



Rayat Shikshan Sanstha's
R. B. Narayanrao Borawake College, Shrirampur
(Autonomous)

**Program Outcomes (POs), Program Specific
Outcomes (PSOs) and Course Outcomes (COs)**

Faculty of Science and Technology

DEPARTMENT OF BOTANY

Programme Outcomes: B. Sc. Botany

Department of Botany	After successful completion of three-year degree program in Botany a student will be able to:
Programme Outcomes	<p>PO-1. Students know about different types of lower & higher plants their evolution in from algae to angiosperm & also their economic and ecological importance.</p> <p>PO-2. Cell biology gives knowledge about cell organelles & their functions</p> <p>PO-3. Molecular biology gives knowledge about chemical properties of nucleic acid and their role in living systems.</p> <p>PO-4. Genetics provides knowledge about laws of inheritance, various genetic interactions, chromosomal aberrations & multiple alleles.</p> <p>PO-5. Structural changes in chromosomes.</p> <p>PO-6. Student can describe morphological & reproductive characters of plant and also identified different plant families and classification.</p> <p>PO-7. They know economic importance of various plant products & artificial methods of plant propagation</p> <p>PO-8. Use modern Botanical techniques and decent equipments.</p> <p>PO-9. To inculcate the scientific temperament in the students and outside the scientific community</p> <p>PO-10 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.</p>

Program Specific outcome: B.Sc. (Botany)

Department of Botany	After successful completion of three year degree program in Botany a student will be able to:
Programme Specific Outcomes	<p>PSO-1. Students acquire fundamental Botanical knowledge through theory and practical's.</p> <p>PSO-2. To explain basis plant of life, reproduction and their survival in nature.</p> <p>PSO-3. Helped to understand role of living and fossil plants in our life.</p>

	<p>PSO-4. Understand good laboratory practices and safety.</p> <p>PSO-5 To create awareness about cultivation, conservation and sustainable utilization of biodiversity.</p> <p>PSO-6. To know advance techniques in plant sciences like tissue culture, Phytoremediation, plant disease management, formulation of new herbal drug etc.</p> <p>PSO-7 Students able to start nursery, mushroom cultivation, biofertilizer production, fruit preservation and horticultural practices</p>
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Course Outcomes of B.Sc. Botany:

Course	Outcomes
	After completion of these courses students should be able to:
Semester-I	
BO-MJ-111T Plant Life and Utilization-I	<p>CO-1: The students will develop understanding about the diversity, identification, classification and economic importance of lower plants.</p> <p>CO-2: To Understand the characters and classification of Algae, Fungi, Lichen and Bryophytes.</p> <p>CO-3: To Know the Economic Importance and Utilization of Algae, Fungi, Lichen and Bryophytes.</p> <p>CO-4: To Understand the life cycle pattern of Algae, Fungi, Lichen and Bryophytes.</p> <p>CO-5: To Know the systematic, morphology and structure, of Algae, Fungi, Lichen and Bryophytes.</p> <p>CO-6: Student will get Knowledge and understanding of the range of plant diversity in terms of structure and function.</p> <p>CO-7: To Understand the reproduction of Algae, Fungi, Lichen and Bryophytes.</p> <p>CO-8: To study the role of plants in functioning of global ecosystem.</p> <p>CO-9: To study the evolutionary importance of Algae as progenitors of land plants.</p>
BO-MJ-112T Plant Morphology and Anatomy	<p>CO-1: Understanding of Plant morphology terminologies and identifying morphological peculiarities.</p> <p>CO-2: Recognize members of the major angiosperm families by identifying their diagnostic features.</p> <p>CO-3: The students will gain ability to apply the acquired knowledge and skills in the field of plant morphology and anatomy.</p> <p>CO-4: Provide lab-based training in writing short species description and illustration.</p>

	<p>CO-5: This course aims to impart an insight into the internal structure of Dicot and Monocot plants.</p> <p>CO-6: The students will learn about the basic concepts in Morphology and anatomy.</p> <p>CO-7: Acquire practical skills to gather information, assess, create, and execute new ideas to develop entrepreneurial skill.</p>
<p>BO-MJ-113P Practical based on BO- MJ 111T and BO-MJ 112T</p>	<p>CO-1: Learn the algal diversity, their systematic position and morphology of commonly found algae.</p> <p>CO-2- Study the life cycle patten on different members of Algae.</p> <p>CO-3: Know botanical sources, characteristics, and utilities of Plants/ plant product</p> <p>CO-4: Study of fungal diversity w. r. t Systematic position and morphology and life cycle of different fungal members</p> <p>CO-5: Get knowledge about the diversity of Bryophytes, their systematic position and morphology and life cycle pattern of some members.</p> <p>CO-6: Study of Lichens and its types and their common and medicinal, pharmaceutical uses.</p> <p>CO-7: Will get practical knowledge regarding plant section cutting, staining and mounting and its microscopic studies.</p> <p>CO-8: Learn about morphology, anatomy and reproduction of Angiosperm.</p> <p>CO-9: Study the transport system in plants, vascular tissues and tissues of plants.</p> <p>CO-10:Acquire practical skills to gather information, assess, create, and execute new ideas to develop entrepreneurial skills which is dependent on medicinal, pharmaceuticals values of algae, fungi, lichens and angiospermic plants and their production and marketing.</p>
<p>BO-VSC-114T Plant Nursery and management</p>	<p>CO-1: Understand the importance of a plant nursery and basic infrastructure Establish it.</p> <p>CO-2: Explain the basic material, tools and techniques required for nursery.</p> <p>CO-3: Demonstrate expertise related to various practices in a nursery. Comprehend knowledge and skills to get an employment or to become an entrepreneur in Plant Sciences.</p> <p>CO-4: Introduction with climatic requirements of nursery plant cultivation.</p> <p>CO-5: Learning value of nursery plant.</p>
<p>BO-SEC-115P Fruit and Vegetable Processing Technology</p>	<p>CO-1: Students will get scientific knowledge and skills about fruit and vegetable farming and technologies for fruit and vegetables processing and preservation.</p> <p>CO-2: Students will be encouraged to develop new cultivars, improved fruit and vegetable varieties and disease resistant varieties of fruits.</p> <p>CO-3: students will be able to study and find out most effective strategies keeping fruit trees and vegetables healthy and productive.</p> <p>CO-4: Students will get practical knowledge and information for fruit and vegetable preservation.</p> <p>CO-5: Students will get information about fermented fruit and vegetables products and by product waste utilization.</p>

	<p>CO-6: Students will acquire knowledge that enables them to identify the main key processing steps used during fruit and vegetables transformation, understand the main effect of the processing on the quality characteristics of processed fruits and vegetables.</p> <p>CO-7: Students will acquire knowledge that enables them to identify the main key processing steps used during fruit transformation, understand the main effect of the processing on the quality characteristics of processed fruits and vegetables.</p> <p>CO-8: Students will get knowledge about job and entrepreneurial opportunities related to fruit and vegetable farming and processing.</p>
<p>BO-IKS-116T Medicinal Botany and Indigenous Medicinal System</p>	<p>CO-1. Understand scope and importance of Medicinal Botany.</p> <p>CO-2. Know the cultivation, collection, processing & importance of various herbal drugs.</p> <p>CO-3. Understand the scope of Indigenous Medicinal System.</p> <p>CO-4. Know the botanical resources like non wood forest products.</p> <p>CO-5. Understand the concept of Ayurvedic pharmacy.</p>
<p>BO-OE-101T मशरूम (अळंबी) लागवड व तंत्रज्ञान</p>	<p>CO-1: विद्यार्थी मशरूम मध्ये आकार विज्ञान आणि प्रकार यांचा अभ्यास करू शकतात.</p> <p>CO-2: विद्यार्थी मशरूम लागवडीचा लघुउद्योग सुरू करू शकतात.</p> <p>CO-3: विद्यार्थ्यांना खाणे योग्य आणि विषारी मशरूमची ओळख पटते.</p> <p>CO-4: विद्यार्थी स्वतः मशरूम बीज तयार करू शकतील.</p> <p>CO-5: लघु उद्योगात मशरूम लागवडीच्या संभावना आणि व्याप्ती जाणून घेतील.</p> <p>CO-6: विद्यार्थ्यांना या अभ्यासक्रमातून पोषण तत्वे व त्यांचा जीवनातील उपयोग याबद्दल महत्त्व पटते.</p> <p>CO-7: विद्यार्थी वेगवेगळ्या स्वादिष्ट पाककृती बनवू शकतील.</p>
<p>BO-OE-101P Practical Based on BO-OE-101T मशरूम (अळंबी) लागवड व तंत्रज्ञान</p>	<p>CO-1: विद्यार्थी मशरूम मध्ये आकार विज्ञान आणि प्रकार यांचा अभ्यास करू शकतात.</p> <p>CO-2: विद्यार्थी मशरूम लागवडीचा लघुउद्योग सुरू करू शकतात.</p> <p>CO-3: विद्यार्थ्यांना खाणे योग्य आणि विषारी मशरूमची ओळख पटते.</p> <p>CO-4: विद्यार्थी स्वतः मशरूम बीज तयार करू शकतील.</p> <p>CO-5: लघु उद्योगात मशरूम लागवडीच्या संभावना आणि व्याप्ती जाणून घेतील.</p>
<p>Semester-II</p>	

<p>BO-MJ-121T Plant Life and Utilization II</p>	<p>CO-1: The students will develop understanding about the diversity, identification, classification And economic importance of lower plants.</p> <p>CO-2: Understand the characters and classification of Pteridophytes.</p> <p>CO-3: Know the Economic Importance and Utilization of Pteridophytes, Angiosperms and Gymnosperms.</p> <p>CO-4: Understand the life cycle pattern of Pteridophytes, Angiosperms and Gymnosperms.</p> <p>CO-5: Know the systematic, morphology and structure, of Pteridophytes, Angiosperms and Gymnosperms.</p> <p>CO-6: Knowledge and understanding of the range of plant diversity in terms of structure and function.</p> <p>CO-7: Understand the reproduction of Pteridophytes, Angiosperms and Gymnosperms.</p> <p>CO-8: The role of plants in functioning of global Ecosystem.</p> <p>CO-9: Understand the habit of the Angiosperm plant body.</p>
<p>BO -MJ-122T Principles of plant science</p>	<p>CO-1: Develop a strong fundamentals basics for further detailed molecular, cellular and physiological study.</p> <p>CO-2: Develop the understanding of plant growth, development, metabolic and physiological processes in plants.</p> <p>CO-3: Gain about basic information about prokaryotic and eukaryotic cells, structure and functions about cells, cell organelles, genetic material.</p> <p>CO-4: Understand cell cycle and division patterns of plant cells.</p>
<p>BO -MJ-123P Practical based on BO-MJ 121T and BO-MJ 122T</p>	<p>CO-1: Develop a strong fundamental and practical basics for plant physiological and molecular processes.</p> <p>CO-2: Gain basic information about structure and functions of prokaryotic and eukaryotic cells.</p> <p>CO-3: Understand cell cycle and division patterns of plant cells.</p> <p>CO-4: Understand cellular events in plants.</p> <p>CO-5: Gain idea about diversity of vegetation.</p>
<p>BO-VSC-124P Plant Nursery and management</p>	<p>CO-1: Understand the importance of a plant nursery and basic infrastructure to establish it.</p> <p>CO-2: Get knowledge about basic material, tools and techniques required for nursery.</p> <p>CO-3: Get thorough information about the climatic requirements of nursery plant for their proper cultivation.</p> <p>CO-4: Learn value of nursery plants</p>

BO-SEC-125P Herbal cosmetology	CO-1: Students will be aware of local herbs and plants that are useful in the preparation of herbal cosmetics. CO-2: Through this course students will be able to manufacture herbal cosmetic products.
BO -MN-126T Agricultural Botany	CO-1: Able to deal with all aspects of crop cultivation and production. CO-2: A study of agronomy often involves a summoning of resources from related disciplines such as Botany, Soil Science, Irrigation, plant protection, Plant Genetics and Breeding, Agro meteorology etc. which will be helpful for students to get detailed knowledge. CO-3: Get knowledge about Indian Agriculture, seasons and importance, present status, scope, and future prospect. CO-4: Get aware about cropping seasons of India and concepts like soil formation, classification, physical and chemical properties of soil, Identification of important crops and crop seeds. CO-5: Able to choose an agriculture as a source of income with improve and modern technology.
BO-OE-102T फलोत्पादन आणि फुलशेती	CO-1: फुलांची वाढ, देखभाल आणि विपणन याबद्दल विद्यार्थ्यांना माहिती मिळेल. CO-2: विद्यार्थ्यांना फलोत्पादन व फुलशेती यामधील नवनवीन तंत्रज्ञानाची माहिती मिळेल. CO-3: नवनवीन तंत्रज्ञानाचा वापर करून विद्यार्थी आर्थिकदृष्ट्या सक्षम होऊ शकतील. CO-4: हायड्रोपोनिक पद्धतीचा वापर करून शेतीची उत्पादन क्षमता वाढविणेसाठी सक्षम होऊ शकतील.
BO-OE-102P Practical Based on BO-OE-102T फलोत्पादन आणि फुलशेती	CO-1: फुलांची वाढ, देखभाल आणि विपणन याबद्दल विद्यार्थ्यांना माहिती मिळेल. CO-2: विद्यार्थ्यांना फलोत्पादन व फुलशेती यामधील नवनवीन तंत्रज्ञानाची माहिती मिळेल.
Semester-III	
BO 231 Taxonomy of Angiosperms and Plant Ecology	CO-1 Know principals of taxonomy, methods in taxonomy CO-2 To gain knowledge about of taxonomy, Sources of data for taxonomy CO-3 To learn methods of preparation of Herbarium, E- Herbarium etc
BO 232 Plant Physiology	CO-1 Applications of plant physiology, Mechanism of Absorption of water, Transpiration CO-2 Plant growth and growth regulators, Nitrogen Metabolism in plants.

	CO-3 Physiology of flowering plants.
Semester-IV	
BO 241 Plant Anatomy and Embryology	CO-1 To get knowledge about different tissue systems in plants CO-2 To study normal secondary growth and different types of anomalous ,secondary growth. CO-3 Study of male and female gametes in angiosperms, Process of fertilization and types of endosperms and structure of embryo.
BO 242 Plant Biotechnology	CO-1 Know various application of biotechnology like Enzymetechnology, Fermentation technology CO-2 Single Cell Proteins and Environmental biotechnology. CO-3 Know Basics of Plant Genetic Engineering, Methods of gene transfer in plants and applications of plant genetic engineering in crop improvement CO-4 Knowledge about Nanotechnology and its applications in Agriculture
Semester-V	
BO 351 Algae & fungi	CO- 1It is useful to study lifecycle, thallus structure, classification of algae and fungi. CO-2 It is helpful to know about role in industry, agriculture, fodder and medicine.
BO 352 Archegoniate	CO-1 Study of bryophyte, pteridophyte general character, habit and habitat and lifecycle pattern. CO-2 To know about ecological and economic importance.
BO 353 Spermatophyte and Paleobotany	CO-1 Spermatophyta gives knowledge of general characters, economic importance and classification of Gymnosperm and Angiosperm. CO-2 Palaeobotany provides the information regarding the Fossils..
BO 354 Plant Ecology	CO-1 Plant ecology gives the knowledge about interrelationship between the living world and the environment, levels of organization, components and dynamism of ecosystem, homeostasis. CO-2 It is helpful to study of EIA, remote sensing and ecological management. solution about singular points.
BO 355 Cell and Molecular Biology	Cell and Molecular Biology CO-1 Cell biology gives the knowledge of Internal organization of the cell CO-2 Cellular signaling, transport and trafficking, Cellular Processes. CO-3 Molecular biology provides the Gene structure and Function, DNA: Structure, Functions and Damage
BO 356 Genetics	CO-1 Genetics provides knowledge regarding Classical Genetics, Microbial Genetics & Cytogenetics Co-2 Plant Breeding

BO 3510 Medicinal Botany	CO-1 Understand scope and importance of pharmacognosy. CO-2 Know the cultivation, collection, processing & importance of various herbal drugs and scope of economic botany. CO-3 Know the botanical resources like non wood forest products and study the concept of Ayurvedic pharmacy.
BO 3511 Plant diversity and Human Health	CO- 1.To study about genetic diversity Species diversity, Plant diversity at the ecosystem level, CO-2 To know about conservation of biodiversity.
<u>Semester-VI</u>	
BO 361 Plant Physiology	Co-1 Plant physiology give knowledge regarding the Photosynthesis, Respiration, Translocation of organic solutes
BO 362 Biochemistry	CO-1 Biochemistry gives the Knowledge regarding the various biochemical activity occurs in living organism. CO-2 Carbohydrates, Amino acids and proteins, Secondary Metabolites
BO 363 Plant Pathology	CO-1 Study scope and importance of plant pathology. CO-2 Know disease cycle and disease development, CO-3 Effect of plant diseases on economy of crops. CO-4 Know the methods of studying plant diseases they can identify the plant diseases like bacterial, nematode, and fungal, disease forecasting. CO-5 Study prevention and control measures of plant diseases.
BO 364 Evolution and Population genetics	CO-1 To study of historical account of origin of life and organic evolution. CO-2 To know about organic evolution and population genetics. CO-3 It is helpful for the study of Hybrid in viability, Hybrid sterility & Hybrid breakdown.
BO 365 Advanced Plant Biotechnology	CO-1 To study Impact of Biotechnology on Health care, Agriculture, and Environment. CO-2 Understand Role of microbes in agriculture, medicine & industry. CO-3 Study the concept of bioinformatics & genomics Proteomics. Understand technical germplasm & cryopreservation.
BO 366 Plant Breeding and Seed Technology	CO-1 Study the scope & importance of plant breeding. CO-2 Study the technique of production of new superior crop varieties, heterosis, hybrid vigor etc. CO-3 Know the process of hybrid variety, development & their release. CO-4 Know about seed germination, processing, production etc.
BO 3610 Nursery and	CO-1 To know about idea of nursery and gardening management. CO-2 To study the different techniques of nursery such as cutting, budding

Gardening Management	grafting, air layering.
BO 3611 Bio fertilizers	CO-1 To study the different types of Bio fertilizers. CO-2 To know about the mass production techniques of bio fertilizers.

Programme Outcomes: M. Sc. Botany

Department of Botany	After successful completion of three year degree program in Botany a student will be able to:
Programme Outcomes	<p>PO-1 Student can identify and classify all plant groups from algae to angiosperms, also understand the evolutionary relationship and their taxonomic aspects.</p> <p>PO-2. 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.</p> <p>PO-3. Students know about economically important algae, their cultivation and applications. and also methods of preparation and application of algal products.</p> <p>PO-4. Understand the application of Biopesticides; know about sources, methods and production of biofuel.</p> <p>PO-5. Acquired knowledge of fermentation technology and production offermented products.</p> <p>PO-6. 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.</p> <p>PO-7. Students learn the basic biostatistics, experimental statistics and bioinformatics.</p> <p>PO-8. Students understood plant organism interaction,</p> <p>PO-9. To inculcates the scientific temperament in the students and outside the scientific community</p>

Programme Specific Outcomes: M. Sc. Botany

Department of Botany	After successful completion of three year degree program in Botany a student will be able to:
Programme Specific Outcomes	<p>PSO-1. Students acquired knowledge through practical work in fields as well as in laboratory.</p> <p>PSO-2. Students are expose to various industrial process by industrial training.</p> <p>PSO-3. Project helps for creating research attitude among the post graduate students</p>

Course Outcomes: M. Sc. Botany

Course	Outcomes
	After completion of these courses' students should be able to:
<u>Semester-I</u>	
BOTANY. BOUT 111 Plant Systematic-I	CO-1. To study the classification of Bryophytes. CO-2. Understand the evolutionary relationships between plant groups. CO- 3. Know about systematic classification & nomenclature. CO-4. Knows about taxonomic aspects of Cryptogamic plants.
BOUT 112 Cell Biology and Evolution	CO-1. Knows about cell structure and cell organelles CO2. Cell Signalling and Cell cycle. CO-3. Study of Evolution, Cellular and Molecular evolution.
BOUT 113 Cytogenetics and plant breeding	CO-1. Study of Classical genetics CO-2. Study of recombination, Linkages and Mutations CO-3. Study of Microbial Genetics and Cytogenetics CO-4. Study of Different Techniques of Plant Breeding.
BODT 114: Pomoculture and Fruit Processing Technology	CO-1 To know about scope and importance of Pomoculture and Fruit Processing Technology. CO-2 To study the different techniques of fruit processing and preservation techniques.
<u>Semester-II</u>	
BOTANY BOUT 121 Plant Systematics-II	CO-1. To study the classification of pteridophyte, gymnosperms and angiosperm CO-2. Understand the evolutionary relationships between plant groups. CO- 3. Know about systematic classification & nomenclature. CO-4. Knows about taxonomic aspects of gymnosperms and angiosperms..
BOUT 122 Molecular Biology	CO-1. Study of Structure and properties of Nucleic acid. CO-2. Study of Gene structure, Transcription and Translation. CO-3 To study the advanced techniques of Genomics and Proteomics.
BOUT 123 Biochemistry	CO-1 Know about Enzymes and Biomolecules such as amino acids, carbohydrates, Proteins.
BODT 124 Mushroom cultivation and Bio-pesticides	CO-1 To know the idea about the Mushroom cultivation, spawn preparation. And their economic values. CO- 2 TO study the techniques of preparation of mushroom recipes. CO-3 To study about bio-pesticide
<u>Semester-III</u>	
BOUT 231 Computational Botany	CO-1. Know the basic terms and test of hypothesis in biostatistics. CO-2. Understand the technical experimental statistics. CO-3. Know the concept of bioinformatics. CO-4. To know the concept of sampling methods.

BOUT232 Developmental Botany	CO-1. Knows the concept, features & process of plant development. CO-2. Understand embryological aspects of development. CO-3. Know about the polyembryony, apomixis, parthenogenesis etc. CO-4. They also understand physiology, molecular basis of development CO-5. Know about various spices, millets, leguminous crop plants and their economic importance.
BOUT 233 Plant Physiology	CO-1. Knows about plant water relations, Transport of solute CO-2. Understand physiological aspects of plants. CO-3. Study metabolism of plants. CO-4. Study plant growth regulators. Flowering, fruiting. CO-5. Know about agro-Electronics
BODT 234 Seed Science	CO-1 To know the Scope and importance of seed technology. CO-2 To study the different techniques of hybrid seed production..
<u>Semester-IV</u>	
MTUT141 : Fourier Analysis and Boundary Value Problems.	CO-1. Find the Fourier series representation of a function of one variable. CO-2. Find the solution of Wave equation, Laplace equation, Heat equation using the Fourier series. CO-3. Know how to solve Boundary value problems.
BOUT241 Botanical Techniques	CO-1. Study of microscopy CO-2. Study of chromatographic, electrophoretic techniques CO-3. Spectroscopic and radioactive techniques CO-4 Centrifugation, Electrochemical techniques and immunological techniques analysis of biostatistical data in Botany.
BOUT 242 Plant Ecology	CO-1. Study of Relations of Plant with environment. CO-2. Study of population ecology CO-3. Study of ecosystem types.
BODT- 243 Seed Technology	CO-1 To study the the techniques of hybrid seed production in field conditions. CO-2 To gain the knowledge about seed pathology, seed entomology, Seed processing techniques. CO-3 To know the seed legislation laws.
BODT -244 Herbal Technology	CO-1 To gain knowledge of medicinal plants in Ayurveda, Siddha, Unani and Homeopathy. CO-2 To get idea about the preparation of different herbal products.

DEPARTMENT OF CHEMISTRY

Programme Outcomes: B. Sc. Chemistry

Department of Chemistry	After successful completion of three-year degree program in Chemistry a student is able to:
Programme Outcomes	<p>PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.</p> <p>PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.</p> <p>PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.</p> <p>PO-4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.</p> <p>PO-5. Find out the green route for chemical reaction for sustainable development.</p> <p>PO-6. To inculcate the scientific temperament in the students and outside the scientific community.</p> <p>PO-7. Use modern techniques, decent equipment's and Chemistry software's.</p>

Programme Specific Outcomes: B. Sc. Chemistry

Department of Chemistry	After successful completion of three-year degree program in Chemistry a student is able to;
Programme Specific Outcomes	<p>PSO-1. Gain the knowledge of Chemistry through theory and practicals.</p> <p>PSO-2. To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.</p> <p>PSO-3. Identify chemical formulae and solve numerical problems.</p> <p>PSO-4. Use modern chemical tools, Models, Chem-draw, Charts and Equipments.</p> <p>PSO-5. Know structure-activity relationship.</p> <p>PSO-6. Understand good laboratory practices and safety.</p> <p>PSO-7. Develop research oriented skills.</p> <p>PSO-8. Make aware and handle the sophisticated instruments/equipment's.</p>

Course Outcomes: B. Sc. Chemistry

Course	Outcomes After completion of these courses' students should be able to;
<u>Semester-I</u>	
BS-CH-111T - Fundamentals of Chemistry I	<p>CO-1: Apply basic algebraic operations for unit conversions, no. of moles and concentration of solutions in analytical and physical chemistry.</p> <p>CO-2: Calculate thermodynamic properties like enthalpy, bond energy, resonance energy, entropy etc.</p> <p>CO-3: Formulate relation between Free energy and equilibrium constant, identify exergonic and endergonic reactions.</p> <p>CO-4: Calculate equilibrium constant and predict the directionality of reaction with respect to various factors like concentration, pressure, volume, temperature etc.</p> <p>CO-5: Calculate ionization pH, pKa of acidic/basic solutions as well as buffer solutions.</p> <p>CO-6: Calculate solubility and solubility product for different types of salt and explain factors affecting their solubilities.</p> <p>CO-7: Calculate pH of resultant solution after salt hydrolysis.</p>
BS-CH-112P - Chemistry Practicals-I	<p>CO-1: Preparation of buffer solutions and significance.</p> <p>CO-2: Qualitative analysis of organic compounds (non-instrumental).</p> <p>CO-3: Chromatographic Techniques for separation of constituents of mixtures.</p>
SEC-CH-113T - Instrumental Techniques – Paper I	<p>CO-1: Describe the principles regions of electromagnetic regions.</p> <p>CO-2: Discuss / explain / derive Beer's law of absorptivity.</p> <p>CO-3: Explain / define different terms in Colorimetry such as radiant power, transmittance, absorbance, molar, Lamberts Law, Beer's Law, molar absorptivity.</p> <p>CO-4: Explain construction and working of colorimeter; Hence apply colorimetric methods of analysis to real problem in analytical laboratory.</p> <p>CO-5: Describe the principles of the IR spectroscopy and its instrumentation.</p> <p>CO-6: Define chromatography, describe thin layer chromatography.</p> <p>CO-7: Describe types of electro-analytical methods and interfacial methods of analysis.</p>
IKS-GE-01 - Agricultural Chemistry	<p>CO-1: Know the role of Agricultural Chemistry and its potential.</p> <p>CO-2: Understand basic concept of soil, properties of soil & its classification on the basis of pH.</p> <p>CO-3: Know the different plant nutrients, their functions and deficiency symptoms.</p> <p>CO-4: Understand the importance of manures as compared to chemical fertilizers.</p> <p>CO-5: Understand the importance of green manuring.</p> <p>CO-6: Have the knowledge of various pesticides, insecticides, fungicides and herbicides.</p>

	<p>CO-7: Identify the problematic soil and recommend method for their reclamation.</p> <p>CO-8: Have the knowledge of quality irrigation water, water quality standard and analysis of irrigation water.</p>
<p>CH-OE-101T - माती आणि पाणी परीक्षण - पेपर १</p>	<p>ह्या अभ्यासक्रमा अंती विद्यार्थ्यांला;</p> <p>CO-1: मातीच्या विविध घटकांची तपासणी करता येईल.</p> <p>CO-2: माती आणि पाण्याच्या नमूऱ्यांचे प्राथमिक परिमानांचे निर्धारण करता येईल.</p> <p>CO-3: शेतातील मातीच्या नमूऱ्यांचे भौतिक, रासायनिक पृथक्करण करून त्यातील उपलब्ध अन्नद्रव्याची प्रमाण तपासणी करता येईल.</p> <p>CO-4: माती आणि पाणी परीक्षणाशी निगडित विविध संकल्पनांची शास्त्रोक्त माहिती असेल</p>
<p><u>Semester-II</u></p>	
<p>BS-CH-121T - Fundamentals of Chemistry II</p>	<p>CO-1: Origin of quantum mechanics and its need to understand structure of hydrogen atom.</p> <p>CO-2: Explain rules for filling electrons in various orbitals- Aufbau's principle, Pauli's Exclusion Principle, Hund's rule of maximum multiplicity.</p> <p>CO-3: Discuss electronic configuration of an atom and anomalous electronic configurations.</p> <p>CO-4: Discuss concept of exchange energy and relative energies of atomic orbitals.</p> <p>CO-5: Design and describe the skeleton of long form of periodic table, blocks, groups, modern periodic law and periodicity.</p> <p>CO-6: Understand the classification of elements as main group, transition and inner transition elements; know their names, symbol and electronic configurations.</p> <p>CO-7: Explain periodicity of elements based on various factors.</p> <p>CO-8: Study electronic effects of organic compounds.</p> <p>CO-9: Study the structure and reactivity of organic compounds.</p> <p>CO-10: Learn stereochemistry, conformations and configuration of organic compounds.</p> <p>CO-11: Study of various projection formulae to draw structures of molecule.</p> <p>CO-12: Understand Aromaticity and Huckel's rule.</p>
<p>BS-CH-122P - Chemistry Practicals-II</p>	<p>CO-1: Preparation of Inorganic compounds.</p> <p>CO-2: Synthesis of organic compounds (non-instrumental).</p> <p>CO-3: Chromatographic Techniques for separation of constituents of mixtures and classifications.</p>

SEC-CH-123P - Instrumental Techniques – Paper II	CO-1: Handle electrochemical and optical instruments for analysis. CO-2: Apply chromatographic techniques for separation and purification of compounds. CO-3: Explain scientific principals behind instrumental techniques.
CH-OE-101P - माती आणि पाणी परीक्षण – पेपर २	ह्या अभ्यासक्रमा अंती विद्यार्थ्यांला; CO-1: मातीच्या विविध घटकांची तपासणी करता येईल. CO-2: माती आणि पाण्याच्या नमूऱ्यांचे प्राथमिक परिमानांचे निर्धारण करता येईल. CO-3: शेतातील मातीच्या नमूऱ्यांचे भौतिक, रासायनिक पृथक्करण करून त्यातील उपलब्ध अन्नद्रव्याची प्रमाण तपासणी करता येईल. CO-4: माती आणि पाणी परीक्षणाशी निगडित विविध संकल्पनांची शास्त्रोक्त माहिती असेल.
<u>Semester-III</u>	
CH-301 Paper-1 Physical and Analytical Chemistry	CO-1. Define/explain adsorption, classification of given processes into physical and chemical adsorption. CO-2. Discuss factor sin fluencing adsorption, its characteristics, differentiates types asphysisorption and Chemisorption CO-3. Classification of Adsorption Isotherms, to derive isotherms. CO-4. Explanation of adsorption results in the ligh to Langmuir adsorption isotherm, Freundlich’s adsorption Isotherm and BET theory. CO-5. Apply adsorption process to real life problem. CO-6. Solve/discuss problems using theory. CO-7. Define/Explain concept to kinetics, terms used, rate laws, molecularity, order. CO-8. Explain factors affecting rate of reaction. CO-9. Explain/discuss/derive integteral laws, characteristics,expression for half-life and examples of zero order, first order, and second order reactions. CO-10. Determination of order of reaction by integrated rate equation method, graphical method, half-lifemethod and differential method. CO-11. Explain/ discuss the term energyof activation with the help of Energy diagram. CO-12. Explanation for temperature coefficient and effect of temperature on rate constant k.
CH-302 Paper-2 Inorganic and Organic Chemistry	CO-1 Study of Aromatic hydrocarbons CO-2 IUPAC nomenclature, Physical and Chemical properties CO-3 Synthesis and Reactions of Phenols, Ethers and Alcohols. CO-4 Postulates of MOT and VBT, Drawbacks of VBT CO-5 MO diagrams of O2, N2, CO, NO, B, C, Li, He. CO-6 Introduction to Co-ordination Chemistry
<u>Semester-IV</u>	

CH-401 Paper-1 Physical and Analytical Chemistry	CO-1. To study different systems for their phase equilibrium. CO-2. To understand phase diagrams for various systems CO-3. To study Raoult's law and Henry's law for ideal solutions with examples. CO-4. To understand maximum solution temperature, minimum solution temperature and their corresponding graphs.
CH-402 Section-I: Inorganic and Organic Chemistry	CO-1. Student should be able to understand Isomerism in coordination Compounds. CO-2. They should be able to find out different types of Isomerism in coordination compounds. CO-3. Student should be able to apply principles of VBT to explain bonding in coordination compound of different geometries. CO-4. They should be able to correlate no. of unpaired electrons and orbitals used for bonding. CO-5. They should be able to discuss inner and outer orbital complexes and limitation of VBT. CO-6. Student must understand principle of CFT and apply crystal field theory to different type of complexes (Td, Oh, Sq, Pl complexes) CO-7. Explain: i) strong field and weak field ligand approach in Oh complexes ii) Magnetic properties of coordination compounds on the basis of weak and strong ligand field ligand concept. iii) Origin of colour of coordination complex. CO-8. Calculate field stabilization energy and magnetic moment for various complexes. CO-9. To identify Td and Sq, Pl complexes on the basis of magnetic properties / unpaired electrons. CO-10. Explain spectrochemical series, tetragonal distortion / Jahn-Teller effect in Cu(II) Oh complexes only.
Semester-V	
CH-501 Physical Chemistry-I	CO-1. To know historical of development of quantum mechanics in chemistry. CO-2 To understand and explain the differences between classical and quantum mechanics. CO-3 To understanding the operators: Position, momentum and energy CO-4 To solving Schrodinger equation for 1D, 2D and 3D model CO-5 To understand the term additive and constitutive properties. CO-6 To understand the term specific volume, molar volume and molar refraction. CO-7 To dipole moment and its experimental determination by temperature variation method. CO-8 To understand electromagnetic spectrum, Nature of wave and its characteristics such as wavelength, wave number, frequency and velocity, Energy level diagram, CO-9 To know classification of molecules on the basis of moment of Inertia, CO-10 To draw the Stokes and anti-Stokes lines in a Raman spectrum CO-11 To understand difference between thermal and photochemical processes. CO-12 To know quantum yield and reasons for high and low quantum yield,

	CO-13 To understand photochemical reactions: photosynthesis, photolysis.
CH-502 Analytical Chemistry-I	<p>CO-1 To know basic terms in gravimetry, spectrophotometry, qualitative analysis and parameters in instrumental analysis. Such as: Gravimetry, precipitation, solubility product, ionic product, common ion effect, precipitating agent, washing Of ppt., drying and ignition of ppt., linearity range, detection limit, precision, accuracy.</p> <p>CO-2 To identify important parameters in analytical processes or estimations. Example: minimum analyte concentration in particular method, reagent concentration in particular analysis, reagent for particular analysis, reaction condition to convert analyte into measurable form, drying and ignition temperature for ppt in gravimetry</p> <p>CO-3 To discuss / Describe procedure for different types analyses</p> <p>CO-4 To Select particular method of analysis if analyte sample is given to him.</p> <p>CO-5 To differentiate / distinguish / Compare among the different analytical terms, process and analytical methods.</p> <p>CO-6 To demonstrate theoretical principles with help of practical.</p> <p>CO-7 To design analytical procedure for given sample.</p> <p>CO-8 To understand Apply whatever theoretical principles he has studied in theory during practical session in laboratory.</p>
CH-503 Physical Chemistry Practical-I	<p>CO-1 To determine the molecular refractivity of the given liquids A, B, C and D.</p> <p>CO-2 To determine the molar refraction of homologues methyl, ethyl and propyl alcohol and show the constancy contribution to the molar refraction by CH₂ group.</p> <p>CO-3 To titrate Cu²⁺ ions with EDTA photometrically.</p> <p>CO-4 To determine the indicator constant of methyl red indicator</p> <p>CO-5 To determine the order of reaction for the oxidation of alcohol by potassium dichromate and potassium permanganate in acidic medium calorimetrically.</p> <p>CO-6 Titration of a mixture of weak acid and strong acid with strong alkali.</p> <p>CO-7 To determine the velocity constant of hydrolysis of ethyl acetate by NaOH solution by conduct metric method.</p> <p>CO-8 To determine the molecular weight of a high polymer by using solutions of different concentrations.</p> <p>CO-9 Determine the radius of glycerol molecule from viscosity measurement.</p>
CH-504	<p>CO-1 To explain electroneutrality principle and different types of pi bonding.</p> <p>CO-2 Able to explain Nephelauxetic effect towards covalent bonding.</p> <p>CO-3 Able to explain Charge Transfer Spectra.</p> <p>CO-4 To understand about inert and labile complexes and stability of complexes in aqueous solutions</p> <p>CO-5 To Understand basic mechanisms of ligand substitution reactions.</p> <p>CO-6 To understand Tran's effect and applications of Trans effect.</p> <p>CO-7 To know position of d-block elements in periodic table.</p> <p>CO-8 To know the general electronic configuration & electronic configuration of elements.</p> <p>CO-9 To Understand term f-block elements, Inner transition elements,</p>

Inorganic Chemistry-I	lanthanides, actinides.
CH-505 Industrial Chemistry	<p>CO-1 To know importance of chemical industry, CO-2 To Understand Their uses and manufacturing process. CO-3 To learn Importance of sugar industry, CO-4 To understand consumption (plantation white) sugar with flow diagram. CO-5 To know Cane juice extraction by various methods, CO-6 To understand concentration of juice by using multiple effect evaporator system. CO-7 To know basic requirement of fermentation process, CO-8 To know washing action of soap and detergents CO-9 To know classification of dyes, CO-10 To understand synthesis, Structures, properties and applications of dyes</p>
CH-506 Inorganic Chemistry Practical-I	<p>CO-1 Gravimetric estimation of Fe as Fe₂O₃. CO-2 Gravimetric estimation of Ba as BaSO₄ using homogeneous precipitation method. CO-3 Analysis of sodium bicarbonate from mixture by thermal decomposition method. CO-4 Determination of water of crystallization by thermal decomposition. CO-5 Preparation of hexamminenickel (II) chloride, [Ni (NH₃)₆] Cl₂. CO-6 Preparation of Potassium trioxalatoferate (III), K₃[Fe(C₂O₄)₃]. CO-7 Inorganic Qualitative analysis</p>
CH-507 Organic Chemistry-I	<p>CO-1 To understand Polynuclear and Heteronuclear Aromatic Compounds CO-2 Write the structure, synthesis of polynuclear and heteronuclear aromatic hydrocarbons. CO-3 Understand the reactions and mechanisms CO-4 To describe the synthesis of chemical reactions of polynuclear and heteronuclear aromatic Hydrocarbons. CO-5 To know meaning of active methylene group CO-6 To understand reactivity of methylene group, CO-7 To Study different types of intermediate in rearrangement reactions. CO-8 To write the mechanism of some named rearrangement reactions and their applications. CO-9 To study of E1, E2 and E1cB mechanism with evidences of these reactions CO-10 Understand stereochemistry by using models and learn reactivity of geometrical isomers.</p>
CH-508	<p>CO-1 Understanding of Cell types, Difference between a bacterial cell, Plant cell and animal cell. Biological composition and organization of cell membrane, structure and function of various cell organelles of plant and animal cell. CO-2 To understand the types of carbohydrates and their biochemical significance in living organisms, structure of carbohydrates and reactions of carbohydrates with Glucose as example. Properties of carbohydrates. CO-3 The student needs to know the types of lipids with examples, structure of lipids, properties of lipids CO-4 The student will understand the structure and types of amino acids.</p>

<p>Chemistry of Biomolecules</p>	<p>Reactions of amino acids. Properties of amino acids. Peptide bond formation. Types of proteins. Structural features in proteins. Effect of pH on structure of amino acid, Determination of N and C terminus of peptide chain.</p> <p>CO-5 The student know the classes of enzymes with subclasses and examples. Enzyme specificity, Equations of enzyme kinetics K_m and its significance, features of various types of enzyme inhibitions,</p> <p>CO-6 To know basic concepts of Endocrinology. Types of Endocrine glands and their hormones. Biochemical nature of hormones. Mechanism of action of lipophilic and hydrophilic hormones</p>
<p>CH-509 Organic Chemistry Practical-I</p>	<p>A) Separation of Binary Mixtures and Qualitative Analysis The students will be able to</p> <p>CO-1 Perform the quantitative chemical analysis of binary mixture, explain principles behind it.</p> <p>CO-2 Separate, purify and analyse binary water insoluble mixture.</p> <p>CO-3 Separate, purify and analyse binary water-soluble mixture.</p> <p>CO-4 Understand the techniques involving drying and recrystallization by various method.</p> <p>CO-5 Learn the confirmatory test for various functional groups.</p> <p>B) Preparations The students will be able to</p> <p>CO-1 Systematic working skill in laboratory will be imparted in student.</p> <p>CO-2 Learn the basic principles of green and sustainable chemistry.</p> <p>CO-3 Synthesis of various organic compounds through greener approach.</p> <p>CO-4 Do and understand stoichiometric calculations and relate.</p> <p>CO-5 Understand the techniques involving drying and recrystallization by various method</p> <p>CO-6 Understand principle of Thin Layer Chromatographic techniques.</p>
<p>CH-510 Polymer Chemistry</p>	<p>CO-1 To know History of polymers.</p> <p>CO-2 To Difference between simple compounds and polymer.</p> <p>CO-3 Understand various ways of nomenclature.</p> <p>CO-4 To know difference between natural, synthetic, organic and inorganic polymers.</p> <p>CO-5 Understand the terms-Monomer, Polymer, Polymerization, Degree of polymerization, Functionality, Number average, Weight average molecular weight.</p> <p>CO-6 To study mechanisms of polymerization.</p> <p>CO-7 Understand uses & properties of polymers.</p> <p>CO-8 Role of polymer industry in the economy.</p> <p>CO-9 To know advantages of polymers.</p>
<p>CH-511 Environmental Chemistry</p>	<p>CO-1 Importance and conservation of environment.</p> <p>CO-2 Importance of biogeochemical cycles</p> <p>CO-3 To know water resources</p> <p>CO-4 Understand Hydrological Cycle</p> <p>CO-5 To know Organic and inorganic pollutants</p>

T. Y. B. Sc. Semester – VI

CH-601 Physical Chemistry-II	<p>CO-1 To know Explanation of Daniell cell, Conventions to represent electrochemical cells</p> <p>CO-2 Understand EMF of electrochemical cell and its measurement.</p> <p>CO-3 To know Secondary reference electrodes: (a) The calomel electrode, (b) The glass electrode (c) The silver-silver chloride electrode. Understanding of these electrodes with reference to diagram, representation, Construction, working</p> <p>CO-4 To know types of Reversible electrodes: Metal-metal ion electrodes, Amalgam electrodes, Gas electrodes, Metal-metal insoluble salt electrodes, Oxidation-reduction electrodes with respect to examples, diagram, representation, construction, working and electrode potential.</p> <p>CO-5 To study Liquid junction potential and salt bridge</p> <p>CO-6 To know applications of emf measurements:</p> <p>CO-7 Applications for Secondary Batteries</p> <p>CO-8 To understand distinguish between crystalline and amorphous solids / anisotropic and isotropic solids.</p> <p>CO-9 To explain the term crystallography and laws of crystallography.</p> <p>CO-10 To know Cubic lattice and types of cubic lattice</p> <p>CO-11 Understand types and properties of radiations: alpha, beta and gamma</p> <p>CO-12 To know types of radioactive decay: α- Decay, β-Decay and γ-Decay</p> <p>CO-13 To study kinetics of Radioactive Decay, Half-life, average life and units of radioactivity</p> <p>CO-14 To study application of radioisotopes as a tracer.</p>
CH-602 Physical Chemistry-III	<p>CO-1 To know meaning of the terms-Solution, electrolytes, nonelectrolytes and colligative properties,</p> <p>CO-2 To study lowering of vapour pressure of solvent in solution, elevation of B.P. of solvent in solution, Landsberger's method,</p> <p>CO-3 To study application of colligative properties to determine molecular weight of nonelectrolyte, abnormal molecular weight,</p> <p>CO-4 To Know factors affecting on solid state reactions,</p> <p>CO-5 To understand cohesive Energy of ionic crystals based on coulomb's law and Born Haber Cycle</p> <p>CO-6 To understand Conductors and insulators – Its correlation with Extent of energy in energy bands</p> <p>CO-7 To Study temperature dependant conductivity semiconductors.</p>
CH-603	<p>CO-1 To determine the PKa value of given monobasic weak acid by potentiometric titration.</p> <p>CO-2 To determine the formal redox potential of Fe²⁺/ Fe³⁺ system potentiometrically.</p> <p>CO-3 To determine the solubility product and solubility of AgCl potentiometrically using chemical cell.</p> <p>CO-4 To prepare standard 0.2 M Na₂HPO₄ and 0.1 M Citric acid solution, hence prepare four different buffer solutions using them. Determine the pH value</p>

<p>Physical Chemistry Practical-II</p>	<p>of these and unknown solution. CO-5 To determine the degree of hydrolysis of aniline hydrochloride. CO-6 To determine the dissociation constant of oxalic acid by pH-metric titration with strong base. CO-7 To determine the molecular weight of solute by depression in freezing point method</p>
<p>CH-604 Inorganic Chemistry-II</p>	<p>CO-1 To understand M-C bond and to define organometallic compounds. CO-2 To understand the multiple bonding due to CO ligand. CO-3 To know methods of synthesis of binary metal carbonyls. CO-4 To understand the catalytic properties of binary metal carbonyls. CO-5 Understand the phenomenon of catalysis, its basic principles and terminologies. CO-6 Understand the essential properties of homogeneous catalysts. CO-7 Understand the principle of heterogeneous catalyst and development in it. CO-8 Identify the biological role of inorganic ions & compounds. CO-9 Know the abundance of elements in living system and earth crust. CO-10 Understand the toxicity of CN⁻ and CO binding to Hb. CO-11 Understand Preparation of inorganic solids by various methods.</p>
<p>CH-605 Inorganic Chemistry-III</p>	<p>CO-1 Student will learn the concept of acid base and their theories. CO-2 They will also come to know different properties of acids and bases. CO-3 Know the nature of solids. CO-4 Know the crystal structures of solids. CO-5 Draw the simple cubic, BCC and FCC structures. CO-6 Identify the C.N. of an ion in ionic solid. CO-7 Know the effect of radius ratio in determining the crystal structure. CO-8 Know how to draw Born-Haber cycle. CO-9 Be able to solve simple problems based on Born- Haber cycle. CO-10 Know about carbon nanotube and its application CO-11 To know toxic chemical in the environment. CO-12 To know the impact of toxic chemicals on enzyme.</p>
<p>CH-606 Inorganic Chemistry Practical-II</p>	<p>CO-1 Analysis of Phosphate (PO₄³⁻) from Fertilizer. CO-2 Analysis of Iodine from Iodized salt. CO-3 Estimation of Na by flame photometry by calibration curve method. CO-4 Estimation of Na by flame photometry by regression method. CO-5 Purification of water using cation/anion exchange resin and analysis by qualitative analysis /conductometry. CO-6 Synthesis of Silver nanoparticles. CO-7 Verification of periodic trends using solubility of alkaline earth metal hydroxides Ca (OH)₂, Mg (OH)₂, Cr (OH)₂, Ba (OH)₂.</p>
<p>CH-607</p>	<p>CO-1 Students will learn the interaction of radiations with matter. CO-2 They will understand different regions of electromagnetic radiations. They will know different wave parameters. CO-3 Students will learn the principle of mass spectroscopy, its instrumentation and nature of mass spectrum. CO-4 Students will understand the principle of UV spectroscopy and the nature of UV spectrum. They will learn types of electronic excitations.</p>

<p>Organic Chemistry-II</p>	<p>CO-5 Students will understand the principle of NMR spectroscopy and will understand various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants.</p> <p>CO-6 Students will be able to interpret the NMR data and they will be able to use it for determination of structure of organic compounds.</p> <p>CO-7 Students will be able to determine the structure of simple organic compounds on the basis of spectral data such as λ max values, IR frequencies, chemical shift (δ values).</p>
<p>CH-608 Organic Chemistry-III</p>	<p>CO-1 To know disconnection, Synthons, Synthetic equivalence, FGI, TM. One group disconnection, Retrosynthesis and Synthesis of target molecules: Acetophenone, Crotonaldehyde.</p> <p>CO-2 To Know chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzyne etc....).</p> <p>CO-3 To study Michael reaction,</p> <p>CO-4 To Understand Wittig reaction and McMurry reaction,</p> <p>CO-5 To know Diels-Alder reaction,</p> <p>CO-6 To know Preparation and Applications of following reagents.</p> <p>CO-7 To study Natural products.</p>
<p>CH-609 Organic Chemistry Practical-II</p>	<p>1. Interpretations of IR and PMR Spectra The students will be able to</p> <p>CO-1 Explain “fingerprint region” of an infrared spectrum can used in the identification of an unknown compound.</p> <p>CO-2 Identify the functional group or groups present in a compound.</p> <p>CO-3 Identify the broad regions of the infrared spectrum in which occur absorptions caused by N–H, C–H, and O–H, C≡C and C≡N, C=O, C=N, and C=C.</p> <p>CO-4 Understand use NMR spectra to determine the structures of compounds.</p> <p>CO-5 Interpret integration of NMR spectra</p> <p>CO-6 Interpret elemental analysis technique</p> <p>2. Organic Estimations The students will be able to</p> <p>CO-7 Practical knowledge of handling chemicals.</p> <p>CO-8 Achieve the practical skills required to estimations of glucose and glycine.</p> <p>CO- 9 Achieve the practical skills required to Saponification value of oil.</p> <p>3. Organic Extractions The students will be able to</p> <p>CO-10 Apply the principles of extraction</p> <p>CO-11 Understand the equipment for extraction.</p> <p>CO-12 Gain practical hands-on experience of modern Extraction.</p> <p>4. Column chromatography the students will be able to</p> <p>CO-13 Defines the basic parameters in chromatography</p> <p>CO-14 Explain the processes of a chromatography analysis</p> <p>CO-15 Describes the types and materials of column.</p>
<p>CH-610</p>	<p>CO-1 Understood various components of soil and soil properties and their impact on plant growth.</p> <p>CO-2 Understood the classification of the soil.</p> <p>CO-3 Understood the Reclamation and management of soil physical and chemical constraints.</p> <p>CO-4 Got experience on advanced analytical and instrumentation methods in the estimation of soil.</p>

Chemistry of Soil and Agrochemicals	<p>CO-5 Understood various Nutrient management concepts and Nutrient use efficiencies of major and micronutrients and enhancement techniques.</p> <p>CO-6 Proper understanding of chemistry of pesticides will be inculcated among the students.</p> <p>CO-7 Imparts knowledge on different pesticides, their nature and, mode of action and their fate in soil so as to monitor their effect on the environment</p>
CH-611 Analytical Chemistry-II	<p>CO-1 To know basic terms in solvent extraction, basics of chromatography, HPLC, GC, and AAS and AES. Some important terms are: solvent extraction, aqueous and organic phase, distribution ratio and coefficient, solute remain unextracted.</p> <p>CO-2 Identify important parameters in analytical processes or estimations.</p> <p>CO-3 To explain different principles involved in the analyses using solvent extraction, basics of instrumental chromatography, HPLC, GC, and atomic spectroscopic techniques.</p> <p>CO-4 To perform quantitative calculations depending upon equations students has studied in the theory. Furthermore, student should able to solve problems on the basis of theory.</p> <p>CO-5 To demonstrate / explain theoretical principles with help of practical.</p> <p>CO-6 To design analytical procedure for given sample.</p>

Programme Outcomes: M. Sc.

Department Of Chemistry	After successful completion of two-year degree program in Analytical Chemistry a student is able to:
Programme Outcomes	<p>PO-1. Demonstrate, operate and analyze all the concepts of Analytical Chemistry</p> <p>PO-2. Solve the problems independently with logical thinking</p> <p>PO-3. Understand basic concept, historical background, instrumentation, applications of different analytical techniques</p> <p>PO-4. Apply stastical treatment to analytical data</p> <p>PO-5. Understand principle, theory, instrumentation and optimization parameters of chromatography techniques</p> <p>PO-6. Analyze the food and drug substances qualitatively and quantitatively</p> <p>PO-7. Describe the basic principles of spectroscopic techniques</p> <p>PO-8. Explain importance of soil, detergents, pesticides and polymer analysis</p> <p>PO-9. Use of analytical techniques, standard operating procedure</p> <p>PO-10. Inculcate the scientific temperament in the students and in the society</p>

Programme Specific Outcomes: M. Sc.

Department of Chemistry	After successful completion of two-year degree program in Analytical Chemistry a student is able to:
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Programme Specific Outcomes	<p>PSO-1. To gain the knowledge of Analytical Chemistry through theory, practical and project</p> <p>PSO-2. Able to handle instrument with SOP</p> <p>PSO-3. Interpret the results according to quality and quantity of a sample</p> <p>PSO-4. Understand the good laboratory practices</p> <p>PSO-5. Develop research-oriented skills</p>
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Course Outcomes of M.Sc. -I Semester-I

CH-MJ-511T - Fundamentals of Physical Chemistry	<p>CO-1: Demonstrate on paper why Internal Energy has to be a state function.</p> <p>CO-2: Identify various types of process and apply thermodynamic laws to them.</p> <p>CO-3: Define ideal solutions and real solutions.</p> <p>CO-4: Show that colligative properties depend on no. of solute particles in the solution and not on the the nature of them.</p> <p>CO-5: Explain specific characteristics of Black Body Radiation Curves.</p> <p>CO-6: Explain particle nature of light with the help of photoelectric effect.</p> <p>CO-7: Understand the linear variation method as an approach to solving the Schrödinger equation.</p> <p>CO-8: Know the difference between order and molecularity of a reaction.</p> <p>CO-9: Calculate the rate of given reaction using concentration data.</p> <p>CO-10: Understand basic working principles of flash photolysis, flow technique, stopped flow technique, relaxation method</p> <p>CO-11: Understand types of mechanisms of polymer formation and apply laws of kinetics to obtain overall rate of polymerisation.</p> <p>CO-12: Understand the significance of effective collisions in determining the rate of reactions.</p> <p>CO-13: Realise solvent effects in governing overall rate of the reaction.</p> <p>CO-14: Understand the underlying mechanism behind enzyme catalysis and effect of external factors i.e., pH, Temperature on the its rate.</p> <p>CO-15: Solve and simplify Michael Menten equation to obtain different plots to obtain values of K_m, substrate concertation and enzyme concentration.</p>
	CO-1: To understand some fundamental aspects of organic chemistry, to

<p>CH-MJ-512T - Basic Organic Chemistry</p>	<p>learn the concept aromaticity, to understand the various types of aromaticity.</p> <p>CO-2: To study heterocyclic compound containing one and two hetero atoms with their structure, synthesis and reactions.</p> <p>CO-3: To know stereochemistry of organic compounds; able to do interconversion of Fischer to Newmann, Newmann to Sawhorse and vice versa, Able to assign R and S to given molecules; understand stereoselective and stereospecific reactions; acquire knowledge on topicity.</p> <p>CO-4: To study structure, formation, stability and related name reaction of intermediates like Carbocation, Carbanion, Free Radical, Carbenes and nitrenes; Recognize neighbouring group participation.</p> <p>CO-5: To study rearrangement reaction with specific mechanism and migratory aptitude of different groups</p> <p>CO-6: To understands the basis of redox reaction; acquire knowledge about the reagents which causes selective oxidation / reduction in various compounds; learn the basic mechanism of oxidation / reduction in organic compounds.</p>
<p>CH-MJ-513T - Molecular Symmetry, Group Theory and their Applications</p>	<p>CO-1: Student should visualize/ imagine molecules in 3 dimensions.</p> <p>CO-2: To understand the concept of symmetry and able to pass various symmetry elements through the molecule.</p> <p>CO-3: Understand the concept and point group and apply it to molecules.</p> <p>CO-4: To understand product of symmetry operations.</p> <p>CO-5: To apply the concept of point group for determining optical activity and dipole moment.</p> <p>CO-6: Student should understand the importance of Orthogonality Theorem.</p> <p>CO-7: They should able to learn the rules for constructing character table.</p> <p>CO-8: Using reduction formulae should be able to find out the possible type of hybridization.</p> <p>CO-9: Student should know the concept of SALC.</p> <p>CO-10: Student able to find out character for reducible representation.</p> <p>CO-11: To know about projection operator and apply projection operator to find out the normalized wave function for atomic orbital.</p> <p>CO-12: Student should correlate the application of symmetry to spectroscopy.</p>

<p>CH-MJ-514P - Basic Practical Chemistry-I</p>	<p>CO-1: Know the concept of hypothesizing and hence perform the experiment accordingly.</p> <p>CO-2: Do molarity calculations, dilution calculations and prepare solutions of given concentrations.</p> <p>CO-3: Realise the need for doing calibration and standardisation wherever and whenever necessary while performing experiments.</p> <p>CO-4: Do graphical presentation and interpretation of experimental data. 1a. Statistical treatment of experimental data (calculation of mean and standard deviation for given data and least square method for calibration curve method) (compulsory). 1b. Demonstration of MICRSOFT EXCEL in the statistical treatment of experimental data. (Calculation of mean, standard deviation, standard error, graph plotting, error bars)</p> <p>CO-5: Students are made aware of safety techniques and handling of chemicals.</p> <p>CO-6: Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.</p> <p>CO-7: Students are made aware of carrying out different types of reactions and their workup methods.</p> <p>CO-8: This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction.</p>
<p>CH-ME-515T - Theory Elective- I</p>	<p>CO-1: To understand the bonding in solids – band theory.</p> <p>CO-2: Students will learn how electronic properties of solids emerge.</p> <p>CO-3: Understand the role of non-stoichiometry, defects in deciding properties of solids.</p> <p>CO-4: Understand how magnetic properties arise in solids.</p> <p>CO-5: Realise how advanced solid materials can help in achieving sustainability by Understanding recent advances in clean energy harvesting and storage strategies.</p>
<p>CH-ME-516P - Practical Elective-I</p>	<p>CO-1: Calculate specific elemental content in the given ore.</p> <p>CO-2: Calculate %yield as well as estimate purity of the synthesized compounds/complexes.</p> <p>CO-3: Demonstrate photoactivity of inorganic complexes using</p>

	<p>spectrophotometer.</p> <p>CO-4: Design and conduct kinetic experiments for photocatalysis of dyes and be able to rationalise the experimental data.</p>
<p>CH-RM-517T - Research Methodology</p>	<p>CO-1: Understand the various methods of literature survey by offline & digitally.</p> <p>CO-2: Understand the chemical safety and ethical handling of chemicals.</p> <p>CO-3: Know the various methods of handling the data of research.</p> <p>CO-4: Know the methods of the data analysis.</p> <p>CO-5: Develop the writing skill of scientific manuscripts and be aware of scientific research methods.</p> <p>CO-6: Understand the Philosophy and ethics in research.</p>
<p><u>Semester-II</u></p>	
<p>CH-MJ-521T - Molecular Spectroscopy and Molecular Thermodynamic s</p>	<p>CO-1: To be able to extract key information such as bond length, rotational constant, vibrational constant, bond dissociation energy, functionalities of a molecule by interpreting its microwave, vibrational, Raman and electronic spectra.</p> <p>CO-2: To understand the principle, instrumentation and application of Mossbauer Spectroscopy.</p> <p>CO-3: To be able to construct partition function and obtain thermodynamic information from it.</p>
<p>CH-MJ-522T Photochemistry and Spectroscopic Methods of Structure Determination</p>	<p>CO-1: Show the photochemical reaction and their mechanism</p> <p>CO-2: Understand the various pericyclic reaction.</p> <p>CO-3: Analyze the pericyclic reaction by various methods.</p> <p>CO-4: To understand the basic principle of spectroscopic methods.</p> <p>CO-5: To understand the applications of spectroscopic methods.</p> <p>CO-6: Structure elucidation of organic compounds using given spectroscopic data or spectra.</p>
<p>CH-MJ-523T - Coordination and Bio- inorganic Chemistry</p>	<p>CO-1: Student should able to find out the no of microstates and meaningful term symbols, construction of microstate table for various configuration</p> <p>CO-2: Hund's rules for arranging the terms according to energy.</p> <p>CO-3: Student should understand interelectronic repulsion.</p> <p>CO-4: Student should know the concept of weak and strong ligand field.</p> <p>CO-5: Student able to find out splitting of the free ion terms in weak ligand field and strong ligand field.</p> <p>CO-6: To draw correlations diagram for various configurations in Td an Oh ligand field.</p>

	<p>CO-7: Student should know basic instrumentation and selection rules and relaxation in rules.</p> <p>CO-8: Student should know basic d-d transition, d-p mixing, charge transfer spectra.</p> <p>CO-9: Interpretation of electronic spectra for spin allowed oh and td complexes using Orgel diagram.</p> <p>CO-10: Understand the concept of Spectro chemical series and Nephelauxetic series.</p> <p>CO-11: Should able to solve numerical based on crystal field parameters.</p> <p>CO-12: Understand the various terms involved in magnetochemistry, various phenomena of magnetism and their temperature dependence.</p>
CH-MJ-524P - Basic Practical Chemistry-II	<p>CO-1: Calculate %yield as well as estimate purity of the synthesized compounds/complexes</p> <p>CO-2: Demonstrate photoactivity of inorganic complexes using spectrophotometer.</p> <p>CO-3: Demonstrate strength of complexes based on spectrochemical series</p> <p>CO-4: To make students aware of how to perform organic compounds in laboratory.</p> <p>CO-5: To make student aware of green chemistry and role of green chemistry in pollution reduction.</p> <p>CO-6: The course includes synthesis of some derivatives and organic compounds, which will help them while working in research laboratory in future</p>
CH-ME-525T - Theory Elective- II	<p>CO-1: To understand bonding in Organometallic Molecules.</p> <p>CO-2: To study the organic ligands, Nomenclature and bonding between metal atoms and organic pi system.</p> <p>CO-3: To understand catalysis: Hydroformylation, Monsanto acetic acid process, Wacker Process, Hydrogenation by Willkinsons catalyst.</p> <p>CO-4: To get information of History and principles, Substitution reactions: Inert and labile complexes, mechanism of substitution. Kinetics Consequences of reaction pathway</p>
CH-ME-526P - Practical Elective- II	<p>CO-1: Know the concept of hypothesizing and hence perform the experiment accordingly.</p> <p>CO-2: Do molarity calculations, dilution calculations and prepare solutions of given concentrations.</p> <p>CO-3: Realise the need for doing calibration and standardisation wherever and whenever necessary while performing experiments.</p> <p>CO-4: Do graphical presentation and interpretation of experimental data.</p>

Course Outcomes: M. Sc. -II Analytical Chemistry
Semester-III

Course	Outcomes
	After completion of these courses students should be able to:
<u>Semester-III</u>	
CHA-390	<p>CO-1. Study of coulometry, Faraday law, Faraday law.</p> <p>CO-2. Study of voltametry and paleographic method of analysis,</p>

Electrochemical and Thermogravimetric Method of Chemical Analysis	<p>heterodynamic voltametry, plus paleography and cyclic voltametry.</p> <p>CO-3. Study of amperometry and their applications.</p> <p>CO-4. Learn radio analytical methods of analysis, activation analysis, isotope dilution analysis, radio metric titration.</p> <p>CO-5. Understand thermal methods of analysis TGA, DTA, DSC.</p>
CHA-391 Analytical Method Development and Extraction	<p>CO-1. Study of Assay validation and Inter laboratory Transfer.</p> <p>CO-2. Study of Validation Parameter: Accuracy, Precision, Mean and Standard deviation, calibration response function</p> <p>CO-3. Study of Overview of world-wide regulation</p> <p>CO-4. Study of Dissolution Studies, USP- type I, USP –II</p>
CHA-392: Advanced Chromatographic Methods Of Analysis	<p>CO-1. Define / understand various terms in chromatography (GC and HPLC) and mass spectroscopy.</p> <p>CO-2. Explain instrumentations in chromatography (GC and HPLC) and mass spectroscopy.</p> <p>CO-3. Explain / describe i) basic principles of chromatography (GC and HPLC) and mass spectroscopy. ii) separation in GC / HPLC column. iii) Functioning and construction of GC /HPLC/ MS detectors.</p> <p>CO-4. Explain /Describe applications chromatography (GC and HPLC) in industry and in analytical laboratory.</p> <p>CO-5. Apply / select particular method / instrumental parameters for analysis for sample GC / HPLC.</p> <p>CO-6. Solve numerical problems on chromatography (GC and HPLC) and mass spectroscopy.</p> <p>CO-7. Integrate GC and HPLC chromatogram, Mass spectrum</p> <p>CO-8. Differentiate among the chromatography</p>
CHA-393 B) Analysis of Food and Controlled Substances	<p>CO-1. Define / understand various terms in food analysis techniques and methods, forensic science and drug substances.</p> <p>CO-2. Explain methods and principles of analysis of i) Food -carbohydrates, proteins, preservatives, ii) drug substances.</p> <p>CO-3. Select appropriate methods of food analysis for its quality.</p> <p>CO-4. Select appropriate methods for identification of drug and analysis of drug from sample.</p> <p>CO-5. Select and describe the parameters required for food quality.</p> <p>CO-6. Solve numerical problems on analysis food and drug substances.</p> <p>CO-7. Interpret food quality and drug substances from analytical results.</p> <p>CO-8. Differentiate among the different methods of analysis of food and drug substances</p>
CHA-394 Analysis of materials	<p>CO-1. Maintain proper record of analytical data in notebook. Observer personal safety in laboratory and able handle all chemicals, instruments, etc safely in laboratory.</p> <p>CO-2. Define / understand various terms involved practical methods of quantitative analysis.</p> <p>CO-3. Explain instrumentations of colorimeter, spectrophotometer,</p>

	<p>photofluorometer, TGA, HPLC, GC, Flame-photometer, CV, AAS, etc.</p> <p>CO-4. Explain / describe basic principles of chromatography different instrumental methods of analysis. Able to handle particular instrument according to SOP.</p> <p>CO-5. Design / modify and validate new analytical method for chemical analysis of particular sample.</p> <p>CO-6. Apply / select particular method / instrumental parameters for analysis of given sample.</p> <p>CO-7. Give mathematical treatment to analytical data and able to interpret the results accurately.</p> <p>CO-8. Verify theoretical principle practically or apply theory to explain practical observations.</p> <p>CO-9. To conclude the results able to take the decision regarding quality of sample.</p> <p>CO-10. Differentiate among the various analytical methods / techniques of chemical analysis.</p>
<u>Semester-IV</u>	
<p>CHA-490: Advanced Analytical Spectroscopic Techniques</p>	<p>CO-1. Define / understand various terms in atomic absorption, atomic emission, fluorescence, ESR and electron spectroscopy.</p> <p>CO-2. Explain instrumentation of atomic absorption, atomic emission, ICPAES, ICPAES-MS, fluorescence, ESR and electron spectroscopy.</p> <p>CO-3. To describe basic principles of atomic absorption, atomic emission, ICPAES, ICPAES-MS, fluorescence, ESR and electron spectroscopy.</p> <p>CO-4. Select appropriate methods for sample treatment in AAS / AES, ICPAES, ICPAES-MS.</p> <p>CO-5. Explain advantages of ICPAES-MS over AES spectroscopy, fluorescence spectroscopy.</p> <p>CO-6. Solve numerical problems on analysis all these spectroscopic methods.</p> <p>CO-7. Interpret ESR spectra, super hyperfine splitting and g value in ESR, and parameters affecting it</p> <p>CO-8. Calculate theoretical parameters from ESR data and characterize compound.</p> <p>CO-9. Solve problems based on atomic absorption, atomic emission, ICPAES, ICPAES-MS, fluorescence, ESR and electron spectroscopy.</p>
<p>CHA-491 Chemical Methods of Pharmaceuticals Analysis</p>	<p>CO-1. Define / understand various terms in pharmaceutical raw material and finished product analysis.</p> <p>CO-2. Explain various pharmaceutical dosage forms and types of raw materials used.</p> <p>CO-3. To describe basic principles of methods of pharmaceutical analysis according to IP.</p> <p>CO-4. Explain importance particular test in pharmaceutical raw material and finished product analysis.</p> <p>CO-5. Perform and explain importance of limit tests, identification tests and microbiological limit test of raw materials and finished products.</p> <p>CO-6. Solve numerical problems on analysis pharmaceutical raw material</p>

	<p>and finished product analysis.</p> <p>CO-7. Interpret IR spectra, HPLC chromatogram, UV-Visible spectra of pharmaceutical materials.</p> <p>CO-8. To perform total analysis of pharmaceutical raw material and finished product analysis according to IP / BP / USP.</p> <p>CO-9. Standardize analytical instruments according to IP /BP/ USP.</p>
<p>CHA-492: Analytical Chemistry of agriculture, Polymer and Detergents</p>	<p>CO-1. Define / understand various terms in soil analysis, pesticide residue analysis, detergent analysis and polymer analysis.</p> <p>CO-2. Explain / describe techniques / methods of soil analysis, pesticide residue analysis, detergent analysis and polymer analysis.</p> <p>CO-3. To describe basic principles techniques / method soil analysis, pesticide residue analysis, detergent analysis and polymer analysis.</p> <p>CO-4. Explain importance of soil analysis, pesticide residue analysis, detergent analysis and polymer analysis.</p> <p>CO-5. Choose suitable method / techniques to characterize quality of soli polymer and detergent.</p> <p>CO-6. Describe / explain results of analysis soil, pesticide residue, detergent and polymer.</p> <p>CO-7. Solve numerical problems on analysis soil, pesticide residue, detergent and polymer.</p> <p>CO-8. Draw conclusion regarding soil, detergent and polymer quality from analytical results.</p>
<p>CHA-493 A Practical III Optional Analytical Chemistry Practical</p>	<p>CO-1. Maintain proper record of analytical data in notebook. Observer personal safety in laboratory and able handle all chemicals, instruments, etc safely in laboratory.</p> <p>CO-2. Define / understand various terms involved practical methods of quantitative analysis.</p> <p>CO-3. To analyze organic and inorganic materials using appropriate chemical / instrumental methods</p> <p>CO-4. Explain / describe basic principles of chemical / instrumental methods used for analysis. Able to handle particular instrument according to SOP.</p> <p>CO-5. Perform analysis of sample with described procedure. Able to handle analytical instruments.</p> <p>CO-6. Apply / select particular method / instrumental parameters for analysis of given sample.</p> <p>CO-7. Maintain appropriate reaction conditions as described in procedures.</p> <p>CO-8. To perform i) selective analysis of particular component from sample. ii) Analysis at trace level from sample.</p> <p>CO-9. To conclude the results able to take the decision regarding quality of sample.</p> <p>CO-10. To perform calculations and interpret the results.</p>
<p>CHA-493 B Project</p>	<p>CO-1. Maintain proper record of analytical data in note book for research purpose.</p> <p>CO-2. Perform review of literature related to the topic of project work and</p>

	<p>design the problem for project work.</p> <p>CO-3. Decide and describe methodology for problem to solve proposed problem in the form of project. Decide and perform application of research work.</p> <p>CO-4. To design experiment for research work. Collect the resources, design small equipment, etc. for completion of research work.</p> <p>CO-5. Collect experimental data (raw data) and analyze the data in the perspective of problem. Present data in graphical forms for the conclusive results.</p> <p>CO-6. Use computer as a tool for result analysis, presentation and writing the project.</p> <p>CO-7. To obtain concrete conclusion from the results on the basis of reported theory / research work and analytical results.</p> <p>CO-8. To perform report writing, scientifically.</p> <p>CO-9. To write research project / paper in scientific manner.</p>
<p>CHA-494 Practical III Applied Analytical Chemistry</p>	<p>CO-1. Maintain proper record of analytical data in notebook. Observe personal safety in laboratory and able to handle all chemicals, instruments, etc safely in laboratory.</p> <p>CO-2. Define / understand various terms involved in practical methods of quantitative analysis.</p> <p>CO-3. To analyze organic and inorganic materials using appropriate chemical / instrumental methods.</p> <p>CO-4. Explain / describe basic principles of chemical / instrumental methods used for analysis. Able to handle particular instrument according to SOP.</p> <p>CO-5. Perform analysis of sample with described procedure. Able to handle analytical instruments.</p> <p>CO-6. Apply / select particular method / instrumental parameters for analysis of given sample.</p> <p>CO-7. Maintain appropriate reaction conditions as described in procedures.</p> <p>CO-8. To perform i) selective analysis of particular component from sample. ii) Analysis at trace level from sample.</p> <p>CO-9. To conclude the results and be able to take the decision regarding quality of sample.</p> <p>CO-10. To perform calculations and interpret the results.</p>

Course Outcomes: M. Sc. -II Organic Chemistry
Semester-III

	<p>CO-1 To understand reaction mechanism</p> <p>CO-2 To study generation, stability, reactivity of free radicals.</p> <p>CO-3 Understand free radical substitution, addition to multiple bonds, radical in synthesis.</p>
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<p>CHO-350: Organic Reaction Mechanism and Biogenesis</p>	<p>CO-4 To study linear free energy relationship. CO-5 To study Mono. Sesqui- Di, Tri-terpenoids Student must be able to derive ornithine lysine, Nicotinic acid, tryptophan from alkaloids CO-6 Isolation of alkaloids from the roots of piper nigrum.</p>
<p>CHO-351 Spectroscopic methods in structure determination</p>	<p>CO-1. Study ¹H NMR Spectroscopy: Chemical Shift, deshielding, correlation for protons bonded to carbon and other nuclei. CO-2. Study of ¹³C NMR spectroscopy: FT- NMR, type of ¹³C NMR spectra, proton decoupled, off resonance, APT, INEPT, DEPT, Chemical shift, nuclear and hetero nuclear coupling constant CO-3. 2D NMR techniques: COSY, homo and hetero nuclear 2D resorts spectroscopy, NOESY and the applications CO-4. Study of mass spectrometry: Instrumentation, various methods of ionization, SIMS, FAB, MALDI. Different detectors rules of fragmentations of different functional groups</p>
<p>CHO-352 Stereochemistry and Asymmetric Synthesis of Organic Compound</p>	<p>Co.1. To study conformations of polysubstituted cyclohexane six member ring with SP² Carbon CO.2. To study stereochemical principles involved in reactions of six member ring and other than six-member ring CO.3. Study stereochemistry of fused and bridge ring system CO.4 To understand asymmetric synthesis, chiral pool and chiral auxiliaries CO.5 to study transition metal catalyzed homogenous asymmetric hydrogenation</p>
<p>CHO-353 Protection –Deprotection, Chiron approach and Carbohydrate</p>	<p>CO-1. Study of protection and deprotection in ketone and aldehyde. CO-2. Study of Protection and deprotection in amine. CO-3. To understand the concept of Chiral templates. CO-4. Study of concept of Glycosyl Donor and acceptor. CO-5 Study the synthesis of Glycosides. CO-6 To Understand intramolecular Glycosylation.</p>
<p>CHO –354</p>	<p>CO -1 Study of solvent free carbon carbon bond formation in different reaction</p>

Practical-I Solvent Free Organic Synthesis	CO.2. Study of Beckmann Rearrangement in Nitrogen Nitrogen bond formation CO-3. To understand oxidative coupling of Thiol by using MnO ₂ CO-4. Study of solvent free supra molecular assembly formation
<u>Semester-IV</u>	
CHO-450 Chemistry of Natural Products	CO-1. Learn different synthesis of heterocycles like. CO-2. Understand the stereochemistry of complex compound. CO-3. Knowledge of name reaction in synthesis. CO-4. Study of different applications of name reactions. CO-5. To understand the use of various synthesis strategies in drug synthesis. CO-6. Study of recent drug development. CO-7. Study of synthetic strategies involved in preparation.
CHO-451 Organometallic Reagents in Organic Synthesis	CO-1 To study ring formation reaction CO-2 To understand criteria for Click Reaction. CO-3 To study the use of Boron and Silicon in Organic Synthesis. CO-4 To study carbon-carbon double bond formation reaction in organic synthesis. CO-5 To study transition metal complex in organic synthesis. CO-6 To understand mechanism for multi component Reaction. CO-7 To Study Metathesis in organic synthesis.
CHO-452-Concepts and applications of Medicinal Chemistry	CO-1. Understand the chemistry of peptides and proteins to study the catalytic activity of proteins as enzymes. CO-2. To study the nucleic acid mechanism. CO-3. Understanding of chemistry of vitamins in biological system. CO-4. To understand the drug design chemistry of diseases and drug development. CO-5. To studies the peptides sequencing in therapeutics. CO-6 To study the pharmacokinetics and pharmacodynamics of drugs.
CHO-453 Carbohydrate synthesis and Natural Product Extraction	CO-1 To separate ternary mixture by using ether solvent. CO-2 To carry out individual qualitative analysis of compound. CO-3 To find functional group CO-4 To find out the physical constants. CO-5 To Identify colourd pigments from plant material.
CHO-454 Convergent and Divergent Organic Synthesis	CO-1. To Study the Synthesis of 4-amino anisole from Anisole. CO-2. To Synthesize Pyrimidine from Acetyl acetone CO-3. To Synthesize dye from Beta-Naphthol

DEPARTMENT OF COMPUTER SCIENCE

Programme Outcomes: B. Sc. Computer Science

Department of Computer Science	After successful completion of three year degree program in Computer Science a student will be able to:
Programme Outcomes	PO1: To develop problem solving abilities using a computer.; PO2: To prepare necessary knowledge base for research and development in Computer Science. PO3:To build the necessary skill set and analytical abilities for developing computerbased solutions for real life problems. PO4:communicate scientific information in a clear and concise manner both orallyand in writing. PO5:To train students in professional skills related to Software Industry PO6: Have developed their critical reasoning, logic judgment and communication skills. PO7: Augment the recent developments in the field of IT and relevant fields of Research and Development. PO8: Enhance the scientific temper among the students so that to develop are search culture and Implementation the policies to tackle the burning issues at global and local level.

Programme Specific Outcomes: B. Sc. Computer Science

Department of Computer Science	After successful completion of three year degree program in Computer Science a student will be able to:
Programme Specific Outcomes	PSO1: Students understand the concepts of software application and projects. PSO2: Students understand the computer subjects with demonstration of allprogramming and theoretical concepts with the use of ICT. PSO3: Development of in-house applications in terms of projects PSO4: Students will build up programming, analytical and logical thinking abilities.PSO6: Aware them to publish their work in reputed journals PSO5: To make them employable according to current demand of IT Industryand responsible citizen.

Course Outcomes: B. Sc. Computer Science

Course	Outcomes
	After completion of these courses students should be able to:

Semester-I

<p>Course CS -MJ-111T: Problem Solving using Computer and ‘C’ Programming</p>	<p>CO1: Students will understand algorithms and flowchart for solving problems using computers. CO2: Students will understand and can choose the loops and decision making statements to solve the problem. CO3: Student will implement different Operations on arrays and will use functions to solve the given problem. CO4: To enrich the students in logic development required for programming. CO5: To help the students to build carrier in various branches of software development.</p>
<p>Course CS-MJ-112T : Database Management Systems</p>	<p>CO1: Will understand the fundamental concepts of database. CO2: Will understand user requirements and frame it in data model. CO3: Will understand creations, manipulation and querying of data in databases CO4: Solve real world problems using appropriate set, function, and relational models. CO5: Design E-R Model for given requirements and convert the same into database tables. CO6: Use SQL.</p>
<p>CS-MJ-113P: Lab course based on CS-MJ-111T and CS-MJ-112T</p>	<p>CO1: Devise pseudo codes and flowchart for computational problems. CO2: Write, debug and execute simple programs in ‘C’. CO3: Create database tables in postgre SQL. CO4: Write and execute simple, nested queries.</p>
<p>CS-MJ-121T: Advanced ‘C’ Programming</p>	<p>CO1: Study advanced concepts of programming using the ‘C’ language. CO2: Design and develop solutions to real world problems using C. CO3: To Develop modular programs using control structures, pointers, arrays, strings and structures CO4: Understand code organization with complex data types and structures CO5: Work with files.</p>
<p>CS-OE-101T: Basics Fundamentals of Computer</p>	<p>CO1: Converse in basic computer terminology. CO2: Formulate opinions about the impact of computers on society CO-3: Possess the knowledge of basic hardware peripherals. CO-4: Know and use different number systems and the basics of programming.</p>
<p>CS-OE-101P: Lab Course based on basics fundamentals of computer</p>	<p>CO-1: Able to perform documentation and presenting skills. CO-2: Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and representation Graphics Applications.</p>

CS-SEC-116T:- Basics of Scripting	CO1: Create web pages to work on objects and respond to events. CO2: Apply special effects to web pages. CO3: Creating cookies that can be used to store and retrieve information from the user's computer.
CS-IKS-118T- History of Science and Technology in India	CO1: Discuss the mathematical knowledge of Indian in the ancient period. CO2: Discuss contributions of India to the world in the field of Mathematics and other Sciences. CO3: Discuss impact of modern science in India upon Indian and their early response.
<u>Semester-II</u>	
Course CS121 Advanced 'C' Programming	CO1: Study advanced concepts of programming using the 'C' language. CO2: Design and develop solutions to real world problems using C. CO3: To Develop modular programs using control structures, pointers, arrays, strings and structures CO4: Understand code organization with complex data types and structures CO5: Work with files.
CS-MJ-122T: Relational Database Management Systems	CO1: Design E-R Model for given requirements and convert the same into database tables. CO2: Use database techniques such as SQL&PL/SQL. CO3: Explain transaction Management in relational database System. CO4: Use advanced database Programming concepts
CS-MJ-123P: Lab course based on CS- MJ-121T and CS- MJ-122T	CO1: Write, debug and execute programs using advanced features in 'C'. CO2: To use SQL&PL/SQL. CO3: To perform advanced database operations.
CS-OE-102T: Introduction to Google Tools	CO-1: Possess the knowledge of basic hardware peripherals. CO-2: Know and use different number systems and the basics of programming.
CS-OE-102P: Lab Course based on introduction to google tools	CO-1: Able to perform documentation and presenting skills. CO-2: Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and Presentation Graphics Applications.
CS-VSC-114T: Introduction to Web Technology	CO-1: When students complete Web pages with HTML&CSS, CO-2: They will be able to: Author web pages with well-structured HTML and correct CSS layout/styling patterns. CO-3: Personalize webpages using text formatting, graphics, audio, and video elements.

CS-SEC-125T: Web designing using Bootstrap	CO1: Understand global Bootstrap CSS classes for images, typography, tables, grids, forms, buttons, and more CO2: Be able to <i>design website</i> efficiently and effectively.
<u>Semester-III</u>	
Course CS-231: Data Structures and Algorithms-I	CO1. Use well-organized data structures in solving various problems. CO2. Differentiate the usage of various structures in problem solution. CO3. Implement algorithms to solve problems using appropriate data structures.
Course CS 232 Software Engineering	CO1. Compare and chose a process model for a software project development. CO2. Identify requirements, analyze and prepare models. CO3. Prepare the SRS, Design document, Project plan of a given software system.
CS 233 Practical course on CS 231 and CS 232	CO1. Prepare a detailed statement of problem for the selected mini project CO2. Identify suitable process models for the same. CO3. Develop Software Requirement Specification for the project. CO4. Identify scenarios and develop UML Use case
<u>Semester-IV</u>	
Course CS-241: Data Structures and Algorithms-II	CO1-Implementation of different data structures efficiently CO2-Usage of well-organized data structures to handle large amount of data CO3-Usage of appropriate data structures for problem solving
Course CS-242: Computer Networks-I	CO1: Students will know the design issues for the layers, layered architecture of the NetworkModels & functions performed at each layer. CO2: Students will come to know the role played by different addresses at different layers ofthe network models. CO3: Students will be able to understand the need and importance of protocols at each layerin the communicating computers.
<u>Semester-V</u>	
Course CS 351: Operating System-I	CO1: Students will understand the design and implementation of System programs. CO2: Students will understand the role of System programs in program development. CO3: Students will able to differentiate between System program and Application program.

<p>Course CS 352: Computer Networks II</p>	<p>CO1: Students will get acquainted with fundamentals of Networking like PAN, LAN, MAN, WAN, topologies and Home & Business applications of Networks.</p> <p>CO2: Students will clear their basic concepts about the standards, their need & types of standards.</p> <p>CO3: Students will know the design issues for the layers, layered architecture of the Network Models & functions performed at each layer.</p> <p>CO4: Students will come to know the role played by different addresses at different layers of the network models.</p>
<p>Course CS 353: Web Technologies-I</p>	<p>CO1: Students will gain deep understanding of the use and implementation of HTML 5 and PHP language.</p> <p>CO2: Students will be able to write well-structured, easily maintained, standards-compliant, responsive HTML code.</p> <p>CO3: Students will get acquainted with Object Oriented Web applications.</p>
<p>Course Code: CS - 354</p>	<p>CO1: Perform Exploratory Data Analysis</p> <p>CO2: Obtain, clean/process, and transform data.</p> <p>CO3: Detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization.</p> <p>CO4: Demonstrate proficiency with statistical analysis of data.</p>
<p>Course Code: CS - 355</p>	<p>CO1-Understand the concept of classes, object, packages and Collections.</p> <p>CO2-To develop GUI based application.</p>
<p>Course CS 356: Theoretical Computer Science</p>	<p>CO1: Design a finite automaton to recognize a given regular language.</p> <p>CO2: Transform a language into regular expression or finite automaton or transition graph and define deterministic and nondeterministic finite automata.</p> <p>CO3: Prove properties of regular languages and classify them.</p> <p>CO4: Define relationship between regular languages and context-free grammars.</p>
<p>Course Code: CS - 357 Practical Course based on CS - 351</p>	<p>CO1-Process synchronization</p> <p>CO2. Processes and Thread Scheduling by operating system</p> <p>CO3. Memory management by operating system using with the help of various schemes.</p>
<p>Course Code: CS - 358 Practical Course based on CS - 353 and CS - 354</p>	<p>CO1- Understand how to develop dynamic and interactive Web Page</p> <p>CO2-Prepare data for use with a variety of statistical methods and recognize how the quality of the data may affect conclusions.</p> <p>CO3- Perform exploratory data analysis</p>
<p>Course Code: CS - 359 Practical Course based on CS - 355</p>	<p>CO1-Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.</p> <p>CO2-Read and make elementary modifications to Java programs that solve real-world problems.</p>

	CO3-Validate input in a Java program.
Course Code: CS-3510 Course Title: Python Programming	CO1-Develop logic for problem solving CO2- Determine the methods to create and develop Python programs by utilizing the data CO3- structures like lists, dictionaries, tuples and sets.
Course Code: CS-3511 Blockchain Technology	CO1. Learn the fundamentals of Blockchain Technology. CO2. Learn Blockchain programming CO3. Basic knowledge of Smart Contracts and how they function.
Semester-VI	
Course CS 361: Operating System-II	CO1. Management of deadlocks and File System by operating system CO2. Scheduling storage or disk for processes CO3. Distributed Operating System and its architecture and the extended features in mobile OS.
Course Code: CS - 362 Software Testing	CO1-To understand various software testing methods and strategies.□ CO2- To understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software.□
Course Code: CS - 363 Course Title: Web Technologies - II	CO1- Build dynamic website. CO2- Using MVC based framework easy to design and handling the errors in dynamic website.
Course Code: CS - 364 Data Analytics	CO1-Use appropriate models of analysis, assess the quality of input, and derive insight from results. CO2-Analyze data, choose relevant models and algorithms for respective applications
Course Code : CS - 365 Object Oriented Programming using Java – II	CO1-To access open database through Java programs using Java Data Base Connectivity (JDBC) and develop the application. CO2- Understand and Create dynamic web pages, using Servlets and JSP.
Course Code: CS - 366 Compiler Construction	CO1-Understand the process of scanning and parsing of source code. CO2-Learn the conversion code written in source language to machine language. CO3-Understand tools like LEX and YACC.
Course Code: CS - 3610	CO1-To understand various software testing methods and strategies. CO2- To understand a variety of software metrics and identify defects and managing those defects for improvement in quality for given

Software Testing Tools	software.
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Programme Outcomes: M. Sc. Computer Science

Department of Computer Science	After successful completion of three year degree program in Computer Science a student will be able to:
Programme Outcomes	<p>PO1-Become technology-oriented with the knowledge and will get the ability to develop creativesolutions, and will better understand the effects of future developments of computer systems and technology on people and society.</p> <p>PO2-Identify, formulate, and develop solutions to computational challenges. through projectwork.</p> <p>PO3- Get ability to apply knowledge of computer science and skills to succeed in their career/ professional development and/or postgraduate education to pursue flexible career paths amidst future technological changes to real-world issues.</p> <p>PO4-Understand and apply computer science principles to manage multi disciplinary projects using knowledge of programming languages, cloud computing, web services, different database technologies, operating systems and different design patterns</p>

Programme Specific Outcomes: M. Sc. Computer Science

Department of Computer Science	After successful completion of three year degree program in Computer Science a student will be able to:
Programme Specific Outcomes	<p>PSO1-Apply the fundamentals of mathematics, science knowledge to understand, analyze and develop computer programs in the areas related to algorithms, Advanced Operating System, Database Technology, mobile technologies, software projectmanagement, multimedia, big data analytics, machine learning, artificial intelligence and networking for efficient design of computer-based systems of varying complexity</p> <p>PSO2-Communicate computer science concepts, designs, and solutions effectively andprofessionally.</p> <p>PSO3- Apply appropriate techniques and modern hardware and software tools for the design andintegration of computer systems and related technologies with the use of ICT.</p> <p>PSO4- Interact with IT experts & will gain knowledge by IT visits.</p>

Course Outcomes: M. Sc. Computer Science

Course	Outcomes
	After completion of these courses' students should be able to:
<u>Semester-I</u>	
CS-MJ-411T: Advanced Operating System	CO1: Understand the Operating Systems Structure with example of Unix/Linux. CO2: Learn the structure of files and directory in UNIX/LINUX OS. CO3: Use various system calls related to file subsystem. CO4: Learn the process control sub system structure in UNIX/LINUXOS CO5: Use various system calls related to process control subsystem. CO6: Learn the concept of signal handling with practical implementation CO7: Understand the memory management policies of UNIX/LINUXOS
CS-MJ-412T: Artificial Intelligence	CO1: Understand the fundamental concepts of Artificial Intelligence. CO2: Identify and apply appropriate search strategies for AI problem. CO3: Identify knowledge and represent AI algorithms using various techniques. CO4: Implement ideas to design and develop AI solutions for complex challenges. CO5: Analyze the performance of AI models and interpret their results. CO6: Implement ideas underlying modern logical inference systems. CO7: Understand recent trends and future scope of AI.
CS-MJ-413T: Paradigm of Programming Languages	CO1: Separate syntax from semantics CO2: Compare programming language designs CO3: Understand their strengths and weaknesses CO4: Learn new languages more quickly CO5: Understand basic language implementation techniques CO6: Learn small programs in different programming Languages
CS-MJ-414P: Lab Course based on CS- MJ-411T	CO1: To Learn the principles and paradigm of Cloud Computing CO2: To appreciate the role of Virtualization Technologies CO3-Ability to design and deploy Cloud Infrastructure CO1: Understand the Operating Systems Structure with example of Unix/Linux. CO2: Learn the structure of files and directory in UNIX/LINUX OS. CO3: Use various system calls related to file subsystem. CO4: Learn the process control subsystem structure in UNIX/LINUXOS CO5: Use various system calls related to process control subsystem. CO6: Learn the concept of signal handling with practical implementation
CS-MJ-415P: Lab Course based on CS- MJ-412T	CO1: Understand the fundamental concepts of Artificial Intelligence. CO2: Identify and apply appropriate search strategies for AI problem. CO3: Identify knowledge and represent AI algorithms using various techniques. CO4: Implement ideas to design and develop AI solutions for complex challenges. CO5: Analyze the performance of AI models and interpret their results. CO6: Implement ideas underlying modern logical inference systems. CO7: Understand recent trends and future scope of AI.

CS-ME-416T: Database & Web technology	CO1: Students will get knowledge of advance database technology CO2: Students will be able to choose appropriate database technology as per application CO3: Students will learn to design responsive web application CO4: Students could design and implement scalable web application
CS-ME-417P: Lab Course based on CS- MJ-416T.	CO1: Students will get knowledge of advance database technology CO2: Students will be able to choose appropriate database technology as per application CO3: Students will learn to design responsive web application CO4: Students could design and implement scalable web application
CS-RM-401T: Research Methodology	CO1.Understand of the fundamental concepts of research,including the research process, research questions, hypotheses, and variables. CO2.Conduct a comprehensive literature review to identify relevant studies,synthesize existing knowledge, and identify research gaps. CO3.Identify research problems,formulate research questions,and design appropriate methodologies to address these problems CO4.Identify and select appropriate research designs,such as experimental,observational, survey, qualitative, or mixed-methods, based on the research objectives. CO5.Apply appropriate data analysis methods, including statistical techniques or qualitative analysis, to draw meaningful conclusions from research data CO6. Develop a well-structuredresearch proposal, outlining research questions, methodology, expected outcomes, and a rationale for the study. CO7. Communicate research findings effectively through written reports, presentations, and academic papers. CO8.Gain an appreciation for the importance of research in contributing to the advancement of knowledge in their field of study and broader society. CO9.Understand the principles of research ethics and integrity and apply them in their research.
<u>Semester-II</u>	
CS-MJ-421T: Design and Analysis of Algorithm	CO1: Analyze worst-case running times of algorithms using a symptotic analysis. CO2: Compare between different data structures.Pick an appropriate datastructure for a design situation. CO3: Ability to design algorithms using standard paradigms like:Greedy,Divide and Conquer, Dynamic Programming and Backtracking. CO4: Able to Explain the major graph algorithms and Employ graphs to model engineering problems, when appropriate. CO5: Able to Compare between different datastructures and pick an appropriate data structure for a design situation.
CS-MJ-422T: Mobile Technologies	CO1.To provide students with a solid understanding of the mobile app development, Android operating system, its architecture, components, and the software development kit (SDK). CO2.To teach students how to build Android applications from scratch,including UI design, handling user interactions, and integrating

	<p>various features.</p> <p>CO3.To learn about Android's UI components,layouts, and design principles to create visually appealing and user-friendly interfaces.</p> <p>CO4.To know various methods of datastorage in Android applications,such as using SQLite databases, shared preferences, and cloud-based solutions.</p> <p>CO5.To empower students to independently design,develop,and deploy their Android applications using advanced android tools.</p> <p>CO 6.To understand how to utilize built-in sensors and hardware components on Android devices,such as GPS,accelerometer,Bluetooth,WiFi,Media Player and Camera, in their applications.</p> <p>CO7.To Get knowledge of Phone Gap Programming</p>
CS-MJ-423T: Software Project Management	<p>CO1: Learn the skills that are required to ensure successful medium and large scale software projects.</p> <p>CO2: Examine Requirements Elicitation, Project Management, Verification &Validation And Management of Large Software Engineering Projects.</p> <p>CO3: Get knowledge to select and apply project management techniques for process modeling, planning, estimation, process metrics and risk management.</p> <p>CO4: Understand the concepts,skills,tools,and techniques of software project management.</p>
CS-MJ-424P: Lab Course based on CS- MJ- 421T	<p>CO1: Analyze worst-case running times of algorithms using a symptotic analysis.</p> <p>CO2: Compare between different datastructures.Pick an appropriate data structure for a design situation.</p> <p>CO3: Ability to design algorithms using standard paradigms like: Greedy, Divideand Conquer, Dynamic Programming and Backtracking.</p> <p>CO4: Able to Explain the major graph algorithms and Employ graphs to model engineering problems, when appropriate.</p> <p>CO5: Able to Compare between different datastructures and pick an appropriate data structure for a design situation.</p>
CS-MJ-425P: Lab Course based on CS- MJ- 422T	<p>CO1.To teach students how to build Android applications from scratch, including UI design, handling user interactions, and integrating various features.</p> <p>CO2.To learn about Android's UI components,layouts,and design principles to create visually appealing and user-friendly interfaces.</p> <p>CO3.To empower students to independently design,develop,and deploy their Android applications using advanced android tools.</p>

CS-ME-426T: Full Stack Development- I	<p>CO1: Learn about the benefits of using MEAN stack and how to install and configure it</p> <p>CO2: Learn advanced ES6 features in JavaScript and Typescript</p> <p>CO3: Learn about Angular architecture, components,directives, pipes, forms, routing, and services.</p> <p>CO4: Learn about the event loop,asynchronous programming, modules, packages, andstreams.</p> <p>CO5: Learn about the MVC pattern, routing, HTTP requests and responses, middleware, and error handling.</p> <p>CO6: Create a full-stack MEAN stack application and deploy it to a production/local server.</p>
CS-ME-427P: Lab Course Based on CS- ME-426T	<p>CO1: Describe appropriate uses for Java Script and PHP</p> <p>CO2: Discuss,create,and debug semantically correct basic examples of dynamic webpages</p> <p>CO3: Construct individual components and entire applications using ReactJS</p> <p>CO4: Build an interactive web page using React JS</p>
CS-OJT-427: On Job Training/Field Projects	<p>CO 1:Participate in the projects in industries during his or her industrial training.</p> <p>CO 2:Describe use of advanced tools and techniques encountered during industrial training and visit.</p> <p>CO 3:Interact with industrial personnel and follow engineering practices and discipline prescribed in industry.</p> <p>CO 4:Develop awareness about general workplace behavior and build interpersonal and team skills.v</p> <p>CO 5:Prepare professional work reports and presentations.</p>
<u>Semester-III</u>	
CSUT231- Software Architecture and Design Patterns	<p>CO1-Recognize the characteristics of patterns that make it useful to solve real world problems.</p> <p>CO2- Able to use specific frameworks as per applications need.</p> <p>CO3- Design java application using design pattern techniques.</p>
CSUT232 Machine Learning	<p>CO1-Recognize the characteristics of machine learning that make it useful to real-world problems.</p> <p>CO2- Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problem</p> <p>CO3-Able to estimate Machine Learning models efficiency using suitable metrics.</p> <p>CO4- Design application using machine learning techniques</p>
CSUT233- Web Frameworks	<p>CO1-Students will be ready with the technology which is used widely in Industry as a part of full stack developer.</p> <p>CO2-Students will know the powerful way to develop the web application in Python.</p> <p>CO3-Students will understand what really the asynchronous programming.</p>
<u>Semester-IV</u>	

CSUIT241: Industrial Training /Institutional project	CO1-Learn the basic concepts of Project & Project Management. CO2-Become capable of self-education and clearly understand the value of achieving Perfection inthe respective Project work CO3- Plan, schedule and execute a project considering the risk management and apply qualityattributes in software development life cycle
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DEPARTMENT OF PHYSICS

Programme Outcomes: B. Sc. Physics

Department of Physics	After successful completion of three-year degree program in Physics student should be able to:
Programme Outcome	PO-1. Understand of major concepts in all disciplines of Physics. PO-2. Solve the problem and think methodically, independently and draw a logical conclusion. PO-3. Employ critical thinking and scientific knowledge to design, carry out, record and analyze the results of Physics experiments. PO-4. Create an awareness of the impact of Physics on the society and development outside the scientific community. PO-5. Inculcate scientific temperament in the students. PO-6. Use modern techniques, equipment's and Software's PO-7. Students would perform basic experiments related to mechanics and also get familiar with various measuring instruments

Programme Specific Outcomes: B. Sc. Physics

Department of Physics	After successful completion of three-year degree program in Physics student should be able to:
Programme Specific Outcomes	PSO-1. Gain the knowledge of Physics through theory and practical's PSO-2. Understand good laboratory practices and safety. PSO-3. Develop research-oriented skills. PSO-4. Make aware and handle the sophisticated instruments.

Course Outcomes: B. Sc. Physics

Course	Outcomes
	After completion of these courses students should be able to:
<u>Semester-I</u>	
BS-PH-111T: Fundamental of Physics-I	CO1: understand concept of rotational dynamics. CO2: understand concept Fluid mechanics Pascal's Laws, Buoyancy and Archimedes Principle CO3: understand the properties of Surface Tension, Surface Energy and angle of contact, Viscosity CO4: understand Bohr's Model, Frank Hertz Experiment, Sommerfield's model
OE-PH-01T: Kalacha Sankshipt Itihas	C01: विद्यार्थी कॉस्मॉलॉजी आणि बिग बॅंग या मूलभूत संकल्पना समजून घेतो. C02: विद्यार्थी गुरुत्वाकर्षणाचे विविध सिद्धांत आणि ते विश्वाच्या रचनेशी कसे संबंधित आहेत हे स्पष्ट करण्यास सक्षम होतो. C03: विद्यार्थी विश्वविज्ञानाबद्दलची त्यांची समज स्पष्ट आणि संक्षिप्त पद्धतीने माहित करून घेतो.

	<p>C04: ब्रह्मांडातील अद्वितीय प्रश्नांची उत्तरे शोधण्याची जिज्ञासा निर्माण होईल.</p> <p>C05: वैज्ञानिक आणि तांत्रिक क्षेत्रातील समस्यांवर सर्जनशील उपाय शोधण्याची क्षमता विकसित होईल.</p> <p>C06: नवीन संशोधन व तंत्रज्ञानाशी निगडित विषयांबाबत अधिकाधिक जागरूकता येईल.</p> <p>C07: विज्ञान सर्वसामान्य लोकांसाठी सुलभ आणि समजण्यास सोपे होईल.</p>
BS-PH-112P: General Physics Lab – I	<p>CO1: understand practical knowledge of mechanics doing experiments.</p> <p>CO2: would also learn optical phenomena such as interference, diffraction and dispersion and do experiments related to optical devices: Prism, grating, spectrometers</p>
SEC-PH-113P: Experimental Skill in Physics-I	<p>CO1: understand the use of proper equipment, instruments, and measurement techniques.</p> <p>CO2: understand experimental procedures minimize errors and maximize precision.</p> <p>CO3: understand the graphical representation of data, error bars, and fitting results.</p> <p>CO4: understand the revising experimental approaches based on analysis and results.</p> <p>CO5: Linking experimental findings to theoretical principles.</p>
Semester-II	
BS-PH-121T: Fundamental of Physics -II	<p>CO1: Understand the basic concepts of Thermodynamics and laws of thermodynamics.</p> <p>CO2: Identify the different states of system and their dependence on various thermodynamic variables.</p> <p>CO3: Understand different thermodynamic processes and their applications.</p> <p>CO4: Understand different heat engines and their working principles.</p> <p>CO5: Learn the heat radiation mechanism and relate this course to the daily chores through some applications.</p>
OE-PH-02T: Kalacha Sankshipt Itihas	<p>C01: विज्ञान आणि ब्रह्मांडाच्या रचनेबद्दल जाणून घेण्याची उत्सुकता निर्माण होईल.</p> <p>C02: काळ, स्थान, गुरुत्वाकर्षण, आणि सापेक्षतेच्या सिद्धांतांबाबत मूलभूत ज्ञान प्राप्त होईल.</p> <p>C03: काळाचा प्रवाह, कृष्णविवर (ब्लॅक होल), बिग बॅंग सिद्धांत, आणि विश्वाचा विस्तार यासंबंधी ज्ञान समृद्ध होईल.</p> <p>C04: विज्ञान, तत्त्वज्ञान, आणि अध्यात्मिक विचार यांच्यातील परस्परसंबंध समजून घेण्याची क्षमता वाढेल.</p> <p>C05: ब्रह्मांडातील अद्वितीय प्रश्नांची उत्तरे शोधण्याची जिज्ञासा निर्माण होईल.</p> <p>C06: वैज्ञानिक आणि तांत्रिक क्षेत्रातील समस्यांवर सर्जनशील उपाय शोधण्याची क्षमता विकसित होईल.</p> <p>C07: नवीन संशोधन व तंत्रज्ञानाशी निगडित विषयांबाबत अधिकाधिक जागरूकता येईल.</p> <p>C08: विज्ञान सर्वसामान्य लोकांसाठी सुलभ आणि समजण्यास सोपे होईल.</p>

BS-PH-122P: General Physics Lab – II	CO1: understand the practical knowledge of thermodynamics CO2: understand the electricity and magnetism while doing the experiments: Engine, electric vibrations. CO3: They would also learn electric phenomena such as diode, CRO and do experiments related to electric devices.
SEC-PH-123P: Experimental Skill in Physics- II	CO1: students will demonstrate the ability to design and implement experiments to test physical theories, make measurements, and collect data using appropriate experimental techniques. CO2: students will be able to gather, process, and analyze experimental data with attention to accuracy and precision. CO3: students will apply theoretical concepts from physics to interpret experimental results, validating or challenging models and predictions. CO4: students will acquire proficiency in operating a wide range of experimental tools and instruments. CO5: students will be able to effectively document experimental procedures, results, and conclusions, and communicate findings in written and oral formats.
Semester-III	
PHY231: Mathematical Methods in Physics	CO-1. Understand of complex Algebra CO-2. Understand of partial differentiation and its use in physics. CO-3. Understand of vector algebra and singular points of physics.
PHY232: Electronics/ Instrumentatio ns	CO-1. Understand of Laws of electrical circuits. CO-2. Understand of solid-state semiconductor devices like transistors, OPAMP. CO-3. Understand of Boolean Algebra and logic circuits.
PHY233: Physics Laboratory-2A	CO-1. Design experiments to test hypothesis and /or determination of unknown quantities. CO-2. Develop skill of data analysis, plotting graphs and drawing conclusions. CO-3. Investigate theoretical background of an experiment.
Semester-IV	
PHY241: Oscillations, Waves and sound	CO-1. Understand of equation of motion in different types of oscillations CO-2. Understand of basic concepts of energy exchange in oscillations. CO-3. Understand of Doppler effect and its applications in real life.
PHY242: Optics	CO-1. Acquire basic concepts of wave-optics. CO-2. Understand of optical phenomenon such as interference, diffraction, polarization, birefringence etc. CO-3. Learn optical instruments like microscopes and IP's.
PHY243: Physics Laboratory-2B	CO-1. Design experiments to test hypothesis and /or determination of unknown quantities. CO-2. Develop skill of data analysis, plotting graphs and drawing conclusions. CO-3. Investigate theoretical background of an experiment.
Semester-V	

PH331: Mathematical methods of Physics	CO-1. Know the Cartesian, Spherical polar and Cylindrical co-ordinate systems. CO-2. Solve of Legendre, Hermite and Bessel differential equations. CO-3. Understand the special theory of relativity. CO-4. Discuss the Michelson-Morley Experiment.
PH332: Solid State Physics:	CO-1. Understand the crystal structure and types of Bravais lattices. CO-2. Study of X-ray diffraction technique. CO-3. Introduced to band theory of metals. CO-4. Study of magnetic properties of solids.
PH333: Classical Mechanics:	CO-1. Understand of mechanics of system of particles and scattering of particles. CO-2. Understand of Motion of object in central force field. CO-3. Set up Lagrangian and Hamiltonian formulation.
PH334: Atomic and Molecular Physics	CO-1. Understand of atomic structure and spectra. CO-2. Study of one and two electron systems. CO-3. Introduction to various spectroscopies.
PH335: Computational Physics	CO-1. Develop skills of C-language programming for solving physics problems.
PH336: Elements of Material Science	CO-1. Basic knowledge of Material Science. CO-2. Understand the properties of material science. CO-3. Discuss the type of Phase Diagram.
Semester-VI	
PH341: Classical Electrodynamic s:	CO-1. Understand fundamentals of Electrostatics. CO-2. Understand fundamentals of Magnetostatics. CO-3. Understand fundamentals of Electrodynamics. CO-4. Know the different Potentials in EM field.
PH342: Quantum Mechanics:	CO-1. Introduction to modern physics and development of quantum mechanics. CO-2. Setting up Schrodinger's steady state equation. CO-3. Problems like potential well, potential barrier, step, hydrogen atom CO-4. Introduction to operators.
PH343: Thermodynami cs and statistical physics:	CO-1. Introduction of Kinetic theory of gases. CO-2. Importance of Maxwell's relation CO-3. Knowledge of Random walk problem. CO-4. Types of ensembles. CO-5. Introduction to Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics.
PH344: Nuclear Physics:	CO-1. Understand properties of nucleus. CO-2. Study of Radioactivity. CO-3. Knowledge of types of nuclear forces and nuclear reactions. CO-4. Knowledge of types of particle accelerators.
PH345: Electronics:	CO-1. Know basic components like diode and its types, BJT, FET CO-2. Study of amplifiers and its types.

	CO-3. Introduction to power supplies. CO-4. Details of Digital electronics.
PH346: Lasers	CO-1. Know the about LASER. CO-2. Understand the properties of LASER. CO-3. Understand different type of LASER.
PH347: Laboratory course I	CO-1. Handling of optical and measuring instruments CO-2. Learn to verify basic constants in physics CO-3. Verify laws of physics experimentally
PH348: Lab. course II	CO-1. C-programming Skills. CO-2. Knowledge of programming.
PH349: Laboratory course III (Project)	CO-1. Develop skills of independent working CO-2. Learn Literature survey CO-3. Designing of physics/electronics experiments CO-4. Develop writing and presentation skills
PH350: Laboratory course IV	CO-1. Introduction to process control. CO-2. Basics of discrete state process control. CO-3. Understand the controller principles and types. CO-4. Introduction to modeling, simulation and MATLAB programming.

Programme Outcomes: M.Sc. Physics

Department of Physics	After successful completion of two-year degree program in Physics student should be able to:
Programme Outcome	PO-1. Apply the skill and knowledge in the design and development of electronic circuit to fulfil the needs of small-scale electronic industry. PO-2. Become professionally trained in areas like material science, electronics, lasers and nonlinear circuits. PO-3. They will have a sense of academic and social ethics. PO-4. They will be able to recognize the need for continuous learning and develop throughout for the professional career. PO-5. They will be prepared to take up challenges as globally competitive physicists/researchers. PO-6. They will be technically and analytically skilled enough to pursue their further studies.

Programme Specific Outcomes: M.Sc. Physics

Department of Physics	After successful completion of two-year degree program in Physics student should be able to:
Programme Specific Outcomes	PSO-1. Introduce advanced techniques and ideas required in developing areas of Physics.

	<p>PSO-2. Enhance students' ability to develop mathematical models for physical systems.</p> <p>PSO-3. Gain the knowledge of Physics through theory and practicals.</p> <p>PSO-4. Understand good laboratory practices and safety.</p> <p>PSO-5. Develop research-oriented skills.</p> <p>PSO-6. Make aware and handle the sophisticated instruments.</p> <p>PSO-7. Understand and apply principles of Physics for understand the scientific phenomenon in classical and quantum Physics.</p> <p>PSO-8. Understands and apply statistical methods for describing the classical and quantum particle phenomenon in various physical systems.</p>
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Course Outcomes: M.Sc. Physics

Course	Outcomes
	After completion of these courses students should be able to:
Semester – I	
PHCT-111: Mathematical methods of physics:	<p>CO1: get familiar with Matrix Algebra.</p> <p>CO2: introduction to operators.</p> <p>CO3: uses of Special functions like Legendre, Bessel.</p> <p>CO4: uses of Fourier series, Fourier and Laplace transforms.</p>
PHCT-112: Classical Mechanics	<p>CO1: set up Lagrangian and Hamiltonian formulation.</p> <p>CO2: introduction to Canonical transformations and Poisson brackets.</p> <p>CO3: basics of Non-inertial frame of reference.</p> <p>CO4: information of Central force field problems.</p>
PHCT-113: Electronics	<p>CO1: know basic of Semiconductor Devices and its Applications.</p> <p>CO2: know basic of Special Function ICs and their Applications.</p> <p>CO3: know basic of Digital Logic Circuits I: Combinational Logic.</p> <p>CO4: know basics of analog to digital and digital to analog converter types.</p>
PHOT-114C4: Laser- Fundamentals and Applications	<p>CO1: understand principles of Interaction of radiation with matter, Einstein's coefficients.</p> <p>CO2: know basics of two, three and four level laser systems.</p> <p>CO3: Study of various laser systems like He-Ne, N₂, CO₂, Nd:YAG, Ruby, Excimer, Dye lasers.</p> <p>CO4: know applications of lasers.</p>
PHCP-115 Physics Lab I	<p>CO1: design skills of electronic circuits.</p> <p>CO2: handling of electronic instruments.</p> <p>CO3: understand of basic concepts of electronic devices.</p>
Semester – II	
PHCT-121: Electrodynamics:	<p>CO1: understand fundamentals of Multipole expansions and time varying fields</p> <p>CO2: understand the Reflection and refraction of electromagnetic waves.</p> <p>CO3: understand Wave equations in terms of electromagnetic potentials.</p> <p>CO4: know Relativistic Mechanics and Covariance.</p>

PHCT-122: Atoms and Molecules:	CO1: know basics of Atomic structure and atomic spectra. CO2: understand of molecular spectra. CO3: get familiar with ESR, NMR and X-ray diffraction techniques.
PHCT-123: Quantum Mechanics I:	CO1: representation of state of system. CO2: using Dirac and Delta notations. CO3: concept of Angular Momentum. CO4: introduction to types of approximation methods
PHOT-124D4: Physics of Semiconductor devices:	CO1: understand Properties of semiconductors. CO2: working principles and construction of p-n junction diode. CO3: working principles and construction of junction transistor and field-effect devices. CO4: working principles and construction of Metal and MIS devices.
PHCP-125 Physics Laboratory-II (General Lab)	CO1: perform Experiments. CO2: develop skills of independent working. CO3: designing of physics/electronics experiments.
<u>Semester-III</u>	
PHCT-231: Physics of Semiconductor devices:	CO-1. Understand Properties of semiconductors. CO-2. Working principles and construction of p-n junction diode. CO-3. Working principles and construction of junction transistor and field-effect devices. CO-4. Working principles and construction of Metal and MIS devices.
PHCT-232: Laser- Fundamentals and Applications	CO-1. Understand principles of Interaction of radiation with matter, Einstein's coefficients. CO-2. Know basics of two, three and four level laser systems. CO-3. Study of various laser systems like He-Ne, N ₂ , CO ₂ , Nd:YAG, Ruby, Excimer, Dye lasers. CO-4. Know applications of lasers.
PHCT-233: Experimental Techniques in Physics - I	CO-1. Introduction to vacuum physics. CO-2. Study of various types of vacuum pumps. CO-3. Study of vacuum measuring gauges.
PHOP-234-K- Energy Studies – I	CO-1. Know Energy Sources. CO-2. Understand the Solar Radiation and Its Measurements. CO-3. Understand the Heat and Thermodynamics. CO-4. Know the types of energy storage systems.
PHCT-235 Physics Laboratory - III	CO-1. Know how to write program. CO-2. Develop skills of independent working. CO-3. Know how to execute program.
<u>Semester-IV</u>	
PHCT-241 Nuclear Physics	CO-1. Understand general properties and concepts of nuclei. CO-2. Know about radiation detectors and nuclear models. CO-3. Understand basics of reaction dynamics, nuclear reactors and accelerators. CO-4. Knowledge of nuclear interactions and particle physics.

<p>PHCT-242 Materials Science</p>	<p>CO-1. Understand properties of materials and defects in solids. CO-2. Know Basics of solid solutions and diffusion in solids. CO-3. Know metallurgical thermodynamics. CO-4. Get knowledge of phase diagrams.</p>
<p>PHCT-243 Experimental Techniques in Physics - II</p>	<p>CO-1. Know Radiation Sources, Detectors and Sensors. CO-2. Understand Structural Characterization and Thermal Analysis. CO-3. Understand Optical Microscopy, Morphological and Magnetic Characterization. CO-4. Get knowledge of Spectroscopic Analysis.</p>
<p>PHOP-244-K Energy Studies – II</p>	<p>CO-1. Know about Solar photovoltaic (SPV) Conversion. CO-2. Understand Photo-thermal Applications of Solar Energy. CO-3. Get knowledge of Hydrogen Energy.</p>
<p>PHCT-245 Project</p>	<p>CO-1. Develop skills of independent working CO-2. Learn Literature survey CO-3. Designing of physics/electronics experiments CO-4. Develop writing and presentation skills</p>

DEPARTMENT OF MATHEMATICS

Programme Outcomes: B. Sc. Mathematics

Department of Mathematics	After successful completion of three year degree program in Mathematics a student will be able to:
Programme Outcomes	<p>PO-1. Gain sound knowledge on fundamental principles and concepts of Mathematics and computing with their applications related to Industrial, Engineering, Biological and Ecological problems.</p> <p>PO-2. Exhibit in depth the analytical and critical thinking to identify, formulate and solve real world problems of science and engineering.</p> <p>PO-3. Get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.</p> <p>PO-4. A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.</p> <p>PO-5. Apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.</p> <p>PO-6. Be capable of undertaking suitable experiments/research methods while solving the real-life problem and would arrive at valid conclusions based on appropriate interpretations of data and experimental results.</p> <p>PO-7. Develop written and oral communications skills in order to effectively communicate design, analysis and research results.</p> <p>PO-8. Demonstrate appropriate inter-personal skills to function effectively as an individual, as a member or as a leader of a team and in a multi-disciplinary setting.</p> <p>PO-9. Acquire competent positions in industry and academia as well.</p>

Programme Specific Outcomes: B. Sc. Mathematics

Department of Mathematics	After successful completion of three year degree program in Mathematics a student will be able to:
Programme Specific Outcomes	<p>PSO-1. Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerable power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.</p> <p>PSO-2. To equip the students sufficiently in both analytical and computational skills in Mathematical Sciences.</p> <p>PSO-3. To develop a competitive attitude for building a strong academic – industrial collaboration, with focus on continuous learning skills.</p> <p>PSO-4. Enhancing student's overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.</p>

	<p>PSO-5. Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.</p> <p>PSO-6. Enabling students to Gauge the hypothesis, theories, techniques and proofs provisionally.</p>
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Course Outcomes: B. Sc. Mathematics

Name of the Course	Course Outcomes
Semester-I	
MT-MJ-111T Algebra	<p>After completion of these course student will be able to:</p> <p>CO-1: Use the Mathematical induction and find the LCM and GCD of two integers.</p> <p>CO-2: Solve various problems on properties of integers and use the basic concept of divisibility, congruence and their application in basic algebra.</p> <p>CO-3: Solve problems involving polynomial equations, finding roots and factors of the Polynomial.</p> <p>CO-4: Solve the problems on system of the linear equations by various methods and use Cayley Hamilton theorem.</p>
MT-MJ-112T Calculus-I	<p>After completion of these course student will be able to:</p> <p>CO-1: Identify algebraic and order properties of real numbers.</p> <p>CO-2: Identify and apply the function properties of real number system such as the completeness property.</p> <p>CO-3: Verify the values of limit of a function at a point using the definition of a limit.</p> <p>CO-4: Student will be able to understand differentiation and fundamental theorem in differentiation and various rules.</p>
MT-MJ-113P Practical Based on Algebra and Calculus-I	<p>After completion of these course student will be able to:</p> <p>CO-1: Improve the ability of students to solve the problems.</p> <p>CO-2: Solve the most difficulties possible strengthens theoretical notions.</p> <p>CO-3: Clarify their doubts because of one-to-one interaction with the teacher.</p> <p>CO-4: Gain the ability to use mathematical ideas to solve practical and everyday issues.</p> <p>CO-5: Develop an interdisciplinary approach.</p>
MT-VSC-114T Foundation of Mathematics	<p>After completion of these course student will be able to:</p> <p>CO-1: Prove mathematical statements by deductive reasoning or by exhaustion or disprove them using a counter example.</p> <p>CO-2: Solve problems on equivalence relations, functions, inverse functions, Composition of functions.</p> <p>CO-3: Determine the number of possible combinations for a given situation using the fundamental counting principle.</p> <p>CO-4: Solve problems on basic properties of complex numbers, different forms of Complex numbers, algebraic equations and regions in the complex plane.</p>

MT-SEC-115P Introduction to Python Programming	After completion of these course student will be able to: CO-1: Explain basic principles of Python programming language. CO-2: Understand the importance of Python tools for Mathematics and Science. CO-3: Learn how to use lists, tuples and dictionaries in Python programmes. CO-4: Learn Conditional Statements Looping statement in python.
MT-IKS-116T Vedic Mathematics	After completion of these course student will be able to: CO-1: Know the history of Vedic mathematics and how the ancient mathematicians invent the Vedas and Śulva Sūtras, Place Value System and various Arithmetic Operation. CO-2: Know the work done by the Indian mathematician in the medieval and during Classical age. CO-3: Perform simple arithmetic calculations with speed and accuracy will be able to generate tables of any number and find squares, cubes of given numbers quickly. CO-4: Develop confidence in calculating square roots and cube roots of integers. CO-5: Perform difficult calculations speedily. CO-6: Face Numerical Aptitude part of any Competitive Examination confidently.
MT-OE-101T+ MT-OE-101P Mathematics for Competitive Examination- I	After completion of these course student will be able to: CO-1: Have a strong base in the fundamental mathematical concepts. CO-2: Gain appropriate skills to succeed in preliminary selection process for recruitment. CO-3: Grasp the approaches and strategies to solve problems with speed and accuracy. CO-4: Solve the problems easily by using Short-cut method with time management which will be helpful to them to clear the competitive exams for better job opportunity.

Programme Outcomes: M. Sc. Mathematics

Department of Mathematics	After successful completion of three year degree program in Mathematics a student will be able to:
Programme Outcomes	<p>PO-1. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results implemented in the theorem.</p> <p>PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.</p> <p>PO-3. Understand and Make application of major concepts in all disciplines of Mathematics.</p> <p>PO-4. Relate correlation between various courses of Mathematics with standard mathematical proofs.</p> <p>PO-5. To inculcate the scientific temperament in the students and outside the scientific community.</p> <p>PO-6. Create an awareness of the impact of Mathematics according to various geometrical shapes and patterns on the environment and development outside the scientific community.</p>

Programme Specific Outcomes: M. Sc. Mathematics

Department of Mathematics	After successful completion of three year degree program in Mathematics a student will be able to:
Programme Specific Outcomes	<p>PSO-1. Understand the proof techniques in Mathematics and importance of theorems for sorting out typical examples.</p> <p>PSO-2. Gain the knowledge of Mathematics through applied and pure theories.</p> <p>PSO-3. Develop research oriented skills.</p> <p>PSO-4. To explain nomenclature of Mathematical proof techniques and structures.</p> <p>PSO-5. Identify Mathematical formulae and solve numerical problems.</p>

Course Outcomes: M. Sc. Mathematics

Name of the Course	Course Outcomes
Semester-I	
MT-MJ-511T Advanced Calculus	<p>After completion of these course student will be able to:</p> <p>CO-5: Perform the vector calculus operations by applying addition, subtraction, scalar multiplication, dot product, cross product.</p> <p>CO-6: Perform vector calculus operations by partial derivatives.</p> <p>CO-7: Use Green's, Divergence and Stoke's theorem by combining vector differential calculus and vector integral calculus.</p> <p>CO-8: Apply the integral calculus to find arc length of a curve, arc length of a parametric curves, area under a curve and surface area.</p> <p>CO-9: To understand concept of integrals of function and vector fields over parameterized surfaces and compute them.</p>
MT-MJ-512T Advanced Ordinary Differential Equations	<p>After completion of these course student will be able to:</p> <p>CO-1: Find solution of linear differential equations of first order.</p> <p>CO-2: To find solution of homogeneous and non-homogeneous</p> <p>CO-3: equations of second order.</p> <p>CO-4: Explain Euler's equation, Legendre equation and Bessel's</p> <p>CO-5: Equation.</p> <p>CO-6: Understand Existence and Uniqueness of solution.</p> <p>CO-7: Find asymptotics at regular singular points.</p>
MT-MJ-513T Abstract Algebra-I	<p>After completion of these course student will be able to:</p> <p>CO-1: Generalize the groups on the basis of their orders, elements, order of elements and group relations.</p> <p>CO-2: Identify the various algebraic structures with their corresponding binary operations.</p> <p>CO-3: Use various canonical types of groups including cyclic groups and group of permutations.</p> <p>CO-4: Compute the possible subgroups of given group of specific orders and will recognize them.</p> <p>CO-5: Apply Sylow theorems for groups of finite orders.</p>

	CO-6: Develop concepts on ring theory of abstract algebra.
MT-MJ-513P Practical on Abstract Algebra-I	After completion of these course student will be able to: CO-1: Improve the ability of students to solve the problems on Abstract Algebra-I. CO-2: Solve the most difficulties possible strengthens theoretical notions. CO-3: Clarify their doubts because of one-to-one interaction with the teacher. CO-4: Gain the ability to use mathematical ideas to solve practical and everyday issues. CO-5: Develop an interdisciplinary approach.
MT-MJ-514P Programming with Python	After completion of these course student will be able to: CO-5: Study python on different operating systems, variables, strings and comments. CO-6: Working with lists and understand difference between lists and dictionaries. CO-7: Use loops and conditional Statements in Python. CO-8: Learn functions, classes, files in Python.
MT-ME-515T Number Theory and Coding Theory	After completion of these course student will be able to: CO-7: Understand the definitions of congruences, residue classes and least residues. CO-8: Add and subtract integers <i>modulo n</i> , multiply integers and calculate powers <i>modulo n</i> . CO-9: Determine multiplicative inverses modulo n and use to solve linear congruences. CO-10: Describe some important result including Prime number theorem, Chinese Remainder Theorem and their consequences. CO-11: Describe arithmetic functions like Euler's φ function, τ -function, σ -function, and their application. CO-12: Use algebraic Techniques to construct efficient codes, identify the parameters of the given code and the quality of given code.
MT-ME-515P Practical on Number Theory and Coding Theory	After completion of these course student will be able to: CO-1: Improve the ability of students to solve the problems on Number Theory and Coding Theory. CO-2: Solve the most difficulties possible strengthens theoretical notions. CO-3: Clarify their doubts because of one-to-one interaction with the teacher. CO-4: Gain the ability to use mathematical ideas to solve practical and everyday issues. CO-5: Develop an interdisciplinary approach.
MT-ME-516T Lattice Theory	After completion of these course student will be able to: CO-1: Understand Lattices and their algebraic structures, homomorphism between Lattices and Boolean algebra. CO-2: Learn the existence of maximal elements and the celebrated Zorn's Lemma. CO-3: Deal with lattices as algebraic structures; to form sublattices; products; homomorphism and congruences.

	CO-4: Determine whether the given lattice is modular or distributive; and how to apply the $M3 - N5$ Theorem.
MT-ME-516P Practical on Lattice Theory	After completion of these course student will be able to: CO-1: Improve the ability of students to solve the problems on Lattice Theory. CO-2: Solve the most difficulties possible strengthens theoretical notions. CO-3: Clarify their doubts because of one-to-one interaction with the teacher. CO-4: Gain the ability to use mathematical ideas to solve research problems.
MT-ME-517T Advanced Operations Research	After completion of these course student will be able to: CO-1: Analyze and solve linear programming models of real-life situations. CO-2: Find the graphical solution of LPP with only two variables and illustrate the concept of convex set and extreme points. CO-3: Identify the relationships between the primal and dual problems and their solutions, assignment and transportation problem. CO-4: Understand fundamentals of Network Analysis using CPM and PERT. CO-5: Solve sequencing problem for various jobs and machines.
MT-ME-517P Practical on Advanced Operations Research	After completion of these course student will be able to: CO-1: Improve the ability of students to solve the problems on Operations Research. CO-2: Solve the most difficulties possible strengthens theoretical notions. CO-3: Clarify their doubts because of one-to-one interaction with the teacher. CO-4: Gain the ability to use mathematical ideas to solve practical and everyday issues. CO-5: Develop an interdisciplinary approach.
MT-RM-518T Research Methodology	After completion of these course student will be able to: CO-1: Understand the concept, need and importance of Research. CO-2: Make them aware of the various methods of types of research. CO-3: To make them aware of the various research tools. CO-4: Help the learner to realize the research problem and try to find solutions through Research.
MT-RM-518P Practical on Research Methodology	After completion of these course student will be able to: CO-1: Improve the ability of students to solve the research problems. CO-2: Solve the most difficulties possible strengthens theoretical notions. CO-3: Clarify their doubts about the research because of one-to-one interaction with the teacher. CO-4: Gain the ability to use mathematical ideas to solve practical research problems. CO-5: Develop an interdisciplinary approach in research.
Semester-II	

<p style="text-align: center;">MT-MJ-521T Advanced Complex Analysis</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Justify the need for complex number system and explain how is related to other existing number systems.</p> <p>CO-2: Apply Cauchy Riemann equations and use it to show that a function is analytic.</p> <p>CO-3: Apply the techniques of complex variables and functions together with their derivatives, Contour integration and transformations.</p> <p>CO-4: Understand the boundeness of a function in the set of complex number.</p> <p>CO-5: Define singularities of a function, know the different types of singularities and determinepoints of singularities of a function.</p>
<p style="text-align: center;">MT-MJ-522T General Topology</p>	<p>After completion of these course student will be able to:</p> <p>CO-1. Understand the concept of Metric Spaces, Topological Spaces and their role in Mathematics.</p> <p>CO-2. Prove basic results about Completeness, Connectedness, Compactness, Convergence within these structure.</p> <p>CO-3. Apply the theory in the course to solve a variety of problem at an approximate level of difficulties.</p>
<p style="text-align: center;">MT-MJ-523T Advanced Linear Algebra</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Explain Vector spaces, Basis and Dimensions, the concept of Linear Transformation and its applications.</p> <p>CO-2: Find Eigen values and eigen vectors, minimal polynomials.</p> <p>CO-3: Identify the Inner product spaces, self adjoint, normal and unitary operators.</p> <p>CO-4: Understand the notion of Bilinear form and its matrix, Quadratic form, diagonalizable Matrix.</p>
<p style="text-align: center;">MT-MJ-523P Practical on Advanced Linear Algebra</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Improve the ability of students to solve the problems on Linear Algebra.</p> <p>CO-2: Solve the most difficulties possible strengthens theoretical notions.</p> <p>CO-3: Clarify their doubts because of one-to-one interaction with the teacher.</p> <p>CO-4: Gain the ability to use mathematical ideas to solve practical problems in linear algebra.</p> <p>CO-5: Develop an interdisciplinary approach of linear algebra.</p>
<p style="text-align: center;">MT-MJ-524P Machine Learning</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Recognize the characteristics of machine learning that make it useful to real-world problems.</p> <p>CO-2: Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problem.</p>

	<p>CO-3: Able to estimate Machine Learning models efficiency using suitable metrics.</p> <p>CO-4: Design application using machine learning techniques.</p>
<p>MT-ME-525T</p> <p>C and C++ Programming Language</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Understand the Programming basics and the fundamentals of C and C++.</p> <p>CO-2: Work with textual information, characters and strings.</p> <p>CO-3: Work with arrays of complex objects.</p> <p>CO-4: Understand the concept of object thinking within the framework of functional Model, functional hierarchical code organization.</p>
<p>MT-ME-525P</p> <p>Practical on C and C++ Programming Language</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Improve the ability of students to solve the problems on C and C++ programming.</p> <p>CO-2: Solve the most difficulties possible strengthens theoretical notions.</p> <p>CO-3: Clarify their doubts because of one-to-one interaction with the teacher.</p> <p>CO-4: Gain the ability to use mathematical ideas to solve practical problems in programming language.</p> <p>CO-5: Develop an interdisciplinary approach in programming language.</p>
<p>MT-ME-526T</p> <p>Classical Mechanics</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Define and understand basic mechanical concepts related to advanced problems involving the dynamic motion of classical mechanical systems.</p> <p>CO-2: Describe and understand the differential equations and other advanced mathematics in the solution of the problems of mechanical systems.</p> <p>CO-3: Describe and understand the motion of a mechanical system using Lagrange Hamilton formalism.</p> <p>CO-4: Learn that a particle moving under a central force describes a plane curve and know the Kepler's laws of the planetary motions.</p>
<p>MT-ME-526P</p> <p>Practical on Classical Mechanics</p>	<p>After completion of these course student will be able to:</p> <p>CO: Improve the ability of students to solve the problems on Classical Mechanics.</p> <p>CO-1: Solve the most difficulties possible strengthens theoretical notions.</p> <p>CO-2: Clarify their doubts because of one-to-one interaction with the teacher.</p> <p>CO-3: Gain the ability to use mathematical ideas to solve practical problems in Classical Mechanics.</p> <p>CO-4: Develop an interdisciplinary approach in Classical Mechanics.</p>
<p>MT-ME-527T</p> <p>Advanced Discrete Mathematics</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Understand and explore the basics of graph theory.</p> <p>CO-2: Achieve command of the fundamental definitions and concepts of graph theory.</p> <p>CO-3: Find the shortest path through a graph using Dijkstra's Algorithm.</p> <p>CO-4: Engage with mathematical literature.</p> <p>CO-5: Analyze combinatorial Problem extract and interpret descriptive statistics from</p>

	<p>social network and apply resolution techniques for finding the answer for first order query.</p> <p>CO-6: Use combinatorial statements interpreted in generating function of regular sets.</p>
<p>MT-ME-527P</p> <p>Practical on Advanced Discrete Mathematics</p>	<p>After completion of these course student will be able to:</p> <p>CO-1: Improve the ability of students to solve the problems on Discrete Mathematics.</p> <p>CO-2: Solve the most difficulties possible strengthens theoretical notions.</p> <p>CO-3: Clarify their doubts because of one-to-one interaction with the teacher.</p> <p>CO-4: Gain the ability to use mathematical ideas to solve practical problems in Discrete Mathematics.</p>
<p>MT-OJT-528</p> <p>On Job Training</p>	<p>After completion of these course student will be able to:</p>

Semester-III

<p>MTUT131 : Functional Analysis</p>	<p>CO-1. A student learns the basics of functional analysis.</p> <p>CO-2. They learn to treat the vector spaces which have the additional property of being topological spaces.</p> <p>CO-3. Blending of these two structures brings them an exposure to higher mathematics. Important theorems like the Hahn-Banach theorem is taught here. These theorems stand a student in good stead throughout his mathematical life.</p> <p>CO-4. 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.</p> <p>CO-5. The intimate relationship between analysis and geometry should become apparent at the end of this course.</p>
<p>MTUT132 : Field Theory</p>	<p>CO-1. Understand basic notions in the theory of field extensions</p> <p>CO-2. Apply the theorems of algebraic extensions, splitting fields, Separable and Inseparable Extensions to find the various examples of extensions.</p> <p>CO-3. Relate the group theory and Galois Theory in finding the Galois extension and Galois group.</p> <p>CO-4. Understand basic theory of composite extensions, simple extensions and cyclotomic extensions.</p>
<p>MTUT133 : Introduction to Data Science</p>	<p>CO-1. The student will be able to explain the steps involved in data science process.</p> <p>CO-2. The student will implement object oriented concepts.</p> <p>CO-3. Demonstrate the use of Python in Data Science.</p> <p>CO-4. Study graphics and design and implement a python program on big data.</p> <p>CO-5. The students will implement the concepts of data with python and database connectivity.</p>

	CO-6. Gain knowledge about basic concepts of Machine Learning and identify machine learning techniques suitable for a given data problem.
MTUTO134 : Discrete Mathematics	CO-1. Know the basic terms paths, cycles, trees. CO-2. Understand the language of graphs and model. CO-3. Understand the use of graphs as model. CO-4. Solve real world problems using graphs and trees. CO-5. Understand the ideas of permutations and combinations. CO-6. Understand the addition and multiplication principles for counting. CO-7. Understand how to apply combinatorial ideas to real life problems. CO-8. Use generating functions to solve variety of combinatorial Problems.
MTUTO137 : Integral Equations	CO-1. Explain the Fundamental concepts of the Theory of Integral Equation. CO-2. Distinguish the difference between Differential Equations and Integral Equations, singular integral equation. Convert the differential equation into an integral equation and vice versa CO-3. Solve the problems on Fredholm integral equations by Adomian decomposition method direct computation method, and on Volterra integral equations by Adomian decomposition method, series solution method successive approximation method. CO-4. Find the solution of the problems on Fredholm Integro differential equation, Volterra Integro differential equation. CO-5. Learn the methods to solve singular integral equation.
<u>Semester-IV</u>	
MTUT141 : Fourier Analysis and Boundary Value Problems.	CO-1. Find the Fourier series representation of a function of one variable. CO-2. Find the solution of Wave equation, Laplace equation, Heat equation using the Fourier series. CO-3. Know how to solve Boundary value problems.
MTUT142 : Differential Geometry.	CO-1. Recognize different types of graphs and its level sets. CO-2. Understand basic notions related vector fields, tangent spaces and Surfaces. CO-3. Understand core ideas of orientation, geodesics, parallel transport, Weingarten map and Curvatures CO-4. Solve examples on curvatures, arc lengths and line integrals, curvature of surfaces
MTUT143 : Programming with Python	CO-1. The student will be able to explain basic principles of Python programming language. CO-2. The student will implement object oriented concepts. CO-3. Demonstrate the use of Python in Mathematics such as operations research and computational Geometry etc. CO-4. Study graphics and design and implement a program to solve a real world problem. CO-5. The students will implement the concepts of data with python and database connectivity.
MTUTO144 :	CO-1. Solve various problems on properties of integers and use the basic

<p>Number Theory</p>	<p>concepts of divisibility, congruence and their applications in basic algebra.</p> <p>CO-2. 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</p>
<p>MTUTO148 : Probability and Statistics</p>	<p>CO-1. Use basic concepts of probability including independence and conditional probability.</p> <p>CO-2. Determine the appropriate probability distributions based on experiment conditions and assumptions.</p> <p>CO-3. Students should able to know basic concepts of continuous, univariate, bivariate probability distributions.</p> <p>CO-4 Calculate, interpret and communicate the correlation coefficient and linear regression equation.</p>

DEPARTMENT OF PHYSICS

Programme Outcomes: B. Sc. Physics

Department of Physics	After successful completion of three-year degree program in Physics student should be able to:
Programme Outcome	PO-1. Understand of major concepts in all disciplines of Physics. PO-2. Solve the problem and think methodically, independently and draw a logical conclusion. PO-3. Employ critical thinking and scientific knowledge to design, carry out, record and analyze the results of Physics experiments. PO-4. Create an awareness of the impact of Physics on the society and development outside the scientific community. PO-5. Inculcate scientific temperament in the students. PO-6. Use modern techniques, equipment's and Software's PO-7. Students would perform basic experiments related to mechanics and also get familiar with various measuring instruments

Programme Specific Outcomes: B. Sc. Physics

Department of Physics	After successful completion of three-year degree program in Physics student should be able to:
Programme Specific Outcomes	PSO-1. Gain the knowledge of Physics through theory and practical's PSO-2. Understand good laboratory practices and safety. PSO-3. Develop research-oriented skills. PSO-4. Make aware and handle the sophisticated instruments.

Course Outcomes B.Sc. Physics

<u>Semester I</u>	
Course	Outcomes
PHY111: Mechanics and Properties of Matter	After completion of these courses' students should be able to; CO1: understand Newton's Laws and its applications in simple systems. CO2: understand basic concepts of energy, work and power. CO3: understand physical properties like elasticity, viscosity and surface tension. CO4: understand use of Bernoulli's theorem in real life.

PHY112: Physics principles and applications	CO1: understand of electromagnetic spectrum and waves. CO2: understand of structure of atom and hydrogen atom spectrum. CO3: understand the atomic excitation and laser principles. CO4: demonstrate quantitative problem-solving skills in all the topics covered.
PHY-113 :Physics Laboratory-IA	CO1: acquire technical and manipulative skills in using laboratory equipment's, tools and materials. CO2: understand of lab procedures including safety and scientific techniques. CO3: skill development in collaborative learning and teamwork in lab setting.
<u>Semester II</u>	
PHY121: Heat and Thermodynamics	CO1: understand of concepts of thermodynamics and equation of state CO2: applications of Laws of thermodynamics for a process CO3: understand of refrigerators, heat pumps and thermometers CO4: know the concept of entropy and latent heat
PHY122: Electromagnetics	CO1: understand of electric force field and potential for stationary charges CO2: knowledge of Coulombs, Gauss, Biot-Savart and Amperes law CO3: understand of magnetization of materials CO4: To develop problem solving skills
PHY123: Physics Laboratory-IB	CO1: acquire technical and manipulative skills in using laboratory equipment's, tools and materials. CO2: understand of lab procedures including safety and scientific techniques. CO3: skill development in collaborative learning and teamwork in lab setting.
<u>Semester-III</u>	
PHY231: Mathematical Methods in Physics	CO1: understand of complex Algebra CO2: understand of partial differentiation and its use in physics. CO3: understand of vector algebra and singular points of physics.
PHY232: Electronics/ Instrumentations	CO1: understand of Laws of electrical circuits. CO2: understand of solid-state semiconductor devices like transistors, OPAMP. CO3: understand of Boolean Algebra and logic circuits.
PHY233: Physics Laboratory-2A	CO1: design experiments to test hypothesis and /or determination of unknown quantities. CO2: develop skill of data analysis, plotting graphs and drawing conclusions. CO3: investigate theoretical background of an experiment.

<u>Semester-IV</u>	
PHY241: Oscillations, Waves and sound	CO1: understand of equation of motion in different types of oscillations CO2: understand of basic concepts of energy exchange in oscillations. CO3: understand of Doppler effect and its applications in real life.
PHY242: Optics	CO1: acquire basic concepts of wave-optics. CO2: understand of optical phenomenon such as interference, diffraction, polarization, birefringence etc. CO3: learn optical instruments like microscopes and IP's.
PHY243: Physics Laboratory-2B	CO1: design experiments to test hypothesis and /or determination of unknown quantities. CO2: develop skill of data analysis, plotting graphs and drawing conclusions. CO3: investigate theoretical background of an experiment.
<u>Semester-V</u>	
PHY351: Mathematical methods of Physics	CO1: know the Cartesian, Spherical polar and Cylindrical co-ordinate systems. CO2: solve of Legendre, Hermite and Bessel differential equations. CO3: understand the special theory of relativity. CO4: discuss the Michelson-Morley Experiment.
PHY352: Electrodynamics	CO1: know the basic laws of Electrostatics. CO2: solve of problem based on electrostatics and magnetostatics. CO3: understand the physical significance of Maxwell equation. CO4: discuss the theory of electrodynamics.
PHY353: Classical Mechanics:	CO1: understand of mechanics of system of particles and scattering of particles. CO2: understand of Motion of object in central force field. CO3: set up Lagrangian and Hamiltonian formulation
PHY354: Atomic and Molecular Physics	CO1: understand of atomic structure and spectra. CO2: study of one and two electron systems. CO3: introduction to various spectroscopies.
PHY355: Computational Physics:	CO1: develop skills of C-language programming for solving physics problems.
PHY356: Elements of Material Science	CO1: basic knowledge of Material Science. CO2: understand the properties of material science. CO3: discuss the type of Phase Diagram.

PHY357: Physics Laboratory 3A	CO1: handling of optical and measuring instruments CO2: learn to verify basic constants in physics CO3: verify laws of physics experimentally
Project PHY-359	CO1: develop skills of independent working CO2: learn Literature survey CO3: designing of physics/electronics experiments CO4: develop writing and presentation skills
PHY-3510(I) Energy studies	CO1: Introduction to energy sources CO2: Solar thermal applications CO3: Applications of solar photovoltaic systems CO4: Study of biomass and wind energy
PHY-3511(L) Physics Workshop Skill	CO1: study principle and working of digital multimeter CO2: learn electronic voltmeter CO3: detail study of cathode ray oscilloscope CO4: study of impedance bridges and Q-meters
Course Outcomes T.Y.B.Sc. Physics Sem-VI	
PHY361: Solid State Physics:	CO1: understand the crystal structure and types of Bravais lattices. CO2: Study of X-ray diffraction technique. CO3: Introduced to band theory of metals. CO4: Study of magnetic properties of solids.
PHY362: Quantum Mechanics	CO1: introduction to modern physics and development of quantum mechanics. CO2: setting up Schrodinger's steady state equation. CO3: problems like potential well, potential barrier, step, hydrogen atom CO4: introduction to operators.
PHY363: Thermodynamics and statistical physics	CO1: introduction of Kinetic theory of gases. CO2: importance of Maxwell's relation CO3: knowledge of Random walk problem. CO4: types of ensembles. CO5: introduction to Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics.
PHY364: Nuclear Physics:	CO1: understand properties of nucleus. CO2: study of Radioactivity. CO3: knowledge of types of nuclear forces and nuclear reactions. CO4: knowledge of types of particle accelerators.
PHY365: Electronics	CO1: know basic components like diode and its types, BJT, FET CO2: study of amplifiers and its types. CO3: introduction to power supplies. CO4: details of Digital electronics.
PHY-366(S): Lasers	CO1: know the about LASER. CO2. Understand the properties of LASER. CO3: understand different type of LASER.

PHY-367	CO1: handling of optical and measuring instruments CO2: learn to verify basic constants in physics CO3: verify laws of physics experimentally
Physics Laboratory-4A	CO1: handling of optical and measuring instruments CO2: learn to verify basic constants in physics CO3: verify laws of physics experimentally
PHY-369 Projects	CO1: develop skills of independent working CO2: learn Literature survey CO3: designing of physics/electronics experiments CO4: develop writing and presentation skills
PHY-3610(X): Solar PV Systems	CO1: Introduction to solar PV system CO2: Study of solar radiation and measurement CO3: learn basic solar PV system CO4: Analysis of MSEB bill
PHY-3611(AC): Radiation Physics	CO1: Study of interaction of radiation with matter CO2: understand radiation detectors CO3: Learn to radiation units and measurement of radiation exposure CO4: To understand radiation protection and their applications

Programme Outcomes: M.Sc. Physics.

Department of Physics	After successful completion of two-year degree program in Physics student should be able to:
Programme Outcomes	PO-1: apply the skill and knowledge in the design and development of electronic circuit to fulfil the needs of small-scale electronic industry. PO-2: become professionally trained in areas like material science, electronics, lasers and nonlinear circuits. PO-3: they will have a sense of academic and social ethics. PO-4: they will be able to recognize the need for continuous learning and develop throughout for the professional career. PO-5: they will be prepared to take up challenges as globally competitive physicists/researchers. PO-6: they will be technically and analytically skilled enough to pursue their further studies.
Programme Specific Outcomes	PSO-1: introduce advanced techniques and ideas required in developing areas of Physics. PSO-2: enhance students' ability to develop mathematical models for physical systems.

	<p>PSO-3: gain the knowledge of Physics through theory and practicals.</p> <p>PSO-4: understand good laboratory practices and safety.</p> <p>PSO-5: develop research-oriented skills.</p> <p>PSO-6: make aware and handle the sophisticated instruments.</p> <p>PSO-7: understand and apply principles of Physics for understand the scientific phenomenon in classical and quantum Physics.</p> <p>PSO-8 understand and apply statistical methods for describing the classical and quantum particle phenomenon in various physical systems.</p>
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Course Outcomes M.Sc. Physics

Semester-I

PHCT-111: Mathematical methods of physics:	<p>CO1: get familiar with Matrix Algebra.</p> <p>CO2: introduction to operators.</p> <p>CO3: uses of Special functions like Legendre, Bessel.</p> <p>CO4: uses of Fourier series, Fourier and Laplace transforms.</p>
PHCT-112: Classical Mechanics	<p>CO1: set up Lagrangian and Hamiltonian formulation.</p> <p>CO2: introduction to Canonical transformations and Poisson brackets.</p> <p>CO3: basics of Non-inertial frame of reference.</p> <p>CO4: information of Central force field problems.</p>
PHCT-113: Electronics	<p>CO1: know basic of Semiconductor Devices and its Applications.</p> <p>CO2: know basic of Special Function ICs and their Applications.</p> <p>CO3: know basic of Digital Logic Circuits I: Combinational Logic.</p> <p>CO4: know basics of analog to digital and digital to analog converter types.</p>
PHOT-114C4: Laser-Fundamentals and Applications	<p>CO1: understand principles of Interaction of radiation with matter, Einstein's coefficients.</p> <p>CO2: know basics of two, three and four level laser systems.</p> <p>CO3: Study of various laser systems like He-Ne, N₂, CO₂, Nd:YAG, Ruby, Excimer, Dye lasers.</p> <p>CO4: know applications of lasers.</p>
PHCP-115 Physics Lab I	<p>CO1: design skills of electronic circuits.</p> <p>CO2: handling of electronic instruments.</p> <p>CO3: understand of basic concepts of electronic devices.</p>

Semester II

PHCT-121: Electrodynamics:	<p>CO1: understand fundamentals of Multipole expansions and time varying fields</p> <p>CO2: understand the Reflection and refraction of electromagnetic waves.</p> <p>CO3: understand Wave equations in terms of electromagnetic potentials.</p> <p>CO4: know Relativistic Mechanics and Covariance.</p>
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PHCT-122: Atoms and Molecules:	CO1: know basics of Atomic structure and atomic spectra. CO2: understand of molecular spectra. CO3: get familiar with ESR, NMR and X-ray diffraction techniques.
PHCT-123: Quantum Mechanics I:	CO1: representation of state of system. CO2: using Dirac and Delta notations. CO3: concept of Angular Momentum. CO4: introduction to types of approximation methods
PHOT-124A4: Physics of Thin Films	CO1: understand synthesis method of thin film. CO2: properties of thin film.
PHCP-125 Physics Laboratory-II (General Lab)	CO1: perform Experiments. CO2: develop skills of independent working. CO3: designing of physics/electronics experiments.
<u>Semester III</u>	
PHCT-231 Statistical Mechanics	CO1: Study of probability theory CO2: To understand classical statistical mechanics CO3: Study applications of statistical mechanics CO4: Learn to ideal bose
PHCT-232 Solid State Physics	CO1: Introduction to crystal structure and band theory of solids CO2: To understand dimagnetism and paramagnetism CO3: To understand ferromagnetism and antiferromagnetism CO4: Learn superconductivity properties of solid
PHCT-233 Experimental Techniques in Physics - I	CO1: introduction to vacuum physics. CO2: study of various types of vacuum pumps. CO3: study of vacuum measuring gauges.
PHOT-234H4 Energy Studies – I	CO1: know Energy Sources. CO2: understand the Solar Radiation and Its Measurements. CO3: understand the Heat and Thermodynamics. CO4: know the types of energy storage systems.
PHCP-235 Physics Laboratory III	CO1: know how to write program. CO2: develop skills of independent working. CO3: know how to execute program.
<u>Semester IV</u>	
PHCT-241 Nuclear Physics	CO1: understand general properties and concepts of nuclei. CO2: know about radiation detectors and nuclear models. CO3: understand basics of reaction dynamics, nuclear reactors and accelerators. CO4: knowledge of nuclear interactions and particle physics.
PHCT-242 Experimental Techniques in Physics - II	CO1: know Radiation Sources, Detectors and Sensors. CO2: understand Structural Characterization and Thermal Analysis. CO3: understand Optical Microscopy, Morphological and Magnetic Characterization. CO4: get knowledge of Spectroscopic Analysis.
PHOT-243B4 Physics of Nanomaterials	CO1: understand properties of Nanomaterials. CO2: Study synthesis method of nanomaterials CO3: Properties of nanomaterials

	CO4: get knowledge of phase diagrams.
PHOT-244H4Energy Studies – II	CO1: know about Solar photovoltaic (SPV) Conversion. CO2: understand Photo-thermal Applications of Solar Energy. CO2: get knowledge of Hydrogen Energy.
PHCP-245 Project	CO1: develop skills of independent working CO2: learn Literature survey CO3: designing of physics/electronics experiments CO4: develop writing and presentation skills

DEPARTMENT OF STATISTICS

Programme Outcomes: B. Sc. Statistics

Department of Statistics	After successful completion of three-year degree program in Statistics a student will be able to;
Programme Outcomes	<p>PO-1 Gain sound knowledge on fundamental principles, concepts and application of Statistics and handling data related to Industrial, Engineering, Biological and Ecological problems.</p> <p>PO-2 Exhibit in depth the analytical and critical thinking to identify, formulate and solve real world problems in various fields</p> <p>PO-3 Gain adequate knowledge of statistical software.</p> <p>PO-4 A student should be able to collect, present and analyze the big data.</p> <p>PO-5 Apply their skills and knowledge to interpret results in statistical as well as simple language of analysed data</p> <p>PO-6 Be capable of undertaking suitable experiments/research methods while solving the real-life problem and would arrive at valid conclusions based on appropriate interpretations of data and experimental results.</p> <p>PO-7 Develop written and oral communications skills in order to effectively communicate design, analysis and research results.</p> <p>PO-8 Demonstrate appropriate inter-personal skills to function effectively as an individual, as a member or as a leader of a team and in a multi disciplinary setting.</p> <p>PO-9 Acquire competent positions in IT sector, Government sector and Academia as well.</p>
Programme Specific Outcomes	<p>PSOs-1 Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of Statistical tools and know how to use them by modelling, solving and interpreting.</p> <p>PSOs-2 To equip the students sufficiently in both analytical and computational skills in Statistics</p> <p>PSOs-3 To develop a competitive attitude for building a strong academic – industrial collaboration, with focus on continuous learning skills.</p> <p>PSOs-4 Enhancing students overall development and to equip them with Statistical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.</p> <p>PSOs-5 Enabling students to develop a positive attitude towards Statistics as an interesting and valuable subject of study.</p> <p>PSOs-6 Enabling students to Gauge the hypothesis, theories, and techniques provisionally.</p>
Course	Outcomes After completion of these courses' students should be able to;
<u>Semester-I</u>	

ST-MJ-111T: Descriptive Statistics-I	<p>CO-1: Understand meaning and importance of statistics.</p> <p>CO-2: Understand the concept of primary data, secondary data, data collection methods, statistical population and sampling methods.</p> <p>CO-3: Compute various measures of central tendency and measures of dispersion.</p> <p>CO-4: Compute raw and central moments and various measures of skewness and kurtosis.</p>
ST-MJ-112T : Elementary Probability Theory	<p>CO-1: Distinguish between random and non-random experiments. Understand the basic concept of probability.</p> <p>CO-2: Compute conditional probability.</p> <p>CO-3: Obtain a univariate probability Distribution,</p> <p>CO-4: Compute mathematical expectation of discrete random variable in the given situation.</p>
ST-MJ-113P: Statistics Practical -I	<p>CO-1: Use various graphical and diagrammatic techniques and interpretation.</p> <p>CO-2: Analyse data pertaining to discrete and continuous variables and to interpret the results.</p> <p>CO-3: Compute various measures of central tendency, measures of dispersion.</p> <p>CO-4: Compute raw and central moments and various measures of skewness and kurtosis.</p> <p>CO-5: Interpret summary statistics.</p>
ST-VSC-114T: Foundation of R Software	<p>CO-1: Install R, writing commands in R console and R editor</p> <p>CO-2: Do matrix operations, data handling and strings.</p> <p>CO-3: Know commonly used functions in R and manipulating data.</p> <p>CO-4: know loops used in R programming</p>
ST-SEC-115P: Statistical TechniquesUsing MS-Excel-I	<p>CO-1: Perform Operations with Formulas and Functions.</p> <p>CO-2: Draw diagrams and graphs and interpret it.</p> <p>CO-3: Compute and interpret averages and dispersions.</p> <p>CO-4: Compute and interpret skewness and kurtosis</p>
ST-IKS-116T: Ancient Science andStatistics in India	<p>CO-1: Get information about the origin and development of mathematics, astronomy, medicine and engineering in ancient India.</p> <p>CO-2: Get information about the ancient higher educational institutes in India.</p> <p>CO-3: Get information about the Indian statisticians.</p> <p>CO-4: Know statistical organizations in India.</p>
ST-OE-101T: Basic Statistics-I	<p>CO-1: Understand importance of statistics, scope of statistics, statistical organizations in India.</p> <p>CO-2: Understand the concept of primary data, secondary data, methods of data collection statistical population and sampling methods.</p> <p>CO-3: Prepare frequency distribution and draw graphs and diagrams.</p> <p>CO-4: Compute various types of measures of central tendency and measures of dispersion.</p>
	<p>CO-1: Get knowledge about introduction to ms-excel, basic excel functions and excel worksheet.</p>

ST-OE-101P: Statistics Practical-I	CO-2: Draw various types of graphs and diagrams. CO-3: Do tabulation and classification of the given data. CO-4: Compute various types of measures of central tendency and measures of dispersion.
<u>Semester-II</u>	
ST-MJ-121T: Descriptive Statistics -II	CO-1: Compute the correlation coefficient for bivariate data and interpret it. CO-2: Fit linear, quadratic and exponential curves to the bivariate data to investigate relation between two variables. CO-3: Compute and interpret various index numbers. CO-4: Understand theory of attributes.
ST-MJ-122T: Discrete Probability Distributions	CO-1: Understand concept of the various discrete probability distributions. CO-2: Apply various discrete probability distributions in real life situation. CO-3: Compute probability of the random variables for various discrete probability distributions. CO-4: Compute mean, variance and moments for various discrete probability distributions. CO-5: Fit various discrete probability distributions to the statistical data.
ST-MJ-123P- Statistics Practical-II	CO-1: Compute correlation coefficient, regression coefficients. CO-2: Compute probabilities of bivariate distributions. CO-3: Fit binomial and Poisson distributions. CO-4: Compute probabilities of bivariate distributions. CO-5: Draw random samples from Poisson and binomial distributions
ST-VSC-124P: Statistical Computing Using R Software	CO-1: Draw diagrams in R. CO-2: Draw graphs in R. CO-3: Prepare frequency table and frequency distribution in R. CO-4: Compute averages and measures of dispersion in R. CO-5: Compute coefficient of skewness and coefficient of kurtosis.
ST-SEC-125P: Statistical Techniques Using MS-Excel-II	CO-1: Use MS-Excel command for regression analysis. CO-2: Compute correlation coefficient, regression coefficients lines of regression in MS-Excel. CO-3: Fit binomial, Poisson and Negative Binomial distributions using MS-Excel. CO-4: Compute probabilities of Binomial, Poisson, Geometric and Negative Binomial distributions using MS-Excel. CO-5: Draw random samples from Poisson and binomial distributions using functions in MS-Excel. CO-6: Compute various index numbers in MS-Excel.
ST-MN-126T: An Introduction to Statistical Learning	CO-1: Understand meaning and importance of statistics.
	CO-2: Understand the concept of primary data, secondary data, data collection methods, statistical population and sampling methods.
	CO-3: Compute various measures of central tendency and measures of dispersion.

	CO-4: Compute raw and central moments and various measures of skewness and kurtosis.
ST-OE-102T: Basic Statistics-II	CO-1: Understand moments, skewness and kurtosis. CO-2: Understand the correlation, types of correlation, scatter diagram and methods of correlation coefficient. CO-3: Understand regression, lines of regression, fitting of regression lines, properties and coefficient of determination. CO-4: Compute various types of index numbers.
ST-OE-102P: Statistics Practical-II	CO-1: Understand moments, skewness and kurtosis. CO-2: Understand the correlation, types of correlation, scatter diagram and methods of correlation coefficient. CO-3: Understand regression, lines of regression, fitting of regression lines, properties and coefficient of determination. CO-4: Compute various types of index numbers. CO-5: Compute correlation coefficient and fit regression lines using MS-Excel. CO-6: Compute descriptive statistics and draw samples using MS-Excel.
<u>Semester-III</u>	
Course Outcomes	After completion of these courses students should be able to;
ST . 231 Discrete probability distributions and Time Series	CO-1. Understand some standard discrete probability distributions CO-2 .Write pmf of Negative Binomial Distribution,Multinomial distribution Truncated Distributions CO- 3. Understand meaning and utility of time series and its uses CO-4. Know R-Software , write commands in R CO-5 Do programmes using various commands in R
ST.232 Continuous Probability Distributions-I	CO-1.Understand Continuous Univariate Distributions Expectation, variance, M.G.F.,mode, median, Quartiles e tc. CO-2. understand Continuous Bivariate distributions Expectation,M.G.F.,and its properties CO-3. know Uniform distributios and its mathematical expectation,C.D.F. And applications CO-4. learn Normal distribution its pdf,mean variance distribution function applications etc. CO-5. learn exponetial Distribution their pdf,mean variance distribution function applications etc.
ST 233 Practical paper	CO-1 Do fitting of NBD, Normal distributions also using MS-EXCEL CO-2. draw model sample from exponential, normal distributions CO-3 Applcation of NBD ,Normal,Multinomial distribution. CO-4 plot time series graph ,exponential smoothing also using MS-EXCEL
<u>Semester IV</u>	
ST. 241 Test of significance and Statistical methods	CO-1 Understand the concept of Multiple linear Regression Model Partial correlation Coefficient, residual CO-2 Do testing of Hypothesis test of means,Propertions also using R software CO-3 Understand Meaning of Demography Death rate and Fertility rate CO-4. Know Queng Model,queue,M/M/1 : FIFO

ST.242 Sampling distributions and exact tests	CO-1 write pdf of Gamma, Chi-square distribution, Normal approximation and transformations CO-2. Understand t-distribution, write its pdf, mean, variance etc. CO-3. write pdf of F- distribution its derivation mean variance etc. CO-4 know meaning of Sampling distributions CO-5 learn tests based on Chi-square, t, F distributions
ST 243 Practical paper	CO-1 Compute GRR, NRR CO-2 write test for proportions CO-3. write tests based on Chi-square, t, and F distributions CO-4 Use basic R-Software commands CO-5 Do project based on data and do analysis of that data

DEPARTMENT OF ZOOLOGY

Programme Outcomes: B. Sc. Zoology

Programme outcomes: B.Sc. Zoology	
Department of Zoology	After successful completion of three-year program in Zoology a student is able to-
Programme outcomes	<p>PO-1 The students are expected to acquire the knowledge of basic science such as physics, Chemistry, Zoology.</p> <p>PO-2 The students are expected to understand scientific terms, concepts, facts, phenomenons, and their interrelationship.</p> <p>PO-3 The students develops ability to apply scientific methods, collection of scientific data, problem solving, organize scientific exhibitions, curiosity, thinking etc.</p> <p>PO-4 Students develops scientific outlooks in science and other subjects.</p> <p>PO-5 Students will develops interest in subject and scientific hobbies.</p> <p>PO-6 The students will appreciate the subject contribution of the scientists, scientific methods, scientific programs etc.</p> <p>PO-7 The students will develop skills in practical work, experiment and laboratory materials instruments.</p>
Program specific outcome	
Program specific outcome	<p>PSO-1. Students could understand the applications of Zoology</p> <p>PSO-2. Students could run the apiculture, poultry, dairy, vermitechnique, prawn culture and goat farming.</p> <p>PSO-3. Students could acquire basic knowledge of sex- determination in man.</p> <p>PSO-4. Students could acquire knowledge of inherited human diseases.</p> <p>PSO-5. Students could acquire basic knowledge of histology of human organs which will be the foundation for pathology.</p> <p>PSO-6. Students could acquire knowledge of complete B.Sc. Programme they could start additional source of income instead of running behind job.</p> <p>PSO-7. The students get develops skills in laboratory, experiments in laboratory which would be benefited in their future carrier.</p>
Course Outcome	
SEM-I	

ZO-MJ-111T - Systematics & Diversity of Life	CO 1- Understand classification and identification of animals. CO 2- Know the importance of classification of animals and classifies them effectively. CO 3- The student knows his role in nature as a protector, preserver and promoter of life. CO 4- Recognize our role as a caretaker and promoter of life.
ZO-MJ-112T - Fundamental of Cell Biology	CO1: Identify cell types based on structural peculiarities. CO2: Explain the functions of cell organelles. CO3: Recall the facts & definitions of cytology, mitosis, meiosis, etc. CO4: Explain the concept of cell division. CO5: Interpret the stage of cell division with the help of pictures.
ZO-MJ-113P - Zoology Practicals-I	CO1-Recall the classification system of Invertebrates and chordate animals. Identify the animals belonging to different phylum of animals. Retrieve the data of animals from field visit. CO2-Identify and classify the animals in Animal Kingdom according to Phylum and appropriate distinguishing characteristics of all phyla. CO3-Interpret the data of field visit. Organize the animals as per their hierarchy of classification. CO4-Classify and compare and distinguish the chordates and non chordates based on morphological characters of Animals. CO5-Compare the similarities and differences between animal and plant cell.
ZO-VSC-114T - Dairy production and Technology	CO1-Describe the nutritive value and composition of milk. Identify the various breeds of cattle. CO2-Understand the challenges in management and setting of dairies, Distinguish the cattle breed. CO3-Apply the knowledge of management of dairy to improve the business profit. Implement the dairy business. CO4-Explain history and future of dairy industry, Distribution map of dairy farming areas/ major milk producing regions in India.
ZO-SEC-115P - Medical Laboratory Technology	CO1- Students will understand glassware and equipment use in Laboratory. CO2- Get knowledge of the Clinical Biochemistry and role of Medical Lab Technologist. CO3- Review Fundamentals of Medical Laboratory Techniques. CO4- Understand the Principle and procedure of various laboratory test.
ZO-IKS-116T - Animal Diversity &	CO 1: Recall facts about animals in Indian culture. CO 2: Classify animals as per Indian tradition. CO 3: Compare habitat and behavioral diversity of animals.

Conservation in Indian Culture	<p>CO 4: Analyze role of Indian culture in animal conservation.</p> <p>CO 5: Explain role of animals in ecosystem.</p> <p>CO 6: Predicts correlation between Indian culture and animal domestication.</p>
SEM-II	
ZO-MJ-121T -Human Physiology	<p>CO 1- Learn various physiological processes.</p> <p>CO 2 - Define various terms of physiology</p> <p>CO 3 - Draw various figures of Human physiological system.</p> <p>CO 4 - Summarize what he learns in Human physiology.</p>
ZO-MJ-122T - Genetics	<p>CO1- Define different terminology of genetics. Describe the concepts of Genetics, gene interaction, lethal genes, euploidy, aneuploidy, sex linked inheritance and principles of inheritance.</p> <p>CO2- Understand the cause and effect of alterations in chromosome number and structure.</p> <p>CO3- Apply the principles of Mendelian inheritance in Human Traits.</p> <p>CO4- Relate the conventional and molecular methods for gene manipulation in other biological systems.</p> <p>CO5- Appraise and differentiate between multiple alleles and multiple genes.</p>
ZO-MJ-123P - Zoology Practicals-II	<p>CO 1-The student will gain a basic understanding on human genetics and hereditary.</p> <p>CO 2-Student should able to define various terms of Genetics.</p> <p>CO 3- Students can apply to real life situations and one's life the principles of human heredity.</p> <p>CO 4- They learn about estimation of Blood Group</p>
	<p>CO1 -Describe the concepts of apiculture, importance of bee keeping, traditional and modern bee keeping methods.</p> <p>CO2 -Aware about the medical properties of honey and its application in various fields, its nutrients and composition.</p>

<p>ZO-VSC-124P - Bee Keeping</p>	<p>CO3 -Apply the knowledge of bee keeping in establishment and maintenance of bee colonies and for the use of various equipment to obtained bee products like honey, bee wax, royal jelly etc. Demonstrate the technique of handling the bees and processing of honey.</p> <p>CO4 -Explain the social organization and division of labour in the honeybees. Compare the indigenous and exotic species of honeybees and differentiate queen, workers and drone bees.</p> <p>CO5 -Appraise the importance of propagation of bee flora and its role in the agricultural crop pollination. Evaluate the impact of pesticides on honeybees.</p> <p>CO6 -Design the calendar for management of bee colonies. Prepare the proposal for financial assistance from banks for starting a bee keeping project.</p>
<p>ZO-SEC-125P - Public Health and Hygiene</p>	<p>CO1- Describe maintenance of personal hygiene.</p> <p>CO2- Classify food into micro and macro nutrients.</p> <p>CO3 -Explain non-communicable diseases/Life style diseases.</p> <p>CO4- Discriminate between a pandemic, an epidemic, endemic, and an outbreak.</p> <p>CO5- Review about Nutrient deficiency diseases.</p>
<p>ZO-MN-126T-Animal Systematics</p>	<p>CO1-Define terms related to animal systematics and outline the system of classification.</p> <p>CO2-Outline the general characters of chordates and illustrate their salient features.</p> <p>CO3-Demonstrate the culturing method of paramecium and explain its morphology.</p> <p>CO4-Explain modes of migration in fishes, birds and parental care in Amphibians.</p> <p>CO5-Classify the invertebrates on the basis of comparative morphology of animals and justify the reasons.</p>
<p>SEM-III</p>	
<p>ZO-231: Animal Diversity III</p>	<p>CO-1. The students will be able to understand, classify and identify the diversity of higher vertebrates.</p> <p>CO-2. The students will able to understand the complexity of higher vertebrates</p> <p>CO-3. The students will be able to understand different life functions of higher vertebrates.</p> <p>CO-4. The students will be able to understand the linkage among different groups of higher vertebrates.</p> <p>CO-5. The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing and understanding life.</p>

<p>ZO-232: Applied Zoology I</p>	<p>CO-1. The learner understands the basics about beekeeping tools, equipment, and managing beehives.</p> <p>CO-2. The learner understands the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.</p> <p>CO-3. The learner understands the biology, varieties of silkworms and the basic techniques of silk production.</p> <p>CO- 4. The learner understands the types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.</p>
<p>SEM-IV</p>	
<p>ZO-241: Animal Diversity IV</p>	<p>CO-1. The students will be able to understand, classify and identify the diversity of higher vertebrates.</p> <p>CO-2. The students will able to understand the complexity of higher vertebrates</p> <p>CO-3. The students will be able to understand different life functions of higher vertebrates.</p> <p>CO-4. The students will be able to understand the linkage among different groups of higher vertebrates.</p> <p>CO-5. The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing and understanding life.</p>
<p>ZO-242: Applied Zoology II</p>	<p>CO-1. The learner understands the basics about beekeeping tools, equipment, and managing beehives.</p> <p>CO-2. The learner understands the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.</p> <p>CO-3. The learner understands the biology, varieties of silkworms and the basic techniques of silk production.</p> <p>CO- 4. The learner understands the types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.</p>
<p>SEM-V</p>	
<p>ZO-351:Pest Management</p>	<p>CO-1. Define pest management, Describe the economic, ecological, and sociological benefits of IPM.</p> <p>CO-2. Distinguish positive and negative impacts of pesticide use, Understand problems resulting from misuse, overuse, and abuse of chemical pesticides.</p> <p>CO-3. Define and describe pesticide resistance and how it develops and Identify ecological and biological characteristics important in development of pest populations.</p> <p>CO-4. Identify 10 tactics commonly used in IPM and be able to distinguish them.</p> <p>CO-5. Understand society's role in IPM decisions and different groups of pests and compare them to weeds and plant pathogens.</p>

ZO-352:Histology	<p>CO-1. The students will be able to understand, classify and identify the different types of tissue. CO-2. The students will understand the complexity of various tissues in an organ.</p> <p>CO-3. The students will be able to learn structure & functions of various tissues.</p> <p>CO-4. The students will understand the various diseases related to organs.</p> <p>CO-5. The student will be able to know the role of glands in mammals.</p>
ZO-353: Biological Chemistry	<p>CO-1. Learners shall be able to understand basic concepts and significance of biochemistry</p> <p>CO-2. The students will learn about the pH and Buffers.</p> <p>CO-3. The students will learn about the chemical structures of carbohydrate, and their biological and clinical significance.</p> <p>CO-4. The students will be able to understand, interpret structure and importance of proteins, carbohydrates and lipids</p> <p>CO-5. Learners will be able to comprehend variations in enzyme activity and kinetics</p>
ZO-356: Parasitology	<p>CO-1. The students will be able to learn about basics and scope of parasitology.</p> <p>CO-2. The students will be able to learn the types of host and parasite with examples.</p> <p>CO-3. The students will be able to learn about the morphology, life cycle, pathogenicity and treatment of common parasites (Protists and Platyhelminthes).</p> <p>CO- 4. The students will be able to learn about host -parasite relationships and their effects on host body.</p> <p>CO-5. The students will be able to learn about the arthropod parasites and their role as vector.</p>
SEM-VI	
ZO-3511: Poultry Management	<p>CO-1.The students will be able to understand the Poultry farming practices.</p> <p>CO-2. The students will able to understand the poultry breeding techniques.</p> <p>CO- 3. The students will be able to understand poultry rearing techniques.</p> <p>CO-4. The students will be able to understand feeding requirement and food ingredients.</p> <p>CO- 5. The students will be able to understand the poultry disease and their pathogens.</p> <p>CO-6. The students will be able to understand market value of poultry products.</p>
	<p>CO-1. The students will be able to understand the basics principles of Medical and Forensic Zoology.</p> <p>CO-2. The students will able to understand scientific methods in crime detection.</p> <p>CO-3. The students will be able to understand the advancements in the field of Medical and Forensic Zoology.</p> <p>CO-4. The students will be able to understand modern tools,</p>

ZO-361: Medical & Forensic Zoology	<p>techniques and skills in forensic investigations.</p> <p>CO-5. The students will be able to describe the fundamental principles and functions of forensic science and its significance to human society.</p>
ZO-362: Animal Physiology	<p>CO-1. The various physiological organ-systems and their importance to the integrative functions of the human body.</p> <p>CO-2. Understand Concept of energy requirements CO-3. Various aspects of Digestive physiology.</p> <p>CO-4. Circulatory system with medical conditions CO-5. Understand Respiratory mechanism and gases transport.</p> <p>CO-6. Eliminations of waste materials from the body.</p> <p>CO-7. Develop understanding in Structure and functions of muscles</p> <p>CO-8. Understand formation of gametes and function of endocrine glands.</p>
ZO-363: Molecular Biology	<p>CO-1. Learner shall get an insight into molecular mechanisms of various biological processes in cells and organisms</p> <p>CO-2. Learner shall get an insight into the Structure of DNA and RNA, DNA and RNA as genetic material</p> <p>CO-3. The course shall prepare learner to get insight into the Central Dogma of Molecular Biology</p> <p>CO-4. Learner shall also understand the concept of gene regulation</p> <p>CO-5. Learner shall get an insight into the DNA Damage and Repair</p>
ZO-364: Entomology	<p>CO-1. Understand basic concepts in Entomology and its scope.</p> <p>CO-2. Learn morphology and anatomy of Insects. CO-3. Understand the concept of social organization in Insects.</p> <p>CO-4. Understand the development process of Insects.</p> <p>CO-5. Identify disease causing insect vectors. CO-6. Will be able to design and implement pest controlling methods against pests.</p>
ZO-366: Evolutionary Biology	<p>CO-1. Students will be able to learn most of the essential aspects of Evolutionary Biology in detail which will help them in acquiring better understanding regarding the subject.</p> <p>CO-2. Explain important processes, principles and concepts and critically evaluate theories and empirical research within evolutionary biology CO-3. Apply evolutionary theory and concepts to address empirical and theoretical questions in evolutionary biology.</p> <p>CO-4. Independently investigate evolutionary questions using literature and analyses of empirical data.</p> <p>CO-5. Communicate the principles, theories, problems and research results associated with questions that lie within the evolutionary framework to students.</p>

Programme Outcomes: M. Sc. Zoology

Department	After successful completion of two-year degree program in Zoology
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of Zoology	a student is able to:
Programme Outcomes	<p>PO-1. Zoology knowledge: Apply the knowledge of Zoology, Life Sciences and allied subjects to the understanding of complex life processes and phenomena.</p> <p>PO-2. Problem analysis: Identify, review research literature, and analyze complex situations of living forms.</p> <p>PO-3. Design/development of solutions: Design processes/strategies that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.</p> <p>PO-4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions in real situations.</p> <p>PO-5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and ICT tools for understanding of the subject.</p> <p>PO-6. The Postgraduate and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.</p> <p>PO-7. Environment and sustainability: Understand the impact of the natural and anthropogenic activities in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Identify a range of invertebrates and vertebrates and justify their conservation.</p> <p>PO-8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the work/research practice.</p> <p>PO-9. Project management and finance: Demonstrate knowledge and understanding of Zoology and management principles and apply these to one's own work, as a member and leader in a team.</p>

Programme Specific Outcomes: M. Sc. Zoology

Department of Zoology	After successful completion of two-year degree program in Zoology a student is able to:
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Programme Specific Outcomes	<p>PSO-1. Students could understand the basic concepts of an Entomology</p> <p>PSO-2. Students could understand the applications of basic zoology and applied zoology.</p> <p>PSO-3. Students could run the Economic Zoology.</p> <p>PSO-4. Students could acquire basic knowledge of Biochemical Techniques.</p> <p>PSO-5. Students could acquire knowledge of genetical disorders; Students could acquire basic knowledge of Physiology of human organs.</p> <p>PSO-6. Students could acquire knowledge of complete M.Sc. programme they could start additional source of income instead of running behind job.</p> <p>PSO-7. The students get develops skills in laboratory, experiments in laboratory which would be helpful in their future carrier.</p>
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Course Outcomes: M. Sc. Zoology

Course	Outcomes
	After completion of these courses students should be able to;
Semester – I	
ZOUT-111: Biochemistry and Biochemical Techniques	<p>CO-1. Define basic terms in biochemistry and biochemical techniques.</p> <p>CO-2. Explain the applications of the various biochemical techniques.</p> <p>CO-3. Explain the structure and functions of various biomolecules.</p> <p>CO-4. Explain the importance of tools and techniques in biology.</p> <p>CO-5. Illustrate the importance of pH, buffer and water in living systems.</p> <p>CO-6. Illustrate the principle, working and applications of basic techniques used in biology</p>
ZOUT-111: Biochemical techniques	<p>CO-1. Explain the importance and applications of techniques in biochemistry.</p> <p>CO-2. Explain the principle and applications of various chromatographic techniques with examples.</p> <p>CO-3. Explain the principle, working, materials used and applications of electrophoresis.</p> <p>CO-4. Describe the concept of light, electromagnetic spectrum and its application in absorption spectroscopy.</p> <p>CO-5. Justify the applications of radioactivity compounds in biology.</p>
ZOUT-112: Cell Biology and Developmental Biology	<p>CO-1. Label the various cell parts</p> <p>CO-2. Sketch and label various types of cells and cell organelles.</p> <p>CO-3. Explain carbon as backbone of biomolecules.</p> <p>CO-4. Explain the ultrastructure and functions of various cell organelles.</p> <p>CO-5. Explain the concepts of cell signaling.</p> <p>CO-6. Illustrate the chemistry and organization of cytoskeleton.</p> <p>CO-7. Illustrate the types, development and causes of tumor.</p> <p>CO-8. Diagrammatically represent the cell cycle phases and its regulation.</p> <p>CO-9. Define the terms in developmental biology</p> <p>CO-10. Explain the significance of model organism for developmental</p>

	studies.
ZOUT-113: Genetics and English in Scientific Communication	<p>CO-1. Define the basic terminologies in genetics.</p> <p>CO-2. Identify genetic disorders based on Karyotypes and traits.</p> <p>CO-3. Explain the concept of Mendelian genetics, gene, gene regulation and multiple alleles.</p> <p>CO-4. Discuss Linkage and crossing with their types and significance.</p> <p>CO-5. Explain the principles of Population genetics.</p> <p>CO-6. Illustrate the modified Mendelian laws of inheritance.</p> <p>CO-7. Justify the inheritance of qualitative and quantitative traits.</p>
ZODT-114: Freshwater Zoology	<p>CO-1. Enlist the diagnostic features of shrimps.</p> <p>CO-2. Explain the types of aquatic habitats.</p> <p>CO-3. Discuss the aquatic adaptations of common freshwater forms.</p> <p>CO-4. Explain the adaptations in freshwater Turtles and Crocodiles.</p> <p>CO-5. Illustrate the physicochemical properties of water.</p> <p>CO-6. Demonstrate the effect of pollutants on freshwater bodies</p> <p>CO-7. Justify the presence of zooplanktons and aquatics forms in freshwater bodies.</p>
ZOUP-115: Basic Zoology Lab-1. (Practical)	<p>CO-1. Identify the developmental stages of chick embryo, cell structures and phases of cell division</p> <p>CO-2. Identify the grammatical mistakes from the given paragraph and common errors in written and spoken presentations.</p> <p>CO-3. Write a scientific project and research article along with its proof reading.</p> <p>CO-4. Demonstrate the working of different microscopes, colorimetric and spectrophotometric methods, cell fractionation and ligature in Drosophila larvae</p> <p>CO-5. Determine the gene distance and order, genotype and phenotype ratios and allelic frequencies from the given data.</p> <p>CO-6. Estimate sugar and protein by suitable biochemical method, and isolate protein from biological source.</p> <p>CO-7. Prepare acid and base solutions of desired strength, buffers, bacterial Culture, chick embryo culture and Drosophila culture.</p> <p>CO-8. Prepare temporary slide of various cells to demonstrate the cell morphology and cell division, giant chromosome and pedigree analysis chart.</p> <p>CO-9. Calculate % retention and % elution of amino acids on given ion exchanger.</p>
ZODP-114: Practical Freshwater Zoology	<p>CO-1. Identify commercially important freshwater fish.</p> <p>CO-2. Identify the aquatic adaptations in common freshwater forms.</p> <p>CO-3. Prepare the culture of Paramecium and Daphnia.</p> <p>CO-4. Estimate the hardness and chloride content in water samples.</p> <p>CO-5. Analyze the Zooplanktons from local freshwater bodies.</p>

	CO-6. Evaluate the bio-indicators of pollution in freshwater.
Semester – II	
ZOUT-121- Molecular Biology and Bioinformatics	<p>CO-1. Explain the DNA structure & types, topology, Physical properties; chromatin structure and organization.</p> <p>CO-2. Discuss genome organization, DNA and Protein sequencing with their application in evolutionary studies.</p> <p>CO-3. Explain the mobile DNA elements.</p> <p>CO-4. Explain mechanism of DNA damage and repair.</p> <p>CO-5. Illustrate the process of DNA replication, transcription, translation and their regulations.</p> <p>CO-6. Illustrate the database tools with their significance.</p> <p>CO-7. Schematically represent the processes of central dogma.</p> <p>CO-8. Justify the post translational and post transcriptional modifications.</p>
ZOUT-122: Endocrinology and Parasitology	<p>CO-1. Discuss the roles of Pituitary gland and pineal body.</p> <p>CO-2. Explain hormonal regulation of biomolecules and mineral metabolism.</p> <p>CO-3. Describe the role of osmoregulatory and gastrointestinal hormones.</p> <p>CO-4. Explain the role of hormones in moulting, change in body colour of crustaceans; yolk synthesis in amphibians; insect development.</p> <p>CO-5. Explain the hormonal regulation of metabolism.</p> <p>CO-6. Illustrate the mechanism of hormone action and role of hormone receptors.</p> <p>CO-7. Justify hormones as coordination molecules.</p> <p>CO-8. Justify the significance of biological clocks and rhythms.</p>
ZOUT-123: Comparative Animal Physiology & Environmental Biology	<p>CO-1. Explain the physiology of processes like digestion, respiration, muscle contraction and excretion.</p> <p>CO-2. Describe the mechanism of thermoregulation in both poikilotherms and homeotherms.</p> <p>CO-3. Explain the mechanism of chemical communication in vertebrates.</p> <p>CO-4. Comment on the structure and functions of various sense organs.</p> <p>CO-5. Illustrate the concept of osmotic regulation in various animals with suitable examples.</p> <p>CO-6. Compare the physiology of regulatory mechanisms in various groups of animals.</p> <p>CO-7. Justify the survival strategies of organism in varied climatic conditions</p> <p>CO-8. Justify the evolution of various life processes in living forms.</p>
ZODT-124:	CO-1. Define basic terminologies of metabolic pathways.

<p>Metabolic Pathways</p>	<p>CO-2. Explain the laws of thermodynamics, concept of free energy a ATP as currency molecule.</p> <p>CO-3. Describe the Concepts and regulation of metabolism.</p> <p>CO-4. Discuss the oxidation of fatty acids and its significance.</p> <p>CO-5. Illustrate the electron transport chain and oxidative phosphorylation.</p> <p>CO-6. Illustrate the reactions, energetics and regulation of glycolysis, glycogen biosynthesis, TCA cycle, Purine and Pyrimidine metabolism</p> <p>CO-7. Write the general reactions of various metabolic pathways.</p> <p>CO-8. Justify the role of enzymes in metabolism</p>
<p>ZOUP-125: Basic Zoology Lab-2 (Practical)</p>	<p>CO-1. Identify the various parasites and parasitic stages of common parasites, nitrogenous wasteproducts of animals, freshwater planktons and slides of endocrine glands.</p> <p>CO-2. Explain the principle and significance of gonadectomy, Thyroidectomy and pancreatotomy.</p> <p>CO-3. Demonstrate the role of eye stalk and insulin in sugar level in crab.</p> <p>CO-4. Demonstrate the retro cerebral complex in cockroach.</p> <p>CO-5. Demonstrate the RBCs of common vertebrates and effect of various osmolarities.</p> <p>CO-6. Demonstrate the effect of body size, oxygen consumption and Insulin on aquatic animal.</p> <p>CO-7. Determine the bleeding and clotting time, heartbeat of crab, species richness in selected area, physico-chemical properties of soil and water.</p> <p>CO-8. Perform Sterilization of lab equipment, prepare microbial culture, Isolate Bacterial, liver DNA and RNA from given sample, quantify and resolve them using electrophoretic procedures, analyze protein sample by PAGE and SDS PAGE and construct phylogenetic tree using tools in bioinformatics.</p>
<p>Semester – III</p>	
<p>ZOUT-231: Entomology- I (Special Paper)</p>	<p>CO-1. Define entomology and Insects and understand origin and evolution of insects and their relation to other arthropods.</p> <p>CO-2. Give outline of Classification of insects up to family with distinguishing characters and examples of each order and family.</p> <p>CO-3. Explain the structure, chemical composition and functions of Integument and Derivatives of Integument.</p> <p>CO-4. Explain the structure, modifications of insect body regions and their appendages.</p> <p>CO-5. Explain the Comparative anatomical and histological structure of various body systems.</p>

	<p>CO-6. Explain the location structure and functions of various Endocrine and Exocrine glands.</p> <p>CO-7. Explain the location and structure of Light and Sound producing organs in various insects</p>
<p>ZOUT-232: graFundamentals of Systematics and Economic Zoology</p>	<p>CO-1. Explain principles, methods of biological classification and diversity in kingdom Animalia.</p> <p>CO-2. Explain the importance of taxonomic keys and taxonomic characters.</p> <p>CO-3. Explain the principles of zoological classification and nomenclature</p> <p>CO-4. Discuss the various taxonomic procedures and molecular phylogenetics & phylogeography</p>
<p>ZOUT-232: Economic Zoology</p>	<p>CO-1. Illustrate the lac culture, apiculture, prawn culture, vermiculture Poultry, dairy industry and Piggery.</p> <p>CO-2. Explain the role of insects of economic importance.</p> <p>CO-3. Explain parasitic roundworms of animal and plants.</p> <p>CO-4. Signify the role of parasitic and soil protozoan in human welfare.</p> <p>CO-5. Justify the use of animals in pharmaceutical research.</p> <p>CO-6. Explain coral reef and its significance</p>
<p>ZOUT- 233:Research Methodology and Insect Physiology and Biochemistry</p>	<p>CO-1. Demonstrate knowledge of research processes (reading, evaluating, and developing)</p> <p>CO-2. Perform literature reviews using print and online databases.</p> <p>CO-3. Select and define appropriate research problem and parameters to prepare a project proposal.</p> <p>CO-4. Identify, explain, compare, and prepare the key elements of a research proposal/report.</p> <p>CO-5. Compare and contrast quantitative and qualitative research paradigms</p> <p>CO-6. Use sampling methods, measurement scales and instruments, and appropriate uses of each.</p> <p>CO-7. Justify the rationale for research ethics,</p>
<p>ZOUT-233:Insect Physiology and Biochemistry</p>	<p>CO-1. Explain the structure, Chemistry of integument and sclerotization.</p> <p>CO-2. Describe the process of digestion and metabolism</p> <p>CO-3. Explain the characteristics of haemolymph and types of haemocytes.</p> <p>CO-4. Illustrate the structure, physiology and biochemistry of flight muscle.</p> <p>CO-5. Demonstrate the process of excretion, detoxification and water balance</p> <p>CO-6. Justify the role of insect hormones in physiological processes.</p>
<p>ZODT-233:</p>	<p>CO-1. List the primary and secondary immune organs.</p>

<p>Immunology</p>	<p>CO-2. Explain the concepts of immunity, self-nonsel immune response, autoimmune disease.</p> <p>CO-3. Explain the theories of antibody synthesis and generation of antibody diversity.</p> <p>CO-4. Explain the principle and application of the common techniques used in Immunology</p> <p>CO-5. Illustrate the events and dynamics of inflammation</p> <p>CO-6. Compare the MHC molecules and diseases associated with HLA.</p> <p>CO-7. Differentiate between active and passive immunization</p> <p>CO-8. Compare the three pathways of complement fixation pathway.</p>
<p>Semester – IV</p>	
<p>ZOUT-241: Entomology- II</p>	<p>CO-1. Explain Gametogenesis, Fertilization and ovipositional.</p> <p>CO-2. Explain embryonic developmental stages such as Cleavage, Blastoderm and Germ band formation; Gastrulation, Blastokinesis, differentiation of germ layers, Segmentation and Appendages formation and organogenesis.</p> <p>CO-3. Explain post-embryonic developmental stages such as Nymph, Naiad, larva, Pupa and Metamorphosis.</p> <p>CO-4. Explain specialized reproductive mechanisms.</p> <p>CO-5. Explain Hadorns experiments with imaginal disc, Regeneration and Aging.</p> <p>CO-6. Explain Occurrence, Initiation, Preparations for diapauses and its Controls.</p>
<p>ZOUT242: Mammalian Reproductive Physiology and Aquaculture</p>	<p>CO-1. Explain the male and female reproductive systems and sexual dimorphic characteristics</p> <p>CO-2. Explain the sexual cycles with examples</p> <p>CO-3. Illustrate the reproductive dysfunctions</p> <p>CO-4. Diagrammatically represent the hormonal regulation of reproductive processes like pregnancy, lactation and parturition.</p> <p>CO-5. Prepare the flow chart to demonstrate the hormonal coordination of reproductive Processes</p> <p>CO-6. Justify the artificial control of reproduction.</p>
<p>ZOUT-242: Aquaculture</p>	<p>CO-1. Identify the fish diseases and the causative organisms</p> <p>CO-2. Mention the various composite fish culture with significance of each type.</p> <p>CO-3. Describe the methods of freshwater prawn culture and its management.</p> <p>CO-4. Explain the methods of pearl culture and pearl harvesting.</p> <p>CO-5. Illustrate the preparation and management of fish culture ponds.</p> <p>CO-6. Demonstrate the methods of packaging and transport of fish</p>

	<p>and brood fish.</p> <p>CO-7. Illustrate techniques of fish harvesting, preservation & processing.</p> <p>CO-8. Compare the techniques used in fishery development.</p>
ZODT-243: Pest Control	<p>CO-1. Explain the Pest, nature of damage caused by pests and pest control.</p> <p>CO-2. Explain medical, veterinary, Household and stored grain pests.</p> <p>CO-3. Explain the Principles and methods of pest control including Biological control measures</p> <p>CO-4. Explain the Integrated pest management (IPM)</p>
ZODT-244: Apiculture	<p>CO-1. Explain the basic concepts of apiculture like systematics, colony organization, polymorphism, morphology and foraging.</p> <p>CO-2. Explain the tools and management of apiary.</p> <p>CO-3. Explain the importance of institutions pertinent to apiculture.</p> <p>CO-4. Discuss the setup of beekeeping business.</p> <p>CO-5. Illustrate the bee keeping as occupation.</p>

DEPARTMENT OF MICROBIOLOGY

Programme Outcomes: B.Sc. Microbiology

Department of Microbiology	After successful completion of three year degree program in Microbiology student should be able to
Programme Outcomes	<p>PO-1 Acquired knowledge and understanding of the microbiology concepts as applicable to diverse areas such as medical, industrial, environment, genetics, agriculture, food and others.</p> <p>PO-2 Demonstrate key practical skills/competencies in working with microbes for study and use in the laboratory as well as outside, including the use of good microbiological practices.</p> <p>PO-3 Competent enough to use microbiology knowledge and skills to Analyze problems involving microbes, articulate these with peers/ team members/ other stake holders, and undertake remedial measures/studies etc.</p> <p>PO-4 Developed abroad perspective of the discipline of Microbiology to enable him to identify challenging societal problems and plan his professional career to develop innovative solutions for such problems.</p>
Programme Specific Outcomes	<p>PSO1- For the subject of Microbiology the outcomes are defined in terms of the understanding and knowledge of the students in microbiology and the practical skills the students are required to have to be competitive microbiologist so that They are able to play their role as microbiologist where we required in the society such as the diseases caused by the microbes, their diagnosis and remedies; the role of microbiologists in the biotechnology industry and how they may be able of it the bill in the industry.</p> <p>PSO2-The students are also trained in such a way that they develop critical Thinking and problem solving as related to the microbiology.</p> <p>PSO3 - The curriculum envisions that the student, once graduate as specialists in a discipline have an important role to play in the newer developments and innovations in the future in the subject for advancement of the discipline.</p> <p>PSO4-The students graduating in this degree must have through understanding of basic knowledge or understanding of the fundamentals of Microbiology as Applicable to wide ranging contexts.</p>

Course Outcomes: Microbiology

Semester-I

Course Outcomes	After completion of these courses students should be able to:-
MB-OE-101 T Food and Dairy Microbiology	<p>CO-1 food and the role of intrinsic and extrinsic factors on the growth and survival of microorganisms and obtain information on food spoilage of microorganisms.</p> <p>CO2: Understand the principles of traditional food preservation techniques, including salting, pickling, refrigeration, freezing, oxidation, and canning / bottling.</p> <p>CO3: Analyze the types of starter cultures such as lactic acid bacteria, fermented milk, products, probiotics, SCP and edible mushrooms.</p> <p>CO4: Get and remember the microorganisms that cause food intoxication and food contamination.</p> <p>CO-5: Describe the role of microorganisms used in everyday life. The role of microorganisms.</p> <p>CO-6 The role of microorganisms in the functioning of the global ecosystem.</p>
MB-OE-01 P Food and Dairy Microbiology- based Practical	<p>CO-1: Will be able to isolate, detect and identify microorganisms in milk.</p> <p>CO2: Will be able to identify microorganisms that spoil fruits and vegetables, bread, mushrooms.</p> <p>CO-3: It will be able to identify and analyze microbes in canned food.</p> <p>CO-4: The effect of temperature on the spoilage of food products and will be able to analyze it.</p>
<u>Semester-II</u>	
MB-MN-101T: Introduction to Microbial World	<p>CO-1: The students will develop understanding about the diversity, identification, classification of Microorganisms.</p> <p>CO-2: Understand the concepts of Abiogenesis and biogenesis.</p> <p>CO-3: Study the different branches of Microbiology.</p> <p>CO-4 Study bacterial nomenclature and classification.</p> <p>CO-5: Study the difference between prokaryotic and eukaryotic microorganisms and their cell structures.</p> <p>CO-6. Understand the scope of Microbiology.</p> <p>CO-7 Study the microorganisms employed in biopesticide, biofertilizer, fermented food products etc</p> <p>CO-8 The role of Microorganisms in functioning of global ecosystem.</p>

<p>MB-OE-102 T Humans and Viral Infections</p>	<p>CO-1: It describes the microorganisms present in the human body. The human body and different types of associations between microorganisms can be defined.</p> <p>CO-2: Give examples of various pathogens. Immunity in the human body prerogatives it will be possible to tell the importance of the sites that are there.</p> <p>CO-3: explaining the microorganisms present on the human body and the importance of diseases.</p> <p>CO-4: Variations in different types of microbial interactions in the human body and airborne, waterborne infections, foodborne, zoonotic and vector-borne infections.</p> <p>CO-5: Knowledge of various branches of microbiology.</p> <p>CO-6: Difference between prokaryotic and eukaryotic microorganisms and their cell structure.</p>
<p>MB-OE-102 P Humans and Viral Infections</p>	<p>CO-1: Study of the presence of microorganisms in the human body.</p> <p>CO-2: Isolation and identification of bacteria from different samples.</p> <p>CO-3: Different blood groups can be studied.</p> <p>CO-4: Helps to monitor microorganisms.</p> <p>CO-5: Isolation of bioinoculants.</p> <p>CO-6: The study of microbes in the air.</p> <p>CO-7: Bacteriological testing of water</p> <p>CO-8: The study of antibiotic-producing organisms.</p>

Faculty of Humanities

DEPARTMENT OF ECONOMICS

PROGRAM OUTCOMES: B. A. ECONOMICS

DEPARTMENT OF ECONOMICS	After successful completion of three year degree program in Economics student should be able to
Programme Outcomes	PO-1. To able to understand basic concepts of economics. PO-2. To able to analyze economic behavior in practice. PO-3. Understand the economic way of thinking. PO-4. The ability to analyze historical and current events from an economic perspective. PO-5. The ability to write clearly expressing an economic point of view. PO-6. Be exposed to alternative approaches to economic problems through exposure to coursework in allied fields. PO-7. To create student's ability to suggest of the various economic problems.

PROGRAM SPECIFIC OUTCOMES: B. A. ECONOMICS

DEPARTMENT OF ECONOMICS	After successful completion of three year degree program in Economics student should be able to
Program Specific Outcomes	PSO-1. To able to understand basic concepts of economics. PSO-2. Use the basic models of consumer and firm theory to derive consumer demand and firm input functions; and demonstrate key results in economic theory (such as the laws of demand and supply). PSO-3. Explain what is meant by economic efficiency and the mechanism by which competitive markets lead to an efficient allocation of resources. PSO-4. The ability to analyze historical and current events from an economic perspective. PSO-5. The ability to write clearly expressing an economic point of view. PSO-6. Analyze economic information and develop solutions to economic problems. PSO-7. To create student's ability to suggest of the various economic problems. PSO-8. Recognize that although economists address economic problems with a common approach, the science is ever changing, and one's approach must be regularly evaluated and updated. PSO-9. Explain the distinction between real and nominal values, and why this matters for understanding consumer and firm behaviour as well as the national economy.

	PSO-10. Predict the impact of fiscal and monetary policy – use of deficits, changes in the money supply, etc. – on overall economic performance.
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COURSE OUTCOMES: B. A. ECONOMICS

Course	Outcomes
	After completion of these courses students should be able to :-
<u>Semester-I</u>	
DISCIPLINE SPECIFIC CORE COURSE (DSC-1) Indian Economy – I (EC-MJ -111T)	CO-1. Understand characteristics and the current problems of Indian Economy CO-2. Identify the factors contributing to the recent growth of the Indian economy. CO-3. To familiarize the students with the recent developments in the Indian Economy Evaluate impact of LPG policies on economic growth in India. CO-4. Analyze the sector specific policies adopted for achieving the inspirational go. CO-5. Review various economic policies adopted.
DISCIPLINE SPECIFIC CORE COURSE (DSC-2) Agriculture Economics- I (EC-MJ -112T)	CO-1. To understand the importance of agriculture in economic development CO-2. To Examine and recognize the Issues and problems in Indian Agriculture CO-3. To provide the students with a detailed treatment of Issues and problems in agriculture Economics, Particularly in the Indian Context CO-4. Ability to develop awareness for new trends in Indian Agriculture Sector
VOCATIONAL SKILL COURSE-VSC - I: Basic Banking System (EC - VSC-113T)	CO-1. Clear understanding of evolution of banks CO-2. Clear understanding banking principles and Balance sheet

<p>INDIAN KNOWLEDGE SYSTEM (IKS): History of Indian Economic Thought (EC-IKS-117T)</p>	<p>CO-1. Understand of evolution Economic Ideas and Thought of Kautilya's, Dadabhai Naoroji, M.G. Ranade , Gopal Krushna Gokhale, Mahatma Gandhi</p> <p>CO-2. Understand of evolution Economic Ideas and Thought J. K. Mehta, D. R. Gadgil, Dr. B. R. Ambedkar and Dr. Amartya Sen.</p> <p>CO-3. Ability to take a critical account of the reactions against Indian Economic Thought</p>
<p>OPEN ELECTIVE: 1. Indian Banking System (EC-OE01T)</p>	<p>CO-1. To apply understanding about the Indian Banking System</p> <p>CO-2. To understand about the various aspects and working of Indian Banking System like Retail Banking, Wholesale Banking, Risk Management, Banking Technology, Micro finance and Micro credit</p>
<p><u>Semester-II</u></p>	
<p>DISCIPLINE SPECIFIC CORE COURSE (DSC-3) Indian Economy –I (EC-MJ -121T)</p>	<p>CO-1. Identify the factors contributing to the recent growth of the Indian economy.</p> <p>CO-2. Students will learn the major policy regimes of government and also try to resolve problems from Agriculture and Industrial sector of India.</p> <p>CO-3. Evaluate impact of LPG policies on economic growth in India</p> <p>CO-4. At the end of the course students will understand the different aspect of Labour and Economic Planning and its impact on Indian Economy</p> <p>CO-5. Analyze the sector specific policies adopted for achieving the inspirational goals</p>
<p>DISCIPLINE SPECIFIC CORE COURSE (DSC-4) Agriculture Economics-II (EC-MJ -122T)</p>	<p>CO-1. To understand the importance of agriculture in economic development</p> <p>CO-2. To Examine and recognize the Issues and problems in Indian Agriculture</p> <p>CO-3. Enhance the student's awareness on contemporary debates of problems of Agriculture sector.</p> <p>CO-4. To provide the students with a detailed treatment of Issues and problems in agriculture Economics, Particularly in the Indian Context</p> <p>CO-5. Ability to develop awareness for new trends in Indian Agriculture Sector.</p>
<p>VOCATIONAL SKILL COURES (VSC-II) 1. Modern Banking (EC-VSC123T)</p>	<p>CO-1. Clear understanding of various concepts of modern banking Techniques.</p>
<p>INDIAN KNOWLEDGE SYSTEM (IKS): History of Indian Economic Thought (EC-IKS-117T)</p>	<p>CO-1. Understand of evolution Economic Ideas and Thought of Kautilya's, Dadabhai Naoroji, M.G. Ranade, Gopal Krushna Gokhale, Mahatma Gandhi</p> <p>CO-2. Understand of evolution Economic Ideas and Thought J. K. Mehta, D. R. Gadgil, Dr. B. R. Ambedkar and Dr. Amartya Sen.</p>

<p style="text-align: center;">OPEN ELECTIVE: 1. Population Studies in India (EC-OE-02T)</p>	<p>CO-1. In recent times, changing characteristics of the population have acquired importance and these have also been included in the framework of study.</p> <p>CO-2. Migration and urbanization are the characteristics of structural change taking place in a society. Their study is essential to understand the dynamics of this change.</p> <p>CO-3. The paper exposes the students to sources of population and related characteristics as also to the rationale, need and evolution of population policy.</p>
<p style="text-align: center;">SKILL ENHANCEMENT COURSE SEC-I: 1. Financial Market in India (EC-SEC-115T)</p>	<p>CO-1. Student will learn about The Introduction of Indian Financial Market.</p> <p>CO-2. Student will learn about The Introduction of Financial Market.</p> <p>CO-3. Student will learn about The Money Market.</p> <p>CO-4. Student will learn about The Capital Market.</p> <p>CO-5. Student will learn about The Investors Protection</p>
<p style="text-align: center;">SKILL ENHANCEMENT COURSE SEC-I: 2. Introduction to Economics of Tourism (EC- SEC-125 T)</p>	<p>CO-1. Tourism has economic impacts, including improved tax revenue, personal income.</p> <p>CO-2. Increased standards of living, and more employment opportunities.</p>
Semester-III	
<p style="text-align: center;">DSE-1A S-1: Micro Economics-I (23151)</p>	<p>CO-1. To develop an understanding about subject matter of Economics.</p> <p>CO-2. To impart knowledge of microeconomics.</p> <p>CO-3. To clarify micro economic concepts.</p> <p>CO-4. To analyze and interpret charts, graphs and figures.</p> <p>CO-5. To develop an understanding of basic theories of micro economics and their application.</p> <p>CO-6. To demonstrate that the theories discussed in class will usually be applied to real-life situations.</p> <p>CO-7. To help the students to prepare for varied competitive examinations.</p>
<p style="text-align: center;">DSE-2A S2: Macro Economics-I (23152)</p>	<p>CO-1. To introduce students to the historical background of the emergence of macroeconomics.</p> <p>CO-2. To familiarize students with the differences between microeconomics and macroeconomics</p> <p>CO-3. To familiarize students with various concepts of national income</p> <p>CO-4. To familiarize students with Keynesian macroeconomic theoretical framework of consumption and investment functions</p> <p>CO-5. To introduce students to the role of money in an economy.</p> <p>CO-6. To introduce students to the conceptual and theoretical frameworks of inflation, deflation and stagflation, Business Cycle.</p>
Semester-IV	
<p style="text-align: center;">CC-1C G2: Financial System-I</p>	<p>CO-1. To understand fundamentals of modern financial system.</p> <p>CO-2. To understand the recent trends and developments in banking system.</p> <p>CO-3. To understand the role of the Reserve Bank of India in Indian financial</p>

(23153)	<p>system.</p> <p>CO-4. To provide the knowledge of various financial and non-financial institutions.</p> <p>CO-5. To provide the students the intricacies of Indian financial system for better financial decision making.</p>
SEC-2A Basic Concept of Research Methodology-I (23154)	<p>CO-1. Prepare a chart showing the steps of research.</p> <p>CO-2. Prepare a chart showing the sampling technique.</p> <p>CO-3. Prepare Charts showing sources of primary data.</p> <p>CO-4. Prepare a chart showing sources of secondary data.</p> <p>CO-5. Construct a questionnaire to measure student's attitude towards the purchase of two wheelers / readymade garments etc.</p> <p>CO-6. Collect the data related to any schemes of your locality and Present in front of the students.</p> <p>CO-7. Construct a questionnaire for collection of primary data on any Social issue.</p>
DSE-2B S-1: Micro Economics-II (24151)	<p>CO-1. Student is expected to understand the behavior of an economic agent, namely, a consumer, a producer, a factor owner, and the price fluctuation in a market.</p> <p>CO-2. To understand nature and scope of economics, the theory of consumer behavior, analysis of production function and equilibrium of a producer, the price formation in different markets structures and the equilibrium of a firm and Industry.</p> <p>CO-3. To able to understand concept of Revenues and cost of Production.</p> <p>CO-4. To able to understand Linear & Non- Linear functional relationship.</p> <p>CO-5. To able to understand price determination of factors (Rent, wages, interest and Profit.)</p> <p>CO-6. To able to understand meaning of social welfare function.</p>
DSE-2B S2: Macro Economics-II (24152)	<p>CO-1. To introduce students to the historical background of the emergence of macroeconomics.</p> <p>CO-2. To familiarize students with the differences between microeconomics and macroeconomics.</p> <p>CO-3. To introduce students to the conceptual and theoretical frameworks of Inflation, deflation and stagflation, Business Cycle.</p> <p>CO-4. To familiarize students with the conceptual and theoretical framework of business cycles.</p> <p>CO-5. To introduce students to the role of monetary and fiscal policies in fulfilling the macroeconomic objectives of stability, full employment and growth.</p> <p>CO-6. To introduce students to the various instruments of monetary and fiscal policies.</p>
CC-2D Financial System-II (24153)	<p>CO-1. To develop an understanding about subject matter of Economics.</p> <p>CO-2. To impart knowledge of microeconomics.</p> <p>CO-3. To clarify micro economic concepts.</p> <p>CO-4. To analyze and interpret charts, graphs and figures.</p> <p>CO-5. To develop an understanding of basic theories of micro economics and their application.</p> <p>CO-6. To demonstrate that the theories discussed in class will usually be applied to real-life situations.</p> <p>CO-7. To help the students to prepare for varied competitive examinations.</p>
SEC-2B	CO-1. Demonstrate his/her understanding of sampling methods and

Basic Concept of Research Methodology-I I (24154)	<p>the ability to use collection of data.</p> <p>CO-2. Identify the appropriate sample techniques for different kinds of research questions.</p> <p>CO-3. Identify the appropriate source of data in relation to the collection of Research data.</p> <p>CO-4. Able to classify and present the collected data in the form of graph, bar diagram, chart etc.</p>
<u>Semester-V</u>	
G-3: Economic Development and Planning (3157)	<p>CO-1. To understand the differences between Economic growth and Development, Indicators of Economic Development.</p> <p>CO-2. To able to understand Characteristics of Developing Countries.</p> <p>CO-3. To able to understand Constraints on Development Process.</p> <p>CO-4. To able to understand theories and Approaches of economic development.</p> <p>CO-5. To able to understand some growth models.</p> <p>CO-6. To understand macroeconomic policies, roll of foreign capital and economic planning etc. in developing countries.</p>
S-3: International Economics (3158)	<p>CO-1. To able to understand Nature, Scope and Importance of International Economics.</p> <p>CO-2. To able to understand theories international trade.</p> <p>CO-3. To able to understand gains from international trade & their measurements.</p> <p>CO-4. To able to understand theory of intervention in trade.</p> <p>CO-5. To able to understand the theory of regional blocks.</p> <p>CO-6. To able to understand trade policies in India.</p> <p>CO-7. To able to understand international financial institutions.</p> <p>CO-8. To able to understand foreign direct investments.</p> <p>CO-9. To able to understand foreign exchange market.</p>
S-4: Public Finance (3159)	<p>CO-1. To able to understand Functions and Role of Government in Economy and Meaning, Nature, Scope & Importance's of public finance</p> <p>CO-2. To understand various Approaches about Role of Government and Principle of Maximum Social Advantage- Dr. Dalton.</p> <p>CO-3. To able to understand concept of public expenditure and understand concept of public revenue.</p> <p>CO-4. To able to understand incidence & approaches of taxation.</p> <p>CO-5. To able to understand concept of public debt.</p> <p>CO-6. To able to understand concept of budget & deficit finance.</p> <p>CO-7. To able to understand taxation & public debt of India.</p> <p>CO-8. To able to understand fiscal federalism in India.</p>

PROGRAM OUTCOMES: M. A. ECONOMICS

	<p>After successful completion of three year degree program in Economics student should be able to</p>
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Programme Outcomes	<p>PO-1. Use the basic models of consumer and firm theory to derive consumer demand and firm input functions; and demonstrate key results in economic theory (such as the laws of demand and supply).</p> <p>PO-2. Use models to describe economic phenomena; analyze and make predictions about the impact of government intervention and changing market conditions on consumer and producer behavior and well-being.</p> <p>PO-3. Explain what is meant by economic efficiency and the mechanism by which competitive markets lead to an efficient allocation of resources.</p> <p>PO-4. Recognize that markets fail to efficiently allocate resources in the presence of externalities, market power, and imperfect information.</p> <p>PO-5. The ability to write clearly expressing an economic point of view.</p> <p>PO-6. Discuss the potential for efficiency-improving government intervention into inefficient markets.</p> <p>PO-7. To create student's ability to suggest of the various economic problems.</p> <p>PO-8. Explain the distinction between real and nominal values, and why this matters for understanding consumer and firm behavior as well as the national economy.</p> <p>PO-9. Predict the impact of fiscal and monetary policy – use of deficits, changes in the money supply, etc. – on overall economic performance.</p> <p>PO-10. Discuss the costs and causes of unemployment, and assess public policies to ameliorate it.</p> <p>PO-11. Discuss economic globalization and the inter-connectedness of nations.</p>
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PROGRAM SPECIFIC OUTCOMES: M. A. ECONOMICS

After successful completion of two year degree program in Economics student should be able to

Program Specific Outcomes	<p>PSO-1. To able to understand basic concepts of economics.</p> <p>PSO-2. Use the basic models of consumer and firm theory to derive consumer demand and firm input functions; and demonstrate key results in economic theory (such as the laws of demand and supply).</p> <p>PSO-3. Explain what is meant by economic efficiency and the mechanism by which competitive markets lead to an efficient allocation of resources.</p> <p>PSO-4. The ability to analyze historical and current events from an economic perspective.</p> <p>PSO-5. The ability to write clearly expressing an economic point of view.</p> <p>PSO-6. Analyze economic information and develop solutions to economic problems.</p> <p>PSO-7. To create student's ability to suggest of the various economic problems.</p> <p>PSO-8. Recognize that although economists address economic problems with a common approach, the science is ever changing, and one's approach must be regularly evaluated and updated.</p> <p>PSO-9. Explain the distinction between real and nominal values, and why this matters for understanding consumer and firm behavior as well as the national economy.</p> <p>PSO-10. Predict the impact of fiscal and monetary policy – use of deficits, changes in the money supply, etc. on overall economic performance.</p>
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COURSE OUTCOMES: M. A. ECONOMICS

Course	Outcomes
	After completion of these courses students should be able to :-
<u>Semester-I</u>	
EC-MJ -411T Micro Economic Analysis-I (Mandatory Theory)	CO-1. To provide a thorough understanding of the principles of economics CO-2. To enable students to apply micro economic concepts in various contexts. CO-3. To enable understanding the basic theories in microeconomics such as demand theory, production theory, market structures. CO-4. To discuss the modern developments in micro economics such as Modern Demand theories. CO-5. Ability to apply the concepts of micro economics such as demand, supply, revenue, cost, elasticity, etc.
EC-MJ -413T : International Trade (Mandatory Theory)	CO-1. To develop an understanding of the theoretical concept in international trade. CO-2. To analyze international economics with reference to terms of trade, trade policy, trade agreements etc. CO-3. To provide knowledge to students regarding recent developments and changes in international banking, international banking agreements etc. CO-4. To make the students understand role of international economic organization and global crisis development. CO-5. Ability to understand the concepts of international economics such as comparative cost, terms of trade, trade policies and trade agreements CO-6. Ability to interpret and apply theory relating to understand international trade CO-7. Ability to discuss and debate the effects of trade policy, trade agreements, exchange rate policies on the world economy/trade
EC-MJ -414T : Money Market (Mandatory Theory)	CO-1. Offers theoretical and practical knowledge of managing the capital resources of an organization or company in an efficient way CO-2. Provide analytical skill and facilitate study of Money markets, basics of trading and its regulation, market forces, demand and supply CO-3. Understand the risks, returns as well as legal parameters of a Money market CO-4. Observe and interpret Money markets to uncover potential opportunities.

<p>EC-ME -415T Agricultural Economics (Elective Theory)</p>	<p>CO-1. To develop an understanding of agricultural economics in the theoretical as well as practical context CO-2. To discuss and debate the various issues and challenges faced by agrarian economies w.r.t. production, productivity, efficiency, employment, etc. CO-3. Ability to analyze and evaluate the subject with reference to various aspects of agrarian economies</p>
<p>EC-MJ -415T Research Methodology</p>	<p>CO-1. Develop demonstrate and examine topics under Economics to pursue research CO-2. Evaluate and examine subject areas in economics and explore possibilities of research.</p>
<p><u>Semester-II</u></p>	
<p>EC-MJ -421T : Micro Economic Analysis II (Mandatory Theory)</p>	<p>CO-1. To provide a thorough understanding of the principles of economics CO-2. To enable students to apply micro economic concepts in various contexts. CO-3. To enable understanding the basic theories in microeconomics such as demand theory, production theory, market structures. CO-4. To discuss the modern developments in micro economics such as Game Theory. CO-5. Ability to apply the concepts of micro economics such as demand, supply, revenue, cost, elasticity, etc.</p>
<p>EC-MJ -422T Public Economics II (Mandatory Theory)</p>	<p>CO-1. To develop an understanding of various policies in public economics like fiscal policy, public debt policy, fiscal finances, etc. CO-2. To help the students to understand the normative policies and compare it with the policies framed and followed by Indian economy. CO-3. To impart information to the students about the reforms like taxation reforms in India. CO-4. Ability to understand, apply and analyze concepts-public debt, budget, fiscal policy in public economics. CO-5. Ability to interpret the theories relating to public economics in real life situations. CO-6. Ability to discuss and debate on the public finance and policies w.r.t. India</p>

<p>EC-MJ -423T: International Finance (Mandatory Theory)</p>	<p>CO-1. To develop an understanding of the theoretical concept in international finance- Balance of Payments, exchange rate policies, capital flows, etc. CO-2. To compare and contrast the scenarios on international trade in India vis-à-vis the world economy. CO-3. To provide knowledge to students regarding recent developments and changes in international banking, international banking agreements etc. CO-4. To make the students understand role of international economic organization and global crisis development. CO-5. Ability to understand and interpret the concepts such as Balance of Payments, Exchange Rates, Foreign Exchange transactions, International capital flows, etc. CO-6. Ability to critically analyze the effects of deficits, exchange risk, role of foreign capital on the world economy/trade CO-7. Ability to discuss and debate on subjects related to international trade and finance w.r.t the Indian Economy</p>
<p>EC-MJ -425T: Capital Market (Mandatory Theory)</p>	<p>CO-1. Learn the importance and working of capital market. CO-2. Understand the working of BSE and NSE, and OTCEI in detail. CO-3. Aware about working of capital market in India. CO-4. Expose them to various instruments of capital market. CO-5. Learn and acquire the knowledge of financial services offered by agencies.</p>
<p>EC-ME -425T : Labour Economics (Elective Theory)</p>	<p>CO-1. To develop an understanding of labour economics in the theoretical as well as practical context. CO-2. To discuss and debate the various issues and challenges faced by labour with reference to division of labour, employment, wage determination, etc. CO-3. To demonstrate on the various aspects of labour dynamics and labour relations w.r.t. India CO-4. Ability to analyze and evaluate the subject with reference to various aspects of Labour economics. CO-5. 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.</p>
<p>EC-FP -428T: Field Project (FP)</p>	<p>CO-1. Therefore regular students who do their post-graduation, as internal students will be given an opportunity to get exposed to a few elements of social research and also they are expected to complete a small research project under the expert guidance and supervision. CO-2. To understanding of various branches of Economics. CO-3. It is essentially a job-oriented exercise to enable them to take up the exciting field of social and economic research.</p>
<p>Semester – III</p>	
<p>EC3001 Macro Economics Analysis-I (32301)</p>	<p>CO-1. To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in real-life situations. CO-2. To discuss the modern developments in macroeconomics. CO-3. Ability to analyze and demonstrate knowledge of the basic theories / laws in macroeconomics. CO-4. At the end of the course, the student should be able to evaluate</p>

	macroeconomic concepts, models and its use in real life situations.
EC-3002: Growth & Development – I (32302)	<p>CO-1. To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc.</p> <p>CO-2. To analyze and evaluate the obstacles in the process of economic growth and development.</p> <p>CO-3. Ability to apply the concepts of economic growth and compare international comparison of economic development, etc.</p> <p>CO-4. Ability to analyze and demonstrate knowledge of the economic growth and development theories of economic growth and development</p>
EC-3003: Research Methodology- I (32303)	<p>CO-1. To enable an understanding of Research and its methods under various areas of economics.</p> <p>CO-2. To demonstrate the practical and the applied aspects of research in relation to Economics.</p> <p>CO-3. Ability to develop, demonstrate and examine topics under Economics to pursue research.</p> <p>CO-4. Ability to evaluate and examine subject areas in economics and explore possibilities of research.</p>
EC3004: Demography (32305)	<p>CO-1. To provide an understanding of Demography and its application under various topics under economics.</p> <p>CO-2. To demonstrate the practical and the applied aspects of Demography and the study of Population and its relation to Economics.</p> <p>CO-3. Ability to develop, demonstrate and examine various topics under Demography.</p> <p>CO-4. Ability to evaluate and examine subject areas in economics bringing out the relation to population studies and demography.</p>
Semester – IV	
EC4001: Macro I Economics Analysis- II (42301)	<p>CO-1. To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in various contexts.</p> <p>CO-2. To discuss the modern developments in macroeconomics.</p> <p>CO-3. Ability to analyze and demonstrate knowledge of the basic theories/laws in economics- general equilibrium psychological law of consumption, etc.</p> <p>CO-4. At the end of the course, the student should be able to evaluate macroeconomic concepts, models and its use in real life situations.</p>
EC-4002: Growth & Development II (42302)	<p>CO-1. To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc.</p> <p>CO-2. To analyze and evaluate the obstacles in the process of economic growth and development.</p> <p>CO-3. to analyze and demonstrate knowledge of the economic growth and development theories of economic growth and development.</p> <p>CO-4. Ability analyze, evaluate and apply the growth and development concepts, role of human capital, etc. in real life situations.</p>
EC-4003: Research Project (Only Regular Students) (42303)	<p>CO-1. To enable an understanding of Research and its methods under various areas of economics.</p> <p>CO-2. Ability to develop, demonstrate and examine topics under Economics to pursue research.</p> <p>CO-3. To demonstrate the practical and the applied aspects of research in relation to Economics.</p> <p>CO-4. Ability to evaluate and examine subject areas in economics and explore</p>

	<p>possibilities of research.</p> <p>CO-5. Post- graduation, as internal students will be given an opportunity to get exposed to a few elements of social research and also they are expected to complete a small research.</p> <p>CO-6. Therefore, regular students who do their project under the expert guidance and supervision, Elementary knowledge of research</p> <p>CO-7. Methodology shall consolidate and deepen their understanding of various branches of Economics. Preparing a small dissertation is intended to train them in scientific thinking and art of systematic presentation.</p>
<p>EC-4004: Economics of Environment (42306)</p>	<p>CO-1. To develop an understanding of the economics of environment in the theoretical as well as practical context.</p> <p>CO-2. To discusses various analytical tools to comprehend various environmental issues.</p> <p>CO-3. Ability to analyze and evaluate the subject with reference to various aspects of the economics of environment.</p> <p>CO-4. Ability to develop an understanding of the economics of environment and various analytical tools to comprehend environmental issues.</p>

DEPARTMENT OF ENGLISH

Programme Outcomes: B. A. English

After successfully completing undergraduate B.A. English Program students should be able to:	
Programme Outcomes	<ul style="list-style-type: none">• Critical Thinking <p>PO-1-Interpret literature by applying critical approaches.</p> <p>PO-2-Able to implement literary devices.</p> <p>PO-3-Get acquainted with the terminology in critical appreciation.</p>
	<ul style="list-style-type: none">• Comprehension Skills <p>PO-4-To comprehend evolution of different genre of literature.</p>
	<ul style="list-style-type: none">• Effective Communication <p>PO-5-To develop oral and written communication skills in English.</p> <p>PO-6-To enhance vocabulary and its application in communication</p>
	<ul style="list-style-type: none">• Business Communication <p>PO-7-To apply syntactic in business communication.</p>
	<ul style="list-style-type: none">• Social Interaction <p>PO-8-To use interpersonal and intrapersonal communication skills to interact in different situations.</p>
	<ul style="list-style-type: none">• Ideal Citizenship <p>PO-9-To inculcate values of ideal citizen through creating respect self and others.</p>
	<ul style="list-style-type: none">• Ethics <p>PO-10-To study and understand what is right and wrong in human behavior.</p> <p>PO-11-To give real and practical guidance to our lives.</p>
	<ul style="list-style-type: none">• Environment and Sustainability <p>PO-12-To take care of our Eco-system for future of mankind.</p> <p>PO-13-To sustain natural resource to protect life.</p>
	<ul style="list-style-type: none">• Goal Oriented Education <p>PO-14-To engage students on reaching a specific objective driven by purpose.</p>

Programme Specific Outcomes: B. A. English

After successfully completing undergraduate B.A. English Program students should be able to:	
Programme Specific Outcomes	<p>PSO-1. To comprehend evolution of criticism and its application in language and literature.</p> <p>PSO-2. Able to comprehend renowned master pieces of English literature.</p>

	PSO-3. To apply English language to improve skills in Listening, Speaking, Reading and Writing.
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Course Outcomes: B. A. English

Course	Outcomes
	After completion of these courses students should be able to:
<u>Semester-I</u>	
Introduction to English Language-1	CO-1: Identify and classify speech sounds CO-2: Acquire skill of transcription using IPA CO-3: Identify and classify kinds of noun, pronoun, adjective and verb CO-4: Acquire the skills of building vocabulary using morphological processes CO-5: Recognize and differentiate types of morpheme CO-6: Understand the characteristics that distinguish human and animal Communication
Introduction to English Literature-1	CO-1: Prioritize human relationships over material wealth CO-2: Recognize that wisdom comes from self-reflection and introspection CO-3: Eradicate racial prejudice and discrimination CO-4: Recognize the significance of elements in short story CO-5: Explore the characteristics and structures of different poetic genres CO-6: Enhance creative writing and self-expression by employing figures of speech
Communicative Competence in English	CO-1: Enriching spoken ability in English CO-2: Ability of using language and knowing people CO-3: Awareness among students about mispronunciation CO-4: Acquire the basic skills of effective writing
Introduction To Electronic Media	CO - 1: Develop their skills in field of Electronic Media CO - 2: Hold a live discussion, television programme, radio announcement and editing CO -3: Develop innovative thinking, investigation skills and analytical skills
Enhancing English Communication Skills- 1	CO-1: Develop active listening skills to understand English speakers CO-2: Enhance ability to express fluently, confidently, and coherently in English CO-3: Enhance reading skills in English, such as skimming, scanning, and critical analysis CO-4: Acquire and utilize non-verbal cues and body language effectively CO-5: Learn formal and informal communication styles used in professional settings
Classical Performing Arts of India	CO-1: Apply the principles of Rasa Theory in the interpretation and evaluation of artistic and literary works

	<p>CO-2: Appreciate and respect the <i>guru-shishya parampara</i> (teacher-student tradition) in performing arts of India</p> <p>CO-3: Know the and respect multi-dimensional nature and importance of IKS</p> <p>CO-4: Ignite the poetic pleasure among themselves and society</p> <p>CO-5: Motivate to explore for further studies and potentials through IKS</p>
Grooming Life Skills - I	<p>CO-1: Self-Competency and Confidence</p> <p>CO-2: Intellectual Competency</p> <p>CO-3: Professional Competency</p> <p>CO-4: Acquire Career Skills</p>
<u>Semester-II</u>	
Compulsory English (11011/11012)	<p>CO-1. Revise and reinforce structures already learnt.</p> <p>CO-2. Learn importance of vocabulary.</p> <p>CO-3. Realize the beauty of literature.</p> <p>CO-4. Develop the ability to appreciate ideas and think critically.</p> <p>CO-5. Enhance employability by developing linguistic competence.</p> <p>CO-6. Enrich communication skills for corporate sector.</p>
Optional English (General Paper-1) (11331/11332)	<p>CO-1. Know the basics of literature and language.</p> <p>CO-2. Develop an integrated view about language and literature.</p> <p>CO-3. Interpret, evaluate and analyze literary pieces of different genres.</p> <p>CO-4. Comprehend elements of short story and one act play.</p> <p>CO-5. Acquaint with minor literary forms of English literature.</p> <p>CO-6. Appreciate creative use of language and literature.</p> <p>CO-7. Know the basics of phonology to speak English correctly.</p> <p>CO-8. Enhance job-potential through improving language skills.</p>
<u>Semester-III</u>	
Compulsory English (CC) (23001/24001)	<p>CO-1. Revise and reinforce grammar for better linguistic competence.</p> <p>CO-2. Know importance of soft skills for employability.</p> <p>CO-3. Enrich vocabulary.</p> <p>CO-4. Demonstrate competence in usage of language in day to day life.</p> <p>CO-5. Know best universal human values.</p> <p>CO-6. Contribute emotional quotient and independent thinking.</p>
SEC-1 Advanced Study of English Language (23333/24333)	<p>CO-1. Familiar various components of language.</p> <p>CO-2. Acquire linguistic competence</p> <p>CO-3. Enhance communication skills.</p> <p>CO-4. Know importance of semantics and syntax.</p>
DSC 1 Appreciating Drama (23331/24331)	<p>CO-1. Identify elements of the genre.</p> <p>CO-2. Interpret the prescribed plays by applying the theory</p> <p>CO-3. Analyze scenes and acts of the play.</p> <p>CO-4. Understand types of characters.</p> <p>CO-5. Develop literary competence to help pleasure by reading prescribed plays.</p> <p>CO-6. Evaluate the prescribed plays by categorizing their types.</p>

<p>DSC-2 Appreciating Poetry (23332/24332)</p>	<p>CO-1. Identify and describe types of poetry. CO-2. Identify various elements of poetry. CO-3. Describe literary devices used in poetry. CO-4. Summarize a poem. CO-5. Discuss various literary devices in a poem. CO-6. Critically appreciate prescribed poems.</p>
<p><u>Semester-IV</u></p>	
<p>Compulsory English (CC) (23001/24001)</p>	<p>CO-1. Revise and reinforce grammar for better linguistic competence. CO-2. Know importance of soft skills for employability. CO-3. Enrich vocabulary. CO-4. Demonstrate competence in usage of language in day to day life. CO-5. Know best universal human values. CO-6. Contribute emotional quotient and independent thinking.</p>
<p>SEC-1 Advanced Study of English Language (23333/ 24333)</p>	<p>CO-1. Familiar various components of language. CO-2. Acquire linguistic competence CO-3. Enhance communication skills. CO-4. Know importance of semantics and syntax.</p>
<p>DSC 1 Appreciating Drama (23331/24331)</p>	<p>CO-1. Identify elements of the genre. CO-2. Interpret the prescribed plays by applying the theory CO-3. Analyze scenes and acts of the play. CO-4. Understand types of characters. CO-5. Develop literary competence to help pleasure by reading prescribed plays. CO-6. Evaluate the prescribed plays by categorizing their types.</p>
<p>DSC-2 Appreciating Poetry (23332/24332)</p>	<p>CO-1. Identify and describe types of poetry. CO-2. Identify various elements of poetry. CO-3. Describe literary devices used in poetry. CO-4. Summarize a poem. CO-5. Discuss various literary devices in a poem. CO-6. Critically appreciate prescribed poems.</p>
<p><u>Semester-V</u></p>	
<p>Course: 3017 Compulsory English</p>	<p>CO-1. Define communicative use of language in Indian Context. CO-2. Identify types of sentences. CO-3. Outline the idea of varied cultural experiences. CO-4. Define types of communication. CO-5. Summarize in English Prose and Poetry. CO-6. Apply sentence transformation in given format.</p>
<p>Course: 3337 General III Advanced Study of English Language and Literature</p>	<p>CO-1. Define communicative use of language in Indian Context. CO-2. Identify types of sentences. CO-3. Outline the idea of varied cultural experiences CO-4. Define types of communication. CO-5. Summarize in English Prose and Poetry.</p>

	CO-6. Apply sentence transformation in given format.
Course: 3338 Special III Appreciating Novel	CO-1. Define purpose and types of fiction. CO-2. Comprehend various elements of a novel. CO-3. Apply critical theories to the study of novel. CO-4. Identify different literary devices used in novel CO-5. Compare and contrast the prescribed novels in the syllabus.
Course: 3339 Special IV Introduction to Literary Criticism	CO-1. Define criticism and identify different types of criticism. CO-2. Outline the history of English literary criticism CO-3. Analyze independently prose passages and poems. CO-4. Compare and contrast different critical theories. CO-5. Develop literary competence for aesthetic pleasure.
Course: 3339 (SEC 2-C & SEC 2-D) Title of the Paper: Mastering Life Skills and Life Values	CO-1.To equip the students with the social skills CO-2.To train the students interpersonal skills CO-3.To build self-confidence and communicate effectively CO-4.To Encourage the students to think critically CO-5.To learn stress management and positive thinking CO-6.To enhance leadership qualities CO-7.To aware the students about universal human values CO-8.To develop overall personality of the students
<u>Semester-VI</u>	
Course: 3017 Compulsory English	CO-1. Define communicative use of language in Indian Context. CO-2. Identify types of sentences. CO-3. Outline the idea of varied cultural experiences. CO-4. Define types of communication. CO-5. Summarize in English Prose and Poetry. CO-6. Apply sentence transformation in given format.
Course: 3337 General III Advanced Study of English Language and Literature	CO-1. Define communicative use of language in Indian Context. CO-2. Identify types of sentences. CO-3. Outline the idea of varied cultural experiences CO-4. Define types of communication. CO-5. Summarize in English Prose and Poetry. CO-6. Apply sentence transformation in given format.
Course: 3338 Special III Appreciating Novel	CO-1. Define purpose and types of fiction. CO-2. Comprehend various elements of a novel. CO-3. Apply critical theories to the study of novel. CO-4. Identify different literary devices used in novel CO-5. Compare and contrast the prescribed novels in the syllabus.
Course: 3339 Special IV Introduction to Literary Criticism	CO-1. Define criticism and identify different types of criticism. CO-2. Outline the history of English literary criticism CO-3. Analyze independently prose passages and poems. CO-4. Compare and contrast different critical theories. CO-5. Develop literary competence for aesthetic pleasure.

Course: 3339 (SEC 2-C & SEC 2-D) Title of the Paper: Mastering Life Skills and Life Values	CO-1.To equip the students with the social skills CO-2.To train the students interpersonal skills CO-3.To build self-confidence and communicate effectively CO-4.To Encourage the students to think critically CO-5.To learn stress management and positive thinking CO-6.To enhance leadership qualities CO-7.To aware the students about universal human values CO-8.To develop overall personality of the students
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Course Outcomes: M. A. English

Course	Outcomes
	After completion of these courses students should be able to :-
	FYPG
Contemporary Studies in English Language	CO - 1: Understand how linguistic concepts can be applied to the study of literature CO -2: Familiarize with the tools of language that may be used in translation, textual analysis, etc. CO -3:Understand the correlation between the evolution of linguistic theory and the corresponding developments in the field of language learning
Literary Criticism and Theory	CO - 1: Interpret literature by applying critical approaches CO - 2: Analyze independently prose passages and poems CO - 3: Compare and contrast different critical theories CO – 4: Expand the theoretical perspective while appreciating the work of Art
English Literature from 1550 to 1798	CO - 1: Analyze selected masterpieces of English literature from the literary canon. CO - 2: Empower themselves to evaluate text independently CO - 3: Critically appreciate English poetry and its relevance to various Ideologies
English Literature from 1798 to the Present	CO - 1: Help the students undertake research in comparative literature CO - 2: Acquaint themselves with diction and style of different genres in English Literature CO - 3: Understand the creative process of poetry writing
Translation Studies	CO - 1: Understand the nature and meaning of the translation through various theories of translation CO - 2: Understand various concepts in translation through practical work of translation CO - 3: Familiarize with issues in translation theory and practice
Introduction to Literary Forms	CO - 1: Familiarize with the elements of short story CO -2: Familiarize with the elements and the types of novel, drama and poetry CO - 3: Critically evaluate poetry independently

	CO - 4: Appreciate and analyze drama independently
Research Methodology	CO - 1: Familiarize the procedure involved in research CO - 2: Undertake research work CO - 3: Demonstrate high-level aptitude in literary research
	MA-II
Paper -5- 30601 /40601: Indian Writing in English	CO-1. Identify the nuances of Indian English Literature. CO-2. Interpret the texts with reference to literary critical theories. CO-3. Evaluate Indian literary texts from social, cultural, political points of view. CO-4. Acquaint themselves with the prominent writers in Indian English literature. CO-5. Compare and contrast the artistic and innovative use of language employed by the writer. CO-6. Classify major movements and figures of Indian Literature in English through the study of selected literary texts. CO-7. Discuss the prescribed texts in an analytical, critical and engaging style.
Paper-6- 30602/40602: Applied Linguistics	CO-1. To introduce students to the field of Applied Linguistics. CO-2. To help students understand how descriptive linguistics can be used practically to explain the behavioral and social use of language, especially with regard to language acquisition, second language acquisition / learning, language teaching methodology, etc. CO-3. To help students understand the correlation between the evolution of linguistic theory and the corresponding developments in the field of language learning and teaching. CO-4. To enable students to understand the relationship between language learning theories, teaching methods, production of course materials and language testing. CO-5. To introduce students to the relation between language and culture. CO-6. To help students understand how linguistic concepts can be applied to the study of literature. CO-7. To familiarize students with the tools of language that may be used in translation, textual analysis, etc.
Paper – 7- 30604/40604: Indian Literatures in English Translation	CO-1. To introduce students to some of the significant Indian regional language writers of various periods and to their works. CO-2. To acquaint students with the major ancient, medieval and modern literary movements in India and their influence on literature. CO-3. To enable students to compare the features and peculiarities of Indian societies, cultures and languages. CO-4. To acquaint students with the different literary techniques employed by various Indian regional language writers.
Paper-8 30608/40608:	CO-1. To introduce students to some of the important literary texts of the world.

World Literature in English	CO-2. To help them in gaining some insights into the socio-cultural aspects of the regions from where the texts are chosen. CO-3. To enable students to compare the authors of the world with Indian writers in English or the writers in their own languages. CO-4. To introduce students to the various techniques employed by the authors and how the techniques are adapted/adopted by Indian authors. CO-5. To help the students undertake research in comparative literature. CO-6. Compare and contrast the prescribed novels in the syllabus.
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DEPARTMENT OF GEOGRAPHY

Programme Outcomes: B.A. Geography

Department of Geography	After successful completion of three-year degree program in Geography student should be able to
Programme Outcomes	<p>PO-1. Demonstrate knowledge of Human, Physical and Cultural features of the earth and locate them on a map.</p> <p>PO-2. Know about the basic disciplines of Geography and its sub branches.</p> <p>PO-3. Know 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.</p> <p>PO-4. Differentiate between minerals and rocks, weather and climate, interior of the earth, basic industries, farming etc.</p> <p>PO-5. Get information about the causes and effects of local, national and international problems like global warming, acid rain, ozone depletion, soil degradation, deforestation etc.</p> <p>PO-6. Carry out surveying and learn the art of map making and prepare maps for the areas with the help of surveying techniques.</p> <p>PO-7. Gain knowledge of quantitative methods and their ability to use statistical and cartographical methods to solve geographical problems.</p> <p>PO-8. Construct various types of projections and scales as per requirement of the study.</p> <p>PO-9. Collect primary and secondary data in the field.</p> <p>PO-10. Apply various statistical formulas to analyse data.</p> <p>PO-11. Use cartographic techniques with the help of simple software techniques like MS Excel.</p> <p>PO-12. Handle topographical and weather maps and interpret them.</p> <p>PO-13. Identify types of rocks.</p> <p>PO-14. Know about Geographical Information System (GIS) and Remote Sensing (RS).</p> <p>PO-15. Develop of the basic concept of research.</p> <p>PO-16. The understanding of the basic framework of sampling and data collection.</p> <p>PO-17. Knowledge acquires various sampling methods and techniques.</p>

Programme Specific Outcomes: B.A. Geography

Department of Geography	After successful completion of three-year degree program in Geography student should be able to
Programme Specific Outcomes	<p>PSO-1: Give the students a sufficient knowledge of fundamental principles, methods, and a clear perception of geographical tools and know how to use them by modelling, solving, and interpreting.</p> <p>PSO-2: To prepare the students sufficiently in both logical and computational skills in geography.</p> <p>PSO-3: To develop a competitive attitude for building a strong academic – industrial collaboration, with focus on continuous learning skills.</p> <p>PSO-4: Enhancing students’ overall development and to prepare them with geographical analysis abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.</p> <p>PSO-5: Enabling students to develop a positive attitude towards geography as an interesting and valuable subject of study.</p> <p>PSO-6: Enabling students to Gauge the hypothesis, theories, and techniques provisionally.</p>

Course Outcomes: B.A. Geography

Course	Outcomes
	After completion of these courses students should be able to :-
	<u>Semester-I</u>
BA-GE-111T: Physical Geography	<p>CO-1: Understand fundamental concepts, theories and approaches of Physical Geography</p> <p>CO-2: Recognize functions of complex interactive earth systems.</p> <p>CO-3: Demonstrate scientific explanation of physical processes of the atmosphere, hydrosphere and lithosphere.</p> <p>CO-4: Describe diverse human activities in changing natural environment.</p>
OE-GE 01: Rainwater Harvesting	<p>CO-1: Familiarize with the rainwater harvesting methods and techniques. .</p> <p>CO-2: The student develops water conservation and management skills.</p> <p>CO-3: To acquire advanced knowledge about surface and rooftop rainwater harvesting.</p>
OE-GE 01: Rainwater Harvesting	<p>CO-1: Familiarize with the rainwater harvesting methods and techniques. .</p> <p>CO-2: The student develops water conservation and management skills.</p> <p>CO-3: To acquire advanced knowledge about surface and rooftop rainwater harvesting.</p>
	<u>Semester-II</u>

OE-GE- 02: Water Pollution and Management	<p>CO-1: List the main water pollutants and their effects on human health and the environment.</p> <p>CO-2: Discuss several types & Causes of water pollution.</p> <p>CO-3: To acquire the knowledge about effects of surface & ground water pollution</p> <p>CO-4: Describe techniques used for wastewater treatment.</p>
SEC-GE- 122T Introduction to Geographical Information System	<p>CO-1: Comprehend knowledge about the concepts in GIS.</p> <p>CO-2: Acquire skills in map-making using GIS</p>
VEC 01: Environmental Science	<p>CO-1: Understand the importance of environment and sustainable development</p> <p>CO-2: Understand the meaning, structure, functions and types of ecosystem</p> <p>CO-3: Understand the classification and effects of over-exploitation of natural resources</p> <p>CO-4: Understand the importance and levels of biodiversity and biogeographic zones of India</p>
Semester-III	
Environment Geography	<p>CO-1. Gain knowledge about concept, scope of environmental geography and components of environment.</p> <p>CO-2. Develop an idea about human-environment relationships.</p> <p>CO-3. Build an idea about ecosystem.</p> <p>CO-4. Know about environmental programmes and policies.</p> <p>CO-5. To make the students understand the key concepts of cause and effect and how they relate to influence the human activities and climate in shaping the Earth surface.</p>
Environment Geography- II	<p>CO-1. Understand Study about nutrient cycling.</p> <p>CO-2. Understand the value of resources.</p> <p>CO-3. Understand environmental problem their cause, effects and remedies.</p> <p>CO-4. Get the knowledge about environmental hazardous and management.</p> <p>CO-5. Make awareness about conservation of resources.</p> <p>CO-6. Understand the various environmental protection acts.</p>
Geography of Maharashtra-I	<p>CO-1. Understand the location of physiographic, natural, historical and political of Maharashtra.</p> <p>CO-2. Understand the geographical area and administrative division of Maharashtra.</p> <p>CO-3. To understand the major rivers and dams of Maharashtra.</p> <p>CO-4. To understand the climate, soils, and natural vegetations.</p> <p>CO-5. Understand the water , forest, minerals and power resources in</p>

	Maharashtra.
<u>Semester-IV</u>	
Geography of Maharashtra-II	CO-1. Study the distribution and factors affecting growth of population in Maharashtra. CO-2. Get the knowledge about types of agriculture, recent trends in agriculture, problems and prospects about agriculture, trade and transport in Maharashtra.
Practical Geography-I (Scale and Map Projections)	CO-1. Develop practical skill and use of map scale and projection. CO-2. To make students aware of the new techniques, accuracy and skills of map making. CO-3. Understand the different types of scale. CO-4. Understand the construction of simple geographical scale, time and distance scale. CO-5. Understand the different types of map projection and its classifications. CO-6. Understand the construction of various Projections.
Practical Geography – II (Cartographic Techniques, Surveying and Excursion / Village / Project Report)	CO-1. Develop practical knowledge and application of cartographical techniques. CO-2. To make students aware of the new techniques, accuracy and skills of Map Making. CO-3. Understand the different techniques of surviving. CO-4. Knowledge about the preparation of layout. CO-5. Understand the socio-economic condition of village.
SEC- A Introduction to Geographical Information System (GIS)	CO-1. Comprehend knowledge about the concepts in GIS. CO-2. Acquire skills of map making using GIS. CO-3. To increase awareness among students of GIS and modelling tools with the latest learning and teaching experiences to deal with real world problems.
SEC- B Introduction to Remote Sensing	CO-1. To develop technical skills and competence in data and information acquisitions, extraction, management and analysis for mapping and visualization. CO-2. Student will be familiar with modern techniques in Geography. CO-3. Students will be prepared to apply their skills in professional careers.
<u>Semester-V</u>	
Geography of India -I	CO-1. To acquaint the students with geography of our Nation. CO-2. To make the student aware of the magnitude of problems and Prospects at National level. CO-3. To help the students to understand the inter relationship between the subject and the society. CO-4. To help the students to understand the recent trends in regional studied

<p>Geography of India -II</p>	<p>CO-1. To acquaint the students with geography of our Nation. CO-2. To make the student aware of the magnitude of problems and Prospects at National level. CO-3. To help the students to understand the inter relationship between the subject and the society. CO-4. To help the students to understand the recent trends in regional Studied</p>
<p>Practical Geography- I (Techniques of Spatial Analysis) Practical Geography- II (Techniques of Spatial Analysis, Surveying and Excursion /Village/ Project Report)</p>	<p>CO-1. To introduce the basic concepts and techniques of Geographical Analysis. CO-2. To introduce the students with SOI Toposheets and acquire the Knowledge of Toposheet interpretation. CO-3. To introduce the students with Weather Maps and acquire the Knowledge of its interpretation. CO-4. To introduce the students with Aerial Photographs and Satellite Images and acquire knowledge to interpret it . CO-5. To acquaint students with the spatial and structural characteristics of Practical Geography. CO-6. To explain the elementary and essential principles on field of practical work.</p>
<p>SEC 2 C Value/Skill based Course Research Methodology - I</p>	<p>CO-1. To develop the understanding of the basic concept of research CO-2. To develop the understanding of the basic framework of sampling and data collection CO-3. To develop the understanding of various sampling methods and Techniques</p>
<p><u>Semester-VI</u></p>	
<p>SEC 2 D Value/ Skill based Course Research Methodology – II</p>	<p>CO-1. To identify various sources of information for data collection. CO-2. Understanding of the conducting survey on various issues and develop the Report writing skill of students</p>
<p>Geography of Disaster Management-I & II</p>	<p>CO-1. To introduce students the concept of disaster & its relation with Geography. CO-2. To acquaint the students with the utility & application of hazards in different areas & its management. CO-3. To make the students aware of the need of protection & disaster management.</p>

PROGRAMME OUTCOMES: M.A. Geography

Department of Geography	After successful completion of Two year degree program in Geography student should be able to:
Programme Outcomes	<p>PO-1. Ability of Problem Analysis: Student will be able to analyses the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.</p> <p>PO-2. Conduct Social Survey Project: They will be eligible for conducting Social survey project, which is needed for measuring the status of development of a particular group or section of the society.</p> <p>PO-3. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p>PO-4. Application of modern instruments: Students will be able to learn the application of various modern instruments and by these; they will be able to collect primary data.</p> <p>PO-5. Application of GIS and modern Geographical Map Making Techniques: They will learn how to prepare map based on GIS by using the modern geographical map-making techniques.</p> <p>PO-6. 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 from different perspectives.</p> <p>PO-7. Development of Observation Power: As a student of Geography Course, they will be capable to develop their observation power through field experience and in future, they will be able to identify the socio-environmental problems of a locality.</p> <p>PO-8. Development of Communication Skill and Interaction Power: After the completion of the course, they will be efficient in their communication skill as well as power of social interaction. Some of the students are being able to understand and write effective reports and design credentials, make effective demonstrations, and give and receive clear instructions.</p> <p>PO-9. 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.</p> <p>PO-10. Enhancement of the ability of Management: Demonstrate knowledge and understanding of the management principles and apply these to their own work, as a member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p>

Programme Specific Outcomes: M.A. Geography

Department of Geography	After successful completion of Two year degree program in Geography student should be able to
	<p>PSO-1. Design and conduct independent research in their chosen field in the discipline</p> <p>PSO-2. Demonstrate knowledge of concepts, methods, and theories designed to enhance understanding of the natural world and human society.</p> <p>PSO-3. Communicate the results and significance of their research in both written and oral form</p> <p>PSO-4. Evaluate how historical events have been influenced by, and have influenced, physical and human geographic factors in local, regional, national, and global settings.</p> <p>PSO-5. Examine social and environmental processes, with a particular focus on space and place, critical theory, practical application, analysis and intervention in chosen field within the discipline of Geography</p> <p>PSO-6. Evaluate causes, consequences, and possible solutions to persistent, contemporary, and emerging global issues.</p> <p>PSO-7. Follow established ethical guidelines for research and teaching</p> <p>PSO-8. Have an in-depth understanding of and mastery of the literature in, at least one particular geographic subfield.</p> <p>PSO-9. Classify processes of environmental change and evaluate the relationship between human beings and their surroundings, bringing to bear knowledge from many disciplines.</p> <p>PSO-10. A geographer has better job opportunities in government departments, Cartographer, Researcher, Teacher/Professor, Competitive Examinations, Government employer, GIS specialist, Climatologist, Transportation Manager, Surveyor, GPS Surveyors</p>

Course Outcomes: M.A. Geography

Course	Outcomes
	After completion of these courses students should be able to :-
<u>Semester-I</u>	
	<p>CO-1. Accurately describe the concept of a drainage basin and stream network, including their components and interconnectedness.</p> <p>CO-2. Demonstrate a comprehensive understanding of the basic laws and models of fluvial processes, enabling them to explain and apply them to real-world scenarios.</p> <p>CO-3. Discuss the characteristics of drainage basin hydrology, including aspect such as precipitation, runoff, and stream flow patterns.</p> <p>CO-4. Apply quantitative methods to measure and assess fluvial processes and landforms, allowing them to collect and analyze data related to river systems effectively.</p>

<p>GE-MJ-511T: Principles of Geomorphology</p>	<p>CO-5. Analyse the role of fluvial processes in shaping landscapes, including erosion, deposition, and landform evolution.</p> <p>CO-6. Explain in detail the factors influencing the formation and evolution of river channels, such as sediment transport, channel morphology, and boundary conditions.</p> <p>CO-7. Identify different flow types within a river system and measure the velocity of the river flow, utilizing appropriate measurement techniques and tools.</p>
<p>GE-MJ-512T: Principles of Population Geography</p>	<p>CO-1. Aware of basic principles and concepts in population geography.</p> <p>CO-2. Knows the various theories in population geography</p> <p>CO-3. Understood the dynamics of population and its role in population policies</p> <p>CO-4. Realize the worldwide distribution of population.</p> <p>CO-5. By understanding about population structure and characteristics of different countries, they can also predict the future population scenario of the country.</p> <p>CO-6. Understand the population growth of different countries, they can also predict the future population setting of the country.</p>
<p>GE-MJ-513P: Practicals in Geomorphology</p>	<p>CO-1. Understand the stream ordering methods of stahlers and harton and calculate the stream orders and bifurcation ratio</p> <p>CO-2. Getting knowledge of the drainage basin analysis and preparing the relative relief map, absolute relief map, and hypsometric analysis.</p> <p>CO-3. Understand the slope profile and their types and draw the block diagram</p> <p>CO-4. Understand a river's cross-section through toposheet.</p>
<p>GE-MJ-514P: Practicals in Population Geography</p>	<p>CO-1. Understand calculation techniques of growth rates.</p> <p>CO-2. Calculate projection and apply it to various states of india.</p> <p>CO-3. Studying in hdi and gdi gives me knowledge of society.</p> <p>CO-4. Apply various theories in population geography to their society.</p> <p>CO-5. Understood the dynamics of population and its role in population policies</p> <p>CO-6. By understanding about population structure and characteristics of different countries, they can also predict the future population scenario of the country.</p> <p>CO-7. Understand the population growth of different countries, they can also predict the future population setting of the country.</p>

GE-MJ-515P: Practicals in Agriculture Geography	CO-1. Students will be able to calculate the level and index of agricultural productivity CO-2. Students will be able to calculate crop combination using various methods CO-3. Students will be able to calculate agricultural efficiency.
GE-ME-516T: Agriculture Geography	CO-1. Understand the introduction to agriculture, nature, scope, significance, and approaches of agriculture geography. CO-2. Understand the influence of physical, economic, and technological factors on agriculture patterns. CO-3. Getting ideas of the agricultural system its meaning and concept, Whittlesey's classification of the agricultural system. CO-4. Understand the definition and characteristics of arid and semi-arid regions and study droughts and famines, and the role of irrigation and dry farming. CO-5. Understand types of agriculture and problem and prospects of agriculture and study sustainable agricultural development in India.
GE-RM-517T: Research Methodology in Geography	CO-1. Understand the research process and different types of research designs CO-2. Identify research problems and formulate research questions CO-3. Choose appropriate research methods and data collection techniques CO-4. Analyze and interpret research data CO-5. Write research reports and communicate research findings effectively CO-6. Understand the new trends and approaches in research methodology. CO-7. Analyze and apply the research aptitude in their research work.
<u>Semester-II</u>	
GE-MJ-521T: Principles of Climatology	CO-1. Understand the difference between weather & climate and nature, scope, origin, composition, and structure of the atmosphere. CO-2. Getting facts about Heat Budget and factors that effects Heat Budget. CO-3. Understand the concept of horizontal, vertical temperature, and inversion of temperature. CO-4. Identify the Atmospheric pressure and winds humidity and the concept of precipitation and its types. CO-5. Understand the Air masses and Fronts and the Weather Forecasting. CO-6. Students will understand the insolation, mechanism of heat transfer, lapse rate, and inversion of temperature. CO-7. Students will recognize atmospheric pressure, pressure belts, and their relation with the wind system.

<p>GE-MJ-522T: Principles of Economic Geography</p>	<p>CO-1.Students understand the nature, scope, approaches, production, exchange, consumption, and recent trends of economic geography. CO-2.Understand the fundamental theories in economic geography. CO-3. Review, understand and apply the modes of economic development by various models.</p>
<p>GE-MJ-523T: Geography of Tourism</p>	<p>CO-1.To students understand the tourism influencing factors: historical, natural, social-cultural, and economic. CO-2.Study tourism motivating factors for pilgrimages, leisure, recreation, and elements. CO-3.Understand the tourism types: eco-ethno coastal and adventure tourism, national and international tourism, globalization, and tourism. CO-4. Study and understand the environmental laws and tourism-current trends, spatial and recent changes, tourism circuits-short and longer, accommodation and supplementary accommodation other facilities, Indian hotel industry.</p>
<p>GE-MJ-524P: Practicals in Climatology</p>	<p>CO-1.Students will able to measure weather elements using weather instruments CO-2.Students will able to represent climatic data using appropriate methods CO-3.Students will classify climate using Koppen’s and Thornthwaite’s methods</p>
<p>GE-MJ-525P: Practicals in Economic Geography</p>	<p>CO-1.Understand concepts of crop combination, agricultural efficiency, and agricultural productivity. CO-2.Examine Location Quotient, Lorenz Curve, Gini’s Coefficient, and Von Thunear. CO-3.Understand transport network analysis CO-4.Get information about the gravity potential population surface model CO-5.Understand the application of the breaking point theory (trade area)</p>
<p>Practical of Statistical Techniques for Geography</p>	<p>CO-1. Understand the statistical characteristics of geographical data, scales of measurement. CO-2. Clear the facts about the probability, types of probability and applications and uses. CO-3. Understand the concept of sampling and designing and conducting a sample survey for data collation and data analysis. CO-4. Evaluate, calculate and understand the parametric and non-parametric statistical tests. CO-5. Understand the correlation and regression analysis and their application in various fields of geography.</p>
<p><u>Semester-III</u></p>	
<p>Geoinformatics - II</p>	<p>CO-1. Understand the modern techniques in geography under this course such as remote sensing and aerial photography. CO-2 Examining the history, basic theories of EMR, and other concepts. CO-3 Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera. CO-4 Understand the types of remote sensing, types of platforms and</p>

	<p>get the knowledge about satellite sensor and types of sensors in remote sensing.</p> <p>CO-5. Get basic Knowledge about the image interpretation Techniques</p>
Geographical Thoughts	<p>CO-1. Understand the historical development of geographical thought according to Greek, Roman, Indian, German, French, British and American school.</p> <p>CO-2. Getting the knowledge about the dualisms in geography; determinism and possibilism, systematic Vs regional and physical Vs human geography.</p> <p>CO-3. Understand recent trends, scientific methods, quantitative revolution and computer application in geography.</p> <p>CO-4. Understand the definition, need, and signification of applied Geography</p>
Geography of Rural Development	<p>CO-1. Understand the concept, Nature and scope of Rural development</p> <p>CO-2. Understand the factors and rural basic services in rural development.</p> <p>CO-3. Understand the about the Rural development planning and Government policies.</p> <p>CO-4. Get basic Knowledge about Rural management and Application of computer & information technology in Rural development.</p>
Practical in Geoinformatics	<p>CO-1. Understand the modern techniques in geography under this course such as remote sensing and aerial photography.</p> <p>CO-2. Examining the history, basic theories of EMR, and other concepts.</p> <p>CO-3. Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera.</p> <p>CO-4. Understand the types of remote sensing, types of platforms and get the knowledge about satellite sensor and types of sensors in remote sensing.</p> <p>CO-5. Get basic Knowledge about the image interpretation Techniques</p>
Watershed Management	<p>CO-1. Understand the fundamentals concepts related to watershed, significances of watershed development, demarcation of watershed, types of watershed according to area and shape</p> <p>CO-2. Getting the ideas about the physical parameters of watershed, channel geometry and basin morphology.</p> <p>CO-3. Understand the hydrological parameters, rainfall, aerial precipitation, evaporation and transpiration, infiltration, run off and drainage.</p> <p>CO-4. Aware about the watershed development planning and sample of watershed management and planning for appropriate development of watershed management for water conservation and development.</p>
Practical in Economic Geography	<p>CO-1. Understand concepts of crop combination, Agricultural Efficiency and Agricultural Productivity.</p> <p>CO-2. Examine Location Quotient, Lorenz Curve, Gini's Coefficient and Von Thunean.</p> <p>CO-3. Understand transport Network Analysis</p> <p>CO-4. Get information about gravity potential population surface model</p> <p>CO-5. Understand application Breaking Point theory (Trade Area)</p>
<u>Semester-IV</u>	

<p align="center">Geography of India</p>	<p>CO-1. Understand the about the physiographic division of India and Maharashtra.</p> <p>CO-2. Understand the drainage system of India and Maharashtra.</p> <p>CO-3. Understand the climatic variation in India and climatic region of India and Maharashtra.</p> <p>CO-4. Examine and understand the types of vegetation of India and Maharashtra.</p> <p>CO-5. Understand the variation in industrial development in India and Maharashtra.</p> <p>CO-6. Examine and understand the developed and underdeveloped states in India.</p>
<p align="center">Oceanography</p>	<p>CO-1. Understand the meaning, nature and scope, ocean floor and relief of the ocean bottom and modern trends in Oceanography.</p> <p>CO-2. Understand the ocean floor and relief of the ocean bottom and properties like temperature, density, salinity of ocean water.</p> <p>CO-3. Understand the characteristics and properties of factors affecting on formation of sea waves.</p> <p>CO-4. Understand the tides, tide generating forces, types of tides and tidal effects in coastal areas.</p>
<p align="center">Research Method</p>	<p>CO-1. Understand the types, research problems, selecting research problems, literature review and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research.</p> <p>CO-2. Aware about the research design, need, features, basic principal and developing of research plan, and sampling design and its basic types, steps, characteristics of sampling design.</p> <p>CO-3. Getting the ideas about type's data and methods of data collection and study the processing and analysis of data using different statistical methods.</p> <p>CO-4. Understand the report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report.</p>
<p align="center">Soil Geography</p>	<p>CO-1. Understand the nature, scope, and concept of soil geography</p> <p>CO-2. Understand physical and chemical properties of soil and factors affecting formation of soil.</p> <p>CO-3. Understand vertical structure of soil and soil horizon.</p> <p>CO-4. Understand soil classification of USDA</p>
<p align="center">Practical in Watershed Analysis</p>	<p>CO-1. Understand the fundamentals concepts related to watershed, significances of watershed development, demarcation of watershed, types of water shed according to area and shape</p> <p>CO-2. Getting the ideas about the physical parameters of watershed, channel geometry and basin morphology.</p> <p>CO-3. Understand the hydrological parameters, rainfall, aerial precipitation, evaporation and transpiration, infiltration, run off and drainage.</p> <p>CO-4. Aware about the watershed development planning and sample of Water shed management and planning for appropriate development of watershed management for water conservation and development.</p>

Dissertation / research project	CO-1. Understand and get the knowledge about research problems, selecting research problems CO-2. Aware about the aims and objective, research design, need, features, basic principal and developing of research plan, and sampling design. CO-3. Getting the ideas about data and methods of data collection and study the processing and analysis of data using different statistical methods.
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DEPARTMENT OF HINDI

Programme Outcomes: B. A. Hindi

Department of Hindi	After successful completion of three year degree program in Hindi student should be able to
Programme Outcomes	<p>PO-1. छात्रों को हिंदी भाषा के उद्भव, विकास तथा विभिन्न रूपों एवं बोलियों का ज्ञान प्राप्त हुआ।</p> <p>PO-2. छात्रों काव्यशास्त्र का सैद्धांतिक एवं अनुप्रयोगात्मक ज्ञान प्राप्त हुआ।</p> <p>PO-3. छात्रों में हिंदी साहित्य के इतिहास के विकासक्रम और लेखन परंपरा के संबंध में यथोचित दृष्टिकोण विकसित हुआ।</p> <p>PO-4. छात्रों को भाषा विज्ञान के माध्यम से हिंदी भाषा के व्यवस्थित और यथोचित प्रयोग का ज्ञान प्राप्त हुआ।</p> <p>PO-5. छात्र हिंदी गद्य और पद्य की विभिन्न साहित्य विधाओं से परिचित हुए।</p> <p>PO-6. छात्रों में हिंदी भाषा और साहित्य को समझने, अध्ययन, आस्वादन और मूल्यांकन की क्षमता निर्माण हुई।</p> <p>PO-7. साहित्य की विभिन्न विधाओं के माध्यम से छात्रों का भावात्मक विकास हुआ।</p> <p>PO-8. छात्रों में हिंदी साहित्य के माध्यम से नैतिक मूल्य, राष्ट्रीय मूल्य तथा सामाजिक मूल्यों के प्रति आस्था निर्माण हुई।</p> <p>PO-9. छात्रों को सरकारी कार्यालयों में प्रयुक्त कार्यालयीन हिंदी भाषा का परिचय प्राप्त हुआ।</p> <p>PO-10. छात्रों को संचार माध्यम लेखन एवं हिंदी भाषा का परिचय प्राप्त हुआ।</p>

Programme Specific Outcomes: B. A. Hindi

Department of Hindi	After successful completion of three year degree program in Hindi student should be able to
Programme Specific Outcomes	<p>PSO-1. हिंदी भाषा का व्यवस्थित और यथोचित ज्ञान</p> <p>PSO-2. भावात्मक और सौंदर्यात्मक विकास</p> <p>PSO-3. निवेदक और सूत्र संचालक</p> <p>PSO-4. पटकथा लेखक, संवाद लेखक, विज्ञापन लेखक</p> <p>PSO-5. प्रकाशक, संपादक, संवाददाता</p> <p>PSO-6. दुभाषिया, अनुवादक, प्रूफ शोधक</p> <p>PSO-7. एम.ए., बी. एड.,</p> <p>PSO-8. पत्रकारिता, अनुवाद और दूरसंचार : पदविका और पदवी</p> <p>PSO-9. मूल्य संवर्धन : नैतिक, राष्ट्रीय, सामाजिक मूल्यों का संवर्धन</p> <p>PSO-10. राष्ट्रीय एकात्मता, समानता, बंधुता, उत्तरदायित्व और</p>

	<p>वैज्ञानिकता का विकास</p> <p>PSO-11. नागरी सेवा परीक्षा</p> <p>PSO-12. वाचन, श्रवण, संवाद एवं लेखन कौशल का विकास</p> <p>PSO-13. माध्यम लेखन कौशल का विकास</p>
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Course Outcomes: B. A. Hindi

F. Y. B. A. Outcomes	
Course	After completion of these courses students should be able to :-
कथा साहित्य (HN-MJ-111T)	<p>CO-1. छात्र हिंदी कहानी साहित्य से अवगत हुए।</p> <p>CO-2. छात्र हिंदी के प्रातिनिधिक गद्यकारों से परिचित हुए।</p> <p>CO-3. छात्रों का मौलिक लेखन की ओर रुझान बढ़ गया।</p> <p>CO-4. छात्रों में लेखन कौशल विकसित हुआ।</p> <p>CO-5. छात्रों में कथा साहित्य के मूल्यांकन का कौशल विकसित हुआ।</p> <p>CO-6. छात्र कहानी की संवेदना तथा शिल्पगत अध्ययन से अवगत हुए।</p> <p>CO-7. छात्रों में सृजनात्मक शक्ति, कल्पना शक्ति, विचार क्षमता तथा सामाजिक ऐक्य भावना विकसित हुई।</p>
आधुनिक काव्य (HN-MJ-112T)	<p>CO-1. छात्र हिंदी के प्रतिनिधि कवियों से परिचित हो गए।</p> <p>CO-2. छात्रों में काव्य अध्ययन की दृष्टि विकसित हुई।</p> <p>CO-3. छात्रों में काव्य के मूल्यांकन का कौशल विकसित हुआ।</p> <p>CO-4. छात्र काव्य की संवेदना तथा शिल्पगत अध्ययन से अवगत हुए।</p> <p>CO-5. छात्रों में काव्य-सर्जन कला का विकास हुआ।</p> <p>CO-6. छात्रों में आलोचनात्मक दृष्टिकोण विकसित हुआ।</p> <p>CO-7. छात्रों में हिंदी काव्य साहित्य के प्रति अभिरुचि संवर्धित हुई।</p> <p>CO-8. छात्रों में राष्ट्रप्रेम तथा सामाजिक प्रतिबद्धता की भावना विकसित हुई।</p> <p>CO-9. छात्रों का राष्ट्रीय ऐक्य, सामाजिक उत्तरदायित्व, वैज्ञानिकता आदि मूल्यों के प्रति ध्यान आकर्षित हुआ।</p>

<p style="text-align: center;">हिंदी पत्रकारिता (HN-VSC- 113T)</p>	<p>CO-1. छात्र पत्रकारिता के शास्त्रशुद्ध स्वरूप से परिचित हो गए। CO-2. छात्रों में पत्रकारिता से संबंधित लेखन कौशल विकसित हुआ। CO-3. छात्र पत्रकारिता के विभिन्न भेदों से अवगत हुए। CO-4. छात्रों में समाचार लेखन कौशल विकसित हुआ। CO-5. छात्र समाचार के तत्वों से अवगत हुए। CO-6. छात्रों को समाचार लेखन के सिद्धांतों की जानकारी प्राप्त हुई। CO-7. छात्र समाचार लेखन के सोपानों से अवगत हुए। CO-8. छात्र समाचार लेखक के गुणों से परिचित हुए। CO-9. छात्र पत्रकारिता के क्षेत्र में रोजगार प्राप्ति हेतु तैयार हुए।</p>
<p style="text-align: center;">हिंदी पत्राचार (HN-SEC- 114T)</p>	<p>CO-1. छात्र पत्राचार के शास्त्रशुद्ध प्रारूप से परिचित हो गए। CO-2. छात्रों में पत्र लेखन कौशल विकसित हुआ। CO-3. छात्र आवेदन पत्र के विभिन्न भेदों से अवगत हुए। CO-4. छात्र व्यावसायिक पत्र के विभिन्न भेदों से परिचित हुए। CO-5. छात्र सरकारी पत्र के विभिन्न भेदों से अवगत हुए। CO-6. छात्र व्यावहारिक पत्र के विभिन्न भेदों से अवगत हुए। CO-7. छात्र सरकारी कार्यालयों में रोजगार प्राप्ति हेतु तैयार हुए।</p>
<p style="text-align: center;">कबीर दर्शन (HN-IKS- 115T)</p>	<p>CO-1. छात्र संत साहित्य के स्वरूप से परिचित हो गए। CO-2. छात्रों को संत साहित्य की प्रवृत्तियों की जानकारी प्राप्त हुई। CO-3. छात्रों को संत साहित्य की भाषा की प्रवृत्तियों का परिचय प्राप्त हुआ। CO-4. छात्रों में काव्य मूल्यांकन की क्षमता विकसित हुई। CO-5. छात्रों में सर्जनात्मक कौशल विकसित हुआ। CO-6. छात्रों में संत साहित्य के प्रति समीक्षात्मक दृष्टि विकसित हुई। CO-7. छात्र कबीरदास जी के व्यक्तित्व एवं कृतित्व से परिचित हुए। CO-8. छात्रों में आदर्श और मूल्य वृद्धिगत हुए।</p>
<p style="text-align: center;">हिंदी साहित्य का इतिहास</p>	<p>CO-1. छात्र हिंदी साहित्य लेखन की परंपरा से अवगत हुए। CO-2. छात्र हिंदी साहित्य के काल विभाजन से परिचित हुए। CO-3. छात्रों को हिंदी साहित्य के नामकरण का परिचय प्राप्त हुआ। CO-4. छात्र आदिकालीन एवं भक्तिकालीन परिस्थितियों से अवगत हुए। CO-5. छात्र आदिकालीन एवं भक्तिकालीन साहित्य की प्रवृत्तियों से परिचित हुए।</p>

<p>(HN-OE-101T)</p>	<p>CO-6. छात्रों को आदिकाल तथा भक्तिकाल के प्रमुख कवियों का परिचय प्राप्त हुआ। CO-7. छात्र सिद्ध साहित्य, नाथ साहित्य तथा रासो साहित्य से अवगत हुए। CO-8. छात्र संत काव्यधारा की प्रवृत्तियों से परिचित हुए। CO-9. छात्र सूफी काव्यधारा की प्रवृत्तियों से अवगत हुए। CO-10. छात्र रामभक्ति काव्यधारा की प्रवृत्तियों से परिचित हुए। CO-11. छात्र कृष्णभक्ति काव्यधारा की प्रवृत्तियों से अवगत हुए।</p>
<p>काव्य साहित्य एवं व्यावहारिक हिंदी (HN-MJ-121T)</p>	<p>CO-1. छात्र हिंदी काव्य साहित्य के स्वरूप से परिचित हो गए। CO-2. छात्र हिंदी के प्रतिनिधि कवियों से परिचित हुए। CO-3. छात्रों में काव्य अध्ययन की दृष्टि विकसित हुई। CO-4. छात्रों में काव्य के मूल्यांकन का कौशल विकसित हुआ। CO-5. छात्र काव्य की संवेदना तथा शिल्पगत अध्ययन से अवगत हुए। CO-6. छात्र स्ववृत्त लिखने की कला से अवगत हुए। CO-7. छात्रों में विज्ञापन लेखन कौशल विकसित हुआ। CO-8. छात्र इंटरनेट से परिचित हुए। CO-9. छात्रों की सर्जनात्मक शक्ति एवं संभाषण कला विकसित हुई। CO-10. काव्य साहित्य के माध्यम से छात्रों का भावात्मक विकास हुआ।</p>
<p>कथेतर गद्य साहित्य (HN-MJ-122T)</p>	<p>CO-1. छात्र हिंदी के प्रातिनिधिक गद्यकारों से परिचित हुए। CO-2. छात्र हिंदी व्यंग कहानी साहित्य से अवगत हुए। CO-3. छात्रों में निबंध लेखन कौशल विकसित हुआ। CO-4. छात्र रेखाचित्र विधा से परिचित हुए। CO-5. छात्र संस्मरण विधा से परिचित हुए। CO-6. छात्र एकांकी विधा से परिचित हुए। CO-7. छात्र यात्रा वर्णन विधा से परिचित हुए। CO-8. छात्र हिंदी एकांकी, रेखाचित्र, संस्मरण, तथा आत्मकथा विधाओं के रचनात्मक पहलुओं से परिचित हुए।</p>
<p>माध्यम लेखन (HN-VSC-123T)</p>	<p>CO-1. छात्र माध्यम लेखन के स्वरूप से परिचित हुए। CO-2. छात्र माध्यम लेखन के विभिन्न प्रकारों से अवगत हुए। CO-3. छात्रों में विज्ञापन लेखन कौशल विकसित हुआ। CO-4. छात्र साक्षात्कार लेखन की प्रक्रिया से अवगत हुए। CO-5. छात्रों में रेडियो लेखन कौशल विकसित हुआ। CO-6. छात्रों में वार्ता लेखन कौशल निर्माण हुआ। CO-7. छात्रों में रेडियो नाटक लेखन कौशल विकसित हुआ।</p>

	<p>CO-8. छात्र उद्घोषणा लेखन की प्रक्रिया से अवगत हुए।</p> <p>CO-9. छात्रों में टेलीविजन लेखन कौशल निर्माण हुआ।</p> <p>CO-10. छात्र मिडिया के क्षेत्र में रोजगार प्राप्ति हेतु तैयार हुए।</p>
<p>कार्यालयीन हिंदी (HN- SEC-124T)</p>	<p>CO-1. छात्र कार्यालयीन हिंदी के स्वरूप से परिचित हुए।</p> <p>CO-2. छात्र कार्यालयीन लेखन प्रकारों से अवगत हुए।</p> <p>CO-3. छात्रों में कार्यालयीन लेखन कौशल विकसित हुआ।</p> <p>CO-4. छात्रों में प्रारूपण लेखन का कौशल निर्माण हुआ।</p> <p>CO-5. छात्रों में संक्षेपण लेखन कौशल विकसित हुआ।</p> <p>CO-6. छात्रों में पल्लवन लेखन कौशल विकसित हुआ।</p> <p>CO-7. छात्रों में टिप्पण लेखन कौशल निर्माण हुआ।</p> <p>CO-8. छात्रों में प्रतिवेदन लेखन कौशल विकसित हुआ।</p> <p>CO-9. छात्र सरकारी कार्यालयों में रोजगार प्राप्ति हेतु तैयार हुए।</p>
<p>भक्ति एवं नीति साहित्य (HN-MN- 125T)</p>	<p>CO-1. छात्र भक्ति साहित्य के स्वरूप से परिचित हो गए।</p> <p>CO-2. छात्र नीति साहित्य के स्वरूप से परिचित हो गए।</p> <p>CO-3. छात्रों को भक्ति एवं नीति साहित्य की प्रवृत्तियों की जानकारी प्राप्त हुई।</p> <p>CO-4. छात्रों में काव्य मूल्यांकन की क्षमता विकसित हुई।</p> <p>CO-5. छात्रों में सर्जनात्मक कौशल विकसित हुआ।</p> <p>CO-6. छात्रों में भक्ति एवं नीति साहित्य के प्रति समीक्षात्मक दृष्टि विकसित हुई।</p> <p>CO-7. छात्र सूरदास जी के व्यक्तित्व एवं कृतित्व से परिचित हुए।</p> <p>CO-8. छात्र रहीम जी के व्यक्तित्व एवं कृतित्व से परिचित हुए।</p> <p>CO-9. छात्रों में आदर्श और मूल्य वृद्धिगत हुए।</p>
<p>हिंदी साहित्य का इतिहास (HN-OE- 102T)</p>	<p>CO-1. छात्र रीतिकालीन एवं आधुनिक कालीन परिस्थितियों से अवगत हुए।</p> <p>CO-2. छात्र रीतिकालीन एवं आधुनिक कालीन साहित्य की प्रवृत्तियों से परिचित हुए।</p> <p>CO-3. छात्र रीतिसिद्ध काव्य, रीतिबद्ध काव्य तथा रीतिमुक्त काव्य से परिचित हुए।</p> <p>CO-4. छात्रों को रीतिकाल एवं आधुनिक काल के प्रमुख कवियों का परिचय प्राप्त हुआ।</p> <p>CO-5. छात्र भारतेंदू युगीन काव्य की प्रवृत्तियों से परिचित हुए।</p> <p>CO-6. छात्रों को द्विवेदीयुगीन काव्य की प्रवृत्तियों से अवगत कराना।</p> <p>CO-7. छात्र छायावाद की प्रवृत्तियों से परिचित हुए।</p> <p>CO-8. छात्र प्रगतिवाद की प्रवृत्तियों से अवगत हुए।</p> <p>CO-9. छात्र प्रयोगवाद की प्रवृत्तियों से परिचित हुए।</p> <p>CO-10. छात्र राष्ट्रीय काव्यधारा की प्रवृत्तियों से अवगत हुए।</p> <p>CO-11. छात्रों में काव्य के मूल्यांकन की दृष्टि विकसित हुई।</p>

S. Y. B. A.	
DSE-1A काव्यशास्त्र (23091)	CO-1. छात्रों को भारतीय काव्यशास्त्र का परिचय प्राप्त हुआ।
	CO-2. छात्र काव्य की परिभाषा एवं तत्वों से अवगत हो गए।
	CO-3. छात्रों को काव्य हेतुओं एवं काव्य प्रयोजनों का परिचय प्राप्त हुआ।
	CO-4. छात्रों में भारतीय काव्यशास्त्र के प्रति रुचि निर्माण हो गई।
	CO-5. छात्र रस के स्वरूप एवं अंगों से अवगत हो गए।
	CO-6. छात्रों में आलोचनात्मक दृष्टि विकसित हो गई।
	CO-7. छात्र शब्दशक्तियों से परिचित हो गए।
DSE-2A मध्ययुगीन काव्य तथा उपन्यास साहित्य (23092)	CO-1. छात्रों को कबीर के साहित्य का परिचय प्राप्त हुआ।
	CO-2. छात्र मीरा के काव्य से अवगत हो गए।
	CO-3. छात्रों को भारतीय उपन्यास की अवधारणा का परिचय प्राप्त हुआ।
	CO-4. छात्रों में उपन्यास कृति के मूल्यांकन की कला विकसित हो गई।
	CO-5. छात्र मध्ययुगीन काव्य से अवगत हो गए।
	CO-6. छात्रों में साहित्य कृतियों में प्रस्तुत जीवनमूल्यों के प्रति रुचि निर्माण हो गई।
CC-1C आधुनिक काव्य, कहानी तथा व्यावहारिक हिंदी (23093)	CO-1. छात्र काव्य साहित्य से परिचित हो गए।
	CO-2. छात्रों को कहानी साहित्य का परिचय प्राप्त हुआ।
	CO-3. छात्र हिंदी भाषा की कारक व्यवस्था से अवगत हो गए।
	CO-4. छात्रों में शब्दयुग्मों के अर्थ और वाक्य में प्रयोग की कला विकसित हो गई।
	CO-5. छात्रों को संक्षेपण लेखन का प्रत्यक्ष बोध प्राप्त हुआ।
	CO-6. छात्रों में सर्जनात्मकता का विकास हो गया।
	CO-7. छात्रों में काव्य साहित्य के रसास्वादन की दृष्टि विकसित हो गई।
SEC-2A अनुवाद : स्वरूप एवं व्यवहार (23096)	CO-1. छात्रों में अनुवाद कौशल का विकास हुआ।
	CO-2. छात्र अनुवाद के स्वरूप से अवगत हो गए।
	CO-3. छात्रों को अनुवाद के विभिन्न क्षेत्रों का परिचय प्राप्त हुआ।
	CO-4. छात्रों को अनुवाद प्रक्रिया का परिचय प्राप्त हो गया।
	CO-5. छात्र अनुवादक के गुणों से अवगत हो गए।
	CO-6. छात्रों को मराठी से हिंदी में अनुवाद का प्रत्यक्ष अनुभव प्राप्त हुआ।
	CO-7. छात्रों में अनुवाद का कौशल विकसित हो गया।
MIL-1	CO-1. छात्रों में हिंदी भाषा वाचन कौशल विकसित हुआ।
	CO-2. छात्रों में हिंदी भाषा श्रवण कौशल विकसित हुआ।
	CO-3. छात्रों में हिंदी भाषा संवाद कौशल विकसित हुआ।
	CO-4. छात्रों में हिंदी भाषा लेखन कौशल विकसित हुआ।

हिंदी भाषा शिक्षण (23012)	CO-5. छात्र हिंदी भाषा-विधि तथा व्यवहार से अवगत हो गए।
	CO-6. छात्रों में लघुकथा सृजन कौशल विकसित हुआ।
	CO-7. छात्रों को हिंदी भाषा के व्याकरण का परिचय प्राप्त हुआ।
DSE-1B साहित्य के भेद (24091)	CO-1. छात्रों को साहित्य के विभिन्न भेदों का परिचय प्राप्त हुआ।
	CO-2. छात्र पद्य के विभिन्न भेदों से अवगत हो गए।
	CO-3. छात्रों को प्रबंध काव्य, महाकाव्य, खंडकाव्य, गीतिकाव्य एवं मुक्तक काव्य का परिचय प्राप्त हुआ।
	CO-4. छात्रों में नाट्य अभिनय की रुचि विकसित हो गई।
	CO-5. छात्र कथासाहित्य के स्वरूप एवं तत्वों से अवगत हो गए।
	CO-6. छात्रों को नाटक साहित्य का परिचय प्राप्त हो गया।
	CO-7. छात्रों में निबंध साहित्य के प्रति आलोचनात्मक दृष्टि विकसित हो गई।
DSE-2B मध्ययुगीन काव्य तथा नाटक साहित्य (24092)	CO-1. छात्रों को रहीम के काव्य का बोध प्राप्त हुआ।
	CO-2. छात्र बिहारी के काव्य के अभिव्यंजना पक्ष से अवगत हो गए।
	CO-3. छात्रों को भारतीय उपन्यास की अवधारणा का परिचय प्राप्त हुआ।
	CO-4. छात्रों में नाटक साहित्य के मूल्यांकन की कला विकसित हो गई।
	CO-5. छात्र नाटक और रंगमंच से अवगत हो गए।
	CO-6. छात्रों में नाटक साहित्य के रसास्वादन की दृष्टि विकसित हो गई।
CC-1D आधुनिक हिंदी व्यंग्य साहित्य तथा व्यावहारिक हिंदी (24093)	CO-1. छात्र हिंदी व्यंग्य पाठ से परिचित हुए।
	CO-2. छात्रों को कहानी व्यंग्य पाठ का बोध प्राप्त हुआ।
	CO-3. छात्र साक्षात्कार कला से अवगत हुए।
	CO-4. छात्रों में व्यंग्य साहित्य के मूल्यांकन की कला विकसित हो गई।
	CO-5. छात्र भाषा के मोबाईल तंत्र से अवगत हो गए।
	CO-6. छात्रों में साहित्य के रसास्वादन की दृष्टि विकसित हो गई।
	CO-7. छात्र पल्लवन कला से अवगत हुए।
SEC-2B माध्यम लेखन (24096)	CO-1. छात्रों को माध्यम लेखन का परिचय प्राप्त हुआ।
	CO-2. छात्रों में सृजनात्मक लेखन कौशल विकसित हो गया।
	CO-3. छात्र माध्यम के स्वरूप तथा लेखन प्रकारों से अवगत हो गए।
	CO-4. छात्रों को श्रव्य-दृश्य माध्यमों की भाषा का परिचय प्राप्त हुआ।
	CO-5. छात्र फीचर लेखन कला से अवगत हो गए।
	CO-6. छात्रों को फीचर के तत्वों एवं गुणों का परिचय प्राप्त हुआ।
	CO-7. छात्रों में फीचर लेखन का कौशल विकसित हो गया।

	CO-8. छात्रों को फीचर के भेदों का परिचय प्राप्त हुआ।
MIL-2 हिंदी भाषा शिक्षण (24012)	CO-1. छात्र वाक्य के भेदों से अवगत हुए।
	CO-2. छात्र विशेष प्रकार के वाक्यों से परिचित हुए।
	CO-3. छात्रों में हिंदी भाषा वाचन कौशल विकसित हुआ।
	CO-4. छात्रों में हिंदी भाषा श्रवण कौशल विकसित हुआ।
	CO-5. छात्रों में हिंदी भाषा संवाद कौशल विकसित हुआ।
	CO-6. छात्रों में हिंदी भाषा लेखन कौशल विकसित हुआ।
	CO-7. छात्र हिंदी भाषा-विधि तथा व्यवहार से अवगत हो गए।
	CO-8. छात्रों को हिंदी भाषा के विरामचिह्नों का परिचय प्राप्त हुआ।
	CO-9. छात्रों में काव्य-गीत सृजन कौशल विकसित हुआ।
T. Y. B. A.	
DSE-1C हिंदी साहित्य का इतिहास (35091)	CO-1. छात्रों को हिंदी साहित्य के इतिहास का परिचय प्राप्त हुआ।
	CO-2. छात्रों को साहित्येतिहास लेखन का परिचय प्राप्त हुआ।
	CO-3. छात्र हिंदी साहित्य के इतिहास के काल विभाजन और नामकरण से अवगत हो गए।
	CO-4. छात्रों को आदिकालीन साहित्य की प्रवृत्तियाँ, रचनाएँ और रचनाकारों का परिचय प्राप्त हुआ।
	CO-5. छात्र भक्तिकालीन साहित्य की प्रवृत्तियाँ, रचनाएँ और रचनाकारों से अवगत हो गए।
	CO-6. छात्रों को रीतिकालीन साहित्य की प्रवृत्तियाँ, रचनाएँ और रचनाकारों का परिचय प्राप्त हुआ।
DSE-2C भाषा विज्ञान (35092)	CO-1. छात्रों को भाषा विज्ञान के स्वरूप का परिचय प्राप्त हुआ।
	CO-2. छात्रों को भाषा विज्ञान की व्याप्ति समझ में आ गई।
	CO-3. छात्रों को भाषा विज्ञान के अध्ययन की दिशाओं का ज्ञान प्राप्त हुआ।
	CO-4. छात्र भाषा विज्ञान के अनुप्रयोगात्मक पक्ष से अवगत हो गए।
	CO-5. छात्रों को साहित्य के अध्ययन में भाषा विज्ञान की उपयोगिता समझ में आ गई।
	CO-6. छात्रों को भाषा विज्ञान का अन्य शाखाओं से संबंध का ज्ञान प्राप्त हुआ।
CC-1E कथेतर विधाएँ (35093)	CO-1. छात्रों को हिंदी संस्मरण साहित्य का परिचय प्राप्त हुआ।
	CO-2. छात्र हिंदी रेखाचित्र साहित्य से अवगत हो गए।
	CO-3. छात्रों में साहित्य के मूल्यांकन की दृष्टि विकसित हो गई।
	CO-4. छात्रों में संस्मरण और रेखाचित्र साहित्य के रसास्वादन की दृष्टि विकसित हुई।
	CO-5. छात्रों में सभा इतिवृत्त लेखन कौशल का विकास हुआ।
	CO-6. छात्रों में वार्ता लेखन कौशल का विकास हुआ।

SEC-2C पटकथा लेखन (35096)	CO-1. छात्रों को स्क्रिप्ट लेखन का परिचय प्राप्त हुआ।
	CO-2. छात्र दृश्य-श्रव्य माध्यम लेखन के विभिन्न प्रकारों से अवगत हो गए।
	CO-3. छात्रों में पटकथा लेखन की दृष्टि विकसित हो गई।
	CO-4. छात्रों में ड्राफ्ट बनाने का कौशल विकसित हुआ।
	CO-5. छात्रों में कथा और संवाद लेखन कौशल का विकास हो गया।
	CO-6. छात्र वृत्तचित्र और शॉर्टफिल्म लेखन से परिचित हो गए।
	CO-7. छात्रों को पटकथा के प्रारूपों और सॉफ्टवेयरों का ज्ञान प्राप्त हुआ।
DSE-1D हिंदी साहित्य का इतिहास (36091)	CO-1. छात्र हिंदी साहित्य के आधुनिक काल की पृष्ठभूमि से अवगत हो गए।
	CO-2. छात्रों को भारतेंदू युगीन काव्य की विशेषताओं का परिचय प्राप्त हुआ।
	CO-3. छात्रों को द्विवेदी युगीन काव्य की विशेषताओं का परिचय प्राप्त हुआ।
	CO-4. छात्र आधुनिक काल की रचनाओं एवं रचनाकारों से परिचित हो गए।
	CO-5. छात्र हिंदी गद्य साहित्य के उद्भव विकास से अवगत हो गए।
DSE-2D भाषा विज्ञान (36092)	CO-1. छात्रों को हिंदी भाषा के स्वरूप का परिचय प्राप्त हुआ।
	CO-2. छात्र हिंदी भाषा के विविध रूपों से परिचित हो गए।
	CO-3. छात्रों को हिंदी भाषा की विभिन्न बोलियों का परिचय प्राप्त हुआ।
	CO-4. छात्र भाषा विज्ञान के अनुप्रयोगात्मक पक्ष से अवगत हो गए।
	CO-5. छात्रों को हिंदी भाषा के शब्द भंडार का परिचय प्राप्त हुआ।
	CO-6. छात्रों में शोध आलेख लेखन की दृष्टि विकसित हो गई।
CC-1F कथेतर विधाएँ (36093)	CO-1. छात्र हिंदी गजल साहित्य से अवगत हो गए।
	CO-2. छात्रों को गजल के स्वरूप एवं तत्वों का ज्ञान प्राप्त हुआ।
	CO-3. छात्रों में गजल साहित्य के मूल्यांकन की दृष्टि विकसित हुई।
	CO-4. छात्रों में पत्र लेखन कौशल का विकास हुआ।
	CO-5. छात्र सरकारी पत्र लेखन से अवगत हो गए।
SEC-2D भाषा विज्ञान (36096)	CO-1. छात्र सिनेमा के स्वरूप से अवगत हो गए।
	CO-2. छात्रों को हिंदी साहित्य और सिनेमा के अंतःसंबंध का परिचय प्राप्त हुआ।
	CO-3. छात्रों में साहित्य के फिल्मांतरण की दृष्टि विकसित हुई।
	CO-4. छात्र हिंदी उपन्यासों पर आधारित फिल्मों से अवगत हो गए।
	CO-5. छात्र हिंदी कहानियों पर आधारित फिल्मों से अवगत हो गए।
	CO-6. छात्रों को भारतीय सिनेमा के उद्भव एवं विकास का परिचय प्राप्त हुआ।

Programme Outcomes: M. A. Hindi

Department of Hindi	After successful completion of two year PG degree program in Hindi a student should be able to:
Programme Outcomes	<p>PO-1. छात्रों हिंदी साहित्य के विभिन्न रूपों, विधाओं, प्रवृत्तियों, रचनाओं और रचनाकारों का परिचय प्राप्त हुआ।</p> <p>PO-2. भारतीय एवं पाश्चात्य साहित्यशास्त्र का सैद्धांतिक और अनुप्रयोगात्मक ज्ञान प्राप्त हुआ।</p> <p>PO-3. समीक्षात्मक दृष्टिकोन विकसित हुआ।</p> <p>PO-4. भाषा और साहित्य के अध्ययन, आस्वादन और मूल्यांकन की क्षमता का विकास हुआ।</p> <p>PO-5. साहित्य और युग जीवन का संबंध विशद करने का दृष्टिकोन विकसित हुआ।</p> <p>PO-6. साहित्य की विभिन्न विधाओं के माध्यम से छात्रों का भावात्मक विकास हुआ।</p> <p>PO-7. छात्रों में हिंदी साहित्य के माध्यम से नैतिक मूल्य, राष्ट्रीय मूल्य तथा सामाजिक मूल्यों के प्रति आस्था निर्माण हुई।</p> <p>PO-8. छात्रों को सरकारी कार्यालयों में प्रयुक्त कार्यालयीन हिंदी भाषा का परिचय प्राप्त हुआ।</p> <p>PO-9. अनुसंधान करने की क्षमता निर्माण हुई।</p> <p>PO-10. अनुवादक, दुभाषिया बनने की क्षमता निर्माण हुई।</p>

Programme Specific Outcomes: M. A. Hindi

Department of Hindi	After successful completion of two year PG degree program in Hindi a student should be able to :
	<p>PSO-1. हिंदी भाषा का व्यवस्थित और यथोचित ज्ञान।</p> <p>PSO-2. भावात्मक और सौंदर्यात्मक विकास।</p> <p>PSO-3. अनुसंधान कर्ता।</p> <p>PSO-4. निवेदक और सूत्र संचालक।</p> <p>PSO-5. पटकथा लेखक, संवाद लेखक, विज्ञापन लेखक।</p> <p>PSO-6. प्रकाशक, संपादक, संवाददाता।</p> <p>PSO-7. दुभाषिया, अनुवादक, प्रूफ शोधक।</p>

Programme Specific Outcomes	<p>PSO-8. मूल्य संवर्धन : नैतिक, राष्ट्रीय, सामाजिक मूल्यों का संवर्धन।</p> <p>PSO-9. राष्ट्रीय एकात्मता, समानता, बंधुता, उत्तरदायित्व और वैज्ञानिकता का विकास।</p> <p>PSO-10. सृजनात्मक लेखन।</p> <p>PSO-11. NET /SET परीक्षा।</p> <p>PSO-12. अध्यापक, प्राध्यापक, हिंदी अधिकारी, हिंदी सलाहकार, हिंदी निदेशक</p> <p>PSO-13. प्रबोधक, उपदेशक।</p> <p>PSO-14. वाचन, श्रवण, संवाद एवं लेखन कौशल का विकास</p>
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Course Outcomes: M. A. Hindi

Course	Outcomes
M. A. - I (Semester –I)	
<p>प्राचीन तथा मध्ययुगीन काव्य (HN-MJ-511T)</p>	<p>CO-1. छात्रों को हिंदी की प्राचीन तथा मध्ययुगीन काव्य प्रवृत्तियों का परिचय प्राप्त हुआ।</p> <p>CO-2. छात्रों को मध्ययुगीन काव्य प्रवृत्तियों की पृष्ठभूमि पर कवि विशेष की रचनाओं का परिचय प्राप्त हुआ।</p> <p>CO-3. छात्रों को आदिकाल और भक्तिकाल के साहित्य की प्रवृत्तियों की जानकारी प्राप्त हुई।</p> <p>CO-4. छात्रों को तत्कालीन काव्य भाषा की प्रवृत्तियों का परिचय प्राप्त हुआ।</p> <p>CO-5. छात्रों में काव्य मूल्यांकन की क्षमता विकसित हुई।</p> <p>CO-6. छात्रों में सर्जनात्मक कौशल विकसित हुआ।</p> <p>CO-7. छात्रों में काव्य के प्रति समीक्षात्मक दृष्टि विकसित हुई।</p> <p>CO-8. छात्र प्राचीन तथा मध्ययुग की काव्य परंपरा से परिचित हुए।</p>

<p>कथा साहित्य (HN-MJ-512T)</p>	<p>CO-1. छात्र उपन्यास विधा से अवगत हुए। CO-2. छात्र कहानी विधा से अवगत हुए। CO-3. छात्रों में पाठ्य रचनाओं में अभिव्यक्त मूल्यों का संप्रेषण हुआ। CO-4. छात्रों में आलोचनात्मक दृष्टि का विकास हुआ। CO-5. छात्रों में सर्जनात्मक कौशल का विकास हुआ। CO-6. छात्रों में हिंदी कथा साहित्य के प्रति अभिरुचि संवर्धित हुई। CO-7. छात्रों में राष्ट्र के प्रति प्रेम एवं सामाजिक प्रतिबद्धता की भावना विकसित हुई।</p>
<p>भारतीय काव्यशास्त्र (HN-MJ-513T)</p>	<p>CO-1. छात्रों को भारतीय काव्यशास्त्र के विकासक्रम का परिचय प्राप्त हुआ। CO-2. छात्र भारतीय काव्यशास्त्र के प्रमुख संप्रदायों से अवगत हुए। CO-3. छात्रों में रचना वैशिष्ट्य और मूल्यबोध को परखने की क्षमता विकसित हुई। CO-4. छात्रों में आलोचनात्मक दृष्टि विकसित हुई। CO-5. छात्र साधारणीकरण की अवधारणा से अवगत हुए। CO-6. छात्र रस सिद्धांत से परिचित हुए। CO-7. छात्र अलंकार सिद्धांत से अवगत हुए। CO-8. छात्रों को रीति एवं ध्वनि सिद्धांत की जानकारी प्राप्त हुई। CO-9. छात्र वक्रोक्ति एवं औचित्य सिद्धांत से परिचित हुए।</p>
<p>अनुवाद विज्ञान (HN-MJ-514T)</p>	<p>CO-1. छात्रों को अनुवाद के स्वरूप का परिचय प्राप्त हुआ। CO-2. छात्र अनुवाद के महत्व एवं व्याप्ति से अवगत हुए। CO-3. छात्र अनुवाद की प्रक्रिया से परिचित हुए। CO-4. छात्र अनुवाद के सामाजिक एवं सांस्कृतिक पक्ष से अवगत हुए। CO-5. छात्रों में अनुवाद का कौशल विकसित हुआ। CO-6. छात्र अनुवाद में आनेवाली समस्याएँ तथा उनके समाधान से परिचित हुए। CO-7. छात्र अनुवाद के भेदों से अवगत हुए। CO-8. छात्र अनुवाद और भाषा विज्ञान के संबंध से परिचित हुए।</p>

<p>नाटककार मोहन राकेश (HN-ME-515T)</p>	<p>CO-1. छात्र नाटक के स्वरूप एवं संरचना से परिचित हुए। CO-2. छात्र नाटक के रचना विधान से अवगत हुए। CO-3. छात्रों को हिंदी रंगमंच की जानकारी प्राप्त हुई। CO-4. छात्रों को हिंदी नाटक के विकासक्रम का परिचय प्राप्त हुआ। CO-5. छात्रों में नाटक के मूल्यांकन की क्षमता विकसित हुई। CO-6. छात्रों में नाट्याभिनय कौशल विकसित हुआ। CO-7. छात्रों में नाटक के प्रति समीक्षात्मक दृष्टि विकसित हुई। CO-8. छात्रों में नाटक साहित्य के आस्वादन की दृष्टि विकसित हुई।</p>
<p>शोध प्रविधि (HN-RM-518T)</p>	<p>CO-1. छात्र शोध प्रविधि से अवगत हुए। CO-2. छात्रों में शोध दृष्टि का विकास हुआ। CO-3. छात्र नये शोध-प्रवाहों से परिचित हुए। CO-4. छात्र शोध प्रक्रिया से अवगत हुए। CO-5. छात्रों में शोध प्रबंध लेखन कौशल विकसित हुआ। CO-6. छात्रों को शोध के भेदों की जानकारी प्राप्त हुई। CO-7. छात्र शोध के मूल तत्वों से परिचित हुए। CO-8. छात्रों में सर्जनात्मक कौशल विकसित हुआ। CO-9. छात्रों में समीक्षात्मक दृष्टि विकसित हुई।</p>
<p>M. A. - I (Semester –II)</p>	

<p>मध्ययुगीन काव्य (HN-MJ-521T)</p>	<p>CO-1. छात्रों को हिंदी की मध्ययुगीन काव्य प्रवृत्तियों का परिचय प्राप्त हुआ। CO-2. छात्रों को मध्ययुगीन काव्य प्रवृत्तियों की पृष्ठभूमि पर कवि विशेष की रचनाओं का परिचय प्राप्त हुआ। CO-3. छात्रों को भक्तिकाल और रीतिकाल के साहित्य की प्रवृत्तियों की जानकारी प्राप्त हुई। CO-4. छात्रों को तत्कालीन काव्य भाषा की प्रवृत्तियों का परिचय प्राप्त हुआ। CO-5. छात्रों में काव्य मूल्यांकन की क्षमता विकसित हुई। CO-6. छात्रों में सर्जनात्मक कौशल विकसित हुआ। CO-7. छात्रों में काव्य के प्रति समीक्षात्मक दृष्टि विकसित हुई। CO-8. छात्र मध्ययुग की काव्य परंपरा से परिचित हुए।</p>
<p>कथेतर गद्य साहित्य (HN-MJ-522T)</p>	<p>CO-1. छात्रों को हिंदी कथेतर साहित्य की प्रवृत्तियों का परिचय प्राप्त हुआ। CO-2. छात्र हिंदी निबंध साहित्य से परिचित हुए। CO-3. छात्र हिंदी आत्मकथा साहित्य से अवगत हुए। CO-4. छात्रों को हिंदी रेखाचित्र साहित्य का परिचय प्राप्त हुआ। CO-5. छात्र हिंदी व्यंग्य साहित्य से परिचित हुए। CO-6. छात्र हिंदी संस्मरण साहित्य से अवगत हुए। CO-7. छात्रों में कथेतर साहित्य के मूल्यांकन की क्षमता विकसित हुई। CO-8. छात्रों में सर्जनात्मक कौशल विकसित हुआ। CO-9. छात्रों में कथेतर के प्रति समीक्षात्मक दृष्टि विकसित हुई।</p>
<p>पाश्चात्य काव्यशास्त्र (HN-MJ-523T)</p>	<p>CO-1. छात्र पाश्चात्य काव्यशास्त्र से अवगत हुए। CO-2. छात्र पाश्चात्य काव्यशास्त्र के विकासक्रम से परिचित हुए। CO-3. छात्रों को पाश्चात्य काव्यशास्त्र के सिद्धांतों का ज्ञान प्राप्त हुआ। CO-4. छात्रों को काव्यशास्त्रीय समीक्षा का महत्व अवगत हुआ। CO-5. छात्र प्लेटो के काव्यशास्त्रीय सिद्धांतों से अवगत हुए। CO-6. छात्र अरस्तु के काव्यशास्त्रीय सिद्धांतों से परिचित हुए। CO-7. छात्रों में काव्यशास्त्रीय अध्ययन के द्वारा समीक्षात्मक दृष्टि विकसित हुई। CO-8. छात्र पाश्चात्य काव्यशास्त्र के विभिन्न वादों से परिचित हुए।</p>

<p>प्रयोजनमूलक हिंदी (HN-MJ- 524T)</p>	<p>CO-1. छात्र प्रयोजनमूलक हिंदी के स्वरूप से अवगत हुए। CO-2. छात्र प्रयोजनमूलक हिंदी स्वरूपगत विशेषताओं से परिचित हुए। CO-3. छात्र प्रयोजनमूलक हिंदी की विभिन्न प्रयुक्तियों से अवगत हुए। CO-4. छात्र प्रयोजनमूलक हिंदी की सीमाएँ एवं संभावनाओं से परिचित हुए। CO-5. छात्रों को राजभाषा हिंदी के संवैधानिक प्रावधानों की जानकारी प्राप्त हुई। CO-6. छात्र कार्यालयी हिंदी का स्वरूप से परिचित हुए। CO-7. छात्र पारिभाषिक शब्दावली से परिचित हुए। CO-8. छात्रों में हिंदी भाषा के संबंध में प्रयोजनमूलक कौशल विकसित हुआ।</p>
<p>हिंदी उपन्यास (HN-ME- 525T)</p>	<p>CO-1. छात्र हिंदी उपन्यास के स्वरूप एवं संरचना से परिचित हुए। CO-2. छात्र उपन्यास के रचना विधान से अवगत हुए। CO-3. छात्र हिंदी उपन्यास की विभिन्न शैलियों से अवगत हुए। CO-4. छात्रों को हिंदी उपन्यास के विकासक्रम का परिचय प्राप्त हुआ। CO-5. छात्रों में उपन्यास के मूल्यांकन की क्षमता विकसित हुई। CO-6. छात्रों में उपन्यास के आस्वादन का कौशल विकसित हुआ। CO-7. छात्रों में उपन्यास के प्रति समीक्षात्मक दृष्टि विकसित हुई। CO-8. छात्र हिंदी के प्रमुख उपन्यासकार और उपन्यासों से परिचित हुए।</p>
<p>Field Project (HN-FP- 529T)</p>	<p>CO-1. छात्र क्षेत्रीय परियोजना के स्वरूप एवं महत्व से अवगत हुए। CO-2. छात्रों को क्षेत्रीय परियोजना कार्य का प्रत्यक्ष अनुभव प्राप्त हुआ। CO-3. छात्रों में क्षेत्रीय परियोजना का कौशल विकसित हुआ। CO-4. छात्रों का समाज एवं क्षेत्र विशेष के साथ अंतर-संबंध प्रस्थापित हुआ।</p>
<p>M. A. - II (Semester –III)</p>	
<p>HP 09 आधुनिक काव्य (30501)</p>	<p>CO-1. छात्र आधुनिक काव्य से अवगत हुए। CO-2. छात्रों को आधुनिक हिंदी काव्य की प्रवृत्तियों का परिचय प्राप्त हुआ। CO-3. छात्रों को प्रबंध काव्य और मुक्तक काव्य के तात्विक स्वरूप का ज्ञान प्राप्त हुआ। CO-4. छात्रों को आधुनिक काव्य प्रकारों का परिचय प्राप्त हुआ। CO-5. छात्र काव्य-संवेदना और शिल्पगत अध्ययन से अवगत हुए। CO-6. छात्रों में काव्य-सर्जन कला का विकास हुआ। CO-7. छात्रों में काव्य के आस्वादन, अध्ययन और मूल्यांकन की यथोचित दृष्टि विकसित हुई।</p>

<p>HP 10 भाषा विज्ञान (30502)</p>	<p>CO-1. छात्रों को भाषा विज्ञान के स्वरूप, अंग एवं शाखाओं का ज्ञान प्राप्त हुआ। CO-2. छात्रों को भाषा विज्ञान के सैद्धांतिक पक्ष का परिचय प्राप्त हुआ। CO-3. छात्रों को भारतीय आर्य भाषाओं के विकास क्रम की जानकारी प्राप्त हुई। CO-4. छात्रों को भाषा विज्ञान की उपयोगिता की जानकारी प्राप्त हुई। CO-5. छात्रों में भाषा के प्रयोग के संबंध में समुचित दृष्टिकोन विकसित हुआ।</p>
<p>HP 11 हिंदी साहित्य का इतिहास (30503)</p>	<p>CO-1. छात्रों को साहित्यिक प्रवृत्तियों का ज्ञान प्राप्त हुआ। CO-2. छात्रों को हिंदी साहित्य के इतिहास के काल विभाजन और नामकरण के संबंध में जानकारी प्राप्त हुई। CO-3. छात्र आदिकाल, भक्तिकाल तथा रीतिकाल के प्रतिनिधि कवियों से परिचित हुए। CO-4. छात्रों में साहित्य और युग जीवन का संबंध विशद करने की क्षमता निर्माण हुई। CO-5. छात्रों को हिंदी साहित्येतिहास लेखन का परिचय प्राप्त हुआ। CO-6. छात्रों को आधुनिक युग की सामाजिक, राजनीतिक, धार्मिक, साहित्यिक परिस्थितियों का ज्ञान प्राप्त हुआ।</p>
<p>HP 12 हिंदी आलोचना (30504)</p>	<p>CO-1. छात्रों को आलोचना के स्वरूप का परिचय प्राप्त हुआ। CO-2. छात्र आलोचना के विविध प्रकारों से अवगत हुए। CO-3. छात्रों को प्रमुख आलोचकों के आलोचनात्मक प्रतीमानों का परिचय प्राप्त हुआ। CO-4. छात्रों में साहित्यालोचन एवं व्यावहारिक समीक्षा दृष्टि विकसित हुई। CO-5. छात्रों में आलोचना की क्षमता एवं कौशल विकसित हुआ।</p>
<p>M. A. - II (Semester –IV)</p>	
<p>HP 13 आधुनिक कविता (40501)</p>	<p>CO-1. छात्रों को आधुनिक काव्य की विभिन्न प्रवृत्तियों का परिचय प्राप्त हुआ। CO-2. छात्रों को आधुनिक काल के काव्य के तात्विक स्वरूप का ज्ञान प्राप्त हुआ। CO-3. छात्रों को आधुनिक काव्य प्रकारों का ज्ञान प्राप्त हुआ। CO-4. छात्रों में काव्य के आस्वादन, अध्ययन और मूल्यांकन की दृष्टि विकसित हुई। CO-5. छात्रों में काव्य के प्रति रुचि वृद्धिगत हुई। CO-6. छात्र सर्जनात्मक कौशल से अवगत हुए। CO-7. छात्रों में आलोचनात्मक दृष्टि का विकास हुआ।</p>

<p>HP 14 हिंदी भाषा का विकास (40502)</p>	<p>CO-1. छात्रों को हिंदी भाषा का उद्भव, विकास तथा ऐतिहासिक पृष्ठभूमि का परिचय प्राप्त हुआ। CO-2. छात्र आधुनिक आर्य भाषाओं के वर्गीकरण से अवगत हुए। CO-3. छात्र हिंदी की बोलियों के वर्गीकरण और क्षेत्र से परिचित हुए। CO-4. छात्रों को हिंदी के व्याकरणिक स्वरूप और विकास की जानकारी प्राप्त हुई। CO-5. छात्रों को हिंदी के प्रचार एवं प्रसार आंदोलनों की जानकारी प्राप्त हुई।</p>
<p>HP15 हिंदी साहित्य का इतिहास (40503)</p>	<p>CO-1. छात्रों को हिंदी गद्य के अविर्भाव के कारणों एवं परिस्थितियों का परिचय प्राप्त हुआ। CO-2. छात्रों को हिंदी गद्य के विकासक्रम का परिचय प्राप्त हुआ। CO-3. छात्रों को गद्य की विषयवस्तु, भाषा शैली, विचारधारा, प्रभाव आदि का ज्ञान प्राप्त हुआ। CO-4. छात्र आधुनिक काल के साहित्य की उपलाब्धियों तथा सीमाओं से अवगत हुए। CO-5. छात्रों को आधुनिक गद्यकारों एवं कवियों का परिचय प्राप्त हुआ।</p>
<p>HP 16 भारतीय लोकसाहित्य (40504)</p>	<p>CO-1. छात्र लोक साहित्य के स्वरूप तथा महत्व से परिचित हुए। CO-2. छात्रों को लोकसाहित्य की विभिन्न विधाओं का ज्ञान प्राप्त हुआ। CO-3. छात्र लोकसाहित्य की व्यापकता और उपयोगिता से अवगत हुए। CO-4. छात्र महाराष्ट्र के लोकसाहित्य से परिचित हुए। CO-5. छात्रों में लोकसाहित्य के मूल्यांकन की दृष्टि विकसित हुई।</p>

DEPARTMENT OF HISTORY

Programme Outcomes: B.A. History

<p>Department of History</p>	<p>After successful completion of three year degree program in History student should be able to</p>
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Programme Outcomes	<p>PO-1. After graduation with B.Ed. course, student can choose teaching career.</p> <p>PO-2. Graduates can select Museum curator, Historians, Tourism, History Expert etc. as their career options.</p> <p>PO-3. Eligible to appear for any competitive exams conducted by UPSC, MPSC, Indian Railway Board, etc. for entering into the government services.</p>
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Programme Specific Outcomes: B.A. History

Programme Specific Outcomes	<p>After successful completion of three year degree program in History student should be able to</p> <p>PSO-1. Jobs in Government: Policy analysts, government historians, intelligence analysts, administrative and programs specialists, communication specialists, and corporate communication managers.</p> <p>PSO-2. Travel and Tourism Expert: Work as a tourist guide at historical and religious places.</p> <p>PSO-3. School Teacher: Work as teacher in School and high school.</p> <p>PSO-4. College Teacher: Work as Assistant Professor in Colleges.</p> <p>PSO-5. Archivist: A History graduate can find employment with Archaeological Survey of India or with private firms related to archaeology.</p> <p>PSO-6. Researcher: Many Governments and non-government institutes along with research center offer several career options for qualified geographers with numerous specializations.</p> <p>PSO-7. Competitive Examination: For History graduates, the option of public service and NET/SET is always open.</p> <p>PSO-8. Social Work: NGOs and Social Welfare Organizations also employ BA History Graduates.</p> <p>PSO-9. Journalist: Journalism is a common career for History Graduates.</p>
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Course Outcomes: B.A. History

Course	Outcomes
	After completion of these courses students should be able to :-
<u>Semester-I</u>	

BA- HI-111T History of the Maratha (1630- 1707)	CO-1: Develop the ability to analyze sources for Maratha History. CO-2: Learn significance of regional history and political foundation of the region CO-3: Enhance their perception of 17th century Maharashtra and India in context of Maratha history CO-4: Know skills of leadership and the administrative system of the Maratha.
OE - HI-01T Maharashtra in the 19th Century	CO-1: Enhance their perception of 19th Century Maharashtra. CO-2: Relate and understand their life with the 19th Century Maharashtra CO-3: Significance of Regional History and Socio- religious Reformism foundation of the region CO-4: Develop the ability to analyze sources for 19th century Maharashtra history CO-5: Appreciate the skills of leadership and the Socio-religious System of the Maharashtra
<u>Semester-II</u>	
BA-HI-121T Administrative Policy of Chhatrapati Shivaji Maharaj	CO -1. Aware of the administrative Institutions of the Maratha CO -2. Develop the ability to analyses sources for Maratha History CO -3. Learn significance of regional history and Political foundation of the region CO -4. Make broader perception of 17th century Maharashtra and India in context of Maratha history CO- 5. Appreciate the skills of leadership and the administrative system of the Maratha
OE - HI-02T Maharashtra in the 20th Century	CO-1: Develop the ability to analyses sources for 20th century Maharashtra history CO-2: Learn significance of regional history and Socio- Religious reformism foundation of the region CO-3: Enhance their Perception of 20th century Maharashtra. CO-4: Know the skills of leadership and the Socio-Religious system of the Maharashtra
SEC-HI- 122T Archaeology	CO-1: Understand the definition, aims and scope of Archaeology so as to understand its applications in interpreting the humanpast CO-2: Understand the nature of the archaeological record and the unique role of Science in Archaeology CO- 3: Understand the Archaeology.
<u>Semester-III</u>	
SEC-HI- 122T Archaeology	CO-1: Understand the definition, aims and scope of Archaeology so as to understand its applications in interpreting the human past

	CO-2: Understand the nature of the archaeological record and the unique role of Science in Archaeology
	CO- 3: Understand the Archaeology.
Medieval India:- Sultanate Period Sem-III (23171)	CO-1. Provides examples of sources used to study various periods in history. CO-2. Relates key historical developments during medieval period occurring in one place with another. CO-3. Analyses socio - political and economic changes during medieval period. CO-4. Estimate the foreign invasion and the achievement of rulers.
Glimpses of the Modern World - Part I Sem-III (23172)	CO- 1. It will enable students to develop the overall understanding of the Modern World. CO-2. The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World. CO-3. It will enhance their perception of the history of the Modern World. CO-4. It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World.
Tourism Management Sem- III (23178)	CO-1. Students will get an overall understanding of the process of Tourism Management. CO-2. They will learn to work in the Tourism Management with great potential. CO-3. They will be able to seek self-employment by starting their own tourism related business.
<u>Semester-IV</u>	
History of the Marathas (1707 to 1818) (Sem-IV) (24174)	CO-1. Students will be able to analyse the Marathas policy of expansionism and its consequences. CO-2. They will understand the role played by the Marathas in the 18 th Century India. CO-3. They will be acquainted with the art of diplomacy in the Deccan region.
Medieval India:- Mughal Period Sem- IV (24171)	CO-1. Draws comparisons between policies of different rulers. CO-2. Understanding role of Akbar in the consolidation of Mughal rule in India. CO-3. Understand Auraangzebs conflict with Rajputas , Maratha and weakning Mughals age.
Glimpses of the Modern World - Part II Sem-IV (24172)	CO-1. It will enable student to develop the overall understanding of the modern World. CO-2. It will enhance their overall perception of the History of the modern World.CO-3. It will enable student to understand the significances of the strategic political development in the

	Modern World.
Travel Agency & Tour Business Sem- IV (24178)	CO-1. Students will get an overall understanding of the process of Travel Agency. CO-2. They student will understand the details of the business of Travel Agency CO-3. It will be enable student to seek self employment by starting their own Travel Agency related to business.
<u>Semester-V</u>	
Indian National Movement(1885-1947) Sem –V (35174)	CO-1. It will enable students to develop an overall understanding of modern India . CO-2. It will increase the spirit of healthy Nationalism Democratic Values and secularism among the students. CO-3. Students will understand various aspects of the Indian Independence Movement and the creation of Modern India
Introduction to Historiography Sem-V (35171)	CO-1. Students known source of history. CO-2. Students can study the interdisciplinary approach of History CO-3. Students will be introduces to the Information and importance of Historiography. CO-4 Students will learn about the usefulness of history in the 21 st century, its changing perspectives the new ideas that have been invented. Increased the knowledge of research in history.
Maharashtra in the 19th Century Sem- V (35172)	CO-1. Students will be develop the ability to analyze sources for 19 th century Maharashtra CO-2. It will enhance their perception of 19 th & 20 th Century Maharashtra CO-3. Student will learn significance of Regional History and Socio religious reformism foundation of the region. CO-4. Appreciate the skills of leadership and the Socio-Religious System of the Maharashtra.
Research Paper Writing (SEC) Sem-V (36177)	CO-1. Students understand basic concept of research. CO-2. Students understand basic framework of sampling and data collection. CO-3. Acquaint the students with various sampling methods and techniques CO-4 Student Develop the skill of report writing
<u>Semester-VI</u>	
Archaeology Sem –VI (SEC) (36177)	CO-1. Students will learn to understand the definition, aims and scope of Archaeology so as to understand its applications in interpreting the human past. CO-2 They will be understand the nature of the archaeological record and the unique role of science in archaeology. CO-3. They will have an overall understanding of the Archaeology.
Applied History Sem-VI (36171)	CO-1. Students will be introduced to the information and importance of applied History. CO-2. Students will be learn about the Historical significance of Archaeology and Archives and opportunities in the field of

	<p>Archaeology and Archives.</p> <p>CO-3. Through this course, students will be informed about the opportunities in the field of Media, Museums.</p> <p>CO-4. Students will learn about the usefulness of history in the 21st Century, its changing perspectives, the new ideas that have been invented, and the importance of history in a Competitive World.</p>
<p>Maharashtra in the 20th Century Sem-VI (36172)</p>	<p>CO-1. Students will be develop the ability to analyze sources for 20th century Maharashtra</p> <p>CO-2. It will enhance their perception of 20th Century Maharashtra</p> <p>CO-3. Student will learn significance of Regional History and Socio religious reformism foundation of the region</p>
<p>Indian After Independence- (1947-1991) Sem-VI (36174)</p>	<p>CO- 1. It will enable students to develop an overall understanding of the Contemporary India.</p> <p>CO-2 To increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students.</p> <p>CO-3 Students will understand various aspects of India's domestic and foreign policies that shaped Post-Independence India.</p>

Programme Outcomes: M.A. History

	<p>After successful completion of three year degree program in History student should be able to:</p>
<p>Programme Outcomes</p>	<p>PO-1. Understand the Basic Skill of history Writing & research.</p> <p>PO-2. Tress out the Root of contemporary society from the past.</p> <p>PO-3. Realized the importance of Socio cultural moral value.</p> <p>PO-4. Understand the depth of subject of History from macro to micro level.</p>

Programme Specific Outcomes: M.A. History

	<p>After successful completion of three-year degree program in History student should be able to</p>
<p>Programme Specific Outcomes</p>	<p>PSO-1. Sources of the reconstruction of Ancient Indian History, Literary, Archaeological, Numismatics and Epigraphy.</p> <p>PSO-2. Origin and Evolution of State- Manorial and Republican tradition.</p> <p>PSO-3. Different literary tradition and their important Vedic, Buddhist, and Jain.</p> <p>PSO-4. History-one of the popular option in competitive examination through its study the students becomes acquainted with his or her National heritage.</p> <p>PSO-5. Different Method of archaeological exploration and</p>

	excavation visits of selective sites.
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Course Outcomes: M.A. History

Course	Outcomes
	After completion of these courses students should be able to :-
<u>Semester-I</u>	
HI-MJ-511T History: Theory and Method	CO- 1. Students will be able to understand the conceptual base and understanding of History and its forces. CO- 2. Students will come to know existing paradigms and challenges the out dated. CO- 3. Student will understand the process of the research and formulating hypotheses and develop broad frames
HI-MJ-512T Evolution of Ideas and Institutions in Early India	CO-1- Understand of the social economic and institutional bases of early India. CO- 2 Understand early Indian history. CO -3 The glimpses of early Indian Institutions CO-4 Understand the Political, Social and Economic Indian culture evolved by different ideas thought-out time
HI-MJ-513T Maratha Polity	CO -1. Understand the administrative system of the Marathas. CO -2. Get acquaint with the nature of Maratha Polity CO -3. Understand the basic components of the Maratha administrative structure CO -4. Understand the basic concepts of the Maratha polity
HI-MJ- 514T Science and Technology in Early India	CO -1. The paper aims to acquaint the student with the scientific attitudes nurtured and developed by Indian scientists at Ancient period CO- 2. It is hoped that the student will learn to analyses the philosophical back-ground of science, it implications in terms of technology CO -3. To assessment the role of scientific progress in the process of modernization on India

HI-ME-515T History of Deccan – Pre-History to Chalukyas	CO- 1. Study the administrative system of the Marathas. CO- 2. Get acquainted with the nature of Maratha Polity CO- 3. The basic components of the Maratha administrative structure CO- 4. Understand the basic concepts of the Maratha Polity
HI-RM-516T Research Methodology in History	CO -1. The process of research in History CO- 2. Understand formulating hypothesis and its application to the research problem. CO -3. Understand the types of research and its areas. CO- 4. Understand Different Research Methodologies.
<u>Semester-II</u>	
HI-MJ-521T Approaches to History	CO -1. Get adequate conceptual base bring better understanding of history and its forces. CO -2. Existing paradigms and challenge the out dated. CO -3. Understand research in terms of formulating hypotheses.
Ideas and Institutions in Medieval India	CO-1. Able to analyze Perception Limitations & range of Sources of Medieval India. CO-2. Understand political ideas & institutions of Medieval India. CO-3. Able to illustrate emergence of caste based societies in Medieval India. CO-4. Able to explain emergence of state in Medieval India.
HI-MJ-522T Ideas and Institutions in Medieval India	CO -1. Examines the nature of Medieval Indian society, economy, State formations, and the main religious currents of the time CO- 2 Understand continuation of the course on Ancient India. CO -3. Understand of the nature of society, an the problems of the challenge to that society, through colonialism, at Later stage
HI-MJ-523T Socio-Economic History of the Marathas	CO- 1. The socio-economic History of the Marathas in an analytical way CO- 2. Get acquainted the student with the components of social structure and their functions CO- 3. Understand the relationship between religion, caste, custom, traditions, class in 17th and 18th century Maratha Society CO- 4. Understand aspects of economic life CO -5. Trace the determinants of changes in social and economic life
HI-MJ-524T Science and Technology in Medieval India	CO- 1. Get acquainted the student with the scientific attitudes nurtured and developed by Indian Scientists through the ages CO- 2. Learn to analyses the philosophical back ground of science, its Implications in terms of technology CO- 3. Assess the role of scientific progress in the process of modernization of India

HI-ME-525T Marathas in 17th and 18th Century: Power Politics	CO-1: Understand the social, economic and institutional bases of Ancient India CO-2: Understand of Ancient Indian history.
HI-FP-526P Field visit & Report Writing	CO-1: It helps in making good bonding with classmates. CO-2: The field trip provides an opportunity to explore a child abilities, talent, and skills on different experiences.
HI-FP-526P Field visit & Report Writing	CO-1: It helps in making good bonding with classmates. CO-2: The field trip provides an opportunity to explore a child abilities, talent, and skills on different experiences.
<u>Semester-III</u>	
Cultural History of Maharashtra	CO-1. Write article and present their own view related the topic of modern Maharashtra. CO-2. Discuss and summaries current issue in the area of social religious reform movement in Maharashtra.
Intellectual History of the Modern World	CO-1. Understand the Renaissance, Scholasticism & it's Impact of the world. CO-2. Understand the intellectual revolution in 17 th & 18 th Century. CO-3. Understand the major concepts & ideology in modern west. CO-4. Understand Progress of Science & technology.
Economic History of Modern India	CO-1. 'History of Modern India' topic as a part of History is a very important section as far as the Syllabus of any competitive examination is possible, especially Civil Services exams. CO-2. Modern Indian history Importance For competitive examination.
East Asia : Japan (1853-2000)	CO-1. The course is designed to help the students to know Japanese history especially afterthe opening up of Japan. CO-2. Japan's modernization and its impact; post World War II developments and Japan's role in world politics.
<u>Semester-IV</u>	
Modern Maharashtra: History of Ideas	CO-1. Understand Meaning of the Micro to Macro history. CO-2. Understand the conceptual difference between of the Indian Modernity &Europeanmodernity and also Indian Renaissance & European Renaissance. CO-3. Visit Library and take interest to read the biographies and original literature ofimminent personalities related to 19 century Maharashtra.
World after World War II (1945-2000)	CO-1. Understand the political development in the world after Second World War. CO-2. Developed the understanding of new military and political ideas and institutions.

	CO-3. Understand the process and impact of globalization.
Debates in Indian Historiography	CO-1. The course is designed to introduce the student to some of the issues that have been debated by historians and to introduce some perspectives with reference to Indian History.
History of Modern India (1857-1971)	<p>CO-1. Understand of various term, Key concept related to Economic History of India.</p> <p>CO-2. Understand the change & continuity of Indian Economics System from Ancient to colonial period.</p> <p>CO-3. Take interest to read various book related to British policy and ideology to ruling India.</p> <p>CO-4. Discuss the contemporary Economical issues in classroom and its related to be history.</p>

DEPARTMENT OF POLITICS

Programme Outcomes: B.A. Politics

Department of Politics	After successful completion of three year degree program in Politics student should be able to
Programme Outcomes	PO-1. To able to understand basic concepts of Political Science PO-2. To able to analyze Political behavior in practice. PO-3. To Understand the Socio Political Structure Of Society. PO-4. To Develop the ability to analyze historical and current events from Political perspective. PO-5. To Develop ability to write clearly expressing Political point of view. PO-6. To create student's ability to suggest of the various Socio – Political problems.

Programme Specific Outcomes: B.A. Politics

Department of Politics	An Honors graduate of Political Science of the college should possess the capability to:
Programme Specific Outcomes	PSO-1. Understanding the nature and developments in national and international politics PSO-2. Analyzing the Indian constitutional provisions, major legislations and reforms. PSO-3. Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian society PSO-4. Building overall consciousness regarding national political history, international relations and present Indian and Western political thinkers. PSO-5. Encouraging a comprehensive, comparative understanding of specific world constitutions such as UK, USA, China, Russia, Switzerland and France. PSO-6. Developing knowledge of administrative studies with special reference to Indian administrative structures and practices. PSO-7. Examining India's foreign relations with her neighbors and great powers. PSO-8. Use of case study method for analyzing the working of important international and regional organizations like UN, EU, ASEAN etc.

Programme Outcomes: M.A. Politics

Department of Politics	After successful completion of two year degree program in Politics student should be able to :
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Programme Outcomes	<p>PO-1. Understanding the inter relationship between policy decisions and its effects on society.</p> <p>PO-2. To develop the ability to analyze and predict socio political phenomena based on the study of existing socio political determinants and past experiences.</p> <p>PO-3. The course curriculum inculcates among students a basic understanding of the rights and duties of citizenship</p> <p>PO-4. Establishment of linkages between academics and civil society at large so as to successfully address socio political problems.</p> <p>PO-5. Understanding the nature and developments in national and international politics</p> <p>PO-6. Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian society</p> <p>PO-7. Building overall consciousness regarding national political history, international relations and present Indian and Western political thinkers.</p> <p>PO-8. Examining India's foreign relations with her neighbors and great powers.</p> <p>PO-9. Use of case study method for analyzing the working of important international and regional organizations like UN, EU, ASEAN etc.</p> <p>PO-10. To develop comprehensive and interdisciplinary knowledge by emphasizing inter-linkages between various political, economic and social issues and challenges.</p> <p>PO-11. To generate socially-informed knowledge and cater to the educational upliftment of marginalized communities through papers like Human Rights, Political Ideas in Modern India and Women and Politics in India</p>
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Course Outcomes: B. A. Politics

Semester-I	
PS-MJ -111T Introduction to Indian Constitution-I	<p>CO-1: Understand the philosophy of Indian constitutions.</p> <p>CO-2: Understand and identify the causes and impact of British colonial rule.</p> <p>CO-3: Understand how to create value in young people regarding patriotism.</p> <p>CO-4: Understand the various Governments of India Acts, their provisions, and reforms.</p> <p>CO-5: Understand and know the salient features of the Indian constitution.</p> <p>CO-6: Understand and know the Fundamental rights, Fundamental Duties and Directive principles of state.</p>

<p>PS-MJ -112T Local Self Government in Maharashtra-I</p>	<p>CO-1. Understanding the historical context and evolution of local self-government in India with a focus on the British and post-independence periods.</p> <p>CO-2. Understand the recommendations of the Vasant Rao Naik Committee, L. N. Bongirwar Committee and Prin. P. B. Patil Committee</p> <p>CO-3. Understand the recognize the importance of the 73rd and 74th Amendments in Promoting decentralized and participatory governance.</p> <p>CO-4. Understand the definition and differentiate the roles of Gram Sabha and Gram Panchayat, and assess their composition, powers, and functions.</p> <p>CO-5. Understand the functions and responsibilities of Panchayat Samiti in coordinating and supervising rural development activities.</p> <p>CO-6. Understanding the significance of Zilla Parishad in regional planning, resource allocation, and overall, rural development.</p>
<p>PS-VSC-113T Political Journalism: Part-I</p>	<p>CO 1- Understand the complex relationship between the media of communication and power politics.</p> <p>CO 2- Understand the critical appraisal of practices of political image management, campaigns, Propaganda and censorship</p> <p>CO3- Understand knowing the Indian context of political Journalism</p>
<p>PS-SEC-114T Electoral Politics and Voting Behavior</p>	<p>CO-1: Understand the philosophy of Indian constitution issues in Electoral Politics. CO-2: Understand the voting behavior in India.</p> <p>CO-3: Understand the Election Commission of India and its Composition, Powers and Functions</p> <p>CO-4: Understanding issues in Electoral Politics</p>
<p>PS-IKS-115T Evolution of Indian Administration</p>	<p>CO1: Understanding the Administration in Ancient India.</p> <p>CO2: Understanding the Administration in Medieval India.</p> <p>CO3: Understanding the Administration during the British Period</p> <p>CO4: Understanding the Framework of Indian Administration.</p>
<p>PS-OE-101T Constitutional Framework and Local Self Government in India Part-I</p>	<p>CO-1 Understanding the Evolution of the Indian Constitution.</p> <p>CO-2 Understanding the Political System in India.</p> <p>CO-3 Understanding the Panchayat Raj System</p> <p>CO-4 Understanding Urban Local Governance</p>
<p>VEC- 01T Democracy, Election and Governance</p>	<p>CO-1: Understand the philosophy of Indian Democracy.</p> <p>CO-2: Understanding the causes and impact of Democracy on Social Development.</p> <p>CO-3: Understand and create value in young people regarding patriotism</p>

Semester II

<p>PS-MJ -121T Introduction to Indian Constitution-II</p>	<p>CO-1: Understand the structure of the Indian Parliament. CO-2: Understand the structure of the government of India. CO-3: Understand the Judiciary system and Electoral system in India. CO-4: Understand the various Government of India's acts, their Provisions and reforms CO-5: Understand the structure of the State Assembly and executive System.</p>
<p>PS-MJ -122T Local Self Government in Maharashtra-II</p>	<p>CO1. Understanding the Urban Local Bodies and Their Functions CO2. Understanding the Role of the State Election Commission CO3. Understanding the Impact of Leadership on Local Development CO4. Understand the Identify and Address Challenges in Local Self-Government CO5. Understand the factors affecting citizen participation and suggest strategies to enhance community involvement in decision-making processes.</p>
<p>PS-VSC-123T POLITICAL JOURNALISM: PART-II</p>	<p>CO 1: Understand the complex relationship between media of communication and power Politics. CO 2: Understand the critical appraisal of practices of political image management, campaigns, Propaganda and censorship CO 3: Understand knowing the Indian context of political journalism</p>
<p>PS-MN -125T Government and Politics of Maharashtra</p>	<p>CO-1: Understand the government structure of Maharashtra CO-2: Understand the composition and functions of the high court of Maharashtra CO-3: Understand the political parties in Maharashtra.</p>
<p>EC-SEC-125T POLITICAL REPORTING</p>	<p>CO-1: Understand the need, scope and concepts in Political Reporting. . .CO-2: Understand to identify various sources for Political Reporting CO-3: Understand of interpreting the political phenomena from the gross roots level to the Parliament CO-4: Understand to develop insights and enhance skills in a professional manner in the age of mass media.</p>

<p>PS-OE-102T Constitutional Framework and Local Self Government in India: Part-II</p>	<p>CO-1: Understanding of Fundamental Rights, Fundamental Duties, and Directive Principles of State Policy in the Indian Constitution.</p> <p>CO-2 Understand the different types of federalism and identify the distinctive features of Indian federalism.</p> <p>CO-3 Understand the Centre-State relations, including legislative, administrative, and financial aspects.</p> <p>CO-4 Understand the conflicts between different states, focusing on water and border issues.</p>
<p>VEC- 02T Democracy, Election and Governance</p>	<p>CO-1: Understand the philosophy of Indian Democracy.</p> <p>CO-2: Understanding the causes and impact of Democracy on Social Development.</p> <p>CO-3: Understand and create value in young people regarding patriotism.</p>

Programme Specific Outcomes: M.A. Politics

<p>Department of Politics</p>	<p>After successful completion of two year degree program in Politics student should be able to</p>
<p>Programme Specific Outcomes</p>	<p>PSO-1. Political Sciences as ‘Master Science’ had spawned International Relations, later emerging as an autonomous discipline, Comparative Politics later shifting to Area Studies and Public Administration which again became an autonomous discipline though taking a turn to management and policy studies. This Masters programme provides a broad view of this disciplinary development.</p> <p>PSO-2. The programme provides a balanced treatment between the Western and the Indian political thought and theory.</p> <p>PSO-3. The programme provides a balanced treatment to both empirical and normative aspects of the discipline of Political Science. The students get a balanced footing on concepts and methodology as the programme has made Research Methodology and Field Research compulsory.</p> <p>PSO-4. The programme draws inputs from allied disciplines and empowers the students with an interdisciplinary focus and understanding.</p> <p>PSO-5. The Programme draws on research thrust areas of the Department like India’s state and sub-state politics, public policy, India’s foreign policy, women and politics and social movements, to name a few.</p> <p>PSO-6. The programme supports problem solving skills, thinking, creativity through assignments, project work, both individual and group based.</p>

	<p>PSO-7. The programme empowers and motivates students for research in Political Science and related fields.</p> <p>PSO-8. Since the Department has its own dedicated library students get enough opportunity to prepare for competition examinations.</p>
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Course Outcomes: M.A. Politics

Course	Outcomes
	After completion of these courses students should be able to;
PS-MJ-511T Western Political Thought	<p>CO 1: Understand the theories and concepts of Political Science.</p> <p>CO 2: Understand the function of the state in society and how it rules and regulates.</p> <p>CO 3: Understand the political ideologies and ideas which are broadly considered political creeds usually termed Political Ideology</p> <p>CO 4: Understand the explain various theories of Justice.</p> <p>CO 5: Understand the various theories and contemporary debates in democracy.</p>
PS -MJ-512T Administrative Theory	<p>CO 1: Understand the important concepts, approaches and theories of Public Administration.</p> <p>CO 2: Understanding the latest developments in the field of Public Administration.</p> <p>CO 3: Understand the analyze broad transformations in the study of Public Administration in the course of changes in socio economic and political life.</p>
PS -MJ-513T Political Institutions in India	<p>CO 1-Understand the leading institutions of the Indian political system and to the changing nature of these institutions. Apart from explaining the structure and functions of the main Institutions</p> <p>CO2-Understanding the institutional balance of power as discussed in the Indian Constitution and as developed during the functioning of Indian democracy over the past decades.</p> <p>CO 3- Understanding of political institutions and their functions in India.</p> <p>CO 4-Understanding the evolution and working of Political parties and the way party politics in India has taken shape under diverse social settings</p>

<p>PS -MJ-514T Local Self Government In Maharashtra</p>	<p>CO 1: Understand the local leadership. CO 2: Understand the efforts for rural development. CO 3: Understand the management and theory at the local level.</p>
<p>PS -ME-515T Party System in India</p>	<p>CO 1- Understand the nature of the party system in India. CO 2- Understand the functioning of the main political parties operating in the system. CO 3- Understand the analytical perspectives on party politics in India.</p>
<p>PS-RM-516T Research Methodology in Political Science</p>	<p>CO 1-Understand the comprehend basics in research methodology and applying them inresearch/ project work. CO 2-Understand the select an appropriate research design. CO 3-Understand the take up and implement a research project/ study. CO 4-Understand the collect the data, edit it properly and analyze it accordingly.</p>
<p>Semester II</p>	
<p>PS-MJ-521T Comparative Political Analysis</p>	<p>CO 1: Understand the trajectory of the sub-discipline. CO 2: Understand the significance of the comparative methodology CO 3: Understand the dynamics of domestic politics across the Countries.</p>
<p>PS -MJ-522T Theory of International Politics</p>	<p>CO 1: Understand the major theories of international politics. CO 2: Understand the international events from theoretical standpoint. CO 3: Understand the skill to interpret and evaluate the nature of international politics.</p>
<p>PS -MJ-523T Public Policy</p>	<p>CO 1: Understand the basic concepts, policy processes, theories, approaches andperspectives in the discipline of public policy. CO 2: Understand the making of policy and its interaction with political system.CO 3: Understand the basic methods to evaluate public policy. CO 3: Understand the basic concepts, policy processes, theories, approaches andperspectives in the discipline of public policy.</p>

<p>PS-MJ-524T</p> <p>Indian Political System</p>	<p>CO 1 Understand the Nature of Indian Politics</p> <p>CO-3: Understand the political parties in Maharashtra.</p>
<p>PS -ME-525T</p> <p>Politics and the Media</p>	<p>CO 1: Understanding the Media</p> <p>CO 2: Understanding the course is significant in Political Science discourses when we look at the crucial role of the media in all political processes. On the one hand</p> <p>CO 3- Understand the course is taught with its interdisciplinary character bringing inputs from economic</p> <p>CO-4: Understand to develop insights and enhance skills in a professional manner in the age of mass media.</p>
<p>PS-RP-526</p> <p>Research Project</p>	<p>CO-1: Acquisition of the ability to observe, gather and organize facts in a coherent manner.</p>

DEPARTMENT OF PSYCHOLOGY

Programme Outcomes: B. A. Psychology

Department of Psychology	After successful completion of three year degree program in Psychology a student should be able to
Programme Outcomes	<p>PO-1. Able to understand basic concepts of Psychology.</p> <p>PO-2. Understand the impact of environment, society, heredity on persons Behaviour.</p> <p>PO-3. Understand the human social behavior.</p> <p>PO-4. Awareness of self and social wellbeing.</p> <p>PO-5. Think scientifically about surrounding human behavior.</p> <p>PO-6. Understand human development.</p> <p>PO-7. To write study tour report.</p> <p>PO-8. Social Interaction elicits views of others, mediate disagreements and help reach conclusions in group setting.</p> <p>PO-9. Recognize different value systems including your own, understand the moral dimensions of your decisions and accept responsibility for them.</p> <p>PO-10. Understand the issues of environmental contexts and sustainable development.</p> <p>PO-11. Acquire the ability to engage in independent and life-long learning in the broadest socio-technological changes.</p>

Programme Specific Outcomes: B. A. Psychology

Programme Specific Outcomes	<p>PSO-1. To impact knowledge and understanding of the basic concepts, systems theories of psychology and psychopathology.</p> <p>PSO-2. An ability to apply the theoretical principles of psychology demonstrating an understanding of behaviour thoughts and feeling of the individuals and the individual in group setting.</p> <p>PSO-3. Basic professional skills pertaining to psychological testing assessment and counselling.</p> <p>PSO-4. To recognize understand and respect the complexity of multiculturalism in the practice and application of counselling and psychotherapy.</p> <p>PSO-5. To get admission post-graduation course in Psychology.</p> <p>PSO-6. To interpretation of data and make project research.</p> <p>PSO-7. To write scientific case study report.</p>
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	<p>PSO-8. To use of basic psychological tests and experiments.</p> <p>PSO-9. Identify and Think on the various psychological problems.</p> <p>PSO-10. Make use of personality theories in daily practice.</p> <p>PSO-11. Make Use of Industrial theories while preparing for professional interviews.</p> <p>PSO-12. Analyze and understand abnormal human behavior in practice.</p>
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Course Outcome: B.A. Psychology

Course	Outcomes
Semester-I	
PY-MJ-111T Foundations of Psychology	<p>CO-1: Understand the memory improving techniques.</p> <p>CO-2: Understand the importance of motivation and emotion of the individual.</p> <p>CO-3: Understand the branches of psychology.</p> <p>CO-4: Understand the Measurement of Intelligence.</p>
PY-MJ-112T Career in Psychology	<p>CO-1: Understand the different career paths available in each sub discipline of psychology</p> <p>CO-2: Develop your knowledge of your best self, which strives toward satisfaction and fulfillment of your personal goals and aspirations, and also positively affects the lives of others.</p>
PY-VSC-113T Basic Counseling Skills	<p>CO-1: Delineate the key elements of successful helping.</p> <p>CO-2: Analyze personal values that could impact the helping relationship.</p> <p>CO-3: Develop an ethical approach to counselling</p>
PY-IKS-115T Introduction to Indian Psychology	<p>CO-1: Gain knowledge of concept and its applications of Indian Psychology</p> <p>CO-2: Develop ability to understand the deep rootedness of Yoga in Indian knowledge tradition.</p>
PY-OE-01T Life Skills-I	<p>CO-1: Developed optimally and holistically as an individual as appropriate within the developmental stage</p> <p>CO-2: Acquired the knowledge, skills and understanding needed by individuals to manage their environment</p> <p>CO-3 Developed daily living skills, personal-social and occupational skills</p> <p>CO-4: Developed critical thinking, problem solving skills, individual initiative, interpersonal and enquiring skills</p>
PY-SEC-114T Personality Development	<p>CO-1: Developed daily living skills, personal-social and occupational skills</p> <p>CO-2: Developed the essential skills of personality development</p>
Semester-II	
PY-MJ-121T Introduction to Social Psychology	<p>CO-1: Know the scope of studying social psychology and the methods to gather data in the social context to explain them.</p> <p>CO-2 Understand the significance of social cognition, attitudes, stereotypes and prejudices in explaining human behavior in the</p>

	social contexts. CO-3: Understand the significant aspects group behavior and social influence that constitute the core of human relationships.
PY-MJ-122T Fundamentals of Mental Health	CO-1: Know the basics of mental health and illness from the Bio psychosocial perspectives. CO-2: Understand the significance of behavioral and psychological correlates of health and illness. CO-3: Understand the significant aspects of coping and importance of health enhancing behavior.
PY-VSC-123P Psychological Tests	CO-1: Describe mapping of human behaviour. CO-2: Explain general ability testing and personality CO-3 Identify and classify the intellectual ability and personality patterns. CO-4: Conduct testing and evaluate intellectual ability and personality traits.
PY-MN-101T Psychology of Adjustment	CO-1: Identify the psychological difficulties that arise as consequences of maladaptation to the stresses of modern life. CO-2: Describe some of the prominent perspectives and approaches used in the study of personality and adjustment psychology. CO-3: Identify factors in physiological and psychological processes involved in human behavior, especially in response to the challenges of living in a modern society. CO-4: Compute averages and measures of dispersion in R. CO-5: Compute coefficient of skewness and coefficient of kurtosis.
PY-OE-02T Life Skills-II	CO-1: Gain Self Competency and Confidence CO-2: Practice Emotional Competency CO-3: Gain Intellectual Competency CO-4: Gain an edge through Professional Competency CO-5: Aim for a high sense of Social Competency
PY-SEC-124T Health Promotion Life Skills	CO-1: Give an account of basic documents and principles concerning health promotion. CO-2: Explain the role of the health-care sector in health promotion CO-3: Analyze health-related factors for the choice of strategies in health promotion
<u>Semester-III</u>	
Health Psychology	CO-1. To able to understand health psychology and arrive at the introduction to the role of psychology in health. CO-2. To able to understand the nature of stress and coping. CO-3. To able to understand various factor related to health and dieses. CO-3. To able to understand quality of life and promoting the good health.
Abnormal Behaviour	CO-1. To able to understand acquire the knowledge about the symptoms, Diagnostic criteria, and causes of various psychological disorders. CO-2. To able to understand examine multiple probable causes and correlates of behavior. CO-3. To able to understand critiques limitations, and implications of diagnosis and classification of psychological diseases.

	<p>CO-4. To able to understand awareness about mental health problems in society.</p> <p>CO-5. To able to understand the ways of communication and its applications.</p> <p>CO-6. To able to understand the leadership and its characteristics.</p> <p>CO-7. To learn various applications and techniques of Social Behavior.</p>
Developmental Psychology	<p>CO-1. To able to understand the importance, characteristics and concern in lifespan development.</p> <p>CO-2. To able to understand biological, cognitive and socio-emotional process.</p> <p>CO-3. To able to understand the periods of development the significance age and discusses developmental issues.</p> <p>CO-4. To able to understand Psychoanalytic, cognitive Behavioral and socio Cognitive Ethological Ecological and Eclectic theories of development.</p> <p>CO-5. To able to understand methods of data collection and research design used in Life –span developmental research.</p> <p>CO-6. To understand physical, motor and development of relations.</p> <p>CO-7. To learn Physical and mental changes in Adolescence.</p> <p>CO-8. To learn all stages of life span and understand its good and bad impact on life.</p>
<u>Semester-IV</u>	
Positive Psychology	<p>CO-1. To able to understand how the positive psychology as the science of happiness, human strength, positive aspects of human behavior and psychology of well-being.</p> <p>CO-2. To able to understand how we lead our lives, find happiness and satisfaction, and face life’s challenges.</p> <p>CO-3. To able to understand how positive psychology has become an evolving mosaic of research and theory from many different areas of psychology.</p>
Abnormal Behaviour	<p>CO-1. To able to understand learn descriptions, and theories underlying diagnostic oncology of psychiatric disorder.</p> <p>CO-2. To able to learn and understand benefits critiques, limitations, and implications of diagnosis and classification.</p> <p>CO-3. To able to help students to acquire the knowledge about the symptoms, diagnostic criteria and causes of various psychological disorders.</p> <p>CO-4. To able to understand examine multiple probable causes and correlates of behavior.</p> <p>CO-5. To able to understand create awareness about mental health problem in society.</p>

Theories of Personality	<p>CO-1. To able to understand the concept of personality with various theories of personality on the basis of personality psychology.</p> <p>CO-2. To able to understand different framework and theoretical aspects of personality.</p> <p>CO-3. To able to understand and observe, interpret individual differences in behavior in the light of sound theoretical systems of personality.</p> <p>CO-4. To able to understand comprehensive overview of the major theories personality.</p>
Skill Enhancement Course	<p>CO-1. To able to understand types of hygienic behavior.</p> <p>CO-2. To able to understand prevent infectious diseases.</p> <p>CO-3. To able to understand competencies dealing with self-management.</p> <p>CO-4. To able to understand interpersonal relationship.</p>
Skill Enhancement Course	<p>CO-1. To able to understand know the applications of counseling at educational and career setting.</p> <p>CO-2. To able to understand the counseling at workplace setting.</p> <p>CO-3. To able to understand engage with the counseling at clinical setting.</p> <p>CO-4. To able to understand study the counseling in special situations.</p> <p>CO-5. To able to understand different types of counseling areas.</p>
<u>Semester-V</u>	
Industrial Psychology	<p>CO-1. To able to understand describe the concept of industrial and organizational Psychology, selection and training.</p> <p>CO-2. To able to understand explain job profile, job analysis, recruitment and employee training.</p> <p>CO-3. To able to understand identify and classify the appraisal rating system.</p> <p>CO-4. To able to understand compare different theories of motivation.</p> <p>CO-5. To able to understand evaluate the training programmed and job performance.</p> <p>CO-6. To understand leadership, leadership qualities and functions of leaders on industry.</p> <p>CO-7. To learn new concept 'engineering psychology' for easier work for workers.</p>
Scientific Research and Experimental Psychology	<p>CO-1. To acquire basic skills and understand basic concept of Research Methodology.</p> <p>CO-2. To understand how to make small research project.</p> <p>CO-3. To learn making group report/project.</p> <p>CO-4. To able to understand theory of research.</p> <p>CO-5. To understand Psychophysics.</p> <p>CO-6. To understand the perceptual processes.</p> <p>CO-7. To learn psychological testing.</p> <p>CO-8. To understand thinking processes.</p> <p>CO-9. To understand problem solving concept.</p>

Psychology Practical Test and Experiments	<p>CO-1. To able to understand describe mapping of human behavior.</p> <p>CO-2. To understand explain general ability testing, personality, adjustment and attitude.</p> <p>CO-3. To able to understand identify and classify the intellectual ability and personality patterns.</p> <p>CO-4. To able to understand conduct testing and evaluate intellectual ability, personality traits, adjustment and attitudes of participant.</p> <p>CO-5. To able to understand analyze statistical method employed in behavior analysis.</p>
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Programme Outcomes: M. A. Psychology

Department of Psychology	<p>After successful completion of two year post degree program in Psychology a student should be able to</p>
Programme Outcomes	<p>PO-1. To go further higher education.</p> <p>PO-2. 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 from different perspective.</p> <p>PO-3. Speak, read, write and listen clearly in person and through election media in English and one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.</p> <p>PO-4. 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.</p> <p>PO-5. To provide the students with a unique opportunity of obtaining a professional qualification in Psychology focusing on the advanced Skills.</p> <p>PO-6. To able to understand basic concepts of Psychology and to analyse behaviour in practice.</p> <p>PO-7. Understand the Psychological way of thinking.</p> <p>PO-8. The ability to write clearly Project reports.</p> <p>PO-9. To develop comprehensive understanding of interdisciplinary issues and aspects of society.</p> <p>PO-10. To do scientific research in Psychology.</p> <p>PO-11. Collaboration, cooperation and acknowledging the dynamic of groups and communities.</p> <p>PO-12. Identifying and evaluating social problems from a mental health perspective.</p>

Programme Specific Outcome: M.A. Psychology

Programme Specific Outcomes	<p>PSO-1. The ability to analyse Symptoms and able to diagnose.</p> <p>PSO-2. Students will be able to effectively communicate with psychological illness.</p> <p>PSO-3. Be exposed to alternative approaches to Psychological problems through exposure to coursework in allied fields.</p> <p>PSO-4. To identify upcoming psychological hazards.</p> <p>PSO-5. To suggest remedy for the various psychological abnormal behaviour.</p> <p>PSO-6. To prepare the students for scientific Psychological Testing.</p> <p>PSO-7. To prepare the students for scientific Counselling.</p> <p>PSO-8. To prepare the students for Proper Prognosis.</p> <p>PSO-9. To prepare the students for appropriate news breaking, and able to take sessions.</p> <p>PSO-10. Social and Ecological responsibility towards society and learning reflected through social participations.</p> <p>PSO-11. Including strong ethical values in psychological practice.</p> <p>PSO-12. Incollating multicultural approach by working with groups and communities.</p> <p>PSO-13. Instilling ethical practices in counselling process.</p>
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Course Outcomes: M. A. Psychology

Course	Outcomes
	M.A (Part – I) Semester I
PY-MJ-411T Cognitive Processes	<p>CO-1: Demonstrate a comprehensive understanding of the processes involved in sensation and Perception.</p> <p>CO-2: Demonstrate a comprehensive understanding of the process involved in attention and pattern recognition.</p> <p>CO-3: Critically evaluate and apply major concepts, theories, and empirical findings in Cognitive psychology.</p> <p>CO-4: cognitive psychology principles to analyze and resolve issues in the actual world.</p>
PY-MJ-412T Psychological Testing: Theory & Applications	<p>CO-1: Observe ethical considerations of testing in practice.</p> <p>CO-2: Analyze the types of reliability/ validity/ norms of the test.</p> <p>CO-3: Follow standardized procedure for test construction.</p> <p>CO-4: Apply theoretical understanding of psychological tests to different applied fields.</p>

<p>PY-MJ-413T Basic Statistical Methods</p>	<p>CO-1: Demonstrate the conceptual understanding of the basic concepts in statistics like Measures of central tendency, measures of variability, normal probability, and Correlation and regression</p> <p>CO-2: Apply different statistical techniques in data analysis and perform the calculations of the same.</p> <p>CO-3: Use different basic statistical techniques of data analysis and interpretation of results.</p>
<p>PY-MJ-414P Psychology Practical: Tests</p>	<p>CO-1: Conduct testing in laboratory setting and at fields for research purpose.</p> <p>CO-2: Psychological test construction skill will be developed.</p> <p>CO-3: Psychological tests will be used for assessment, and screening purpose</p>
<p>PY-ME-415T Media Psychology</p>	<p>CO-1: Explain the scope of Media Psychology along with the research methods used in the field.</p> <p>CO-2: Describe the psychological effects of media, specifically in context of violence and erotica.</p> <p>CO-3: Develop guidelines for responsible media consumption.</p> <p>CO-4: Develop guidelines for responsible media consumption. Propose interventions and strategies to mitigate the negative effects of Media</p> <p>CO-5: Exposure and create media campaigns to promote awareness of media's psychological effects.</p>
<p>PY RM-416T Research Methods in Psychology</p>	<p>CO-1: Demonstrate the understanding of overall research process and about the problem, variables, and hypothesis formulation.</p> <p>CO-2: Exhibit the knowledge of data gathering tools, procedures, and different research designs.</p> <p>CO-3: Develop conceptual clarity about the application of factor analysis, other multivariate techniques, qualitative approaches and psychological and psychological and psychophysical scaling.</p> <p>CO-4: Develop and apply the skills of describing and evaluating the published research</p>
<p>M.A (Part – I) Semester II</p>	
<p>PY-MJ-421T Learning and Memory</p>	<p>CO-1: Demonstrate a comprehensive understanding of the various types, models, and theories of learning and memory.</p> <p>CO-2 : Explain the neurological basis of learning and memory processes.</p> <p>CO-3 : Apply principles of learning and memory to real-world contexts and situations.</p> <p>CO-4 : Critically evaluate and analyze the strengths and limitations of different learning and memory theories.</p> <p>CO-5 : Apply effective learning and memory strategies to enhance cognitive performance</p>
<p>PY-MJ-422T Biopsychology</p>	<p>CO-1: Understand the Basics of Neuropsychology.</p> <p>CO-2: Develop in depth understanding of Neurological Basis of Behavior.</p> <p>CO-3: Understand the overeating system and its effect on body regulation.</p> <p>CO-4: Understanding the relationship of sleep disorders and wakefulness to brain systems.</p>

<p>PY-MJ-423T Personality</p>	<p>CO-1: Define and explain the fundamental concepts of Personality, including the misconceptions and approaches. CO-2: Explain the differences in the psychoanalytic and neo psychoanalytic theories of Personality CO-3 Demonstrate the applications of personality theories in different walks of life CO-4:Observe and interpret individual differences in behaviour in the light of sound theoretical systems of personality.</p>
<p>PY-MJ-424P Experimental Psychology: Practical</p>	<p>CO-1: Understand the importance and practical implications of research conducted in many psychological fields. CO-2: Develop various skills of conducting experiments in psychology CO-3: Analyze and interpret experimental data using statistical techniques and Psychological theories. CO-4:Understand the applications of experimental design in psychology. CO-5: Apply the principles of experimental design to address specific research questions and investigate causal relationships. CO-6: Develop report writing skills in the style of psychological research.</p>
<p>PY-ME-425T Criminal Psychology</p>	<p>CO-1: Define and explain the meaning and scope of criminal psychology, including theories and various schools. CO-2: Explain the influence of psychological disorders on criminal behaviour and the assessment of criminal tendencies. CO-3: Identify the different types of criminal behaviour such as cyber crime, stalking, etc. CO-4: Describe the role of forensic psychology in criminal investigation.</p>
<p>PY-OJT-426 On –the Job Training/Field Project</p>	<p>CO-1: Balance theoretical understanding with practical experience CO-2: Understand the requirements of running Mental Health Organizations CO-3: Demonstrate the practical skills required in the field of mental health</p>
<p>M.A (Part –II) Semester III</p>	
<p>Counselling Process and Skills</p>	<p>CO-1. To able to understand the nature of the counseling skills. CO-2. To able to know the groundwork for understanding the use of b basic and specialized skills. CO-3. To able to engage with different models of counseling skills. CO-4. To able to Manage Counseling Stages. CO-5. To able to difference with counseling and psychotherapy. CO-6. To able to correlation with counseling & psychotherapy. CO-7. To able to various types of different counseling.</p>
<p>Psychopathology</p>	<p>CO-1. To able to understand concept of Mental disorder. CO-2. To understand the latest DSM-5. CO-3. To able to understand Neurodevelopmental Disorders. CO-4. To able to understand Schizophrenia Disorder. CO-5. To able to understand OCD and related disorders.</p>

	<p>CO-6. To understand symptoms of disorders.</p> <p>CO-7. To able to make Prognosis.</p> <p>CO-8. To learn various paradigm of Psychopathology</p>
Psycho-diagnostics	<p>CO-1. To understand Nature, structure and role of testing in Psychology.</p> <p>CO-2. To able to understand diagnostic procedure.</p> <p>CO-3. To understand importance of various tools of diagnostic.</p> <p>CO-4. To able to make diagnosis.</p> <p>CO-5. To able to understand Structured clinical interview for DSM.</p> <p>CO-6. To understand cognitive assessment process.</p> <p>CO-7. To understand and able to make Clinical report.</p> <p>CO-8. To understand Role of Projective techniques in diagnosis</p>
Project Clinical Base	<p>CO-1. To Understand Process of research.</p> <p>CO-2. To able to understand able to implies appropriate statistical method.</p> <p>CO-3. To understand and able to select proper sampling technique.</p> <p>CO-4. To understand and able to analyze collected data.</p> <p>CO-5. To able to use proper review of previous research.</p> <p>CO-6. To able to present data through using appropriate graph.</p> <p>CO-7. To able to make appropriate conclusion.</p> <p>CO-8. To understand the whole process of research by doing practical work.</p> <p>CO-9. To able to make project report in APA style.</p>
M.A (Part –II) Semester IV	
Areas of Counselling	<p>CO-1. To able to understand know the applications of counseling at educational and career setting.</p> <p>CO-2. To able to understand the counseling at workplace setting.</p> <p>CO-3. To able to understand engage with the counseling at clinical setting.</p> <p>CO-4. To able to understand study the counseling in special situations.</p> <p>CO-5. To able to understand different types of counseling areas.</p>
Psychopathology	<p>CO-1. To Understand Sexual disorders and its effect on life.</p> <p>CO-2. To able to understand disruptive and impulse behavior.</p> <p>CO-3. To understand substance and its related disorders.</p> <p>CO-4. To understand the personality disorders and able to distinguish with each other.</p> <p>CO-5. To able to recognize various symptoms and able to diagnose and prognosis,</p>
Psychotherapies	<p>CO-1. To understand the concept of Psychotherapy.</p> <p>CO-2. To learn various Psychotherapies.</p> <p>Co-3. To learn applications of Psychotherapies.</p> <p>CO-4. To able to applications of Psychotherapy.</p> <p>CO-5. To understand the transactional analysis.</p> <p>CO-6. Able to understand the Process of Psychotherapy.</p>

	CO-7. To able to understand Behavior Therapy.
Practicum Clinical Base	<p>CO-1. Students will be able to observe individuals behaviour in proper way.</p> <p>CO-2. To understand the Process of case study.</p> <p>CO-3. To understand the taking history of an Individual.</p> <p>CO-4. To understand and able to Assessment and diagnosis.</p> <p>CO-5. Students will be able to Proper Prognosis.</p> <p>CO-6. To understand concept of News breaking and able to break the news.</p>

DEPARTMENT OF MARATHI

Programme Outcomes: B. A. Marathi

Department of Marathi	After successful completion of three-year degree program in Marathi a student is able to:
Programme Outcomes	PO-1. विशिष्ट कालखंडाच्या पाश्वभूमीवर साहित्यामागील प्रेरणा प्रवृत्तीचे ज्ञान करून घेतो. PO-2. चिकित्सक अभ्यासाची क्षमता विकसित होते. PO-3. जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे. PO-4. विविध प्रकारची लेखनकौशल्ये विकसित करणे. PO-5. स्वाद घेण्याची डोळस क्षमता विकसित करणे. PO-6. वाङ्मयीन व्यवहार व प्रकाशन व्यवसायाचे स्वरूप समजते. PO-7. समीक्षा करण्याची दृष्टी व क्षमता विकसित होते. PO-8. दोन भाषामधील वाङ्मय व्यवहार समजून घेणे.

Programme Specific Outcomes: B. A. Marathi

Department of Marathi	After successful completion of three-year degree program in Marathi a student is able to:
Programme Specific Outcomes	PSO-1. मराठी साहित्यातील भिन्न प्रवाह आणि प्रकार लक्षात घेणे. PSO-2. विद्यार्थ्यांच्या वाङ्मयीन अभिरूचीचा विकास करणे. PSO-3. संशोधनाची संकल्प, प्रयोजने आणि विविध संशोधन पध्दती समजून घेणे. PSO-4. व्यक्तिमत्व विकासासाठी भाषिक कौशल्ये विकसित करणे. PSO-5. प्रसारमाध्यमांसाठी विविध प्रकारची लेखन कौशल्ये आत्मसात करणे.

Course Outcomes: B. A. Marathi

Course	Outcomes
	After completion of these courses students should be able to;
Semester-I	

<p>CO-1:MR-MJ-111T मराठी साहित्य प्रकार: कथा</p>	<p>CO-1: मराठी साहित्यासंबंधी रुची निर्माण होईल. CO-2: कथेच्या आधारे सर्जक भाषिक क्षमता विकसित होईल . CO-3: कथेचा आस्वाद आणि रचना समजण्यास मदत होईल. CO-4: कथा हा साहित्यप्रकार समजून घेता येईल. CO-5: कथातील व्यक्तिचित्रण,प्रसंगवर्णन, वातावरण निर्मिती यांचे विशेष आकलन होईल. CO-6: विद्यार्थ्यांच्या वाङ्मयीन अभिरुचीचा विकास करता येईल.</p>
<p>CO-2:MR-MJ-112T व्यावहारिक आणि उपयोजित मराठी भाग -१</p>	<p>CO-1: मूलभूत भाषिक कौशल्याचा विद्यार्थ्यांनी परिचय करून घेता येईल. CO-2: व्यक्तिमत्व विकासातील भाषिक कौशल्यांची महत्वाची भूमिका लक्षात येईल. CO-3: भाषिक कौशल्यांचे विविध आविष्कार आकलन होईल. CO-4: श्रवण व वाचन कौशल्यांचे महत्व जाणून ती आत्मसात करून त्याबाबत माहिती घेता येईल. CO-5: लेखन कौशल्याचे स्वरूप जाणून घेता येईल. CO-6: संवाद कौशल्यासाठी आवश्यक बाबीचा परिचय करून घेता येईल. CO-7: सर्जनशील लेखन आणि भाषिक वापर क्षमता विकसित करता येईल</p>
<p>MR-OE-101T स्पर्धा परीक्षा आणि मराठी भाषा भाग: १</p>	<p>CO-1: विद्यार्थ्यांनी मराठी व्याकरणाची ओळख करून घेता येईल. CO-2: विद्यार्थ्यांमध्ये विविध व्याकरण कौशल्य विकसित होईल. CO-3: विद्यार्थ्यांमध्ये मराठी भाषेची शब्दनिष्ठ सर्जनशीलता विकसित करता येईल. CO-4: विद्यार्थ्यांनी विविध क्षेत्रातील भाषा उपयोजनाची कौशल्य विकसित करण्यास मदत होईल. CO-5: विद्यार्थ्यांचे मराठी वाचन आणि भाषिक आकलन समृद्ध होईल.</p>
<p>CO-4:MR-VSC-113T प्रसारमाध्यमांसाठी लेखन कौशल्य भाग :१</p>	<p>CO-6: विद्यार्थ्यांमध्ये लेखन कौशल्य विकसित होईल. CO-7: विद्यार्थ्यांमध्ये अर्जलेखनाचे कौशल्य विकसित करता येईल. CO-1: विद्यार्थ्यांना वृत्तपत्राची ओळख होईल. CO-2: वृत्तपत्रीय बातमीची रचना व लेखन विशेष लक्षात येतील. CO-3: विद्यार्थ्यांमध्ये वृत्तलेखन,स्तंभलेखन व मुलाखत लेखनतंत्र विकसित होईल. CO-4: वृत्तपत्रीय जाहिरातीची ओळख होऊन तिचे महत्व समजले</p>
<p>CO-5:MR-SEC-114T कार्यक्रम संयोजनातील भाषिक कौशल्य भाग -१</p>	<p>CO-1: विद्यार्थ्यांना विविध कार्यक्रमांचे स्वरूप समजावून देता येईल. CO-2: विद्यार्थ्यांना विविध कार्यक्रमांचे प्रकाराचे आकलनास मदत होईल. CO-3: विद्यार्थ्यांमध्ये कार्यक्रम संयोजनातील भाषिक कौशल्य विकसित करता येईल. CO-4: विद्यार्थ्यांना कार्यक्रम संयोजनविषयक विविध बाबींची ओळख करून देता येईल. CO-5:विद्यार्थ्यांना कार्यक्रम संयोजनातील भाषेचे महत्व जाणता येईल</p>

<p>CO-6:MR-IKS-115T मराठी लोकगीत परंपरेची ओळख</p>	<p>CO-1:लोकसाहित्याचे स्वरूप समजावून घेण्यास मदत होईल. CO-2:लोकसाहित्याची व्यापकता व सर्वासामावेशकता लक्षात आणून घेता येईल. CO-3:लोकसाहित्याचे स्वरूप समजावून घेता येईल. CO-4:लोकसाहित्याचे कलात्मक सौंदर्य जाणून घेण्यास मदत होईल. CO-5:लोकसाहित्यातील विविध प्रकार ,स्वरूप जाणून घेता येईल. CO-6:लोकसाहित्यातील लोकगीत प्रकार त्याचे ,स्वरूप, विशेष समजावून घेता येईल. CO-7:लोकसाहित्यातील सामाजिक,धार्मिक,सांस्कृतिक जाणीवा स्पष्ट करता येतील.</p>
<p>SEMESTER-II</p>	
<p>CO-1:MR-MJ-121T मराठी साहित्यप्रकार: एकांकिका</p>	<p>CO-1: विद्यार्थ्यांमध्ये साहित्यविषयक अभिरूची विकसित होईल . CO-2: एकांकिका या साहित्यप्रकाराची ओळख होईल. CO-3: एकांकिका या साहित्यप्रकाराची वाटचाल व विकास यांचे आकलन होईल .</p>
<p>CO-2:MR-MJ-122T व्यावहारिक आणि उपयोजित मराठी भाग -२</p>	<p>CO-1: कार्यालयीन कामकाजाच्या दृष्टीने आवश्यक कौशल्याची ओळख होईल. CO-2: विविध क्षेत्रातील भाषाविषयक कौशल्य जाणून घेता येतील. CO-3: कार्यालयीन कामकाजातील पत्रलेखनाचे स्वरूप लक्षात येईल. CO-4: कार्यालयीन पत्रलेखनाचे तंत्र आत्मसात करता येईल. CO-5: कार्यालयीन कामकाजातील इतिवृत्त व टिप्पणीलेखन यांचे स्वरूप समजावून घेता येईल. CO-6: कार्यालयीन कामकाजातील इतिवृत्त व टिप्पणीलेखन यांचे लेखन तंत्र जाणून घेता येईल.</p>
<p>CO-3:MR-MN-125T मराठी साहित्य प्रकार – चरित्र</p>	<p>CO-1: विद्यार्थ्यांमध्ये साहित्यासंबंधी आवड निर्माण होईल. CO-2: विद्यार्थ्यांमध्ये वाङ्मयीन व भाषिक कौशल्यांचा विकास होण्यास मदत होईल. CO-3: चरित्र व आत्मचरित्र या साहित्य प्रकाराची ओळख होईल. CO-4: चरित्र या साहित्य प्रकाराचा विकास निवडक टप्प्याच्या आधारे समजून घेता येईल. CO-5: नेमलेल्या निवडक चरित्रांचा आशय जाणून घेता येईल. CO-6: नेमलेल्या निवडक चरित्रांचे वाङ्मयीन गुणवैशिष्ट्ये यांचे आकलन होईल. CO-7: आधुनिक मराठी साहित्यातील निवडक चरित्र वेच्यांचे आकलन,आस्वाद आणि मूल्यमापन करण्याची क्षमता विद्यार्थ्यांमध्ये निर्माण होईल.</p>

<p>CO-4:MR-OE-102T स्पर्धा परीक्षा आणि मराठी भाषा भाग : २</p>	<p>CO-1: मुलाखत कौशल्याची ओळख होईल. CO-2: विद्यार्थ्यांना मुलाखतीचे तंत्र आत्मसात करता येईल. CO-3: मुलाखतीची पूर्वतयारी करून घेत विद्यार्थ्यांमध्ये मुलाखत कौशल्य विकसित करता येईल. CO-4: मराठीतील प्रसिद्ध साहित्यिक व त्यांच्या साहित्याची ओळख होईल. CO-5: साहित्यसंस्था व त्यांच्या कार्याची ओळख होईल. CO-6: साहित्यसंस्था व समाज यांच्यातील सहसंबंधाची जाणीव होईल. CO-7: अखिल भारतीय मराठी साहित्य संमेलनांविषयीची थोडक्यात माहिती होईल. CO-8: प्राचीन मराठी साहित्यातील ठळक घडामोडींचा परिचय होईल.</p>
<p>CO-5:MR-VSC-123T प्रसारमाध्यमांसाठी लेखन कौशल्य भाग : २</p>	<p>CO-1: विद्यार्थ्यांना नवमाध्यमे व समाजमाध्यमांची ओळख होईल. CO-2: नवमाध्यमे व समाजमाध्यमांचतील अनुबंधाची जाणीव होईल. CO-3: नवमाध्यमे व समाज यांच्यातील सहसंबंधाचे आकलन होईल. CO-4: नवमाध्यमे व समाजमाध्यमांसाठी मराठी भाषेच्या वापराबाबतचे ज्ञान प्राप्त होईल.</p>
<p>CO-6:MR-SEC-124T कार्यक्रम संयोजनातील भाषिक कौशल्य भाग -२</p>	<p>CO-1:कार्यक्रम संयोजनातील लेखन कौशल्य संपादन करता येतील. CO-2: कार्यक्रम संयोजनातील भाषिक कौशल्य आत्मसात होतील. CO-3:विविध कार्यक्रमांच्या संयोजनासाठी विद्यार्थ्यांना प्रोत्साहन मिळेल.</p>

Programme Outcomes: M. A. Marathi

Department of Marathi	After successful completion of two-year degree program in Marathi astudent is able to:
Programme Outcomes	<p>PO-1. विद्यार्थ्यांना आपल्या आवडीचे संशोधनाचे क्षेत्र निश्चित करूना येते. PO-2. मराठी भाषा आणि वाङ्मयाचे प्रगत ज्ञान प्राप्त होते. PO-3. समकालीन वाङ्मयीन प्रवाहांचे नीट आकलन होते. PO-4. वाङ्मयीन प्रश्नांविषयी विचार करण्याची जाण निर्माण होते. PO-5. वाङ्मयीन आणि जीवन विषयक जाणीव प्रौढ होते. PO-6. चिकित्सक अभ्यासाची क्षमता विकसित होते. PO-7. विद्यार्थ्यांच्या लेखनगुणांना उत्तेजन मिळते.</p>

Programme Specific Outcomes: M. A. Marathi

Department of Marathi	After successful completion of two-year degree program in Marathi a student is able to:
Programme Specific Outcomes	<p>PSO-1. विशिष्ट कालखंडातील साहित्याच्या व्याप्तीबद्दल जाण निर्माण होण्यास मदत करणे. अशा विषयाच्या चिकित्सेची समज वाढविणे.</p> <p>PSO-2. साहित्यकृतीच्या साहित्यप्रकाराच्या तौलनिक अभ्यासाबाबत दिशा, व्याप्ती आणि मर्यादा यांची समज निर्माण होण्यास मदत करणे, अशा अभ्यासाची क्षमता वाढविणे.</p> <p>PSO-3. साहित्याच्या व्यवच्छेदक लक्षणाबाबत विचारांची आणि वाङ्मयीन मूल्यमापनाच्या दृष्टीची समज वाढते.</p> <p>PSO-4. भाषेचे विविध व्यवहार आणि साहित्याच्या संदर्भातील भाषाव्यवहार याविषयी आकलनाची क्षमता वाढविणे.</p> <p>PSO-5. साहित्याभ्यासाच्या संदर्भातील विषयांची, त्यांच्या प्रस्तुताप्रस्तुततेची जाण निर्माण करणे.</p>

Course Outcomes: M. A. Marathi

Course	Outcomes
	After completion of these courses students should be able to;
Semester-I	
CO-1:MR-MJ-511T भाषा व्यवहार व भाषिक कौशल्य भाग-१	<p>CO-1: विद्यार्थ्यांमध्ये भाषिक कौशल्याची जाणीव निर्माण होईल.</p> <p>CO-2: विद्यार्थ्यांना ग्रंथ प्रकाशनाचे स्वरूप ध्यानात येईल.</p> <p>CO-3: विद्यार्थ्यांना भाषाव्यवहार आणि भाषिक कौशल्यातील सहसंबंध लक्षात येण्यास मदत होईल.</p> <p>CO-4: विद्यार्थ्यांना साहित्य संस्थांच्या वाङ्मयीन कार्याची ओळख होईल.</p> <p>CO-5: विद्यार्थ्यांच्या वाङ्मयीन व जीवनविषयक जाणिवांचा विकास होण्यास मदत होईल.</p> <p>CO-6: भाषाविषयक कौशल्यातून विद्यार्थ्यांना रोजगारक्षम बनविण्यास मदत होईल</p>

<p>CO-2:MR-MJ-512T अर्वाचीन मराठी साहित्याचा इतिहास (इ.स. १८१८ ते १९२०)</p>	<p>CO-1: विद्यार्थ्यांना अर्वाचीन मराठी साहित्य इतिहासाचा परिचय होण्यास मदत होईल. CO-2: विद्यार्थ्यांना अर्वाचीन मराठी साहित्य प्रकार व त्याचे स्वरूप याचे आकलन होईल. CO-3: विद्यार्थ्यांना अर्वाचीन मराठी साहित्यप्रकार व त्यांचे घटक यांची माहिती मिळेल. CO-4: विद्यार्थ्यांना अर्वाचीन साहित्याच्या निर्मितीची प्रेरणा मिळेल. CO-5: विद्यार्थी अर्वाचीन कालखंडातील साहित्य निर्मितीच्या प्रेरणा व प्रवृत्ती समजावून घेतील. CO-6: अर्वाचीन साहित्याबाबत विद्यार्थ्यांची आस्वादन व आकलन क्षमता वाढण्यास मदत होईल.</p>
<p>CO-3:MR-MJ-513T ऐतिहासिक भाषाविज्ञान</p>	<p>CO-1:विद्यार्थ्यांना ऐतिहासिक भाषाविज्ञानाचे स्वरूप समजावून घेता येईल. . CO-2:विद्यार्थ्यांना ऐतिहासिक भाषाविज्ञानाचे कार्य व भाषाअभ्यास पध्दतीचे' आकलन होईल . CO-3:भाषेच्या उत्पत्ती विषयी माहिती मिळेल . CO-4:मराठीची पूर्वपीठीका,निर्मितीकाल व कालिक टप्पे इ .ची माहिती करून घेता येईल .</p>
<p>CO-4:MR-MJ-514T चित्रपट माध्यम आणि साहित्याचे माध्यमांतर</p>	<p>CO-1:विद्यार्थ्यांना साहित्यकृतीचे माध्यमांतर ही संकल्पना स्पष्ट करता येईल. CO-2:साहित्यकृतीचे चित्रपटात माध्यमांतर करण्याची कौशल्य अवगत होतील. CO-3:चित्रपट निर्मितीची कौशल्य प्राप्त होतील. CO-4:मराठी चित्रपटांच्या माध्यमातून साहित्यकृतीचे माध्यमांतर संकल्पना अभ्यासता येईल. CO-5:कथा ,पटकथा,संवाद या कौशल्यांचा वापर करता येईल. CO-6:चित्रपटाची निर्मितीप्रक्रिया अभ्यासता येईल.</p>
<p>CO-5:MR-ME-515T ग्रामीण साहित्य (EL)</p>	<p>CO-1:स्वातंत्र्य प्राप्तीनंतरच्या कालखंडात ग्रामीण साहित्याच्या निर्मितीची कारणपरंपरा यांचे आकलन होईल. CO-2:ग्रामीण साहित्याचे स्वरूप समजावून घेता येईल. CO-3:ग्रामीण साहित्यातील विविध वाङ्मयप्रकारांचा विकास कसा होत गेला याचे मूल्यमापन करता येईल. CO-4:ग्रामीण साहित्याने दिलेले योगदान,त्यांच्या विकासाची गती,दिशा यांची मीमांसा करण्यास मदत होईल. CO-5:ग्रामीण साहित्याचे विशेष व कार्य यांची चिकित्सा करता येईल. CO-6:ग्रामीण साहित्याची सामाजिक बांधलकी स्पष्ट करता येईल.</p>

<p>CO-6:MR-RM-516 T संशोधन पध्दती (RM)</p>	<p>CO-1:विद्यार्थ्यांना साहित्य संशोधन व्यवहाराचा परिचय होईल. CO-2:विद्यार्थ्यांना विविध साहित्य प्रकार व त्यासंदर्भातील संशोधन याविषयी माहिती मिळेल. CO-3:विद्यार्थ्यांमध्ये संशोधन पद्धतीचे ज्ञान व उपयोजनाची क्षमता निर्माण होईल. CO-4:साहित्य संशोधनविषयीविद्यार्थ्यांना प्रेरणा देऊन प्रोत्साहित करता येईल. CO-5:साहित्यसंशोधनाच्या विविध प्रकारांची विद्यार्थ्यांना माहिती मिळेल. CO-6:साहित्य संशोधन व समीक्षा बाबत विद्यार्थ्यांमध्ये जाणीव जागृती निर्माण होईल. CO-7:आकलन, आस्वाद, चिकित्सा, विश्लेषण, संश्लेषण, तुलना व मूल्यमापन या विविध घटकांच्या आकलनातून CO-8: प्रबंध लेखनाची दृष्टी विद्यार्थ्यांमध्ये विकसित करता येईल.</p>
<p>SEMESTER II</p>	
<p>CO-1:MR-MJ-521T भाषा व्यवहार व भाषिक कौशल्य भाग-२</p>	<p>CO-1:विद्यार्थ्यांमध्ये भाषिक जाणीवा विकसित होण्यासाठी प्रोत्साहन मिळेल. CO-2:भाषांतराच्या प्रक्रियेतून विद्यार्थ्यांची वाङ्मयीन आकलनाची क्षमता वाढविण्यास मदत होईल. CO-3:विद्यार्थ्यांची अभिरुची प्रभावी निवेदनातून वाढीस लागेल. CO-4:विद्यार्थ्यांवर वाङ्मयीन मूल्य व जीवन मुल्यांचा संस्कार होईल. CO-5:विद्यार्थ्यांना जनसंपर्काचे स्वरूप व आवश्यकता समजेल. CO-6:विद्यार्थ्यांना वाङ्मयीन प्रकल्प लेखनाची पद्धत व रचना समजण्यास मदत होईल.</p>
<p>CO-2:MR-MJ-522T अर्वाचीन मराठी साहित्याचा इतिहास (इ. स. १९२० ते २०१०)</p>	<p>CO-1:विद्यार्थ्यांना अर्वाचीन मराठी साहित्य इतिहासाचा परिचय होण्यास मदत होईल. CO-2:विद्यार्थ्यांना अर्वाचीन मराठी साहित्य प्रकार व त्याचे स्वरूप याचे आकलन होईल. CO-3:विद्यार्थ्यांना अर्वाचीन मराठी साहित्यप्रकार व त्यांचे घटक यांची माहिती मिळेल. CO-4:विद्यार्थ्यांना अर्वाचीन साहित्याच्या निर्मितीची प्रेरणा मिळेल. CO-5:विद्यार्थ्यांना अर्वाचीन कालखंडातील साहित्य निर्मितीच्या प्रेरणा व प्रवृत्ती समजावून घेतील. CO-6:अर्वाचीन साहित्याबाबत विद्यार्थ्यांची आस्वादन व आकलन क्षमता वाढण्यास मदत होईल.</p>

<p>CO-3:MR-MJ-523T सामाजिक भाषाविज्ञान</p>	<p>CO-1:विद्यार्थ्यांना सामाजिक भाषाविज्ञानाचे स्वरूप व भूमिका समजेल. CO-2: विद्यार्थ्यांना सामाजिक भाषाविज्ञानाचे कार्य व भाषाअभ्यास पध्दतीचे आकलन होईल. CO-3:भाषा आणि विविध व्यवसाय क्षेत्रे यांच्यातील परस्पर संबंध स्पष्ट होईल. CO-4:भाषा आणि संस्कृती यांच्यातील परस्पर संबंध लक्षात घेता येईल. CO-5:भाषेचा लिंग सापेक्ष विचार करण्याची क्षमता प्राप्त होईल. CO-6:भाषेची अविष्कार पध्दती व भाषा रूपे याविषयी माहिती मिळेल.</p>
<p>CO-4:MR-MJ-524T मराठी साहित्याचे चित्रपट माध्यमांतर</p>	<p>CO-1:साहित्यकृतीचे माध्यमांतर ही संकल्पना स्पष्ट करता येईल CO-2:साहित्यकृतीचे चित्रपटात माध्यमांतर करण्याची कौशल्य अवगत होतील. CO-3:चित्रपट निर्मितीची कौशल्य प्राप्त होतील. CO-4:मराठी चित्रपटाच्या माध्यमातून साहित्यकृतीचे माध्यमांतर ही संकल्पना अभ्यासता येईल. CO-5:कथा, पटकथा, संवाद या कौशल्यांचा वापर करता येईल. CO-6:चित्रपटाची निर्मितीप्रक्रिया अभ्यासता येईल.</p>
<p>CO-5:MR-ME-525T दलित साहित्य (EL)</p>	<p>CO-1:स्वातंत्र्य प्राप्तीनंतरच्या कालखंडात दलित साहित्याच्या निर्मितीची कारणपरंपरा यांचे आकलन होईल. CO-2:ग्रामीण साहित्याचे स्वरूप समजावून घेता येईल. CO-3:दलित साहित्यातील विविध वाङ्मयप्रकारांचा विकास कसा होत गेला याचे मूल्यमापन करता येईल. CO-4:दलित साहित्याने दिलेले योगदान,त्यांच्या विकासाची गती,दिशा यांची मीमांसा करण्यास मदत होईल. CO-5:दलित साहित्याचे विशेष व कार्य यांची चिकित्सा करता येईल. CO-6:दलित साहित्याची सामाजिक बांधिलकी स्पष्ट करता येईल.</p>

DEPARTMENT DEFENCE STUDY

Course Outcomes: B. A. DEFENCE STUDY

Course	Outcomes
	After successful completion of three year course in Defence study, student will be able to:
<u>Semester-I</u>	
Defence organization of India Ds101 11271	<p>CO-1. This paper will cover military organization in India, reconstruction of armed forces after 1947, higher defense organization as well as intelligence organization in India.</p> <p>CO-2. The basic outcome of the paper is to introduce students to defence organization of India.</p> <p>CO-3. The students were introduced to the committee, regional organization and command organization in the Indian armed forces defence system.</p> <p>CO-4. A sense of national service should be created in the students.</p>
<u>Semester-II</u>	
India's national security Ds 201 11272	<p>CO-1. The basic aim of this paper is to make aware the students about India's national security.</p> <p>CO-2. This paper covers overall picture of India's national security.</p> <p>CO-3. Which encompasses the internal, external challenges to India's national security along with its dimensions</p> <p>CO-4. The national security or safety of a country also depends on the social and economic factors of the respective country</p>
<u>Semester-III</u>	
Chhatrapati Shivaji Maharaj as a nation builder CC-1d 23173	<p>CO-1. The course focuses on the war history of the Marathas.</p> <p>CO-2. The emphasis is on the strategies and tactics used and on the approaches to war.</p> <p>CO-3. Specific battles would be used as illustrations for the study.</p>
<u>Semester-IV</u>	
Chhatrapati Shivaji Maharaj as a nation builder CC-1d 24273	<p>CO-1. The focus is on the strategies and tactics used and on the approaches to war.</p> <p>CO-2. To gain knowledge of military history.</p> <p>CO-3. Chhatrapati Shivaji Maharaj occupied thee forts of Chakan, Kondana and Purandhar</p>
<u>Semester-V</u>	

<p>India's national security CC-1d 35273</p>	<p>CO-1. Internationally; aimed at to create favorable national and international conditions for the protection or extensions of national interests against existing or potential enemy threats”.</p> <p>CO-2. In this context, the aim of the paper is to make students to understand ever changing different issues directly or indirectly involved in this study.</p>
<p><u>Semester-VI</u></p>	
<p>India's national security CC-1d 36273</p>	<p>CO-1. The security has an extended meaning beyond its military dimension; there is better appreciation now of its non – military and human dimensions.</p> <p>CO-2. Understand the importance of guidance and counselling in Education.</p>