



Sharad Gramin Bahuudeshiya Shikshan Sanstha, Deoli
MARIYA ARTS AND SCIENCE COLLEGE, DEOLI

(Recognized by Govt. of Maharashtra & Affiliated to R.T.M. Nagpur University, Nagapur)

Mariya Campus, Near Tahsil Office, Pulgaon Road, Dist. Wardha -442101
Ph.: 9579190333 email:mariyacollegedeoli@gmail.com www.mariyacollegedeoli.com

Course Outcome and Program Outcome

FACULTY OF HUMANITIES:

COMPULSORY ENGLISH:

B.A. SEM I

CO1. Learners will get to observe difference of level between the earlier and the new text. CO 2. Partial understanding of higher text will be seen.

CO 3. Students will be able to attempt new text. CO 4. Grammar of language will be internalized.

B.A. SEM II

CO 1. Western thinkers are known for their philosophy. CO 2. Indian thinkers are known for their philosophy. CO 3. Description of routine events is learnt.

CO 4. Grammar of language is reinforced. 5. Assignments are solved.

B.A. SEM III

CO 1. Learner will recognize good capacity to acquire thinking process described in text. CO 2. Poetic feelings and creativity will be hinted that helps internalization.

CO 3. Specific events of human life and will be understood.

CO 4. Learner will develop written communication skills of moderate type.

B.A. SEM IV

CO 1. Comprehensive attitude will be developed in case of prescribed authors. CO 2. Observational skills towards text will be developed.

CO 3. Unseen text will be attempted as part of assessment.

B.A. SEM V

CO 1. Students will be enabled to develop language skills and communication skills. CO 2. Students will acquire vocabulary and grammar

CO 3. Students will develop their comprehension skills

B.A. SEM VI

CO 1. Students will be able to develop soft (communication) skills in English CO 2. Students will be able to reorganize language usages in specific domains.



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Economics

SEMESTER I (Micro Economics Theory –I)

After the completion of the course the students must be able to Know

CO 1: The student will learn about meaning of Economics, Differences, between Micro and Macro Economics.

CO 2: The student will get knowledge about Demand, Supply, and Concept of utility.

CO 3: The student will learn about Costs, Functions, Properties, and also get knowledge about Market structure.

CO 4: The student will learn about Modern Theory of Distribution and also learn about welfare Economics.

COURSE OUTCOMES: SEMESTER II (Micro Economics Theory –II)

After the completion of the course the students must be able to Know

CO 1: The student will learn about Macro Economics, National income as major of welfare.

CO 2: The student will definition of Money, Value of Money.

CO 3: The student will learn about meaning, causes, Effects and Methods of check Inflation and Unemployment.

CO 4: The student will learn about consumption function and Investments.

COURSE OUTCOMES: SEMESTER III (Macro Economics Theory –I)

After the completion of the course the students must be able to Know

CO 1: The student will learn that scope, importance, of Macro Economics and also learn difference between Micro and Macro Economics.

CO 2: The student will learn GNP, NNP, GDP, NDP, person income, Measurement of National Income.

CO 3: The student will learn Inflation, Deflation, Monetary, and Fiscal policy.

CO 4: The student will learn market law, consumption function, Investment Function.

COURSE OUTCOMES: SEMESTER IV (Macro Economics Theory –II)

After the completion of the course the students must be able to Know



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CO 1: The student will get knowledge about functions of Commercial and Central bank, Credit Creations and control.

CO 2: The student will learn Modern Banking System.

CO 3: The student will learn about Financial Market, Capital Market.

CO 4: The student will learn about Health problems in India, and use of statistics.

Course Outcomes: SEMESTER V (Indian Economy –I)

After the completion of the course the students must be able to Know

CO 1: The student will learn about Meaning, Nature and types of Economy, basic features of Maharashtra Economy.

CO 2: The student will learn about importance of Indian Agriculture, Problems, Production, Irrigation, Agricultural Market.

CO 3: The student will learn about important role of Industry, small and large scale Industry

CO 4: The student will learn about Employment and Poverty.

Course Outcomes: SEMESTER VI (Indian Economy –II)

After the completion of the course the students must be able to Know

CO 1: The student will learn about Economic Development, meaning, Concept of Sustainable development.

CO 2: The student will get Knowledge about Economic Survey.

CO 3: The student will learn get Knowledge about meaning, Nature, Scope and Importance of Public finance.

CO 4: The student will learn about India and foreign Trade in Export and Imports.



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Political Science

SEM- 1 POLITICAL THEORY

CO 1- Analyzing what is Politics and explaining the approaches to the Study of Political Science – Normative, Behavioral, Post Behavioral

CO 2- Assessing the theories of State (Origin, Nature, Functions): Contract, Idealist, Liberal, and Neo-Liberal Theories

CO 3- Understanding basic concepts of power and authority

CO 4- Understanding basic concepts of Equality, Rights, Law, and Justice

SEM- 2 WESTERN POLITICAL THOUGHT

CO 1- Providing an insight into the dominant features of Ancient Western Political Thought

CO-2 Ancient Greek political thought with a focus on Aristotle and Plato

CO 3- Describing the Marxist Approach to Politics

CO 4- John Stuart Mill's views on liberty and representative government.

SEM- 3 INDIAN GOVERNMENT AND POLITICS

CO 1- Outlining the basic values and philosophy of the Indian Constitution as expressed in the Preamble.

CO 2- Studying Fundamental rights, duties, and Directive Principles of State Policy CO-3 Studying Parliament, President, and Prime Minister

CO-4 Assessing Judicial Activism in India with reference to Supreme Court

SEM-4 STATE GOVERNMENT AND POLITICS

CO1- Demonstrate knowledge of the constitutional structure of state level CO-2 Explaining the Processes and Procedures State Legislatures.

CO-3 Examining Indian Federalism through Centre-state Relations.

CO-4 Studying the composition power and function of the high court in India.



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SEM 5- COMPARATIVE GOVERNMENT AND POLITICS

CO-1 - Tracing the evolution of Comparative Politics as a discipline and drawing a distinction between Comparative Politics and Comparative Government.

CO 2- Investigating the nature and scope of Comparative Politics.

CO 3- Analysing the approaches and models of comparison: systems analysis; structural functionalism; and institutional approach.

CO 4- Critically analyzing the features of a liberal democratic and socialist political system with a focus on the UK, USA

SEM-6 INTERNATIONAL RELATIONS

CO-1 Explaining the scope and subject matter of International Relations as an autonomous academic discipline.

CO 2- Approaches and methods to study the discipline through Political realism, Pluralism, and Worlds system's Model

CO-3 Explaining balance of power and collective security

CO-4 Examining the issues of Underdevelopment, Terrorism, Regionalism, and Integration that characterizes the Post second world war order and Evaluating Peace keeping Function and Human Rights.



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History :

SEM I (History of India) From Earliest time to 1526

Understanding of main feature of Indus valley , civilization and vaidik culture Visualization of the Maurya and Gupta Art and architecture and understanding the socio economic. Student becomes able to get fair picture of Indo-Islamic culture language literature. Understanding of foundation of Delhi Sultanate and Sultanate Administration. The students can recognize of the socio, economic condition of Delhi Sultanate and Lodhis. Decline of Lodhis and Bahmani, rise of Mughals

.SEM II (History of India) 1526 to 1761

The student will be able to form an idea on the establishment of Mughal rule in India in 1526 A.D. Understanding Role of Akbar in the consolidation of Mughal rule in India. The student would have clear idea about the rule of Shahjahan and the golden age of mughal architecture. Understand Aurangzeb's conflict with Rajputas Maratha and weaking Mughals age.

SEM III (History of india) 1764 to 1885

Understanding of foundation of British government and Administraion. to understand british policy Student would gain knowledge idea of land revenue, economic condition of India of and describe Revolt of 1857

SEM 4 (History of India) 1886 to 1947

The students would get to know the return of forgotten nationalism the bounced back under the Indian National Congress. Student would acquaint themselves with the coming up of Gandhi Ji and taking command of freedom struggle in the most peaceful and constructive way till the attainment of independence of India.

SEM 5 Modern world (1789-1920)

Students acquire knowledge about rise of nationalism and liberal Democracy Sufficient knowledge of fascism and world war I It will help students to know about American efforts who solve the civil war

SEM 6 Modern world (1920-1960)

Student get to know about rise of Lenin and Stalin Sufficient knowledge of cold warand its impact of international politics



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बी.ए. अनिवार्य मराठी

कोर्स आउटकम:

सत्र 1 व 2

- गद्यातील साहित्याशी परिचय करणे व लेखकांनी मांडलेले विचार अंतर्गत करून त्यावर मंथन करणे.
- पद्यातील काव्याचा रसग्रहण करणे व कविने केलेल्या रचनेचे प्रकार आत्मसात करणे
- व्यवहारिक मराठीबाबतची तत्वे, स्वरूप व भूमिका समजून घेणे, पत्रलेखन व सारांश लेखनाची कला आत्मसात करणे.

सत्र 3 व 4

- आचार्य अत्रे, राष्ट्रसंत तुकडोजी महाराज, पु. भा. भावे व दुर्गा भागवत इत्यादि लेखकांचे विचार समजून घेणे व पुनरावलोकन करणे.
- कवि संत नामदेव, सुरेश भट, यशवंत, अनिल इत्यादि कविंची कविताशैली व त्यातील फरक बारकाईने समजून घेणे.
- इतिवृत्त लेखन वृत्तलेखन, भाषांतर व मुलाखात लेखनाच्या अभ्यास व सराव करणे.

सत्र 5 व 6

- मारूती चित्तमपल्ली, विनोबा भावे, इरावती कर्वे, गंगाधर गाडगीळ, नरेंद्र दाभोळकर यांसारख्या लेखकांचे समाजाबाबत मांडलेले विचार समजून घेणे व त्याचा सार आत्मसात करणे.
- नामवंत कविंचे रचनात्मक लेखन, त्यांची शैली, कवितेची गहनता व त्यातून व्यक्त केलेली भावना समजून घेणे.
- संपादन प्रक्रिया, कार्यालयीन लेखन व्यवहार ग्रंथ परीक्षण व त्याचे स्वरूप व प्रकार, तसेच ईंटरनेट, मेल इत्यादि करिता मराठीचा वापर आत्मसात करणे.



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Program Outcomes

Programme outcomes of programmes in B.A.

- PO1. **Domain knowledge:** Students will possess a breadth and depth of disciplinary knowledge in the field of Humanities .
- PO2. **Critical Thinking:** Students will be able to identify and present their own perspective as well as identify and consider other perspectives; they will gain a broader outlook and be able to exercise discernment and judgment by evaluating arguments about issues.
- PO3. **Problem solving & Analytical Skills:** Students will be able to identify and define the problem/ question at issue; identify and assess the key assumptions; analyze and process data to reach conclusions; identify and assess conclusions, implications and consequences.
- PO4. **Environment and sustainability:** Students will be able to understand the issues related to environmental contexts and sustainable development
- PO5. **Effective Communication:** Students will be able to present ideas clearly and confidently with skills to negotiate with others. They will be able to evaluate primary literature, in oral and written form and subsequently articulate the information.
- PO6. **Leadership & Team work:** Students will be able to assume leadership roles and will be able to work productively in a team for group projects and group activities. Ability to work as a leader as well as in a team for group projects and group activities and participate actively, in a healthy spirit
- PO7. **Ethical & Moral values:** Students will bear the core values of honesty, integrity and commitment and imbibe qualities of empathy for fellow human beings.
- PO8. **Effective Citizenship and Social Interaction:** Students will develop tolerance and harmony towards cultural, regional, linguistic, communal, socioeconomic and other diversities and will respect the constitution and the national symbols of pride.



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Programme Specific outcomes – ECONOMICS

- PSO1. **RECOLLECTION:** Students will be able to define different ages of literature and recognize their social , cultural and historical contexts.
- PSO2. **UNDERSTANDING:** Students will be able to understand and classify the variety of the literature of different ages.
- PSO3. **APPLICATION:** Students will be able to apply the critical and theoretical approaches to the reading.
- PSO4. **ANALYSIS:** Students will be able to identify ,analyze and describe the critical ideas, themes and principles of the literary text.
- PSO5. **EVALUATION:** Students will be able to evaluate an argument in a text by identifying the evidence given to support the argument.
- PSO6. **CREATION:** Students will be able to design different ideas to defend the idea in a critical text.
- PSO7. Students will be able to analyze the role of the style of the text in achieving aesthetic literary effect.



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Programme Specific outcomes – COMPULSORY ENGLISH

- PSO8. **RECOLLECTION:** Students will be able to recognize the basic English structures and remember the tenets of grammar and vocabulary at an intermediate level.
- PSO9. **UNDERSTANDING:** Students will be able to paraphrase and retell the main idea of the text and recall vocabulary at an intermediate level
- PSO10. **APPLICATION:** Students will be able to apply the learnt structures of the language in their written and oral communication.
- PSO11. **ANALYSIS:** Students will be able to analyze the text and distinguish between the main idea and the supporting details and differentiate fact from opinion.
- PSO12. **EVALUATION:** Students will be able to evaluate the text and connect it with their values, personal thoughts and opinions.
- PSO13. **CREATION:** Students will be able to develop an idea in a text through guided creative articles or role
- PSO14. Students will be able to use the language in all forms of communication at an intermediate level.



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Programme Specific outcomes –POLITICAL SCIENCE

- PSO1. RECOLLECTION:** Students will be able to remember the background of our Political system and Indian Political administration institutions like Parliament Legislature, Executive, Judiciary and Indian administration and so on.
- PSO2. UNDERSTANDING:** Students will be able to understand working of political institutions. Political institutions like Parliament Legislature, Executive, Judiciary and Indian administration .
- PSO3. APPLICATION:** Students will be able to apply knowledge acquired from the political event of world with comparative approach.
- PSO4. ANALYSIS:** Students will be able to analyze the relationship between the past and the present times and brings its contemporary relevance.
- PSO5. EVALUATION:** Students will be able to evaluate the critical thinking of political thinkers among students.
- PSO6. CREATION:** Students will be able to collaborate and create and have role plays such as Mock Parliament to create awareness about the Constitution of their own country as well as the political procedures.
- PSO7.** Students will be ready for various competitive examinations.



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Programme Specific outcomes –SOCIOLOGY

- PSO1.** RECOLLECTION: Students will be able to remember and explain various sociological concepts and develop an understanding of macro and micro perspectives in sociology.
- PSO2.** UNDERSTANDING: Students will be able to demonstrate and summarize sociological phenomena's and emerging biographies.
- PSO3.** APPLICATION: Students will be able to integrate and apply theoretical knowledge and research skills in examining social problems and real life situations.
- PSO4.** ANALYSIS: Students will be able to analyze social issues and challenges and making an attempt to provide solutions.
- PSO5.** EVALUATION: Students will be able to evaluate and understand changing institutions, processes, agents and interventions that bring about change in the Indian society.
- PSO6.** CREATION: Students will be able to develop research models and conduct field studies.
- PSO7.** Students will develop a sense of ethical and social responsibility and engage in critical thinking.



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COURSE OUTCOMES OF B.Sc. BOTANY

B.Sc. Botany is a 6-semester course conducted by Dr. Ambedkar College, Deekshabhoomi, Nagpur as per the syllabus provided by Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur. Each semester students have to take two theory papers, and practical based on it. Coursework is according to theory papers, practical, and related assignments such as field tour, field observation, unit test, class seminars, and different activities of botanical society conducted throughout the program.

Course Outcomes (COs): As per Syllabus (BOS, Botany):-

SEMESTER-I

Paper – I: Viruses, Prokaryotes, Algae and Biofertilizers

Course outcome: Students will be able to

CO1: identify various microbial life forms in depth with ultrastructure, reproduction and economic importance.

CO2: to gain knowledge about Cyanobacteria with ultrastructure and economic importance and Algae: Classification and economic importance.

CO3: to understand complete Life history of Chara, Vaucheria. Ectopus and Batrachospermum.

CO4: to acquire Skill development practices in the field of Biofertilizers. Commercial production of Rhizobium, PSB, Azotobacter and Azolla.

Paper – II: (Fungi, Plant Pathology, Lichens, Bryophyta and Mushroom Cultivation)

Course outcome: Students will Remember and understand

CO1: The General characteristics, Classification & economic importance of Fungi. Study in detail the life history of Albugo, Mucor, Puccinia, Cercospora

CO2: To explore host, pathogen, symptoms, Causes and Control of Leaf curl of Papaya, Citrus canker and Red rot of Sugarcane. To understand the types and reproduction in Lichens.

CO3: The General characteristics, Classification & economic importance of Bryophytes. Study in detail the life history of Marchantia, Anthoceros, Funaria

CO4: To acquire Skill development practices in the field of mushroom cultivation

Practical CO:- The course focuses on viruses, prokaryotes, algae, fungi, plant pathology, lichens, bryophyta and biopreneurship through biofertilizers and mushroom cultivation.



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SEMESTER-II

Paper-I: (Palaeobotany, Pteridophytes, Gymnosperms and Soil analysis)

Course outcome: Students will gain the skills to identify and evaluate critical information of

CO1: Palaeobotany, types of fossils, and geological time scale

CO2: Pteridophytes, classification, life history, heterospory, seed habit, and steles.

CO3: General characteristics, classification, life cycle of gymnospermic forms. CO4: Soil analysis: properties, types, and method of collection of soil samples.

Paper – II: (Morphology of Angiosperms and Floriculture)

Course outcome: After completion of this course students will gain knowledge of -

CO1: Vegetative morphology of angiospermic plant parts.

CO2: Reproductive morphology, evolutionary significance, identification and description of floral characters of angiosperms.

CO3: To get an insight on taxonomic terminologies and description of carpel and types of fruit. CO4: Skill development practices in floriculture related to cultivation, irrigation and harvesting.

Practical CO:- The course focuses on morphology, anatomy, reproduction and evolution in pteridophytes, gymnosperms, and angiosperms including biopreneurship through floriculture and soil analysis.

SEMESTER-III

Paper-I: (Angiosperm Systematics, Embryology and Indoor Gardening)

Course outcome: Students will be able to understand

CO1: Origin of angiosperms, fossils angiosperms, plants diversity, description, identification, nomenclature and their classification including modern trends in the plant systematics.

CO2: Systems of classification and study of Angiosperm families

CO3: Embryology, pollination, and Fertilization in plants development.

CO4 Various analytical and technical skills related to Skill landscaping and Indoor gardening

Paper – II: (Angiosperm Anatomy and Horticulture)

Course outcome: This course aims to add to understanding of the students about the

CO1: Tissue, apical meristem of root and shoot: structure and functions.

CO2: Types of vascular bundles, normal primary structure of root, stem, and normal, anomalous secondary growth.

CO3: Periderm, growth rings, Sap-heartwood, leaf anatomy.

CO4: Skill development practices in horticulture: methods of propagation of horticultural crops and bonsai preparation.



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Practical-CO: The students become competent enough to develop knowledge about the systematics, embryology, anatomy and through skill based biopreneurship horticulture and indoor gardening practices.

SEMESTER-IV

Paper-I: (Cell Biology, Plant Breeding, Evolution and Seed Technology)

Course outcome: After successful completion of this course, students will be able to understand

CO1: Concept of Cell biology, cell organization, Structure and functions

CO2: Basic of Chromosome morphology, molecular organization and cell division:

CO3: Biostatistics, fundamental techniques in plant breeding and evolutionary significance . CO4: Skill development practices in seed technology.

Paper – II: (Genetics, Molecular Biology and Plant Nursery) Course outcome Students will be able to conceive the idea of CO1: Mendelism, interaction of genes, linkages and crossing over.

CO2: Mutation, chromosomal aberrations, DNA damage and repair. CO3: Concept of gene, regulation, protein synthesis and genetic code.

CO4: Skill Development practices in plant nursery planning and management:

Practicals CO: Students learn to carry out practical work on cell division, genetics, molecular Biology in the laboratory and skill based biopreneurship through seed technology and plant nursery practices.

SEMESTER-V

Paper-I: (Plant Physiology, Mineral Nutrition and Hydroponics)

Course outcome: Students will be able to improve the basic understanding on various physiological life processes in plants,

CO1: To gain knowledge about the various uptakes and transport mechanisms in plants and are able to coordinate the various processes. They understand the role of Plant-Water relation, Transpiration, Mineral uptake.

CO2: Enrich themselves with the phenomenon mechanism of Photosynthesis and Respiration: and their role in plants.

CO3: Understand the process of N- Fixation, Plant Movements, Photoperiodism, Nitrogen Metabolism, and Plant Movements.

CO4: Skill Development practices like Mineral nutrition and Hydroponics.

Paper – II: (Plant Ecology and Organic Farming)

Course outcome: Students will remember and understand

CO1: The basics and principles of ecology, biological diversity, conservation, sustainable development, population, community, climatic factors and edaphic factors.



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CO2: The concept, types, development and functions of various ecosystems and their communication.

CO3: Fundamentals of plant succession and adaptations and biogeochemical cycles. CO4: Skill development practices in organic farming.

Practical CO: Students will handle and understand the analytical and instrumentation skills, and various ecological fields parameters and skill based biopreneurship through hydroponics and organic farming.

SEMESTER-VI

PAPER-I: (Biochemistry, Biotechnology and Herbal Technology)

Course outcome: Students will be able to

CO1: Basic concepts of Biochemistry, Lipids metabolism, of enzyme action and mechanism.

CO2: To acquire knowledge in Plant tissue culture, Methods of sterilization and Preparation of Culture Media, Protoplast culture and Applications of tissue culture.

CO3: Understand the fundamentals of Genetic engineering including Cloning vectors and Agro bacterium mediated gene transfer and its role in crop improvement.

CO4: Skill Development practices in Herbal, Dye yielding and cosmetics technology.

Paper-II: (Phytogeography, Utilization of Plants, Techniques and Pharmacognosy)

Course outcome: Student will understand the basics and fundamental of

CO1: Phytogeography, Pollution, Natural resources and Conservation strategies. CO2: Utilization of plants, branches and scope of ethnobotany.

CO3: Principle, types and application of Microscopy and various biophysical techniques CO4: Skill development practices in Pharmacognosy.

Practical-CO: The course aims at the concept, scope, instrumentation, basic requirements and applied aspects of biochemistry, biotechnology, and skill based biopreneurship through utilization of plants, pharmacognosy, medicine, and herbal product development.



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Course Outcome (CO): Zoology (Semester-wise)

Semester 01

The prime objective of paper I and Paper II is to provide fundamental knowledge of animal (without cord), diversity and to provide a much needed environmental awareness and conservation instincts among the students.

Paper – I : Life and Diversity of Animals-Nonchordates (Protozoa to Annelida)

- CO1 To familiar students with unicellular animals starting from protozoans
- CO2 To familiar students with animals including poriferans and coelenterates
- CO3 To familiar students with animals including platyhelminth their parasitic adaptations
- CO4 To familiar students with animals including annelids & their applied aspect

Paper -II : Environment Biology

- CO1 To understand the different spheres of environment and energy resources
- CO2 To understand the ecology interaction including biotic & abiotic factors
- CO3 To understand the biodiversity & ecological conservational aspects
- CO4 To understand the different environmental pollutions and control

The prime objective of paper III and Paper IV is to provide fundamental knowledge of remaining animals (without cord), diversity and to provide a basic know-how of the structural & functional unit of life, the cell.

Paper - III : Life and Diversity of Animals- Non-chordates (Arthropoda to Hemichordata)

- CO1 To familiar students with animals starting from arthropodans & their larvae
- CO2 To familiar students with animals including molluscs and their larvae
- CO3 To familiar students with animals including echnidermata their larvae
- CO4 To familiar students with animals including primitive half-cord animals

Paper - IV : Cell Biology

- CO1 To understand the different aspects cell andf its organelles (membrane)
- CO2 To understand the different aspects cell andf its organelles (metabolic cycle)
- CO3 To understand the different aspects cell andf its organelles (hereditary aspects)
- CO4 To understand the cell propogation and ageing

Semester 03

The prime objective of paper V and Paper VI is to provide fundamental knowledge of animal with cord diversity and to provide with a basic set of doctrines of genetics and its components.



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Paper - V : Life and Diversity of Animals-Chordates (Protochordata to Amphibia)

- CO1 To familiar students with animals having noto cord
- CO2 To familiar students with animals including fishes and amphibians with parental care
- CO3 To familiar students with developmental aspects of fish
- CO4 To familiar students with developmental aspects of amphibian (frog)

Paper - VI : Genetics

- CO1 To familiar students with mendelian inheritance
- CO2 To familiar students with non-mendellian inheritance
- CO3 To familiar students with chromosomal aberrations & anomolies
- CO4 To familiar students with applied aspects genetics such as couselling

Semester 04

The prime objective of paper VII and Paper VIII is to provide fundamental knowledge of remaining animals (with cord) diversity and to provide with a basic know-how of molecular biology and immunology and techniques involved to inculcate the research interest/inclination.

Paper - VII : Life and Diversity of Animals-Chordates (Reptilia, Aves and Mammals)

- CO1 To familiar students with reptiles, birds and mammals
- CO2 To familiar students with animal evolution aspects
- CO3 To familiar students with comparative studies of reptiles, birds and mammals
- CO4 To familiar students with stem cell concept & animal behaviour

Paper - VIII : Molecular Biology and Immunology

- CO1 To familiar students with molecules of life, DNA & RNA
- CO2 To understand the gene concept and its regulation
- CO3 To understand the concept of immunity
- CO4 To understand the responses and defeciencies in immunity

Semester 05

The prime objective of paper IX and Paper X is to provide fundamental knowledge of comparative physiology of different systems in the living body and to provide an idea of applied aspects of zoology.

Paper - IX :General Mammalian Physiology I

- CO1 To familiar students with enzymes and their role in physiology
- CO2 To understand and remember digestive physiology and their enzymes
- CO3 To know about the respiratory physiology
- CO4 To understand and know about cardiac cycle and haematological aspects



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Paper - X : Applied Zoology I (Aquaculture and Economic Entomology)

- CO1 To aware students with fundamentals commercial fisheries
- CO2 To familiar students with different aquacultural practices & disease control
- CO3 To understand the economics of crop & animal pests
- CO4 To aware students with industrial entomological practices

Semester 06

The prime objective of paper XI and Paper XII is to provide fundamental knowledge of comparative physiology of remaining systems in the living body and to provide an idea of applied techniques used to elevate enthusiasm towards higher education and research in zoology.

Paper - XI : General Mammalian Physiology II

- CO1 To familiar students with nerve and muscle coordination
- CO2 To remember normal & abnormal excretory physiology
- CO3 To understand the endocrine control on body
- CO4 To know about the reproduction and its control through various tools

Paper - XII : Applied Zoology II (Biotechniques, Microtechnique, Biotechnology, Bioinformatics and Biostatistics)

- CO1 To familiar students with bio-molecular separation technologies
- CO2 To remember the microtechniques studies in animal tissue
- CO3 To make students aware of fundamental biotechnological applications
- CO4 To understand and to enable statistical application & bioinformatics approach



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B.Sc.
Semester 1

Course Outcome

Paper – I (CH101) (Inorganic Chemistry)

CO-1: Details about quantum numbers Also factors affecting and trends in chemical properties like Ionization Potential, Electron affinity and Electronegativity.

CO-2: Learn, Lattice energy and Born- Haber cycle and Formation of Hydrogen molecule with Potential energy diagram by of VBT.

CO-3: Should learn, s- block elements, Ionization potential, reducing properties. Application of s-block elements (Na, K, Ca) in biosystem. And structures, bonding and applications of Xenon fluorides (XeF_2 , XeF_4 , XeF_6). Structure and bonding in XeOF_2 and XeOF_4 .

CO-4: Students Practice of p-block elements Oxides: Structure of P_2O_3 , P_2O_5 Oxyacids of Phosphorous: Structure of H_3PO_3 and H_3PO_4 And Simple tests for the detection of food adulteration in tea leaves and coffee, spices (turmeric and chili powder) and, milk.

Paper-II (CH: 102) Physical Chemistry

CO-1: To impart the students' concepts of thermodynamics and thermochemistry.

CO-2: To understand the basics of Gaseous state, ideal gas and real gas.

CO-3: To provide an insight into the liquid state and properties of liquid state.

CO-4: To get an overview about the adsorption and colloidal state.



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Semester 2

Paper – I (CH201) (Organic Chemistry)

CO-1: Describe in details, Structure and Bonding:Hybridization in case of Methane, Ethane, Ethylene and Acetylene. And Reactive intermediates: Carbocations, carbanions, free radicals and carbenes (Definition, formation, geometry, stability).

CO-2: Should learn Stereochemistry of Organic Compounds: Elements of symmetry,Optical activity,D & L and R & S system of nomenclature. And Geometrical isomerism, maleic acid, fumaric acid,Conformational analysis of ethane and n-butane.

CO-3: Students learn, methods of formation (Ethane and Propane): Wurtz reaction, Kolbe's reaction and decarboxylation of carboxylic acid. Baeyer's strain theory and its limitations. formation (ethylene and propylene):. Markownikoff's rule and Peroxide effect. And

CO-4: Students prepare,Details of Classification of dienes. Methods of formation of 1,3- butadiene.And Methods of formation of acetylene from: Calcium carbide and dehydrohalogenation of dihalides, Chemical reaction: and MO picture, Huckel rule and aromaticity, Aromatic electrophilic substitution mechanism with energy profile diagram (e.g., nitration and sulphonation) And LPG, CNG, LNG, and Bio-Gas (definition, calorific value, composition, properties and uses). Octane number.Lubricants:Definition, classification

Paper-II (CH: 202) Physical Chemistry

CO-1: To learn the basics of second law of thermodynamics, Carnot cycle and partial molar properties.

CO-2: To learn and understand Phase equilibria and Solutions of Liquids in Liquids. CO-3: To understand the concept of chemical kinetics and theories of reaction rate. CO-4: To get an overview about the nuclear chemistry, pollution and its control.



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Semester-III

Paper-I (CH: 301) Inorganic Chemistry

CO-01: Able to write structure and bonding of Inter-halogen and poly-halogen compound on the basis of VSEPR and MO theory.

CO-02: Able to write electronic configuration and periodic properties of Transition element.

CO-03: Able to understand the types of error in chemical analysis and types of solvent.

CO-04: Able to understand the chemistry of inner transition element.

Paper-II (CH: 302) Organic Chemistry

CO-1: Students should be able to identify the formation and identify chemical reactions of activating, deactivating substituents, alkyl halides and polyhalogen compounds.

CO-2: Students should be able to classify and identify preparation methods, properties and analyse reaction mechanisms of alcohols and phenols

CO-3: Students should be able to evaluate and compare synthesis methods and reactions related to Aldehydes and Ketones.

CO-4: Students should be able to analyse structure and bonding, compare different methods of synthesis, identify reaction mechanisms of Carboxylic Acids and their derivatives.

Semester-IV

Paper-I (CH: 401) Inorganic Chemistry

CO-01: Able to understand coordination chemistry –types, classification, nomenclature Warner theory, coordination number, EAN rule chelating complex.

CO-02: Able to understand the isomerism in coordination compound having 4 and 6, and oxidation reduction in EMF Series.

CO-03: Able to understand the Colorimetry and Spectrophotometry Method and Separation Techniques.

CO-04: Able to understand the Inorganic Polymers, Silicones chemistry, Phosphonitrilic halide polymers.



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Paper-II (CH: 402) Physical Chemistry

CO-1: Students should be able to classify and explain different types of solids, crystals, crystal systems and should be able to characterize and interpret them

CO-2: Students should be able to explain and evaluate different concepts and theories related to electrochemistry and its applications

CO-3: Students should be able to discuss concepts and applications of Rotational and Vibrational Spectroscopy and examine different spectra.

CO-4: Students should be able to interpret different principles and concepts of Quantum chemistry and discuss about dielectric and magnetic properties of molecules.

Semester-V

Paper-I (CH: 501) Organic Chemistry

CO-01: Able to understand classification, nomenclature, synthesis, mechanism of nitrogen containing organic compound.

CO-02: Able to understand classification, nomenclature, synthesis, mechanism of Heterocyclic compound like furan, thiophene, pyrrole and pyridine, Indole, Quinoline and Isoquinoline.

CO-03: Able to perform Quantitative Analysis of carbon, hydrogen, nitrogen, sulphur and halogens and preparation and chemical properties of Organometallic compounds.

CO-04: Ability to understand Spectroscopy technique like UV and IR.

Paper-II (CH: 502) Physical Chemistry

CO-1: To acquaint knowledge on basics of Electrochemistry, Nernst equation, applications of EMF measurement in pH determination and potentiometric titration.

CO-2: Students to learn and understand about applications of Schrodinger equation in one and three dimensional box, concept and shapes of orbitals, radial distribution curves for different orbitals and molecular orbital theory

CO-3: To provide an insight into the photochemistry, laws of photochemistry, Quantum yield, Jablonskii diagram, Raman spectroscopy and rotational-vibrational spectra of diatomic molecules.

CO-4: To get an overview about the colligative properties, determination of molecular mass from relative lowering of vapour pressure and Macromolecules, determination of molecular mass of macromolecules using viscometry, osmometry and light scattering methods.



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Semester-VI

Paper-I (CH: 601) Inorganic Chemistry

CO-01: Able to understand Concept related VSEPR theory Calculation of CFSE and Electronic spectra of Transition Metal Complexes.

CO-02: Able to understanding the Magnetic Properties of Transition Metal Complexes and Thermodynamic and Kinetic aspect of metal complexes.

CO-03: Able to learn Nomenclature, Classification Preparation of Organometallic compound and metal carbonyl compound.

CO-04: Able to understanding the Essential and Trace elements in biological processes, Hard and Soft Acids and Bases, HSAB Concept for acid base.

VI Paper-II (CH: 602) Organic Chemistry

CO-1: To learn the basics of NMR spectroscopy, Infrared spectroscopy and to understand the interpretation of NMR spectra of organic molecules and Intensity and position of IR bands, applications of IR spectra.

CO-2: Students to learn and understand the synthesis, chemical properties of Malonic ester and acetocacetic ester, classifications and reaction of glucose, mechanism of osazone formation, chain lengthening and chain shortening of aldoses.

CO-3: To understand the basics of amino acids, peptides, proteins, nucleic acids, fats, oils, soaps and detergents.

CO-4: To get an overview about the synthetic dyes, synthetic polymers and green chemistry



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Program Outcome

Program: Zoology

PSO1	Program imparts the knowledge with facts related to various subjects in pure sciences such as Physics, Chemistry, Botany, Zoology, Mathematics and so on along with an understanding of basic concepts, fundamental principles , and scientific theories for various scientific phenomena and their implications in everyday life
PSO2	The program also imparts the skills in handling scientific instruments and performing laboratory experiments subsequently letting them know the skills of observations and drawing logical inferences from the scientific experiments with a touch of critical analysis of observations and systematic scientific data handling.
PSO3	The faculty handling this program tries to inculcate the creative and innovative ways of learning and ideas related to overall development of students and a distinct inclination towards research at large.
PSO4	And with no less, the program finesse students with social values by participating in different co-curricular and extra-curricular activities and ethical understanding with attending fine deliberations by experts from various academic and research areas. It also helps in molding students with better competence and more employable after completion of the program. (170 words)
PSO5	A broad understanding of animal diversity, including scientific classification and evolutionary relationships of major phyla/groups of animals is the prime objective. The structural and functional relationships at different levels of biological organization (e.g., molecular-, cellular-, tissue-, organ-, organismal-, population-, and species-level organizations) with respect to major phyla/groups of animals is conceptualized in order to understand the life and its prevalence. To study the interactions of biological, chemical, and physical features of environment or the habitat (e.g., terrestrial, freshwater, marine, host) among living organisms is also emphasized upon. To get aware of the animal growth and development, metabolism and propagation of pre-existing life forms is predominantly included.
PSO6	A latest elementary understanding of genetics and inheritance; molecular concepts; micro-techniques; biotechnical procedures; immunological interactions; bio-statistics and bio-informatics related to the living forms and their progression is not left out.
PSO7	Further, the students are made aware of the application of zoology in different facets of mankind environment under the banner of economic zoology such as seri-culture, api-culture, lac-culture, aquaculture , Industrial microbiology , rDNA technology , medicines and vaccines of different nature/origin and of course a



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	voluntary effort of briefing of the related career opportunities . (188 words)
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Chemistry

Program Specific Outcome

- PSO-1: Students will demonstrate an understanding of major concepts in all disciplines of chemistry.
- PSO-2: Students will employ critical thinking and the scientific method to design, carry out, record and analyze the results of chemical experiments and get an awareness of the impact of chemistry on the environment, society, and other cultures outside the scientific community.
- PSO-3: To enable students to develop an understanding of the principals of chemical safety and to enable them to apply these concepts when working in a laboratory.
- PSO-4: The principle, design, observations, procedures and calculations of the experiment results should demonstrate an understanding of practical's and its applications in different chemical industries and R&D laboratories.

Botany

Program Specific Outcome

Statements of program me Specific Outcomes (PSOs) By the end of this course, the students will be able to:

1. Understand the basic concepts of lower group plants and morphology of higher groups.
2. Understand the evolution, Classification, anatomical details of higher group plants.
3. Analyze the cell organelles and application of genetics, molecular biology in plant breeding.
4. Identify the bacteria, viruses and plant pathogen.
5. Analyze metabolic activities of plants.
6. Understand the application of genetic engineering for the improvements of plants.
7. Understand the basic concepts of ecology.
8. perform the procedure of laboratory technique in biochemistry, biotechnology and utilization of plants.

Vishakha Lohakare
Officiating Principal