

Science Faculty

Programme Outcome

All of these programs are designed to introduce the students to modern laboratory methods and principles using state-of-the-art scientific equipment. These undergraduate students are exposed to applied laboratory techniques, critical thinking, independent and team learning, and are provided with research opportunities. The faculty is committed to providing an environment that addresses the individual needs of each student and encourages them to develop their potential.

Chemistry

- 1 Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Inorganic, Organic and Physical Chemistries.
- 2 Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
- 3 Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
- 4 Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.
- 5 Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
- 6 Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.
- 7 Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.
- 8 Students will be able to function as a member of an interdisciplinary problem solving team.
- 9 (I) Inorganic Chemistry:
 - 10 To enables students to learn the atomic structure, concept of covalent bond, periodic table and its properties, S-block and P-block elements and chemistry of hydrides, oxides and oxyacides.
 - 11 To enables students to know about VSEPR and MO theories, Chemistry of elements of first, second, third transition series, Errors in Chemical Analysis, non-aqueous solutions, Chemistry of lanthanides and actinides.



- 12 The students will understand some fundamental aspects of coordination compounds and isomerism, concept of oxidation and reduction, Colorimetry and Spectrophotometry, separation techniques, introductions of some inorganic polymers.
- 13 To have the idea about Metal ligand bonding in Transition Metal Complexes, Electronic spectra of Transition Metal Complexes, Magnetic Properties of Transition Metal Complexes, Thermodynamic and Kinetic aspect of metal complexes, Organometallic Chemistry, Metal carbonyls, Bioinorganic Chemistry, concept of Hard and Soft Acids and Bases.
- 14 (II) Organic Chemistry
- 15 To predict the outcome, chemical reactions, preparations & mechanism of organic reactions, stereochemistry of organic compounds, geometrical and conformational isomerism, and basics concept of alkanes, alkenes, dienes, alkynes and aromaticity.
- 16 To impart the students concepts of the fundamentals of orientations in organic molecules, properties and mechanism involved in alkyl halides, polyhalogen compounds, aryl halides, alcohols, phenols, aldehydes, ketones, carboxylic acids and its derivatives.
- 17 To understand the basic concepts and mechanisms organic compounds of nitrogen, heterocyclic compounds, elemental analysis, organometallic compounds, UV-visible and infrared spectroscopy and its application.
- 18 To learn the concept of NMR Spectroscopy and its applications, Organic synthesis via enolates, carbohydrates, amino acids, peptides, proteins, nucleic acids, synthetic drugs, dyes and detergents.
- 19 (III) Physical Chemistry:
- 20 To acquaint knowledge on basics of thermodynamics, gaseous states, liquid state, properties of liquids, surface chemistry and catalysis.
- 21 Students to learn and understand about second law of thermodynamics, free energy functions, chemical equilibrium, phase rule, chemistry of liquid-liquid mixtures, nuclear chemistry, molecular structure, chemical kinetics and theories of chemical kinetics.
- 22 To provide an insight into the properties of solid state, electrochemistry, rotational and vibrational spectroscopy, basics of quantum chemistry.
- 23 To get an overview about the concept of electrochemistry, quantum mechanics and MOT, photochemistry, Raman spectroscopy, Colligative properties and Macromolecules.

Botany

1. Know the characteristics, systematics, morphology, structure of Viruses, Mycoplasma, Bacteria, Cyanobacteria, and life cycle pattern of Algae, Fungi, Lichens, Bryophytes and Pteridophytes.
2. Understand the diversity, morphology, anatomy, systematics and biology of seed plants.
3. Understand the nature and basic concepts of cell biology, genetics, anatomy, morphology, Biochemistry, Physiology, Taxonomy and ecology.



4. Analyze the interrelationships among prokaryotic and eukaryotic organisms
5. Study of organization and function of the gene, genome, cell, tissue, organ and organ-system including development, reproduction, ecological and physiological adaptations and behavior of different forms of life.
6. Understand the importance of plants, their diversity and its conservation.
7. Achieve pure and applied botanical knowledge.
8. Perform procedures as per laboratory standards in the areas of Biochemistry, Physiology, Biotechnology, Taxonomy, Economic Botany, Ecology, Genetics and Plant Breeding, Mycology and Plant Pathology.
9. Demonstrate hands on skill in the experimental techniques and methods of analysis in various field of Botany.
10. Generate test hypotheses, observations, data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context.
11. Promotes stewardship responsibility, entrepreneurship skill, research and career opportunities.

Physics

1. The student will demonstrate a scientific knowledge of the core physics principles in Mechanics, Electromagnetism, Modern Physics, and Optics.
2. The student will determine the appropriate level of technology for use in:
 - a) experimental design and implementation,
 - b) analysis of experimental data, and
 - c) Numerical and Mathematical methods in problem solutions.
3. The student will effectively communicate their knowledge of physics from basic concepts to specific detailed presentations through a variety of oral, written, and computational modalities.
4. The student will demonstrate a purposeful knowledge of scientific literature and ethical issues related to physics.

Zoology



1. Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
2. Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
3. Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
4. Understands the complex evolutionary processes and behaviour of animals
5. Correlates the physiological processes of animals and relationship of organ systems
6. Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
7. Gain knowledge of Agro based Small Scale industries like sericulture, fish farming, butterfly farming and vermicompost preparation.
8. Understands about various concepts of genetics and its importance in human health
9. Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties
10. Apply the knowledge and understanding of Zoology to one's own life and work
11. Develops empathy and love towards the animals

Program Specific Outcomes:

1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology
2. Analyse the relationships among animals, plants and microbes
3. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology
4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine



5. Gains knowledge about research methodologies, effective communication and skills of problem solving methods
6. Contributes the knowledge for Nation building.

Microbiology

1. Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
2. Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
3. Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
4. Understands the complex evolutionary processes and behavior of animals
5. Correlates the physiological processes of animals and relationship of organ systems
6. Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
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Mathematics

1. Students will demonstrate the ability to think critically, research, and reason. (Ethical Leadership)
2. Students will recognize and differentiate among diverse cultures through the history of mathematics. (Cultural Competence)
3. Students will engage in activities directly benefitting the broader community. (Community Engagement)
4. Students will demonstrate an understanding of the common body of knowledge in mathematics.
5. Students will demonstrate the ability to apply analytical and theoretical skills to model and solve mathematical problems.
6. Students will demonstrate the ability to analyze data and draw appropriate statistical conclusions.
7. Students will demonstrate the ability to effectively utilize a variety of teaching techniques and classroom strategies to positively influence student learning.

Computer Science

1. Students will attain an ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. Students will attain an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. Students will attain an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. Students will attain an ability to function effectively on teams to accomplish a common goal.
5. Students will attain an understanding of professional, ethical, legal, security and social issues and responsibilities.
6. Students will attain an ability to communicate effectively with a range of audiences.
7. Students will attain an ability to analyze the local and global impact of computing on individuals, organizations, and society.



- 8 Students will attain recognition of the need for an ability to engage in continuing professional development.
- 9 Students will attain an ability to use current techniques, skills, and tools necessary for computing practice.
- 10 Students will attain an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- 11 Students will attain an ability to apply design and development principles in the construction of software systems of varying complexity.

Arts Faculty

Programme Outcome

Become better critical thinkers by learning to identify, clarify and evaluate important ideas and arguments. Learn to challenge standard assumptions by asking constructive questions and presenting coherent perspectives as the result of their questioning process. Improve their ability to communicate effectively using written, oral, and/or visual media. Lifelong Learning and Independent Learning Skills. Develop better information literacy by recognizing the different cultural, social, political, etc. contexts in which meaning is made and through which it is disseminated. Learn to coordinate and cooperate with others to achieve shared goals.

English

- 1 read a variety of texts critically and proficiently to demonstrate in writing or speech the comprehension, analysis, and interpretation of those texts;
- 2 write a literary or expository text using the conventions of standard English as stylistically appropriate, while showing a nuanced use of language (producing such a text may include invention, workshopping, research, compiling bibliographies, drafting, peer responses, revising, and/or editing);
- 3 demonstrate knowledge and comprehension of major texts and traditions of language and literature written in English as well as their social, cultural, theoretical, and historical contexts;
- 4 analyze and interpret texts written in English, evaluating and assessing the results in written or oral arguments using appropriate support;
- 5 and design and create texts for a variety of purposes and audiences, evaluating and assessing the effectiveness and meaning of such texts.

Marathi

- 1 Get introduced to Marathi literature, language and culture.
- 2 Create interest in Marathi literature.
- 3 Develop the literary taste



- 4 Get ability to appreciate literature.
- 5 Connect literature to real life experience.
- 6 Understand various branches and movements of Marathi literature.
- 7 Develop linguistic skills to meet the requirements in the age of globalization.

PALI

- 1 Students can understand great philosophical truths given by Lord Buddha through this programme.
- 2 They can develop their interest in the philosophy given in Pali literature.
- 3 They can apply for post graduate course in Pali and can work in the field of education.
- 4 They can work to rejuvenate Pali language.

History

- 1 Historiographical Literacy. Students will be able to identify and describe the contours and stakes of conversations among historians within defined historiographical fields
- 2 Critical Thinking. Students will learn to apply historical methods to evaluate critically the record of the past and how historians and others have interpreted it.
- 3 Research Skills. Students will acquire basic historical research skills, including (as appropriate) the effective use of libraries, archives, and databases.
- 4 Communication Skills. Students will learn to organize and express their thoughts clearly and coherently both in writing and orally.
- 5 Writing and Intellectual Integration. Students should demonstrate their mastery of the knowledge and skills involved in historical practice by conceptualizing and executing a significant piece of original research.

Economics

1. Students will learn how markets organize core economic activities, such as production, distribution, and consumption, and the growth of productive resources.
2. Students will learn about the determinants of macroeconomic conditions (national output, employment, and inflation), causes of business cycles, and interactions of monetary and fiscal policy.
3. Students will learn to apply economic theories and methodologies in analyzing economic issues in various sub-fields of applied microeconomics and international economics.

Political Science

- 1 Define important field-specific theories and concepts, and understand their role in developing political science knowledge.



- 2 Summarize conceptual argument or theoretical approaches, apply them to field-relevant situations, and support their application with appropriate evidence.
- 3 Compare and evaluate the merits of multiple policies, theories, or concepts from different disciplinary perspectives.

Home Economics

- 1 to help students prepare themselves for home and family living.
- 2 to provide certain experiences which are preparation for professional home economics employment.
- 3 to provide the home economics education curricula which will qualify the person to meet requirements of the Arizona State Plan for Vocational Education.
- 4 to provide minor programs for students with other majors.
- 5 to offer non-baccalaureate terminal functional education of college level.
- 6 to provide course requirements for a dietitian.
- 7 to provide a major in Home Economics Education at the graduate level

Geography

- 1 Demonstrating proficiency in using geographical research tools including spatial statistics, cartography, remote sensing, GIS and GPS.
- 2 Identifying, interpreting and analyzing geographic problems and processes.
- 3 Formulating a research methodology and executing a formal student-led research project.
- 4 Applying knowledge of global issues to a unique scientific problem.
- 5 Identifying human and environmental issues on global, regional, and local scales and critically assess various perspectives on the issue.
- 6 Evaluating the impacts of human activities on natural environments.
- 7 Applying knowledge of global issues to local circumstances to evaluate the local effects of the issues.



Sociology

- 1 Analyze and interpret the diversity of social experience using a sociological perspective.
- 2 Assess competing theoretical approaches to societal problems of publics with differing and multiple interests; specify structural or institutional sources of these social problems; and, propose and assess policies, interventions and/or modes of advocacy that will enact positive change.
- 3 Locate, analyze, assess, and communicate sociological scholarship.
- 4 Articulate the applicability of and demonstrate ability to employ a range of research strategies — quantitative and qualitative — to particular research questions, theoretical orientations, and social contexts.
- 5 Articulate the ethical and social justice implications of sociological inquiry.



Jule
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