave function and uncertainty principle; • Describe Schrodinger's equation and its steady state form; • Solve Schrodinger's steady state equation for simple potentials to obtain eigen functions and eigen values • Apply Schrodinger's steady state equation for spherically symmetric potentials obtain eigen functions and eigen values; • Interpret quantum numbers in atomic system; • Discuss operator algebra in quantum mechanics.
	PHY363: Thermodynamics and statistical physics	• Describe transport phenomena and compute coefficient of thermal conductivity, viscosity and diffusion in terms of mean free path • Define and discuss the concepts and roles of thermodynamic functions from the view point of statistical mechanics • Derive Binomial distribution and Gaussian probability distribution using random walk problem and calculate mean values for a statistical system

T.Y.B.Sc	PHY363: Thermodynamics and statistical physics	• Discuss the concepts of microstate and macro state, basic postulates and behaviour of density of states for model system and calculate the number of microstates for different statistical systems • Differentiate thermal, mechanical and general interaction between statistical system • Derive and compare Maxwell Boltzmann, Bose-Einstein and Fermi-Dirac distributions; state where they are applicable and explain the connection between classical • Derive probability distribution formula for micro canonical, canonical ensemble and calculate mean values in canonical ensemble Discuss applications for canonical ensemble
	PHY364: Nuclear Physics	• Define threshold voltage, dead time and recovery time in GM counter, threshold energy, nuclear fission, nuclear fusion, critical size, critical mass. • Determine the basic properties of nucleus. • Classify nuclear radiations, elementary particles and nuclear states, nuclear detectors. • Compose baryons and mesons with Quark model. • Derive expression for energy of ions and frequency of RF signal in cyclotron, Q value equation, threshold energy, and decay constant. • Estimate binding energy from fission • Justify nuclear reactions using conservation laws • Explain the different processes by which energetic particles interact with matter, kinematics of various reactors and decay processes
	PHY365: Advanced Electronics:	• Know basic components like diode and its types, BJT, FET • Study of amplifiers and its types. • Introduction to power supplies. • Details of Digital electronics.
	PHY366: Lasers	• Explain the interaction of radiation with matter, Quantum behaviour of light, thermal equilibrium and population inversion. • Illustrate the absorption, spontaneous and stimulated emission with appropriate diagrams. • Derive the Einstein's relation, conditions for large stimulated emission and light amplification.

	PHY366: Lasers	• Distinguish between ordinary light and laser light. • Define the characteristics of laser light. • Classify between lifetime broadening, collision and Doppler broadening. • List the types of lasers. • Discuss the applications of lasers in various fields.
T.Y.B.Sc	PHY367: Laboratory course I	• Describe the underlying theory of experiments in the course. • Perform derivations of theoretical models of relevance for the experiments in the course. • Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics. • Document their results, using correct procedures and protocols. CO5: Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. • Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. • Calculate permissible standard error in any physics experiment • Derive conclusions from the analysis of own data. • Assess the language used to describe physics experiments and how it can alter perceptions of the method and results
	PHY368: Laboratory course II	• Describe the underlying theory of experiments in the course. • Perform derivations of theoretical models of relevance for the experiments in the course. • Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics. • Document their results, using correct procedures and protocols. • Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. • Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. • Calculate permissible standard error in any physics experiment • Derive conclusions from the analysis of own data. • Assess the language used to describe physics experiments and how it can alter perceptions of the method and results

T.Y.B.Sc	PHY369: Laboratory course III (Project)	• Design and test hypothesis • Describe the underlying theory of experiments in the course. • Perform derivations of theoretical models of relevance for the experiments in the course. • Document their results, using correct procedures and protocols. • Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. • Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. • Write a project report with literature review. • Defend the outcome of project work in scientific manner.
	PHY-3610(Y) Applications of Internet of things (IOT)	• Understands IOT concepts • Understands about IOT Standards • Know about Components of IOT System. • Understands the Relevance of IOT for the future. • Understands IOT Applications. • Use of IOT for smart cities (Case study Smart city Barcelona) • IOT in Indian Scenario • Understands about Challenges in IOT implementation.
	PHY- 3611(AA) Microcontrollers	• After successful completion of this course students are supposed to develop their own applications/ mini/ tiny projects using microcontroller.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Political Science

Program outcome : B.A./B.Sc./B.Com (Political Science)	
PO1	• To develop academic proficiency in the sub fields of Indian government and Politics, Comparative government, International Relations. Public Administration, Political Theory and Political Ideology.
PO2	• To develop and be able to demonstrate skills in conducting as well as presenting research in political science
PO3	• To analyze political and policy problems and formulate policy options.
PO4	• Students enable to discuss the major theories and concepts of political scienceand its subfields, and also deliver thoughtful and well-articulated presentations ofresearch findings.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Political Science

Program Specific outcome : B.A./B.Sc./B.Com (Political Science)	
PSO1	• Serve as a politician
PSO2	• Work as a teacher in colleges, schools and high schools
PSO3	• Serve as political party member, political adviser, and well citizen of India.
PSO4	• Work in elections and political as well as administrative system.
PSO5	• Serve in forest department as forest conservator.
PSO6	• Can admit to MA Politics, LLB, MSW, MBA,
PSO7	• Work in NGOs.
PSO8	• Can Prepare for Competitive exams.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Political Science

Course Outcomes of BA (Political Science)

Class	Course title	Outcome
F.Y.B.A.	Introduction to Indian Constitutions (G-1)	• Students enable to understand the philosophy of Indian constitutions. • Students enable to identify the causes, impact of British colonial rule. • Students enable to appreciate the various phases of Indian national movement. • Students enable to create value in young youth regarding the patriotism. • Students enable to understand the various Government of Indian acts their provision and reforms. • Students enable to know the salient features in making of Indian constitution • Students enable to appreciate the socio-economic political factors which lead to the freedom struggle. • Students enable to appreciate the fundamental rights and duties and the directive principle of state policy • Students enable to evaluate the evolution, functioning and consequences of political parties in India. • Students enable to identify how electoral rules and procedure in India effect election outcomes. • To familiarize students with the working of the constitutions of India
S.Y.B.A.	Political Theory and Concept (G- 2)	• Students enable to understand the nature and scope of political theory. • Students enable to understand the significance of political theory. • Students enable to acquaint with the theories, approaches, concepts and principles of political theory. • Students enable to appreciate the procedure of different theoretical ideas in political theory. • Students enable to Interpret and assess information regarding a variety of political theory. • Students enable to understand the various traditional and modern theories of political science.

		• Students enable to evaluate the theories of origin of the state.
S.Y.B.A.	Western Political Thought (S-1)	• Examine political thought through the Classical, Renaissance, and Enlightenment periods based on the works of Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Tocqueville, and Marx; • Compare and contrast the concepts of justice, freedom, equality, citizenship, and sovereignty in the works of Machiavelli, Hobbes, Locke, and Rousseau; • Explain the different versions of, and importance of, the state of nature to political thought • Explain Karl Marx's worldview, with particular regard to his critique of democracy and the modern, politically liberal state; how it came to be; and its fundamental link to capitalism • Explain John Stuart Mill's theory on utilitarianism and how he applies it to society and the state.
S.Y.B.A.	Political Sociology (S-2)	• Have good knowledge about main issues and topics in political sociology. • Be able to understand basic principles of the exercise of power, of the state relations with civil society; individual and group interactions in the political realm. • Achieve practical skills of analysis of social phenomena in their political settings. • Acquire habits of socio-political information finding, sorting and critical examining. • Foster skills of public presentations and discussions.
T.Y.B.A.	Modern Political Ideologies (G- 3)	• Student enables to understand the role of different political Ideologies and their impact in Politics. • Students enable to understand the different streams and subtle nuances within each ideology, the change and continuities in its doctrine and its relevance to contemporary times are highlighted. • Student enables to understand the core doctrines of each of the ideologies and to make

T.Y.B.A.	Public Administration (S-3)	• Students enable to demonstrate understanding of various activities of governmental administrators that fall under the rubric of public administration to include rule-making, ratemaking, and other regulatory activities, policy making and the delivery of services and programs • Students enable to understand the 20th century emergence of the modern administrative state as a result of the technological, social, economic and political pressures that have emerged in national industrialized and developed complex, interdependent systems. • Students enable to understanding of public administration as a career field in government.
T.Y.B.A.	International Politics (S-4)	• Students enable to understand the evolution, scope and significance of international relations • Students enable to demonstrate an understanding of: the key historical events and also they enable to understand contemporary international system; and the key actors which shaped the international Politics. • Students enable to discuss the main international relations theories. • Students enable to analyze importance of International relation in process of nation progress. • Students enable to appreciate the foreign policy their determinants features& its relevance

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Zoology

Program outcome : B.Sc. (Zoology)	
PO1	• Demonstrate, solve and an understanding of major concepts in all disciplines of Zoology.
PO2	• Solve the problem and also think methodically, independently and draw a logical conclusion.
PO3	• Understand the evolution, history of phylum.
PO4	• Create an awareness of the impact of Zoology on the environment, society, and development outside the scientific community
PO5	• To study and understand the classification of whole phyla includes in Non chordates with the help of charts/models/pictures.
PO6	• To inculcate the scientific temperament in the students and outside the scientific community.
PO7	• Use modern techniques, decent equipment's

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Zoology

Program Specific Outcome : B.Sc./ (Zoology)	
PSO1	• Gain the knowledge of Zoology through theory and practical's.
PSO2	• Study and understand the DNA Recombinant technology.
PSO3	• Understand the testing of hypothesis.
PSO4	• Use modern Zoological tools, Models, Charts and Equipment's.
PSO5	• Know structure-activity relationship.
PSO6	• Understand good laboratory practices and safety.
PSO7	• Make aware and handle the sophisticated instruments/equipment.
PSO8	• Gain the knowledge of Zoology through theory and practical's.
PSO9	• Study and understand the DNA Recombinant technology.

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Zoology

Course Outcomes of B.Sc. (Zoology)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	Animal systematics and Diversity I and II	• Understanding of basics of Animal Classification. • Understanding of parasitology • Understanding of host and parasite relationship
F.Y.B.Sc. (Paper-II)	Fundamental of Cell Biology and Genetics	• Understanding of fundamentals of cell biology • Understanding of types of cells • Understanding of cell organelles • Understanding of techniques used in cell biology study • Understanding of Mendellian genetics. • Understanding of fundamentals of genetics
S.Y.B.Sc. (Paper-I)	Animal systematics and Diversity III	• Understanding of phylum Arthropoda, Mollusca and Echinodermata with respect to habits and habitats • Understanding of morphology and anatomy of starfish • Understanding of larval forms of above mentioned phyla • Economic importance of Arthropods and molluscs
S.Y.B.Sc. (Paper-II)	Applied zoology I	• Understanding of application of fishery science • Understanding of science of pest control • Understanding of different pests and their infestation
S.Y.B.Sc. (Paper-I)	Animal systematics and Diversity IV	• Understanding of Phylum Chordata and its classes • Understanding of general characteristics of reptiles aves and mammals. • Understanding of Scoliodon systems • Understanding of adaptations according to their habitat
S.Y.B.Sc. (Paper-II)	Applied zoology II	• Understanding of apiculture and sericulture • Understanding of tools and techniques used in apiculture and sericulture • Understanding of enemies of honey bees and silk moths

T.Y.B.Sc. (Paper-I)	Animal Systematic and Diversity- V	• Understand the evolution, history of phylum. • Understand about the Non Chordate animals. • To study the external as well as internal characters of non chordates. • To study the distinguishing characters of non chordates. • Understand the economical importance of Molluscs • Understand the various internal systems like Digestive system,nervous system with the help of charts. • Understand the functions of Gemmules and spicules. • Understand the economical importance of Molluscan shells.
T.Y.B.Sc. (Paper-II)	Mammalian Histology	• Understand the terms Histology and Physiology • Understand the cell, tissue, organ, system and organisms. • Study the derivatives of skin- horns, nails, hairs. • Study and understand the terms- acidosis, alkalosis, asphexia, hypoxia, anoxia and cyanosis
T.Y.B.Sc. (Paper-III)	Biological Chemistry	• Understand about the agencies responsible for Production of various products using biochemistry. • Understand the term pH, Buffer. • Understand the structure and function of carbohydrate, amino acids, proteins, and lipids. • Understand the concept Enzymes and also Vitamins and minerals. • Understand the Principle role of Vitamins in metabolism and the deficiency diseases.
T.Y.B.Sc. (Paper-IV)	Enviromental Biology & Toxicology	• Know the biotic and abiotic components of ecosystem. • Food chain & food web in ecosystem. • Understand diversity among various groups of animal kingdom. • Understand Animal community & ecological adaptationin animals. • Scope , importance and management of biodiversity

T.Y.B.Sc. (Paper-V)	Parasitology	• To study and understand the scope and branches of Medical Zoology. • To aware the students for various parasites and diseaseswhich spreads in human with the help of study of host-parasite relationship. • To increase awareness for the health in students. • Understand the various disease causing vectors like Mosquitoes. • To aware about the typhoid, cholera likes disease.
T.Y.B.Sc. (Paper-VI)	Cell Biology	• Understand the Scope of cell biology, because cell is thebasic unit of life. • Understand the Main distinguishing characters betweenplant cell and animal cell. • To study and understand the whole cell organelles withtheir structure and function. • Understand the cell cycle and know the importance of various cells in body of organisms. • Understand the various applications of cells by usingcell biology like study of various types of tumor. • Understand the Animal cells and various cell organellesby using microphotographs. • Course
T.Y.B.Sc. (Paper-I)	Biological Techniques	• Understand the various Applications of Biotechnology. • Study and Understand the Hybridoma technology as well as Enzyme biotechnology. • Study and understand the DNA Recombinant technology. • Understand the industrial and environmental biotechnology. • Study and understand the Stem cell biotechnology. • Understand the Scope and Significance of Biotechnology.

T.Y.B.Sc. (Paper-II)	Mammalian Physiology and Endocrinology	• Understand the Importance of physiology and branches of it. • Understand the terms-Osmosis, diffusion, pH and Buffer. • Understand the Digestion and Excretion process, by studying the organs of it • Understand the process of Metabolism. • Understand the term Detoxification. • Understand the Circulatory system and Lymphatic system. • Study the nervous system.
T.Y.B.Sc. (Paper-III)	Genetics and Molecular Biology	• Understand the Molecular biology and molecular biology. • Understand the cell divisions and types of mutation. • Understand the structure and function of the cells.
		• Understand the term cell signaling. • Aware the students for Cancer. • Understand the Tools and Techniques in Molecular Biology. • Understand the term ELISA technique and DNA finger printing.
T.Y.B.Sc. (Paper-IV)	Organic Evolution	• To understand Origin of life with respect to prokyariotic and eukaryotic cells. • Understand the evidences of organic evolution by anatomical embryological list, paleontological, physiological, genetics and molecular biology evidences. • Understand theories of organic evolution, isolation, speciation. • Understand geological time scale, methods and classification of animal distribution and factors affecting animal distribution.
T.Y.B.Sc. (Paper-V)	General Embryology	• Understand the terms: Gametogenesis, Fertilization and early development. • Understand the Morphogenesis and Organogenesis in animals. • Understand the Aging, Apoptosis and Senescence.

T.Y.B.Sc. (Paper-VI)	Medical Entomology	• Understand the fundamentals of agricultural, forest, medical and veterinary entomology. • Understand Morphology and Anatomy of Insects. • Understand intra specific and inter specific relationships among insects. • To understand significance of beneficial and harmful insects with reference to their habit and habitat, life cycle, diseases caused by them and their control measures.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Psychology

Program Outcome : B.A. (Psychology)	
PO1	• Develop an understanding of the basic concepts in Psychology.
PO2	• Understand various psychological disorders, classify them and know the treatment.
PO3	• Know characteristic features of the human developmental stages.
PO4	• To develop a sense of responsibility of one's own actions as a part of society at large.
PO5	• Help the youth to make better adjustment in life and inculcating the same in the members of society.
PO6	• Develop listening skills and empathy with others.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Psychology

Program Specific outcome : B.A. (Psychology)	
PSO1	• Gain the knowledge of psychological concepts through theory and practical.
PSO2	• To explain the developmental milestones of humans.
PSO3	• Identify and classify the psychological disorders.
PSO4	• Determine the level of mental disorder and suggest treatment.
PSO5	• Develop healthy relations with the people in the society.
PSO6	• Develop a sense of scientific inquiry in the psychological problem and develop research design.
PSO7	• Administer psychological tests and interpret results.
PSO8	• Conduct experiments under controlled conditions to test a psychological phenomenon or theory.

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Program Outcomes, Program Specific Outcomes and Course Outcome
Department of Psychology

Course Outcomes of BA (Psychology)

Class	Course title	Outcome
F.Y.B.A.	1. Foundations of Psychology	• Understand the basic psychological processes and their applications in day to day life • Develop the ability to evaluate cognitive processes, learning &memory of an individual. • Understand the importance of the motivation &emotion of the individual • Understand the personality &intelligence of the individual by developing their psychological processes &abstract potentials.
	2.Introduction to Social Psychology	• Understand the basics social psychology • Understand the nature of self-concept of the attitude &prejudice of the individual. • Assess the interactional processes, love &aggression in day today life. • Understand group dynamic &individual in the social world.
S.Y.B.A.	1.Health Psychology	• Understand health psychology &arrive at the introduction to the role of psychology in health. • Understand the nature of stress & coping • Understand various factors related to health & diseases. • Understand quality of life &promoting the good health.
	2.Positive Psychology	• Understand how the positive psychology as the science of happiness ,human strength ,positive aspect of human behavior & psychology of well-being • How we lead our lives, find happiness & satisfaction &face life's challenges. • How positive psychology has become an evolving mosaic of research &theory from many different areas of psychology.
T.Y.B.A.	Industrial and Organizational Psychology	• Describe the concept Industrial &organizational psychology, selection &training, evaluation &motivation at workplace • Explain job profile ,job analysis ,recruitment techniques &employee training • Identify & classify the appraisal rating system • Compare different theories of motivation • Evaluate the training programme &job performance

T.Y.B.A.	Applied Psychology	• Describe the concept of applied psychology , educational psychology ,family structure &development patterns . • Know the clinical psychology related mechanisms ,social issues ,&criminal behavior. • Classify the intellectual ability ,abnormality ,criminal behavior • Identify the problem &solution in the field of education. • Evaluate the interpersonal relations • Apply psychological remedies to assess abnormal behavior ,to tackle the social issues & to rectify the problematic behavior.