Ajintha Education Society's
**PANDIT JAWAHARLAL NEHRU MAHAVIDYALAYA**
Shivaji Nagar (E), Garkheda Parisar, Aurangabad-431009

**Faculty: Arts**

**B.A: General**

**Programme outcomes, Programme Specific Outcomes & Course outcomes**

Academic Year 2022-2023

# Department of English

1) To expose students to a vivid range of writings from all over the world.
2) To strive students to be imaginative, rhetorical and technically proficient to gain a deeper insight.
3) To equip students with knowledge of English as a world language.
4) To make students communicate accurately and precisely in speaking and written aspects.
5) To prepare students achieve command over English and its linguistic structures.
6) To make students comprehend and recognize different varieties of English language.
7) Programme Learning Outcome (PLO/PO)
1) To develop familiarity with major literary works, genres, period and critical approaches to various literatures.
2) To develop writing skills effectively and creatively.
3) To demonstrate through class discussion to identify major genres of literature and their influence on society.
4) To make Students aware of specific works of major authors such as Shakespeare, Chaucer and Milton etc.
5) To make students read, write and comprehend English acquisition of soft skills.

**Course Outline**

1) Students acquire Listening, Speaking, Reading and Writing skills through prescribe prose and poetry.
2) Students develop the ability of critical thinking about various literatures.
3) Students understand the various nuances of written and spoken English.
4) Students gain the prose and poetry appreciations skills.
5) Students use the knowledge of research methodology and prepare their research project.
6) Students inculcate the habit of creative writing.

# Department of Hindi

**Programme outcomes:**

P01: Helps to gain and Enhance the knowledge of Humanity.

P02: Understands the journey from savage to civilization.

P03: Understand how cultural, historical geographical, Political, Linguistic, And Environmental forces shape the world.

P04: Demonstrate intercultural awareness and competence.

P05: Analyze and criticize the reflection of complex problems Incorporating multiple Perspectives and innovative thinking.

P06: Demonstrate the capacity to argue in innovative directions.

P07: Practice creative thinking and expression.

P08: Demonstrate detailed knowledge in one or more disciplinary Boundaries.

P09: Develop a detailed understanding of the current state of knowledge in One or more disciplines

P010: Promote active citizenship and community engagement.

**Programme Specific outcomes:**

PS01: Understand the nature, scope and basic concepts in Hindi.

PS02: Analyze the relationship among various genres of literature like Poetry autobiographical novel, drama, story one act play etc.

PS03: Creates an awareness among the students about economical, Socio - Political and communal issues.

PS04: Understand how applied Hindi is important in various sectors of Society like banks, govt. and semi govt. offices etc.

PS05: Analyze various theories like modernism, feminism, realism, Romantics etc.

PS06: Students will be benefitted from saint poetry. Through Saints, their Philosophies can be understood from poetry.

PS07: Understand the process of literature in Hindi.

PS08: Develop the creativity and mental set up.

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**Course outcomes:**

C01: Students will develop their attitude towards humanity.

C02: It helps to build the capacity to argue in innovative directions.

C03: To preserve and promote India's Linguistic interest related to Hindi Language and install human values inherent in its literature.

C04: To foster friendship and understanding between and across Hindi and Non – Hindi Speaking people through the learning of Hindi.

C05: To provide civic and cultural education and to generate interest in the Hindi younger generation.

C06: Students will get the proper linguistic knowledge to communicate With people around the globe.

C07: It makes students able to express themselves in Hindi.

C08: Students get acquainted with the Hindi media like cinema, news, Advertisements, radio anchoring etc.

C09: Helps to build language ability among students.

C010: Students will motivate themselves through literature in their Problem solving and will interpret the world.

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# Department of Marathi

**Programme Outcomes:**

PO1: Helps to gain and Enhance the Knowledge of Humanity.

PO2: To understands the Journey from Savage to Civilization.

PO3: To understand how cultural, historical, geographical, political, linguistic, and environmental forces shape the world.

PO4: Demonstrate intercultural awareness and competence.

PO5: Analyze and criticize the reflection of complex problems incorporating multiple perspectives and innovative thinking.

PO6: Demonstrate the capacity to argue in innovative directions.

PO7: Practice creative thinking and expression.

PO8 Demonstrate detailed knowledge in one or more disciplines and integrate knowledge and perspectives across disciplinary bound

PO9: Develop a detailed understanding of the current state of knowledge in one or more disciplines.

PO10: Promote active citizenship and community engagement.

**Programme Specific Outcomes:**

PSO1: To understand the nature, scope, values and basic concepts in Marathi.

PSO2:To analyze the relationship among various genres of literature like poetry, Biography, autobiography, novel, drama, short stories, travel writing, one act play etc.

PSO3: To create an awareness among the students about socio-economic, political, cultural situations through the history of Marathi literature.

PS04:To promote the values through the literature of Mukundraj, Saint Dnyaneshwar, Saint Dnyandev, Saint Tukaram, Saint Eknath, Saint Namdev etc.

PS05:To understand the spiritual and religious aspects from the writers the Saint Janabai, Chokhamela, Karmmela, Gora Kumbhar, Visoba Khechar, Savta Mali etc.

PS06: To develop an interest in Reading-writing skills, critical approach ability.

PS07: To determine and analyze various literary types like, Dalit, Rural, feminist, tribal, folk literature etc.

PSO8: To understand the literary process through literary criticism.

PS09: To understand the literary thoughts of great writers such as Sigmund Fried, Karl Yung, F. C. Prescott, S. T. Coleridge, and T. S. Eliot etc.

PSO10: To develop Humanitarian, universal, social commitment approaches towards society.

**Course Outcomes:**

CO1: To develop overall mental, social, and innovative growth of students.

CO2: To motivate students to develop reading and writing abilities.

CO3: To get knowledge of our great tradition and culture of Marathi literature.

C04: To appreciate the impact of social situations in the writings.

CO5: To inculcate the social commitment among students.

CO6 Students will motivate themselves through literature in their problem solving and will interpret the world.

C07: To help to create creative writers and innovative scholars.

C08 Supports to create formal and informal writings like Essay, letter, report, news, advertisements etc.

C09: Promotes to create and develop reading culture.

CO10: Helps to develop Elocution, Debate, etc.

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# Department of Political Science

## PROGRAMME OUTCOMES

- The Bachelor of Arts in Political Science prepares graduates to understand fundamental concepts in the discipline of Political Science.
- Students working toward teacher certification will demonstrate the ability to apply political science knowledge and methodologies within the classroom setting.
- Students will demonstrate substantive knowledge of concepts and facts relevant to Political Science.

## PROGRAMME SPECIFIC OUTCOMES

**B.A. F.Y.**

❖ **Basic Concepts Of Political Science**

- To acquaint with the theories, approaches, concepts and principles of political theory.
- To understand the various traditional and modern theories of political science.
- To evaluate the theories of origin of the state.

- **Government And Politics Of Maharashtra**

- To understand the evolution, scope and significance of state
- To understand the state political, social, economical, study of the state
- To understand the Importance of Panchayat Raj System
- To learn Political Party System

**B.A. S.Y.**

❖ **Indian Government And Politics**

- To understand the philosophy of Indian constitutions.
- To identify the causes, impact of British colonial rule.
  To appreciate the fundamental rights and duties and the directive principle of state policy

❖ **International Relations**

- To understand the evolution, scope and significance of international relations and the rise of sovereign state system
- To understand the international political economy.
- To learn about issues of National and International World Scenario
- Understanding the nature and developments in national and international politics

**B.A. T.Y.**

❖ **Western Political Thinkers:**

- Building overall consciousness regarding national political history, international relations and present Indian and Western political thinkers.
- To have Exposure to modern as well as ancient political history
- Western political theory is back bone of today's world politics

VC Principal

❖ **Political Ideologies**

- Examine and analyze the conditions that create the rise of ideologies.
- Interpret and analyze political ideologies as they apply to modern political problems
- Apply their knowledge of ideologies to current political issues.
- To have current knowledge of today's world political ideologies
- To have knowledge of democracy, nationalism state wise politics

**Project Work**

- To explain importance of research
- How collects data
- To describe impact of problems on society

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# Department of Sociology

## Programme Specific Outcomes

1) Core course ensures that through teaching and learning knowledge of sociological concepts and theory imparted.
2) Content at syllabi develop the understanding of social equality, diversity and social issues.
3) Whole exercise is done to make students understand and to think critical about society and social problems.
4) The course intended to develop scientistfic temper and research qualities among students for the future career.
5) Follow new stream of thoughts and theories of social thinkers

## Course Outcomes

1) **Introduction to Sociology**
   - To explain concept of theoretical perspectives in sociology and how they are used in sociological explanations of social behavior
   - Describe origin and the development of sociology in general and development in India in particular
   - Give importance and uses of sociology in present society
2) **Individual and Society**
   - To explain factor of social change and social control
   - To describe concept of social Structure
   - To write concept of conformity and deviance
3) **Introduction to subfield of sociology**
   - To explain factor of anthropology
   - To describe concept of social psychology

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- To write concept of applied sociology

**4) Indian social composition**

- To describe population factors and impact
- To explain future of Indian society
- To give importance of democracy in India

**5) Problem of rural India**

- To describe problems of rural India
- To explain domestic violence
- To describe education drop out

**6) Contemporary urban issues**

- To describe concept of urbanization
- To give various types of urban planning
- To explain importance of globalization and urban changes

**7) Population in India**

- To write on density of population in India
- To describe concept of Indian Population
- To Elaborated population growth and environment

**8) Sociology of Development**

- To explain problems of poverty and unemployment
- To describe concept of development
- To give importance and impact of Government Schemes in India

**9) Sociological Tradition**

- To describe theory of sociological thinkers
- To explain French revolution
- To explain scope of industrial revolution

**10) Introduction to Research Methodology**

- To explain types of Methodology
- To give scope importance of research
- To explain problems of objectivity in research

**11) Social Problems in India**

- **To give** importance of industrial projects
- **To explain** problems of corruption
- **To describe** various quality of education in India

**12) Sociological Theories**

- To explain theory of social action, symbolic interaction theory, theory of violence
- To describe of theory of power and authority

**13) Social Research Methods**

- To describe techniques of investigation
- Use of computer in research
- To describe utility of social research

**14) Social disorganization in contemporary India**

- To explain concept and cause
- To describe women violence
- To explain terrorism and nakshalism
- To give changing values and culture in India

**15) Project Work**

- To explain importance of research

- How collects data
- To describe impact of problems on society


# Department of Economics

### Program Specific Outcomes

At the time of graduation, the students will be able to -

**PSO1:** To know broad characteristics of Indian Economy and World Economy

**PSO2:** To analyze nature and behavior of market, demand and supply in market

**PSO3:** To get acquainted with Policies of Agriculture and Industrial.

**PSO4:** To know about new Economic reforms like globalization

**PSO5:** To acquire knowledge of various aspects of Economics, like human development, human welfare

**PSO6:** To be familiar with aspects of Economic planning, strategy of planning and achievements of planning

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### Course Outcomes

**F.Y. B.A.**

**Semester – I**

**Micro Economics**

Upon completion of the course, the students will be able to-

**CO1:** Discuss basic concepts of Economics

**CO2:** Discuss basic aspects of Demand and Supply Theories

**CO3:** Analyze consumer's behavior

**CO4:** Discuss basic aspects of consumer's equilibrium

**CO5:** Analyze and explain market equilibrium

**Indian Economy**

Upon completion of the course, the students will be able to-

**CO1:** Discuss broad features of the Indian Economy

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**CO2:** Indentify major issues related to population and population policy

**CO3:** Define natural resources in India

**CO4:** Describe nature and types of unemployment and concept of poverty

**CO5:** Explain new economic reforms and concept of globalization

**Price Theory**

Upon completion of the course, the students will be able to-

**CO1:** Discuss concept of Production function

**CO2:** Analyze cost and Revenue

**CO3:** Classify market in various types

CO4: Evaluate theories of distribution

**CO5:** Understand meaning and related concepts of factor pricing

**Money, Banking and Finance**

Upon completion of the course, the students will be able to-

**CO1:** Explain basic aspect about money

**CO2:** Evaluate principle of Commercial Banks and Banking Structure in India

**CO3:** Discuss New Concepts in banking sector

**CO4:** Discuss functions of Reserve Bank of India

**CO5:** Define the term money market and capital market

**S.Y. B.A**

**Macro Economic**

Upon completion of the course, the students will be able to-

**CO1:** Discuss basic aspects of macro Economics

**CO2:** Describe concept of National Income

**CO3:** Explain theory of money and identify the index number

**CO4:** Explain theories of employment

**CO5:** Explain Keynesian theory of employment and Nature of trade cycle

**Development of Economics**

Upon completion of the course, the students will be able to-

**CO1:** Discuss concept of economic development and growth

**CO2:** Analyze theories of Adam Smith and Malthus

**CO3:** Give factors in development process

**CO4:** Get aware about Models of Economic Growth

**CO5:** Explain role of sector approach in Economical Development

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**Public Finance**

Upon completion of the course, the students will be able to-

**CO1**: Discuss nature, scope and importance of public finance

**CO2:** Explain Public Revenue

**CO3:** Comprehend public expenditure

**CO4**: Describe concept, source, causes and effects and importance of public debt

**CO5:** Explain meaning, objective and components of Union Budget

**Statistical Methods**

Upon completion of the course, the students will be able to-

**CO1:** Analyze collection of data – Primary and Secondary data

**CO2:** Describe types of series – simple, Discrete and continuous series

**CO3:** Discuss Arithmetic mean – its merits and demerits, mode and median

**CO4:** Evaluate Range, mean deviation and standard deviation

**CO5:** Explain variance and Co-efficient of variation

**International Economics**

Upon completion of the course, the students will be able to-

**CO1:** Explain basic concept of international economics

**CO2:** Describe Gains from trade

**CO3:** Discuss types of tariffs and quotas

**CO4:** Evaluate concept and components of balance of payment

**CO5:** Discuss Demerits and limitations of devaluation

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**Agriculture Economics**

Upon completion of the course, the students will be able to-

**CO1:** Discuss the role and importance of Agriculture

**CO2:** Describe various technologies used in Agriculture

**CO3:** Explain Government Agriculture Policies

**CO4:** Acquire knowledge of Indian agricultural development from last 50 years

**History of Economic Thought**

Upon completion of the course, the students will be able to-

**CO1:** Explain concept of Mercantilism

**CO2:** Sketch out Adam Smith division of labour and theory of value

**CO3:** Comprehend Tomas R. Malthus – theory of population

**CO4:** Describe Karl Marks theory of dynamics of social change, theory of surplus value

**CO5:** Explain concept of aggregate economy and the role of fiscal policy

**Research Methodology**

Upon completion of the course, the students will be able to-

**CO1:** Discuss meaning, nature, scope and objectives of social science research

**CO2:** Describe Facts – features Primary data collection

**CO3:** Discuss motivating factors of social research

**CO4:** Comprehend meaning and need of research design

**Industrial Economics**

Upon completion of the course, the students will be able to-

**CO1:** Discuss importance and role of Industries in Economic and social development

**CO2:** Know industrial organization, ownership structure

**CO3:** Analyze location and dispersion of industries

**CO4:** Explain composition of industrial sector

**Indian Economic Thinker**

Upon completion of the course, the students will be able to-

**CO1** Students know the Economic Thought of Koutilya

**CO2** To know Economic Ideas of Indian Economic Thinker

**Project work**

**CO1:** Describe Facts – features Primary data collection

**CO2:** Discuss motivating factors of social research

**CO3:** Students know the practical work about Project work

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# Department of History

**B.A. History Programme Outcome:**

Board of Studies (History) Of Dr Babasaheb Ambedkar Marathwada & History Department faculty has indentified the specific objectives of its undergraduate curriculum. The following are the learning outcomes that we would like to see each history student graduate with. We are continuously and actively assessing our program to ensure that these outcomes are being met.

- Students shall be able to demonstrate thinking skill by analyzing, synthesizing and evaluating historical information from multiple sources.
- Students will develop the ability to distinguish between fact and fiction while understanding that there is no one historical truth.
- Students will demonstrate their understanding of cause and effect along with their knowledge of the general chronology of the human experience.
- Student will develop an ability to convey verbally their historical knowledge.
- Students will be able to demonstrate a breadth of training across historical time and space.
- Students will be able formulate historical arguments and communicate those arguments in clear and persuasive prose.
- Students will be able to apply, assess and debate the major historical schools of thought, methodology and types of sources that historians use to make original arguments.
- Understand the present existing social, political, religious and economic conditions of the people.
- Analyze relationship between the past and the present is lively presented in the history.
- To develop practical skills helpful in the study and understanding of historical events. They draw historical maps, charts, diagrams etc. Prepare historical model, tools etc.
- Develop interest in the study of history and activities relating to history. They :

a. Collect ancient arts, old coins and other historical materials,

b. Visit place of historical interests, archaeological sites, museums, and archives,

c. Read historical document, map, chart etc,

d. Play active roles in activities of the historical organizations and associations.

- The study of history helps to impart moral education.
- History installs the feeling of patriotism in the hearts of the Pupils.
- To cultivate historical awareness
- To critically think, read and write about the past.

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**Course Outcome: B.A. Sem. I & II**

**P. No. I. Shivaji & His Times,**
**P. No. II. History of Modern Maharashtra**
**P. No. III. History of the Marathas**
**P. No. IV. Twentieth Century Maharashtra**


- Understand the concept of swaraj establied by Chh. Shivaji.
- Understand social and religious background of the 17th century Maharashtra.
- Understand the process of the transfer of the power from chhatrpati to Peshwa.
- Understand social and religious condition in 17th century Maharashtra.
- Analyze Administrative and Judicial system of Maratha period.
- Understand the political ideas of chhatrapti Shivaji Maharaj.
- Understand socio-religious & Economic condition of 17th century Maharashtra.
- Recognize the process Enlightenment in 19th Century Maharashtra.
- Understand early resistance to Colonial power in Maharashtra.
- Recognize & understand the process of the rise & growth of Nationalism in Maharashtra.
- To understand various Social movements in 20th century Maharashtra.
- To know about the development of Education during the colonial period.
- To understand nature of States & States people movement.

**Course Outcome: B.A. Sem.III & IV.**

**P. No. V. History of Early India**
**P. No. VII. History of India**
**P. No. VI. History of Delhi Sultanat**
**P. No. VIII. History of Mughal India**

- Understand of Delhi Sultanate.
- Analyze Mughal administration. Arts & Architecture
- Identify cultural synthesis.
- Analyze medieval south India.
- Understand the theory of kingship in Medieval India.
- Analyze the reform of All Udin Khilji , Shershaha Suri & Akbar.
- Analyze the religious policy Of Akbar.
- Describe Prehistory and protohistory.
- Classify urbanization in the ganggetic Basin.
- Classification of Buddhism and Jainism.
- Acquire knowledge about Early Tamilakam.
- Identify Early Indian Maps.
- Analyses early human settlements - Paleolithic, Neolithic age.

**Course Outcome: B.A. Sem. V & VI**

**P. No. IX . Historiography**
**P. No. X. History of Indian National Movement**
**P. No. XI. History of India (A.D. 1757- A.D.1885)**
**P. No. XV- Glimpses of the History of Marathwada**
**P. No. XIII. Field of History**
**P. No. XII & XVI Project Work :**

- To cultivate historical awareness among student
- To critically think, read and write about the past.
- Produce written work that incorporates consideration of the relevant historiography along with the theory that inform it.
- Construct original historical arguments based on primary source.
- Demonstrate a superior quality of writing both in terms of mechanics and in developing an argument effectively.
- Write articles on historical topics, Writing history and Techniques of historical writing.
- Develop their ability to assess critically historical analysis and argument, past and present.

- Gained an understanding of the development of the academic study of history throughout the world since the later eighteenth century (since the Renaissance )
- Gained an awareness of recent and contemporary debates in the theory practice of history writing.
- Gained insight into how historical arguments have been and are made.
- Identify history as Scientific Discipline.
- Understand nature and scope of archaeology
- Understand the importance of museum in the study of history.
- Encourage widespread participation in archaeology through society, identifying and addressing barriers to inclusivity.
- Understanding of technique and methods of presentation in history by the students,
- Preparation of primary bibliography,
- Identify Collection of Data.
- Presentation of finding, drafting the dissertation
- Understand Historical method of research.
- Increase interest in historical research through project work.
- Evaluate consolidation of English power in India.
- Analyses social, religious consciousness in India.
- Comparison of National movements - pre Gandhian and post- Gandhian Era.
- Identify Modern Indian Maps- sites of mutiny of 1857, Princely states in 1858, major site of National congress session, major sites in Civil Disobedience Movement--Ahmadabad, Dandi, Midnapur, Peshwar.
- Understand the process of Indian constitutional development.
- Analyze Democratic Culture in India
- Describe rise of modern world
- Classify growth of Capitalism.
- Analyze development of Democracy.
- Acquire knowledge about 20th century world
- Indentify world map- Oceanic Exploration, Europe in 1815, important stages of world war, and Important centers of International trade.
- To Understand ancient history of Marathwada,
- Gain information about Trade & Trades route in Ancient Marathwada,
- To Understand Medieval History of Devgiris Yadava.

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**Faculty: Commerce**

**B.Com: General**


## B. Com F.Y./S.Y./T.Y.

## Programme Specific Outcome

### Bachelor of Commerce (B. Com.)

PO 01: The students get theoretical exposure to the branches like accounts, Human resource management, trade and commerce, marketing, management, environment, finance, GST, Law etc.

PO 02: Enable students to become competitive in the areas of computer applications in accounting, group activities, Seminar and presentations, class discussions and e-learning within the classroom.

PO 03: Students get a solid foundation to pursue professional careers and take up various higher learning courses.

P0 04: The students develop entrepreneurial skills to start business ventures and increase self-employment.

P0 05: The students develop decision making at personal and organizational level and personality development skill.

PO 06: The students develop confidence, research aptitude by undertaking debates, group discussions, seminars, projects etc.

CO1: Provide a practical and theoretical knowledge about the best accounting software Tally ERP 9.

CO2: Equip the students to understand various usages of the Tally software and its application in Business processes for accounting purposes.

CO3: Develop skills to do various accounting through the Tally ERP software.

**6. Rural Development & Agricultural Business**

CO 01: Gain insight into the socio-economic structure of rural India.

CO 02: understand the prospects and problems of rural development in India.

CO 03: Explain the types of agriculture to include, horticulture, dairying and allied rural activities.

CO 04: Define the Agriculture, rural areas and rural families and principles of rural economic development.

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**Faculty: Science**

**B. Sc.: General**

# Department of Botany

**Programme Specific Outcomes**

At the time of graduation, the students will be able to-

**PSO1:** Understand the basic concepts of taxonomy and ecology

**PSO2:** Acquire knowledge about economics and medicinal plants in agriculture and medicine

**PSO3:** Analyse the relationship between plants and microbes

**PSO4:** Understand the biology of diversity of seed plants or phanerogams

**PSO5:** Understand behaviors of fossils and gymnosperm plants

**PSO6:** Understand plant diseases, chemical properties and evolutionary relationship among taxonomic groups

**Course Outcomes**

**B. Sc. First Year**

**Paper I- Diversity of Cryptogams-I**

Upon completion of the course, the students will be able to- **CO1:** Identify various types of plants in kingdom Plantae **CO2:** Identify Cryptogams

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**CO2:** Describe the basic information about gene, hybridisation and genetic material

**CO3:** Describe various genetic abnormalities

**CO4:** Describe mutation and chromosomal aberrations

**CO5:** Describe uses and applications of r-DNA technology

**Paper XXII (A)- Diversity of Angiosperms – II**

Upon completion of the course, the students will be able to-

**CO1:** Describe characteristic feature of various families of angiosperm plants

**CO2:** Describe the importance of plants of various families

**CO3:** Describe various tools used in taxonomy

**CO4:** Describe botanical gardens, bio-reservoirs and conserved forests

**CO5:** Describe herbariums and gene banks

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# Department of Zoology

**Program Specific Outcomes**

At the time of graduation, the students will be able to- **PSO1:** Understand concept of cell biology and genetics **PSO2:** Study various phylum and their classification **PSO3:** Understand mammalian physiology

**PSO4:** Recognize relationship between structure and function at all levels: molecular, cellular, and organismal

**PSO5:** Understand the chemistry and structure of all biological macromolecules including proteins and nucleic acids, determine their biological properties

**PSO6:** Understand ature and basic concepts of physiology, biochemistry, ecology, evolution and biotechnology

**PSO7:** Study animal diversity, including knowledge of specification, classification and evolutionary relationship of major groups of animals

**PSO8:** Understand biological, chemical and physical features of environment, e.g. terrestrial, freshwater, marine, host that animals inhabit

**PSO9:** Gain knowledge in the field of environment conservation, evolution and behaviour of animals

**PSO10:** Understand functions of organisms at the level of the gene, genome, cell, tissue, organ and organ-system

**PSO11:** Understand applications of rDNA technology to think critically and solve problems in the fields of biotechnology by applying research strategies

**Course Outcomes**

**F.Y. B.Sc.**

**Semester I**

**Paper I- Protozoa to Annelida**

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

**CO1:** Identify animals by observation

**CO2:** Describe unique characters of Protozoa, Porifera, Coelenterate, Helminthes and Annelids

**CO3:** Explain life functions of Protozoa, Porifera, Coelenterate, Helminthes and Annelids **CO4:** Describe ecological role of phylum Protozoa, Porifera, Coelenterata, Helminthes and Annelida

**CO5:** Identify diversity from Protozoa, Porifera, Coelenterate, Helminthes and Annelids

**Paper II- Cell Biology**

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

**CO1:** Describe in detail the structure of cell

**CO2:** Describe function and the composition of the plasma membrane

**CO3:** Explain principles of the cell theory

**CO4:** Differentiate between prokaryotes and eukaryotes

**CO5:** Understand importance of the nucleus and its components

**CO6:** Understand how the endoplasmic reticulum and Golgi apparatus interact with one another and know with which other organelles they are associated

**CO7:** Identify three primary components of the cell"s cytoskeleton and how they affect cell shape, function, and movement

**Semester II**

**Paper IV- Arthropoda to Echinodermata and Hemichordata** Upon completion of the course, the students will be able to:- **CO1:** Identify animals by observation

**CO2:** Describe unique characters of Arthropods, Mollusks, Echinoderms and Hemichordates **CO3:** Explain life functions of Arthropods, Mollusks, Echinoderms and Hemichordates **CO4:** Explain ecological role of phylum from Arthropoda to Hemichordata

**CO5:** Explain in detail diversity from Arthropods to Hemichordate

**Paper V- Genetics – I**

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

**CO1:** Describe chemical basis of heredity

**CO2:** Explain role of genetics in evolution

**CO3:** Evaluate conclusions that are based on genetic data

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

**CO1:** Demonstrate ability to apply research strategies like contamination and sterilization of laboratory in cell culture

**CO2:** Explain technical skills necessary for supporting biotechnology research activity in tissue culture and transgenic animal methods

**CO3:** Explain applications of biotechnology

**CO4:** Describe Gene therapy and DNA fingerprinting

**CO5:** Demonstrate knowledge of biotechnology concepts in ex vivo, in vivo gene therapy to diagnosis human diseases

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# Department of Physics

**Programme Specific Outcomes**

At the time of graduation, the students will be able to-

**PSO1:** Understand basic concepts of Mechanics, Optics, Thermodynamics and Mathematical methods of Physics

**PSO2:** Use effectively various basic measuring Instruments in laboratory

**PSO3:** Acquire Knowledge of mathematical Physics, Electronics, Statistical Physics and its applications

**PSO4:** Understand basic Laws of practical Physics

**PSO5:** Draw appropriate conclusions on outcomes of experiments

**PSO6:** Acquire ability to understand different types of crystal structures, classical and quantum theory of specific Heat, Electrodynamics with applications and Fibre Optics and its uses

**PSO7:** Understand and apply simple basics of Quantum mechanics

**PSO8:** Understand and solve Maxwell"s equations

**PSO9:** Gain comprehensive knowledge of various techniques used in laser and its applications

**Course Outcomes**

**F.Y. B. Sc. Semester I**

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**Paper I –Mechanics, Properties of Matter**

Upon completion of the course, the students will be able to:

**CO1:** Describe acceleration due to gravity, Newton"s law of gravitation and basics of potential and fields

**CO2:** Discuss basic properties of matter, Young"s modulus, Bulk modulus and Modulus of rigidity

**CO3:** Discuss properties of matter especially viscosity and surface tension

**CO4:** Define the general terms in acoustics intensity, loudness, reverberation etc.

**Paper II- Heat & Thermodynamics**

Upon completion of the course, the students will be able to:

**CO1**: Define Thermal Conductivity, coefficient of thermal conductivity, Thermal diffusivity, and resistivity; give comparison of conductivities of various metals

**CO2**: Describe reason for modification of gas equation; derive Vander Waals equation of state; define critical constants

**CO3:** Explain Transport phenomenon, mean free path with expression, thermal conductivity and viscosity

**CO4**: Formulate and solve problems in Thermodynamics and Heat; explain adiabatic

Process, isothermal process, reversible process, irreversible process and derive relevant equation, draw indicator diagram

**CO5**: Derive Thermodynamic parameters, Heat engine and Carnot Heat Engine, Maxwell"s equation and their applications

**Semester II**

**Paper-IV Geometrical and Physical Optics**

Upon completion of the course, the students will be able to:

**CO1:** Describe and determine concept of cardinal point and different eye pieces **CO2:** Explain interference phenomenon of light and its relevant experiments **CO3:** Explain concept of diffraction of light and grating

**CO4:** Describe polarization of light and its related Experiments

**Paper V- Electricity & Magnetism**

Upon completion of the course, the students will be able to:

**CO1:** Describe the concept of Scalar, vector triple product of vector algebra and Solve divergence, gradient and curl

**CO2:** Explain Coulomb"s law, Gauss law and dielectrics with mathematical derivation **CO3:** Explain the concept of Biot-Savrat"s Law, Ampere"s Law and Ballistic Galvanometer **CO4:** Elaborate growth and decay of LCR circuit

**S.Y. B. Sc. Semester III**

**CO4**: Elaborate the concept of solar energy and its applications in various fields

**CO5**: Describe structures of optical fibers

**CO6**: Describe fiber fabrication techniques and testing of optical fiber cables

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# Department of Chemistry

**Programme Specific Outcomes**

At the time of graduation, the students will be able to-

**PSO1**: Understand the fundamental principles of Chemistry

**PSO2**: Develop skills in evaluation and interpretation of chemical information and data

**PSO3:** Identify and estimate organic and inorganic compounds using classical and modern laboratory methods

**PSO4:** Analyze various organic mixtures and individual compounds

**PSO5:** Develop skills in the safe-handling of chemical materials, taking into account of their physical and chemical properties including any specific hazards associated with their use

**PSO6:** Gain comprehensive knowledge about fundamental properties of elements

**PSO7:** Acquire knowledge regarding importance of various elements present in the periodic table, coordination chemistry, structure of molecules, properties of compounds and structural determination of complexes using theoretical and instrumental methods

**PSO8:** Perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable accurate conclusion

**PSO9:** Synthesize, separate and characterize compounds using published reactions, protocols, standard laboratory equipment and modern instrumentation

**PSO10:** Acquire problem solving skills in three basic areas of Chemistry, i.e., Inorganic, Organic and Physical Chemistry

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**Course Outcomes**

**F.Y. B.Sc. Semester I**

**Paper No. I (Inorganic Chemistry)**

Upon completion of the course, the students will be able to-

**CO1**: Predict atomic structure and explain various quantum numbers

**CO2:** Explain standardized names and symbols to represent atoms, molecules, ions and chemical reactions

**CO3:** Explain trends of periodic properties of elements in periodic table

**CO4:** Predict biological role of Alkali and Alkaline earth metals

**Paper No. II (Organic Chemistry)**

Upon completion of the course, the students will be able to-

**CO1:** Explain various effects, and properties of organic compounds, nature of bond

**CO2:** Discuss nature of bond breaking and mechanical phenomenon

**CO3:** Explain concept of isomerism and types of stereochemical configuration

**CO4:** Discuss mechanistic pathways of simple organic reaction

**Semester II**

**Paper No. IV (Physical Chemistry)**

Upon completion of the course, the students will be able to-

**CO1:** Differentiate colloids, liquid crystals and properties of solid, liquid and gas

**CO2:** Derive differential equations related to order of reactions

**CO3:** Explain and correlate various laws with respect to gaseous state

**CO4:** Categorize catalysis on the basis of phases

**CO5:** Identify areas of applications of colloids, enzyme catalysts in day to day life

**Paper No. V (Inorganic Chemistry)**

Upon completion of the course, the students will be able to-

**CO1:** Demonstrate preparation, physical and chemical properties, structural properties, applications of various elements

**CO2:** Discuss chemical bonding, hybridization and molecular geometry on the basis of VBT

**CO3:** Differentiate types of indicators and correlate with appropriate titration method

# Department of Microbiology

**Programme Specific Outcomes**

At the time of graduation, the students will be able to-

**PSO1**: Understand fundamental principles involved in Microbiology

**PSO2**: Acquire detail knowledge of microorganisms, their types and significance

**PSO3:** Understand metabolic and structural significance of bio-molecules

**PSO4:** Acquaint with concepts of Immunity, Antigen, Antibody and Immune system

**PSO5:** Understand importance and applications of various enzymes in replication transcription and translations

**PSO6:** Acquire detail knowledge of industrial production of enzymes, antibiotics and vitamins

**Course Outcomes**

**F.Y. B. Sc. Semester I**

**Paper I – Fundamentals of Microbiology**

At the end of the course, the students will be able to-

**CO1:** Identify distribution of microorganism in nature

**CO2:** Determine evolution of microbiology and their role in various biological processes **CO3:** Classify Microorganisms into different category according to taxonomic ranks **CO4:** Determine Biochemical properties of microorganisms

**CO5:** Calculate magnification, resolving power, depth of focus, numerical aperture of Microscope

**Paper II- Microbial Techniques and General Microbiology**

At the end of the course, the students will be able to-

**CO1:** Conceptualize microorganisms and their types, importance and Practical aspects

**CO2:** Distinguish between beneficial and harmful Microbes

**CO3:** Cultivate, observe and perform microscopic identification of bacteria, fungi and other microbes

**CO4:** Describe concept, methods and pattern of Sterilization and its practical applicability

**CO5:** Discuss role of Microorganisms in spreading diseases, usefulness in agriculture, environment and industrial sector

# Department of Mathematics

**Programme Specific Outcomes**

At the time of graduation, the students will be able to:

**PSO1**: Acquire knowledge in basic Mathematics

**PSO2**: Communicate solutions of mathematical problems effectively

**PSO3**: Equip knowledge in various concepts involve in Calculus, differential equation, real analysis and algebra

**PSO4**: Acquire a breadth and depth of understanding in mathematics

**PSO5**: Understand reasonableness of solutions including sign, size, accuracy and units of measurement

**PSO6**: Apply mathematical proof techniques in a wide variety of mathematical areas, including algebra and analysis

**Differential Calculus**

**Course Outcomes**

**F.Y. B.Sc. Semester I**

At the end of the course, the students will be able to:

**CO1:** Solve problems on limits continuity and successive differentiation of Functions

**CO2:** Determine partial derivative of function more than one variable

**CO3:** Describe Rolle"s Theorem, Lagrange"s mean value theorem and Cauchy"s mean value theorem

**CO4:** Determine expansion of $e^x$, sinx, cosx, sinhx, coshx, tanhx, log (ax+b) etc.

**CO5:** Determine gradient, divergence and curl and directional derivatives

**Differential Equations**

At the end of the course, the students will be able to:

**CO1:** Determine solution of first order linear differential equation

**CO2:** Determine solution of exact differential equation

**CO3:** Determine solution of linear equation with constant coefficient using general and short method

**CO4:** Determine solution of linear homogeneous differential equation

**CO5:** Explain formation of partial differential equation by eliminating the arbitrary constants and arbitrary functions

**Semester II**