

SMT RADHABAI SARDA ARTS, COMMERCE & SCIENCE COLLEGE

ANJANGAON SURJI- 444705, DIST- AMRAVATI (Maharashtra)

(Affiliated to SantGadge Baba Amravati University, Amravati)

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Programme Outcomes, Programme Specific Outcome & Course Outcome

BACHELOR OF ARTS

Programme Outcomes	BACHELOR OF ARTS
PO1	Provide knowledge and understanding of various fields of study in core disciplines in the humanities and social sciences
PO2	Develop critical and analytical skills to the identification and resolution of problems within complex changing social, linguistic and literary contexts
PO3	Understanding of the general concepts and principles of selected areas of study outside core disciplines of the humanities, social sciences and languages
PO4	Follow independence in learning appropriate theories and methodologies with intellectual honesty and an understanding of ethical and human values
PO5	Encourage students to analyse the problems and apply their knowledge for remedies thereof
PO6	Enhance students skills of effective communication and language learning i.e. reading, writing, listening and speaking another language with fluency and understand its cultural value
PO7	Become well informed and updated member of the community and responsible citizens
PO8	Work with self esteem, self reliance, self-reflection and creativity to face adversities in the work and personal life

ENGLISH

Programme Specific Outcomes:

PSO1: Make the students fluent in communication in English language.

PSO2: English being 'Lingua-Franca' opens the window of knowledge.

PSO3: Produce conversant knowledge about culture and heritage and disseminate it to the world.

PSO4: Open-up the broader spectrum of information and technological advancement.

PSO5: Obtain the historical knowledge about eminent leaders, scientists, artists etc. the globe over.

PSO6: Inculcate good behaviour, human values, morality through study of English language and literature

PSO7: Gather information about folk-art, literature, tribal-culture, heritage.

PSO8: Inculcate and imbibe English mannerisms to make them competent enough to roam the world-over.

Course Outcomes:

The successful completion of the course will enable the students to...

CO1: Learn and gain fluency in the English language and conversation.

CO2: Obtain and disseminate knowledge available in English language.

CO3: Become efficient in reading and writing skills.

CO4: Develop imaginative powers through learning of poetry.

CO5: Become proficient in the language and eventually gain professional skills.

CO6: Grasp the subtleties of the language and thereby get initiated to rational thinking.

CO7: Analyse the content of the syllabi and broaden their thinking tank.

MARATHI

Programme Specific Outcomes

The Department has specifically defined a few objectives of this programmes which make the students realize the fact that the knowledge and techniques learnt in this course have direct implication for the betterment of society and its sustainability.

Programmes mission objective :

- 1) To Provide opportunity to learners to complete their graduate studies.
- 2) To ensure learners to complete their graduation in Marathi.
- 3) To provide opportunity to learners to studying theory and latest development in Marathi.
- 4) To Enable learners to obtain expertise by advancing the study in Marathi.
- 5) To increase overall awareness and sense of responsibility to tackle individual and social problems having direct or indirect relation with the present problems being faced.

Program Outcome of Bachelor of Arts (B.A)

Students seeking admission for BA programme are expected to imbue with following qualities which help them in their future life to achieve the expected goals.

- a. Realization of human value,
- b. Sense of Social service
- c. Responsible and dutiful citizen,
- d. Critical temper
- e. Creative ability

Program Specific Outcomes (PSO)

B.A. Marathi

- a. Creating an interest in literature
- b. Availing the job Opportunities in translation, transformation and media.
- c. Increasing the critical attitude about literary studies.
- d. Developing Language
- e. Imbuing the literary research attitude

PSO 1 :

To make students learn various literary Streams, their nature, scope etc.

The Arts graduate students will be able to communicate effectively in Marathi, Hindi and English. They will be able to express their ideas, thoughts and feelings in all these three languages appropriately. They will be able to execute themselves regarding comprehending, speaking, reading and writing these languages. They will be able to bring innovation and creativity in their activities.

PSO 2 :

The Arts undergraduate students will be able to understand the thoughts of the social reformers and social revolutionists along with the nations' political, social, economic conditions in the past. They will also understand the concepts like Nationalism, Communalism, Secularism, Humanity etc. and exhibit their behavior accordingly under the impression of egalitarianism, liberty,

fraternity, equality and brotherhood. They will inculcate democratic principles to the extent to abolish bad traditions like untouchability etc.

PSO 3 :

The Arts undergraduate students will be able to understand the structure of Indian Constitution. They will be able to identify their fundamental rights and duties. They will be able to comprehend political system of India which comprises of Legislative, Executive and Judiciary systems. They will be able to understand the system of Local Self Government. They will be able to know the political philosophers and their political concepts like Ideal State etc. They will be able to observe issues of national and international importance. They will be able to understand various contemporary international crises.

PSO 4 :

The Arts undergraduate students will be able to understand the economics of India. They will be able to identify various government and non-government bodies and implementation of various schemes. They will be able to comprehend Banking system in India. They will be able to understand the human resources, population problem and poverty in India. They will be able to know the policies of liberalization, privatization and globalization along the concepts like demonetizations. They will be able to practice cashless transactions in their spheres.

PSO 5 :

The Arts undergraduate students will be able to develop their Emotional Intelligence where they will have problem solving perspective with scientific attitude. They will be able to identify various stress related issues and can manage them properly. They will be able to comprehend their realistic personality and can overcome superiority and inferiority complexes. They will be able to understand the human nature and can socialize themselves appropriately. They will be able to know the mental development and come out as mature persons.

PSO 6 :

The Arts undergraduate students will be able to comprehend geographical morphology to understand various land forms as well as topography of the oceans. They will be able to identify climatic changes and various natural hazards corresponding to environmental disturbances. They will be able to figure out concepts like Remote Sensing, Phytogeography, Geographical Information System (GIS) and Global Positioning System (GPS). They will be able to understand geographical locations, maps, and diagrams as well as data analysis.

PSO 7 :

The Arts undergraduate students will be able to inculcate endurance so that they will have solution tendency among them. They will be able to Identify basic problem in the branch of their study and do research to find out proper solution for it. They will be able to analyze the problem from its very origin to its present position. They will be able to develop their own stand in such situation. They will be able to contribute a solid bulk of knowledge to the society.

Course outcome :

CO 1 :

The Arts undergraduate students will be able to develop sportsman's spirit among themselves. They will be able to accept defeat and victory in the sports as well as life equally. They will be able to tender healthy attitude towards differently abled persons. They will be able to have patience in their behaviour.

CO 2 :

The Arts undergraduate students will be able to know the standard measures of the grounds, rules of different games. They will be able to get physical education and use it appropriately in their life. They will be able to understand the health related issues. They will be able to keep themselves healthy and hygienic. They will be able to develop their physics.

CO 3 :

The Arts undergraduate students will be able to overcome personal drawbacks in their day-to-day sports activities. They will be able to eradicate the social prejudices of caste, class and colour. They will be able to help others without any wrong impression. They will be able to co-operate the students who are in need.

CO 4 :

The Arts undergraduate students will be able to contribute for national integrity. They will be able to identify unity in variety at regional level. They will be able to respect different religious identities. They will be able to inculcate the spirit of nationalism.

CO 5 :

The Arts in Facility Services undergraduate students will be able to develop soft skills in their communication. They will be used to use polite language effectively. They will be able to entertain the customers appropriately. They will be able to apply analytical reasoning to various practical problems. They will be able to strengthen their decision making capacities. They will be able to develop their personality.

CO 6 :

The Arts in Facility Services undergraduate students will be able to understand how the external building maintenance works. They will be able to identify various service sectors in this area. They will be able to explore their skills to support these services. They will be able to join the Building maintenance sector. They will be able to work in different public houses like hospitals, parliament etc.

CO 7 :

The Arts in Facility Services undergraduate students will be able to understand the importance of safety and security in the public life. They will be able to identify various tools and techniques of

safety and security. They will be able to analyze the appropriate uses of these tools and techniques to secure human beings and infrastructure. They will be able to explore these skills to get better job opportunities.

CO 8:

To introduce the dialectical variety of Marathi Language.

To inculcate communication skills of Marathi Language appropriately.

To introduce the basic literary forms in Marathi Literature.

To comprehend humanistic values incipient in Marathi Literature.

To learn the art of creative Marathi Literature.

To develop their interest in Mass media.

To learn Marathi as a professional language.

To cater the Marathi Literary Test

ECONOMICS

PSO of BA (Economics)

PSO1: To study theories of economics and principles and see their applications.

PSO2: To Understand and study the Indian Economy.

PSO3: To Understand and study the Maharashtra's economy.

PSO4: To Understand and study monetary politics of India.

PSO5: To Determine Economic variables including inflation, unemployment poverty, Indian population, and balance of payment.

PSO6: To Understand the money markets and making investment decisions.

Course Outcome of BA I (Micro-Economics)

CO1: To become aware about fundamental concepts of Economics.

CO2: To Understand Economic approach.

CO3: To Know the role of market in real life.

CO4: To Understand the theory of monopoly and monopolistic competition.

CO5: To Understand the theory of rent, wages, interest and profit.

Course Outcome of BA I (Economy of Maharashtra)

- CO1: To Understand the nature of Economy of Maharashtra.
- CO2: To Understand the population and the Economic development.
- CO3: To Understand the causes of farmers' suicides.
- CO4: To Understand the infrastructure and Economic development.
- CO5: To Understand the role of agriculture in the Economy of Maharashtra.

Course Outcome of BA II (Macro-Economics)

On completion of the course, students are able to...

- CO1: To Understand the concept of Macro-Economics.
- CO2: To Understand National income.
- CO3: To Understand employment theories.
- CO4: To Understand the consumption and investment functions.
- CO5: To Understand the concept of public finance and public revenue.
- CO6: To Understand concept of inflation and deflation.

Course Outcome of BA III (Indian Economy Development and Environment Economics)

On completion of the course, students are able to...

- CO1: Understand concept of globalization and privatization.
- CO2: Understand the public expenditure in India.
- CO3: Understand the concept of budget and deficit budget.
- CO4: Understand the Indian agriculture sector.
- CO5: Understand the concept of environmental pollution, air pollution, water pollution and land pollution.
- CO6: Find remedies.

HOME-ECONOMICS

PSO of BA (Home-Economics)

- PSO1: To introduced the students to the field of Home-Economics.
- PSO2: To create an awareness among the students about resources and their management in the family.
- PSO3: To develop knowledge and skills regarding principles and methods of interior decoration.

PSO4: To develop skills regarding preparing the Bouquets and Flower Arrangements for decoration and enhance the chances of employment.

PSO5: To understand the basic concepts of nutrition.

PSO6: To gain knowledge on nutrients and nutritive value of the foods.

PSO7: To get acquainted with classification of food as per its functions.

PSO8: To acquire abilities to plan diets for various diseases as well as healthy humans.

PSO9: To understand method of food preparation, enrichment, enhancement and preservation.

PSO10: To promote entrepreneurship skills.

PSO11: To introduce the students to major concepts of Human Development

PSO12: To understand various behavioural problems of child and to deal with those problems

PSO13: To understand a general case of baby

PSO14: To study the causes and prevention of mother and child mortality.

PSO15: To understand over all development of a child.

PSO16: To acquire basic knowledge of principles involved in planning of residential house.

PSO17: To learn and apply various methods and techniques of work simplification.

PSO18: To bring about awareness about waste management and water conservation for environment protection.

Course Outcome of BA I (Family Resource Management and Interior Decoration)

CO1: To become assure about branches of Home-Economics and their utility in daily life.

CO2: To study the contribution of Home-Economics Education in National Development.

CO3: To learn the process of Home-Management

CO4: To learn about the definitions, Types and classifications of family resources.

CO5: To learn about the factors affecting resource management.

CO6: To learn the process of decision making and role of decision making in Home-Management.

CO7: To study the Elements and Principles of Arts and Classification of colours and colour scheme.

CO8: To study the importance of flowers, flower arrangements and bouquets in human life.

CO9: To learn about the material required for flower arrangement.

CO10: To learn the types of Flower Arrangement.

CO11: To learn the principles of House Planning and types of kitchen shapes.

CO12: To learn the principles and techniques of work simplification. Improving methods of work simplification.

CO13: To learn about style, types of furniture, care of different types of furniture.

CO14: To learn about methods of House Drainage, waste disposal.

CO15: Opportunities of Job and Self Employment in Home-Economics, guiding principles of self employment.

Course Outcome of BA Part II Food Science and Nutrition

CO1: Functions of food, classification, sources, functions, requirement, deficiency symptoms of nutrient.

CO2: Understand the major five food groups.

CO3: Understand balanced diet, formulation of balanced diets of according to requirement of lactating and pregnancy.

CO4: Principles, types of therapeutic diets and role of dietitian.

CO5: Causes, symptoms and dietary treatment for the diseases related to digestive system and liver.

CO6: Traditional and modern food preparation.

CO7: Meaning, Principles and methods of food preservation.

CO8: Effects of food adulterants on human life.

Course Outcome of BA Part III (Home Development)

CO1: Reproductive System of Male and Female

CO2: Understand prenatal development and factors affecting prenatal development.

CO3: Premature babies and their care and problems of childhood and immunization.

CO4: Meaning and laws of heredity and types of environment. Importance of environment in development of child.

CO5: Factors influencing growth and development.

CO6: Merits and demerits of discipline and significance of punishment and rewards.

CO7: Motor, speech, social, emotional development of child.

CO8: Parent-child relationships

CO9: Importance and need for desirable child rearing practices.

CO10: Importance of types of play and leadership

Programme Outcome

PO1: Students can establish own enterprises like boutiques, small scale industries, day-care-centres, preschools etc.

PO2: Students can do interior decoration and kitchen plans, event management programme.

PO3: Gained the knowledge to employ child development project officer in women development and child welfare development, NGO's and child guidance clinics.

PO4: Job opportunities as dietician in hospitals.

PO5: Enhances nutritional knowledge required to be healthy physically and psychologically.

PO6: Augment the young minds with managerial skills to lead a better family life.

POLITICAL SCIENCE

PSO of BA (Political Science)

PSO1: The students of Political Science will be competent to take part in the various social, political, educational and professional competitions.

PSO2: The students of Political Science will succeed in various social and political research areas.

PSO3: The students of Political Science will be able to analyse various political events, political affairs, political policies, public policy making and administration.

PSO4: The students of Political Science will be capable to analyse the relevance of the various political theories and thoughts in present context.

PSO5: The students of Political Science will study the rights and duties of Indian citizens; the limitations of the government in Indian Constitution and make efforts to develop an ideal citizen.

PSO6: The students of Political Science will be able to evaluate the social, economical and political condition of various constitutions in the world with the context of Indian Constitution.

PSO7: The students of Political Science will be succeed in various UPSC and MPSC examinations and render their services in civil and administrative sectors in India.

PSO8: The leadership qualities will be developed in the students of Political Science.

PSO9: The students of Political Science will bring awareness among the people about the importance of voting and as a result they will help to increase the voting percentage.

COURSE OUTCOMES

Course: Indian Constitutional Provisions and Local Self Government

By the completion of this course the student will be able to

CO1: Characteristic of Indian Constitution, Preamble, Fundamental Rights.

CO2: Directive Principal of State Policy, Fundamental Duties, Citizenship

CO3: President, Vice President, Prime minister

CO4: Parliament- loksabha, Rajyasabha

CO5: Judicial System of India-Supreme Court, High Court

Course: Indian Constitutional Provisions and Local Self Government

By the completion of this course the student will be able to

CO1: Election Commission of India- structure, power and Function

CO2: state Executive- Governor, Chief Minister, council of Minister

CO3: State Legislature- structure, power and Function

CO4: local self Government

CO5: women Political Participation in Panchyat raj, Nagpur Pact in Maharashtra formation, Right to Information Act

Course: Comparative Government and Politics

By the completion of this course the student will be able to

CO1: Meaning of comparative Government, Approaches of the comparative study, Constitutionalism

CO2: The Government and Politics of U.K- Constitution, Executive, Legislature, Judiciary, Political Party

CO3: The Government and Politics of U.S.- Constitution, Executive, Legislature, Judiciary, Political Party

CO4: The Government and Politics of Switzerland- Constitution, Executive, Legislature, Judiciary, Political Party

CO5: The Government and Politics of China- Constitution, Executive, Legislature, Judiciary, Political Party

Course: Political Theory

By the completion of this course the student will be able to

CO1: To learn the nature and significance of Political Theory, meaning and scope

CO2: To learn about the state- Theory of state Origin- Divine theory, Social Contract Theory, Evolutionary Theory

CO3: To learn about the Political Concept- sovereignty, citizenship, liberty

CO4: To learn about equality, justice and democracy

CO5: To learn about the development and welfare state

HISTORY

Programme Specific Outcome (PSO)

History is an infinite ocean of knowledge. It embraces a vast area of various subjects and disciplines. As a lighthouse shows way to many wandering ships, the history shows a right path

to human life. History has always a lion's share in shaping the life and personality of the students.

Programme Specific Outcome of the History can be told as follows:

PSO1: The study of history acquaints the students with their great nation and ultimately the world's past.

PSO2: History develops a sense about our ancient culture and civilization.

PSO3: The study of history encourages students to guard our great monuments.

PSO4: History plays a vital role in creating patriotic spirit, nation building and progress of the country.

PSO5: Students can enrich their life by learning the facts and events in the history.

The Study of Medieval and Modern History Can Give the Following Outcomes:

CO1: Students get knowledge of the weakness of India in Political and defense system during the Babar's invasion and the establishment of Moghal dynasty in India.

CO2: The study of freedom struggle of Maratha against the Moghals proves that people in the state is the ultimate power and authority and they can throw off any cruel rule.

CO3: Students know from the life of Shivaji Maharaj that how a great state can be established with the great will power, firm determination, intellectual strategy and fervor for the welfare of the people in the state.

CO4: The study of British Empire throws light on the various important aspects. The students know that how the modern age began with the rise of British Empire in India. The Britishers brought education and awareness in India which encouraged Indians for their freedom struggle. The then educated Indians developed many social institutions and brought social reformation. The students are acquainted with great freedom struggle led by Mahatma Gandhi through his principle of non-violence. The students get knowledge about how the study of British socio-political system paved the way for the creation of our own Indian constitution.

CO5: The French Revolution teaches the students how the cruel rule of the emperor can be demolished and the republic state can be established. How a common man rise to the supreme position of a king and rule the most of the Europe can be learnt from the great history of Napoleon of France.

CO6: The study of Bismarck teaches that a large empire can be created by divide and rule policy. The rise of nationalism in Europe can be learnt by studying various events which took place in Europe.

CO7: How the organisation of peasants and labourers can end the cruel rule of the Tsars is known from the 1917's Russian Revolution.

CO8: How the dictatorship can be over thrown by the allied forces is learnt from the lesson of Hitler.

CO9: The rich history and heritage of India can be known from the ancient culture and civilization of Harappa.

CO10: The study of Vedic Culture puts forth how the then India was full of racial, caste and gender discrimination; superstition and religious fanaticism. As a result, Mahavir Jain and Lord Buddha gave birth to more liberal and compassionate new religions.

CO11: If a king entangles in wars with number of enemies at a time, his own destruction is inevitable is learnt through the fall of Vijaynagar and the war of Talikot.

CO12: The condition of women in India is humiliating, neglected and secondary from the vary past is learnt from the study of ancient and medieval history.

BACHELOR OF COMMERCE

Programme Outcome:

To impart the various skills like accounting skills, managerial skills, communication skills and overall personality development of the students, also to make the students competent to face the challenges in present competitive market acquaint the students relating to change in global scenario besides this the theoretical concepts and its application into the business. To develop among the students the qualities of an entrepreneurship also to give the ideas about the modern business strategies. Apart from this to provide the ideas relating to various fields like banking sector, insurance sector, Income Tax, e-commerce in addition to this give the knowledge about Indian economy Five Year Plan WTO New Industrial Policy etc.

Program outcome:

PO1	To develop numerical abilities of students.
PO2	To develop language abilities of students.
PO3	To inculcate writing skill and Business correspondence
PO4	To create awareness of law and legislations related to commerce and business.
PO5	To introduce recent Trends in Business, Organizations and Industries
PO6	To inform about Economic Environment of Country as well as World.
PO7	To acquire practical skills related with banking and other business.
PO8	To provide a platform for overall development of students and develop knowledge level and awareness of students about Recent Trends of World.

Program Specific Outcomes (Commerce):

1. To build a strong foundation of knowledge in different areas of commerce.
2. To develop the skill of applying concepts and techniques used in Commerce.

3. To development an attitude for working effectively and efficiently in a business environment.
4. To integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students.
5. To expose students about entrepreneurship.
6. To enable a student to be capable of making decisions at personal and professional level.

Course Outcome:

- 1) Advance Accounting & Auditing: To develop the accounting knowledge and its application in different fields also to develop practical knowledge of auditing.
- 2) Business Regulatory Framework: The objective of this course is to provide a brief idea about the framework of Indian Business Law.
- 3) Banking and Finance: To study the Indian Banking system, Banking regulation act 1949, Commercial Bank, Development and Digital Bank.
- 4) Cost Accounting: To understand knowledge of cost accounting, single output costing, material cosy, labour cost and overhead.
- 5) Income tax: To give knowledge of direct and indirect tax
- 6) Financial Accounting: To develop conceptual understanding of fundamentals of financial Accounting system and to impart skills in accounting for various kinds of business transactions.
- 7) Business Statics: Making familiar statistical tools which are relatively used in business. Imparting the ability to collect present, analyze and interpret data. Ability to predict trend values by using list square methods.
- 8) Money and Financial system: Understanding the nature, functions and issues related to money, banking and non banking financial intermediaried and financial system
- 9) Business Environment: Understanding business environment at national and international level.
- 10) Corporate Accounting: To understand knowledge of new trends in corporate accounting issue of share and redemption shares.
- 11) Principles of Business Management: To know to make planning, decision making, controlling, staffing, organizing etc. to understand new approaches in management.
- 12) Business Economics: The objective of this course is to provide fundamental basic knowledge of statistics techniques as applicable to business.
- 13) CFS & ITB: To introduce the student about basic of MS-Office, To provide practical knowledge exposure to MS- Word, To provide practical knowledge exposure MS-Excel, To provide practical knowledge exposure MS-Power Point, To provide practical knowledge exposure Tally, Develop the competence of database management.

BACHELOR OF SCIENCE

Programme Outcomes

PO1: To introduce the fundamentals of science education

PO2: To enrich students' knowledge in all basic sciences

PO3: To develop interdisciplinary approach amongst students

PO4: To inculcate sense of scientific responsibilities and social & environment awareness

PO5: To help students build-up a progressive and successful career in academics and industry

PO6: To motivate the students to contribute in the development of Nation.

PHYSICS

Programme Specific Outcomes

PSO 1: Makes students understand the concepts in the basic discipline in natural sciences.

PSO 2: Induces scientific attitude and awareness among the students and make them able to think various phenomena in nature scientifically.

PSO 3: Improves data analysis, calculation and experimental skills by using mathematical formula, equations, graphs etc.

PSO 4: Helps student in understanding the truth of universe accurately through interplay between theory and observations.

PSO 5: Better understanding of concepts in subject by demonstrating and performing experiments in laboratory is possible.

PSO 6: Let the students to know the role of Physics in the development of Science and Technology.

PSO 7: Develops interest in the subject by means of seminar, Group discussion, mini projects, model etc.

PSO 8: Enhances ability and interest of students to continue work in the field of basic science specially Physics

Course Outcomes

Course: Mechanics, Properties of matter, waves and oscillations

After completing this course, student can understand and describe

CO1: the concepts of gravity and planetary motion.

CO2: rigid body and its rotational motion, moment of inertia and momentum.

CO3: the concepts of different harmonic motions and some pendulums.

CO4: the concept of combination of S.H.M. and Ultrasonic waves.

CO5: elasticity, elastic constants and its measuring techniques.

CO6: kinematics of moving Fluids and the concept of surface tension.

Course: Kinetic theory, thermodynamics and electric currents

After completing this course, student can understand and describe

CO1: kinetic theory of gases and transport phenomena in gases.

CO2: laws of thermodynamic, thermodynamic process, internal energy, entropy.

CO3: understand the concepts of liquification of gases, Maxwell's thermodynamic relations and Joule Thomson effect.

CO4: motion of charge particles in electric and magnetic fields, working of mass spectrograph, linear accelerator and cyclotron.

CO5: basic network theorems, Ballastic galvanometer concepts of varying currents through different circuits.

CO6: alternating currents through different combinations of R, L and C, theory of transformer.

Course: Mathematical background, Solid state electronic devices and Special theory of relativity

After completing this course, student can understand and describe

CO1: the concepts of gradient, divergence, and laws of electrostatics and their applications

CO2: Maxwell's equations and pointing theorem.

CO3: basic of semiconductor, working of different semiconductor diodes and transistors, parameters and applications of operational amplifier.

CO4: special theory of relativity and its results like length contraction, time dilation and energy mass relation.

CO5: structure of earth, earthquakes and its terminologies, scattering, absorption and reflection of solar radiation and formation of clouds.

Course: Optics, Acoustics and renewable energy sources

After completing this course, students can understand and describe

CO1: the concepts of geometrical optics, interference of light and its application like Newtons rings and thin films

CO2: diffraction of light, types of diffraction, theory and applications of grating, resolving power of grating and telescope.

CO3: the concepts of polarization of light, production and detection of different polarized light, double refraction and phase retardation, blue colour of sky.

CO4: properties, types and construction and working of different types of LASER.

CO5: construction and different types of fiber optics, role of optical fiber in communication

CO6: various renewable energy sources like solar energy, wind energy, geothermal energy and hydrogen energy, solar energy storage system, principal and working of solar cell

Course: Quantum mechanics, Atomic and molecular spectroscopy, Nuclear Physics

After completing this course, student can understand and describe

CO1: The origin of quantum mechanics, concepts of wave packet and experimental proof, Uncertainty principal and Thought experiments.

CO2: Schrodinger's time dependant and time independent equations and their applications, Eigen functions and eigen values.

CO3: Understand the concepts of vector atom model and Stern-Gerlach experiment, coupling schemes, properties and types of X-rays, Raman effect.

CO4: Understand the concepts of Detection of charged particle by counter, Alpha decay, Beta decay, nuclear fission, fusion and working of nuclear reactor.

CO5: hybrid parameters, stability, thermal runaway, noise and distortion in amplifier.

CO6: advantages and applications of negative feedback, construction and working of various types of oscillator and multivibrator.

Course: Statistical mechanics and solid state Physics

After completing this course, student can understand and describe

CO1: basics of statistical mechanics like micro and macro states, phase space, probability, Maxwell-Boltzmann statistic and its applications

CO2: distinguishable and indistinguishable particles, quantum statistics and Fermi energy

CO3: amorphous and crystalline solids, types of crystal systems, Miller indices, X-ray diffraction, defects in solid.

CO4: basics of free electron theory, density of states, band structure in solid

CO5: diamagnetic, paramagnetic and ferromagnetic materials, theories of these materials, Curie law, Curie-Weiss law and hysteresis.

CO5: basic concept of superconductivity, Meissner effect, BCS theory of superconductivity, applications of superconductivity, Nanotechnology and its history and applications.

CHEMISTRY

Programme Specific Outcomes

The students completing BSc with chemistry will be able to

Have a firm foundation in the fundamentals and application of chemicals and scientific theories including in inorganic, organic, physical and analytical chemistry and functional knowledge of all core areas of chemistry .

PSO1: Identify and become familiar with the scope, methodology and application of modern chemistry and learn to appreciate its ability to explain various aspects.

PSO2: Understand theoretical and practical concepts of instruments that are commonly used in most chemistry fields.

PSO3: Design and carry out scientific experiments and record the results of such experiments.

PSO4: Understand safety of chemicals, transfer and measurement of chemical, preparation of solutions, and using physical properties to identify compounds and chemical reactions.

PSO5: Explain how chemistry is useful for social, economic and environmental problems and issues facing our society in energy, medicine and health.

Course Outcomes

Course: Paper I

By completion of this course the students will be able to

CO1: Describe periodic properties of elements, understand formation of ionic bonding & factors affecting ionic bond formation.

CO2: Understand electronic configuration, ionization energy, oxidation state of S and P block elements.

CO3: Identify electronic displacement taking place in the molecule by some effects, generation of reactive intermediates, their stability and reactions.

CO4: Interpret aromaticity and based on that distinguish aromatic, anti-aromatic and nonaromatic compounds, able to know the structure of benzene and its electrophilic substitution reaction.

CO5: Understand limitation of first law of thermodynamics and needs of second law of thermodynamics and know the concept of entropy.

CO6: Know the postulates of kinetic theory of gases, understand phase rule and application of phase rule on water system and sulphur system.

Course: Paper-II

By completion of this course the students will be able to

CO1: Define polarization and its application, directional nature of covalent bond, concepts of hybridization and know the theory of acids and bases.

CO2: Understand requirement of good solvent and classification of solvents.

CO3: Describe synthesis and chemical reactions of alkyl halides, aryl halides and alcohol.

CO4: Understand methods of formation of phenols, ether and epoxide and their reactions catalyzed by acid and alkali.

CO5: Identify polar and non polar molecules and know paramagnetic and diamagnetic substances.

CO6: Describe rate of reaction in terms of change in concentration and how the rate of chemical reaction changes as a function of time.

Course: Paper III

By completion of this course the students will be able to

CO1: Understand covalent bonding, metallic bonding and describe structure of molecule with regular & distorted geometry by using VSEPR theory and know about gravimetric and volumetric analysis.

CO2: Describe various reactions, acidity and reactivity involved in aldehydes, ketone and carboxylic acid.

CO3: Identify importance of stereochemistry in organic chemistry & apply the knowledge gained to a variety of chemical problems.

CO4: Define work function, Gibbs free energy and application of phase equilibria in miscible and immiscible liquids.

CO5: Understand determination of surface tension, viscosity and effects of temperature on surface tension and viscosity.

CO6: Describe Conductance of electrolytic solution, Migration of ions under the influence of electric field and Kohlrausch law.

Course: Paper-IV

By completion of this course the students will be able to

CO1: Understand chemistry of transition elements with reference to electronic configuration, atomic and ionic size, ionization energy and know about extraction of elements.

CO2: Define inner transition elements and know their properties and general principle of metallurgy.

CO3: Describe reactions of poly nuclear hydrocarbon, synthesis of higher acids with the help of reactive methylene compounds, constitution of glucose, conversion of glucose to fructose etc.

CO4: Know synthesis of aromatic nitro compounds, amino compounds and diazonium salts and their reactions.

CO5: Understand colligative properties of dilute solution and know to determination of molecular weight of solute.

CO6: Identity symmetry in crystal and elements of symmetry in crystals, also know the laws of symmetry.

Course: Paper-V

By completion of this course students will be able to...

CO1: Understand key features of co-ordination compounds including variety of structures and know the concepts of oxidation number, coordination number, ligands, chelates and stability of complex.

CO2: Knowledge of crystal field theory to understand splitting in complexes and factors affecting in crystal field splitting.

CO3: Understand heterocyclic compounds especially about their synthesis, reactivity and application of heterocyclic compound in advanced chemical synthesis.

CO4: Classify dyes on the basis of structure and mode of application, preparation and uses of dyes, drugs and pesticides.

CO5: Understand photochemical and thermal reactions by interaction of radiation with matter.

CO6: Identify the electric and magnetic properties of radiation and know the spectroscopic techniques for understanding the atomic structure and structure of molecule.

Course: Paper-VI

By completion of this course students will be able to

CO1: Understand thermodynamic and kinetic stability of complexes and geometry of complexes. Know about spectrophotometric technique for determination of concentration of metal ion.

Define and classify chromatographic techniques.

CO2: Know basics of organometallic chemistry, inorganic polymers and bio-inorganic chemistry.

CO3: Identify structure of compound by use of electronic spectroscopy and infrared spectroscopy and know how to interpret spectra.

CO4: Understand the phenomena of Nuclear Magnetic Resonance spectroscopy and mass spectrometry.

CO5: Understand limitation of classical mechanics at molecular length scales and difference between classical and quantum mechanics.

CO6: Identify inter conversions of chemical energy and electrical energy by knowing electrochemistry and application of radio isotopes in industry, agriculture, medicine & biosciences

ZOOLOGY

Program Specific Outcomes:

PSO1 .Demonstrated a broad understood of animal diversity, including knowledge of the scientific classification and evolutionary relationships of major groups of animals.

PSO2 .Recognized the relationships between structure and functions at different levels of biological organization (e.g., molecules, cells, organs, organisms, populations, and species) for the major groups of animals.

PSO3. Characterized the biological, chemical, and physical features of environments (e.g., terrestrial, freshwater, marine, host) that animals inhabit. Explained how animals function and interact with respect to biological, chemical and physical processes in natural and impacted environments.

PSO4. Explained how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system. Drawing upon this knowledge, they are able to give specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life.

PSO5 .Understood the applied biological sciences or economic Zoology such as sericulture, Apiculture, aquaculture, Industrial microbiology, r DNA technology and medicine for their career opportunities.

PSO6.Understand the nature and basic concepts of cell Biology, Biochemistry, Taxonomy and ecology.

PSO7.Analyse the relationship among animal, plants and microbes.

PSO8. Understand the application of biological sciences in Apiculture ,Aquaculture and Medicine.

COURSE OUTCOMES: BIODIVERSITY OF INVERTEBRATE

C01. Identified the taxonomic status of the entire non-chordates up to Echinodermata

.C02.Described the general biology of few selected non-chordates useful to mankind.

C03.Know about some of the important and common protozoans, helminthes of parasitic nature causing diseases in human beings.

C04. Understood the diversity and classification and functional aspects of different systems of phylum Arthropoda, Mollusca and Echinodermata.

C05.Described the social life and economic importance of insects.

C06.Came to know that the resemblance and evolutionary significance of larval forms of

echinoderms.

COURSE OUTCOMES: BIODIVERSITY OF CHORDATES.

C07. Imparted the knowledge on ecology of some important fishes, amphibians reptiles, birds and mammals.

C08. Impart knowledge in comparative anatomy and development systems of chordates.

C09. Make able to discuss some and very important phenomena in Chordates.

C010. Know about the conservation and management strategies of the chordate fauna.

COURSE OUTCOMES - CELL BIOLOGY & DEVELOPMENTAL BIOLOGY

Co11. Understood the structure of cells and cell organelles in relation to the functional aspects and understanding of the working principles and applications of microscopes

C012. Described the composition of prokaryotic and eukaryotic cells.

C013. Understood the structure and functions of chromosome; mitotic and meiotic cell divisions and their significance

C014. Understood the properties and treatment of cancer cells.

C015. Understood the process of development of animals.

C016. Understood the process of organogenesis of selected organs, development of extra embryonic membrane and the nature and physiology of placenta.

C017. Came to know the inducer and inductor role in embryogenesis and knowledge about metamorphosis and the process of regeneration.

C018. Gained slide preparation to observe of Giant chromosome, epithelial and blood cells.

C019. Preparation, direct observation and appreciation of sperm motility and different stages of chick embryo development and placentation of animals.

COURSE OUTCOMES - GENETIC AND MOLECULAR BIOLOGY

C020. Understood the theories of classical genetics and blood group inheritance in man

C021. Described the genetic variation through linkage and crossing over, chromosomal aberrations and sex determination.

C022. Understood the genetic defects and inborn errors of metabolism and genetic counseling and role of inbreeding and outbreeding.

C023. Understood the molecular structure of genetic materials and understood the mechanism of gene expression and regulation character formation.

COURSE OUTCOMES LAB - EVOLUTION, GENETICS AND MOLECULAR BIOLOGY

C024. Obtained the knowledge about direct observation of fossils and evolutionary important specimen by which evolutionary relationship of animal groups.

C025. Understood the inheritance of Mendelian traits by direct observation among students.

C026.Acquired knowledge skill development and observation of blood group identification and pedigree chart preparations

C027.Understood of the mechanism of phenotypic expression in Drosophila.

C028.Gained genetic knowledge on the observation of specimens and models.

COURSE OUTCOMES - ANIMAL PHYSIOLOGY

C029.Understood about the composition of food and mechanism of digestion absorption and assimilation.

C030.Attained knowledge of respiration and excretion and understood the mechanism of transport of gases and urine formation.

C031.Described the mechanism of circulation and composition of blood

C032.Knowledge of neuromuscular coordination and the mechanism of osmoregulation in animals and endocrine system and their function is attained.

C034.Understood the menstrual cycle and the role of contraceptive in population control.

BOTANY

Programme Specific Outcomes

PSO1: Provide knowledge of the morphology, anatomy, Physiology and molecular biology of plants and also medicinal plants & Wild edible plants of Anjangaon region to the students and promote them to use them as earning source.

PSO2: Motivate the Botany students for exploration of flora.

PSO3: Preserve the rare medicinal plants of thrust region.

PSO5: Create awareness about plant propagation, Cultivation of medicinal plant & Environment awareness

PSO6: Develop Ethnomedicinal plant nursery and botanical garden for the students of Botany and various stakeholders.

Course Outcomes

Course: Diversity and Applications of Microbes and Cryptogams

CO1: Study of cryptogamous plants and their diversity in aquatic ecosystem

CO2: Study the role of microbes, fungi in food industry

CO3: investigation on diversity of bryophytes and pteridophytes

CO5: industrial value of algae ,fungi and bryophyte.

Course: Gymnosperm, Morphology of Angiosperms and Utilization of plants

CO1: Understand the Paleobotany – Fossilization and investigation done on paleobotanical study in India

CO2: Taxonomical and economical study of gymnosperms

CO3: Study of Plant morphology and Modifications in plant organ for various purposes.

CO4: Understand the role of medicinal plant and food plant cultivation.

CO5: Economical importance of spices, timber and Bamboo

Course: Angiosperm systematic, anatomy and embryology

- CO1: Biodiversity and its conservation.
- CO2: Plant systematics, their classification and Taxonomic study of various family plant.
- CO3: Anatomy of angiospermic plant.
- CO4: Embryology of Angiosperm- Reproduction in Angiosperm.

Course: Cell biology, Genetics and Biochemistry

- CO1: Cell biology – Cell organelles study and their role in various metabolic activities.
- CO2: Concept of genetics and Mendelism.
- CO3: To study the biochemistry of plants
- CO4: Role of enzymes in Industries

Course: Plant physiology and Ecology

- CO1: To study the physiological process occurred in plant
- CO2: Plant metabolism – Photosynthesis and Respiration
- CO3: Nitrogen metabolism and their role. Understand the role of plant hormone in plant growth. Ecological and environmental study of flora in forest ecosystem
- CO4: To understand the plant responses and movements. Investigation the effects of environmental factors in trends in succession
- CO5: To understand the ecological factors , Atmosphere and adaptations in plants.
- CO6: Population ecology, Community ecology and Structure, Function and Types of ecosystem.

Course: Molecular biology and biotechnology

- CO1: DNA as a genetic material and transposable elements in plants
- CO2: Concept of gene, Expression and Regulation in plant.
- CO3: Tools and techniques of recombinant DNA technology
- CO4: Cloning vectors and Genomic library.
- CO5: Gene transfer techniques in plants.
- CO6: Tissue culture techniques
- CO7: Transgenic plant role in agriculture.
- CO8: Health care edible vaccines
- CO9: Role of microbes in Agriculture, Medicine, and industry.

Mathematics

Programme Outcomes (PO):-

PO 1 Develop the basic Knowledge in Mathematics, which enables them to be strong in theoretical and application skills

PO 2 Apply real situations and develop mathematical models to solve problems

PO 3 Algebra, Differential calculus, Vector analysis, Differential equations, Mechanics, Linear transform, Real analysis can able to apply this knowledge to analyze a broad range of mathematical phenomena.

PO 4 To apply analytical technique to solve the problems.

PO 5 To create, interpret and analyze graphical representation of data and equations.

Programme Specific Outcomes (PSO):-

PSO 1 Students will understand the nature of proofs and able to write clear and concise proofs.

PSO 2 Basic concept of algebraic structures to deal with groups, ring, fields and vector space.

PSO 3 Clear knowledge about algebra to solve equation of series.

PSO 4 To find Laplace transforms and apply these to solve differential equations.

PSO 5 The concept of Mechanics to deal with statics and dynamics.

PSO 6 Develop power of reasoning, critical thinking, problem solving ability developing new ideas, drawing logical conclusions and high level of numeracy.

PSO 7 Graduate with Math's programme will be able to apply their knowledge in modern industry, teaching and other fields such as MBA, MCA, Mathematical Computing and research.

PSO 8 Explain the importance of Math's and its techniques to solve real life problems.

PSO 9 On the completion of the course, the graduates undergraduate.

Course Outcomes (CO):-

Course: (I) Algebra and Trigonometry

By the completion of this course the students will be able to

CO 1 Understand the concept of De Moivre's theorem, its application to find the roots of complex numbers, relation between Circular function and Hyperbolic function.

CO 2 Understand the concept of summation of series, Gregory Series, Euler Series, Machin's series, Rutherford Series.

CO 3 Learn the element of quaternion, Complex Conjugate of quaternion, norm, inverse of quaternion, quaternion as a rotation operator, interpretation, special quaternion product, quaternion to matrices.

CO 4 Understand the concept Polynomial function, relation between roots and co-efficient, solve some quadratic, cubic and bi-quadratic equations.

CO 5 Deeply understand the concept of matrices, its rank, row rank, column rank, Eigen values and Eigen function.

Course: (II) Differential and Integral Calculus

CO 1 Understand the concept Limit, Continuous and discontinuous function, Differentiation, Leibnitz theorem.

CO 2 Learn the Rolle's theorem, Lagrange's mean value theorem, Cauchy mean value theorem, Maclaurin and Taylor series expansions, partial derivative, homogeneous functions, Euler's theorem on homogeneous functions.

CO 3 Learn the concept of integration of some standard form, reduction formulae, Wall's formula, quadrature, rectification.

Course: (III) Differential Equations: Ordinary and Partial

CO 1 Learn the concept of degree and order of ODE, Linear differential equations and differential equations reducible to the linear form, exact differential equations, differential equation of first degree and higher degree, differential equation in Clairaut's form, orthogonal trajectories.

CO 2 Understand the concept of Second order linear differential equations with constant coefficients, homogeneous linear ordinary differential equation, reduction of order, transformation of equation by changing the dependent variable and independent variable, normal form, method of variation of parameter, ordinary simultaneous differential equations.

CO 3 Learn the concept of Formation of PDE, PDE of the first order, total differential equation, Lagrange's method, Charpit's method, PDE of second and higher order, homogeneous and non-homogeneous equation with constant coefficient.

Course: (IV) Vector Analysis and solid Geometry

CO 1 Understand the concept of Scalar and vector triple product, product of four vector, vector differentiation and integration, Space curve t-n-b vectors, fundamental plane. Curvature and torsion, Frenet-Serret formulae.

CO 2 Learn the concept of Sphere and its different form, section of sphere by a plane, sphere through a given circle, intersection sphere and a line, orthogonal sphere and condition of orthogonality.

CO 3 Learn the concept of Cone and cylinder.

Course: (V) Advanced Calculus

CO 1 Sequence, Uniqueness and algebra of limit of sequence, positivity theorem, sandwich theorem, monotonic and bounded sequence, Cauchy sequence, Series: series of non negative terms, convergence of geometric series, comparison test, Cauchy integral test, ratio test, root test, absolute convergent conditional convergent, Leibnitz rule,, Abel's test, Dirichlet condition.

CO 2 Learn the concept of limit and continuity of function of two variables, indeterminate value property, fixed point property, Taylor's theorem for function of two variables, Maxima and minima of function of two variables, Lagrangian's multipliers method, jacobians.

CO 3 Understand the concept of double Integral, change of order of double integral, triple integral, Gauss and Stoke's theorem.

Course: (VI) Elementary Number Theory

CO 1 Understand the concept of divisibility, Division algorithm, greatest common divisor, Euclidean algorithm, least common multiple, prime number, Fermat theorem, Linear Diophantine equation.

CO 2 Learn the concept of congruence, Special divisibility test, linear congruence, Chinese remainder theorem, arithmetic function, Euler's theorem, the τ and σ function, Mobius μ function.

CO 3 Learn the concepts of primitive roots, polynomials congruence, general quadratic congruence, quadratic residues.

Course: (VII) Modern Algebra: Groups and rings

CO 1 Learn the concepts of groups, properties of a group, subgroup, cyclic groups permutation groups, cosets and normal subgroups, quotient group.

CO 2 Understand the concepts of homomorphism of groups, kernel of homomorphism, isomorphism of groups, fundamental theorem of homomorphism, natural homomorphism, second and third isomorphism theorem.

CO 3 Learn the concepts of ring, subring, characterization of ring, integral domain, field, ideal.

Course: (VIII) Classical Mechanics

CO 1 Learn the concepts of constraints, generalized co-ordinates, D'Alembert's principle and Lagrange's equation of motion, central force motion, a real velocity, equivalent one body problem, central orbit, virial theorem, Kepler's law of motion.

CO 2 Understand the concepts of calculus of variation, Hamilton's principle, Lagrange's equations for non-holonomic system, Routh's procedure, least action principle.

CO 3 Understand the concepts of rigid body, generalized co-ordinates of a rigid body, Eulerian angles, Euler's theorem, finite rotation, infinitesimal rotations.

Course: (IX) Mathematical Analysis

CO 1 Learn the concepts of Riemann integral, the fundamental theorem of integral calculus, mean value theorem of integral calculus, improper integral and their convergence, comparison and limit test, Beta and Gamma function.

CO 2 Learn the concepts of continuity and differentiability of complex function, analytic function, Cauchy-Riemann integral, harmonic and conjugate function, Milne-Thomson theorem.

CO 3 Learn the concepts of elementary function, mapping by elementary function, Mobius transformation, fixed point, cross ratio, inverse and critical points, conformal mapping, Metric space, limit point, interior point, open and closed sets, Cauchy sequence, completeness.

Course: (X) Mathematical Methods

CO 1 Learn the concepts of Legendre's equation, generating function of $P_n(x)$, recurrence formulae for $P_n(x)$, Rodrigue's formula, Bessel's equation, generating function of $J_n(x)$, recurrence formulae for $J_n(x)$, Sturm-Liouville boundary value problem.

CO 2 Learn the concepts of Fourier series, Fourier series for odd and even function, half range Fourier sine and cosine series, Laplace transform, inverse Laplace transform, application of Laplace transform in solving ODE and PDE. Also understand the concepts of Fourier transform, application to PDE.

Course: (XI) Linear Algebra

CO 1 Learn the concept of vector space, subspace, sum and direct sum of subspace, linear span, basis, finite dimensional vector space, existence theorem for bases, dimension, Linear transformation and their representation as matrices, rank nullity theorem, change of basis.

CO 2 Learn the concepts dual space, bi-dual space and natural isomorphism, adjoint of a linear transformation, Eigen value and Eigen vector of a linear transformation, inner product space, Cauchy-Schwarz inequality, orthogonal vectors, orthogonal complements, orthonormal sets and bases, Bessel's inequality for finite dimensional space, Gram-Schmidt orthogonalisation process.

CO 3 Understand the concepts of Module, submodule, quotient modules, homomorphism and isomorphism theorem.

Course: (XII) Special theory of Relativity (Optional paper)

CO 1 Learn the concept of Review of Newtonian Mechanics, Relativistic Kinematics

CO 2 Understand the concept of geometrical representation of space-time, Relativistic mechanics.

CO 3 Learn the concepts of electromagnetism.