BACHELOR OF ARTS (B.A.)

Program Outcomes

After the completion of the program the students are able to:

1. Deal with the situations, problems and people with better understanding

2. To develop among themselves a sense of social responsibility

3. Communicate with the world in a better and meaningful way

4. Have a basic understanding of the socio-political, economical, religious and other human-institutions

5. Think clearly and critically about the choices, aspirations, challenges, opportunities and threats in the course of their life

BACHELOR OF SCIENCE (B.Sc.)

Program Outcomes

After the completion of the program the students are able to:

1. Develop among themselves a spirit of scientific temper and inquiry.

2. Understand, analyze and explain the basic principles of science in most of its allied fields.

3. Develop among themselves a sense of social responsibility.

4. Handle the unexpected situation by critically analyzing the problem.

5. Think clearly and critically about the choices, aspirations, challenges, opportunities and threats in the course of their life

BACHELOR OF COMMERCE (B.COM)

Program Outcomes

Students who have taken admission to this program of B.Com are expected to concentrate upon the following outcomes:

1. Commercial sense.

2. Develop managerial skills.

3. Entrepreneurial skill.

4. Budgeting policy.

5. Human Resources Management.

6. Develop Numerical ability.

7. Well versed with business regularity framework.

M.Sc (Computer Science)

Program Outcomes

Practice and grow as computing professionals (appropriate to the description of the Computer Science), conducting research and/or leading, designing, developing, or maintaining projects in various technical areas;

Apply the ethical and social aspects of modern computing technology to the design, development, and usage of computing artifacts; and,

Enhance their skills and embrace new computing technologies through self-directed professional development and further training or education.

Program Outcome: On completion of the Program students will be able to

Systems Thinking: Analyze, design, implement and evaluate a computer-based system, process, component or program to meet desired needs.

Problem Solving: Identify problems and formulate solutions for systems and organizations while reconciling conflicting objectives and finding compromises.

Communication: Communicate effectively with a range of audiences.

Teamwork: Work effectively as part of a team to develop and deliver quality software artifacts.

Cultural and Global Awareness: Recognize the applicability of computing and evaluate its impact on individuals, organizations and societies across the globe.

Professional Practice: Evaluate and use appropriate methods and professional standards in computing practice.

Professional Development: Explore historical, current, and emerging techniques and technologies, founded on a commitment to lifelong learning and professional development.

Technical Expertise: Apply knowledge of computing within technical domains.

Pragmatic Approach. Apply computing theory and programming principles to practical software design and development.

Botany

Program Specific Outcomes:

An Aspirant can learn

- To understand basic concepts of plant Sciences.
- To understand & compare different types Plant Population & community interactions.
- To understand concept of lower plant groups including Algae, Fungi & Bacteria.
- Learn to distinguish between Lower & Higher Plant groups
- Learn to compare habitats of plant communities
- Learn to study behavior of Bryophytes & Pteridophytes
- Learn to study and analyze different applications of microbes.
- To understand Concepts of Cytology & Genetics
- To illustrate the working of chromosome & DNA in a plant cell
- To get Knowledge of principles of evolution through paleo-botany
- To understand systems of classification of lower & Higher Plants.
- To understand Geological Time Scale for Paleontological studies.
- To distinguish between ex-situ & in-situ conservation strategies of plants
- To understand basic information about medicinal plants & ethno-botany.
- To understand standards of genetic engineering & Tissue culture.
- To understand Mycorrhiza, its types & applications
- To understand & compare various branches of biology
- To understand Physiological & ecological principles and its application
- To understand concept of Taxonomy, Anatomy & Embryology of Angiosperms
- To understand concepts of bio-chemistry, enzymology & bio-technology.
- To demonstrate botanical phenomenon in laboratory through live specimens & practical demonstrations.

Course Outcomes:

The 3 year degree program at the above said College with Botany subject, is designed to give students a broad understanding of the foundational concepts in Botany (Plant Science) along with laboratory and excursion related field experience.

The emphasis stream in the 3-year program (Botany Degree Course) gives students the opportunity to study a particular aspect of Botany in depth within the context of a liberal Science education. Graduates should have acquired knowledge and skills that will allow entry into laboratory or field jobs, in Forest Department or further study in related areas. The course has specific learning outcomes, as described under:

1.   Upon graduation, Botany majors should have a thorough knowledge and comprehension of the core concepts in the discipline of Plant Biology. These include the fact that:

a.   Plants are like other organisms in regard to: basic metabolism, sexual reproduction, clonal reproduction, hormonally regulated development, ability to respond to the environment, diversity and evolution.

b.   Plants are unique organisms in: their varied life histories - especially a sporic one with alternation of generations; their role as primary producers in food webs, serving as the interface organisms between the organic and inorganic worlds viamineral assimilation and photosynthesis; and the oxygenation of the atmosphere.

c.   Plants serve as an important source of products: food, fiber, flavorings, feed, fuel, pharmaceuticals, etc.

2.   Upon graduation, Botany majors should have mastered a set of fundamental skills which would be useful to function effectively as professionals and to their continued development and learning within the field of Plant Biology. These skills include the following:

a.   Field and Laboratory Research Skills: Botany majors should be competent observers and experimentalists, whether such research takes place in the field or in the laboratory. They should be able to design and execute experiments, systematically collect and analyze data, identify sources of error, and interpret the results and reach logical conclusions. They should also have a basic understanding of laboratory and field safety issues.

b.   Critical Thinking Skills: Botany majors should be able to engage in the following aspects of critical thinking: (i) differentiate between fact and opinion, (ii) recognize and evaluate author bias and rhetoric, (iii) develop inferential skills, (iv) recognize logical fallacies and faulty reasoning, and (v) make decisions and judgments by drawing logical conclusions using sound quantitative or statistically-based reasoning. Critical thinking does not exclude imaginative and speculative thinking as it applies to science in general and botany specifically. To the extent that critical thinking skills are discipline- specific, students should understand that science and its methodology is a way of knowing.

c.   Communications Skills: Botany graduates will be required to demonstrate competence in communication, both written and oral, and present the results of their research where such communication is expected and evaluated.

3.   Upon graduation, Botany students should demonstrate significant value-added progress in developing the values viz. Appreciation of the aesthetic attributes of nature, whether their studies are primarily in the field where entire ecosystems or biomes are investigated or in the laboratory where the microscope and biochemical techniques are used as tools for observing nature.

4.   All students who are exposed to Botany courses should understand and appreciate, in addition to the core knowledge of Plant Biology, the nature of science, how science is applied to everyday problems, and significant botanical achievements.

Chemistry

Programme Specific Outcomes (PSO)

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

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

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

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

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

Course Outcomes

1.   Describe periodic properties of elements; understand formation of ionic bonding & factors affecting ionic bond formation.

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

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

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

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

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

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

8.   Understand requirement of good solvent and classification of solvents.

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

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

11.   Identify polar and non-polar molecules and know paramagnetic and diamagnetic substances.

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

13.   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.

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

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

16.   Define work function, Gibbs free energy and application of phase equillibria in miscible and immiscible liquids.

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

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

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

20.   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.

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

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

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

24.   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.

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

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

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

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

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

30.   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.

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

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

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

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

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

Computer Science

Computer Science

PSO (Program Specific Outcomes) P.G. Programme

The 3 and 5 years Computer Science Programs at Arts Commerce and Science College are designed to give students a broad understanding of the fundamental concepts in Computer Science along with practical lab, developing project and delivering seminars.

The emphasis stream in 3 years program (Computer Science degree course) gives students the opportunity to study a particular aspect of Computer Science in depth within the context of their university syllabus. Graduate should have acquired knowledge and skills that will allow entry into laboratory or field jobs, or further study related areas.

Students of 5 year program (Computer Science PG degree course) should be prepared for NET / SET examination to become Assistant Professor in College, can become Software Developer, Application Analyst, IT Consultant, Multimedia Programmer, Database Administrator, Game Developer, BSNL Project Executive, Telecom Technical Assistant, Hardware design engineer, Android Developer, robotics engineer, Bank's IT officer, IT Professional in Government offices, also can take the private tuition classes etc.

Graduate and Postgraduate out comes while learning Computer Science Subject:

• To understand fundamental concepts of components of computer.
• To understand generation and classification of computer.
• To aware about features of operating system like windows, Unix, Linux, open source.
• To understand concept of Data Structure.
•To learn programming languages like C, C++, Java, Visual Basic.
•To learn to data base concept in SQL and PL/SQL
• To understand concept of HTML and XML.
• To learn about creation of web page using HTML and XML
• To understand concept of Networking.
• To understand concept of project development in various domain.

B.Sc. (Computer Science)

Program Specific Outcomes U.G. Programme

Program Objectives: The objectives of this Program are to inculcate the following qualities in the students and to assess them at different levels

1.   Broadly Educated and Versatile. Able to draw upon foundational knowledge, learn, adapt and successfully bring to bear analytical and computational approaches on changing societal and technological challenges.

2. Inspiring and Collaborative. Is a leader and a responsible citizen whose strengths come from an ability to draw on and contribute to diverse teams, expertise, and experiences.

3. Innovative: Drives scientific and societal advancement through technological innovation and entrepreneurship.

4. To assess the curricular skills acquired by students at college level through Assignments, Unit test, Internal Test, Group Discussion/Seminar/Mini Project, Study Tour.

5. To conduct co-curricular and extra-curricular activities for overall personality development.

Course Outcomes

1. B.Sc Part I (Computer Science)

Course Objectives:

The objectives of this course are

1. This course introduces the concepts of computer basics, Introduction to OS, File System and File Handling, Programming Concepts, Computer Networking and Internet.

2. This course also introduces the Web Technology using HTML, XML and Style sheets

3. The C programming language is used to demonstrate fundamental as well as advanced programming concepts

Course Outcome: On completion of the course students will be able to

1. Understand the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming

2. Understand the concept of Operating system, associated file system, file operations

3. Write and understand flowcharts, algorithms and program documentation

4. Understand the concept of Computer Networking and use of Internet

5. Acquire critical thinking skills to design and create websites using knowledge of HTML, XML and CSS code.

6. Develops the use of the C programming language to implement various algorithms, and develops the basic concepts and terminology of programming in general.

7. Understand and use more advanced features of the C language

B.Sc Part II (Computer Science)

Course Objectives: The objectives of this course are

1. To design and implementation of various basic data structures.

2. Demonstrate the use of various OOPs concepts with the help of programs

3. To learn the concepts of DBMS, RDBMS, SQL and PL/SQL.

4. To improve the logical ability

Course Outcome: On completion of the course students will be able to

1. Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.

2. Use linear and non-linear data structures like stacks, queues , linked list etc.

3. Understand the concept of an object-oriented programming language

4. To enhance problem solving and programming skills in C++ with extensive programming examples

5. Master the basic concepts and appreciate the applications of database systems.

6. Master the basics of SQL and construct queries using SQL.

7.   Write, compile and debug the PL/SQL Scripts

B.Sc Part III (Computer Science)

Course Objectives: The objectives of this course are

1.   To introduce programming skills using the Visual Basic Integrated Development Environment.

2.   To learn program design, the event driven programming, to create menu driven programs and multiple form applications

3.   To learn and apply the concepts of DBMS, RDBMS, SQL and PL/SQL.

Course Outcome: On completion of the course students will be able to

1.   Use Visual Basic's form designer to create user interfaces

2.   Write Visual Basic code in modules and classes

3.   Create dialogs, menus, windows and use Windows common dialogs

4.   Create SDI and MDI applications

5.   Test and debug Visual Basic programs

6.   Master the basic concepts and appreciate the applications of database systems.

7.   Master the basics of SQL and construct queries using SQL.

8.   Write, compile and debug the PL/SQL Scripts

M.Sc Part I (Computer Science)

Course Objectives: The objectives of this course are

•   This course introduces the concepts of Digital System and Microprocessor , introduces the programming skills using .Net Technologies ,To learn and apply the concept of Operating System and Computer Networks .

•   This course also introduces the programming skills using the Java Programming ,To design and implementation of various data structures algorithms, To learn and apply the concept of Software Engineering ,Discrete Mathematical Structures ,Compiler Construction .

Course Outcome: On completion of the course students will be able to

•   Understand the representation of integers and floating point nos., Boolean Algebra: laws, simplification of logic equations using Boolean laws, SOP and POS, standard forms of SOP and POS, Karnaugh Maps don't care conditions in K-map.

•   Understand the concept of Logic families and to design various Arithmetic circuits .

•   Understand the concept of Flip Flops, Shift registers and Counters.

•   Understand the Overview of microcomputer system, architecture of 8086 microprocessor, pin diagram, Stack structure, interrupts in 8086 microprocessor.

•   Develops the use of the .Net Technologies and C# .

•   Understand the concept of Operating System ,Process Management ,Process Synchronization and Deadlocks ,Memory Management ,File System ,Distributed File System.

•   Understand the concept of Digital Communication, Layered Architecture and Services.

•   Develop the use of Java Programming .

•   Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.

- Use linear and non-linear data structures like stacks, queues , linked list etc.Data Structures
- Understand the System Concept, Software Engineering.
- Understand and learn the concept of Compiler Construction

M.Sc Part II (Computer Science)

Course Objectives: The objectives of this course are

- To learn and apply the concepts of Data Mining and Data Warehousing , Computer Graphics and Distributed Operating System or Theory of Computation ,And to introduce programming skills using Client-Server Computing .
- This course also learn and apply the concepts of Artificial Intelligence and Expert Systems introduces the concept of Design and Analysis of Algorithms ,, To learn and apply the concept of Network Security and Mobile Communications .

Course Outcome: On completion of the course students will be able to

- Understand the concept of Data Mining and Data Warehousing .
- Understand the concept and algorithm of Computer Graphics .
- Knows the concept of Networking in Java ,Java Database Connectivity, Servlets ,JavaScript Overview ,Remote Method Invocation (RMI) and JSP .
- Understand the concept of Distributed Operating System.
- Understand the concept of Artificial Intelligence and Expert Systems.
- Design and Analysis of various Algorithms by Greedy Method ,Branch and bound ,Lower bound theory and knows basic Search and Traversal techniques.
- Understand the concept of Network Security by Cryptography ,Authentication ,E-mail Security and Firewalls .
Understand the concept of Mobile Communications

Economics

PSO (Program Specific Outcomes)
1) To understand the concept of Economics.
2) To understand the basic principle of Economics.
3) To understand Economic rules and theory.
4) To understand distribution of income and structure of market.
5) To understand type of banks & its functions.
6) To understand international trade & international institution like IMF.
7) To understand micro & macro Economics.
8) To understand Indian Economy, Maharashtra Economy.
9) To understand Economic problems of populations.

CO (Course Outcomes)
1) Students get knowledge of difference between micro & macro Economics.
2) Students studied method of Economic studies.
3) Students get knowledge of economic system & feature of Indian Economy.

4)   Students aware of financial system of India.

5)   Students aware of Economical problems of India , Maharashtra.

6)   Students get knowledge about basic Economics.

English

B.A. (English Compulsory)

Program Specific Outcomes (PSOs)

A student of B.A. studying English as a compulsory language is expected to acquire:

a. Basic knowledge of English as Language.

b. An ability to understand Literature.

 c. Basic knowledge of English Grammar.

d. An ability to appreciate literature with critical thinking.

e. An understanding of relationship between literature and real life.

Program Specific Outcomes (PSOs)

A student of B.A. studying English Literature as an optional subject is expected to acquire certain skills, develop certain abilities and nurture certain tendencies towards:

1. Seeking pleasure in all forms of literature

2. Critical understanding of literature

3. Understanding the complexities of human life through the study of literature

5. Evolving into a responsible, sensitive and balanced human being

CO (Course Outcomes)

B.A.I, B.A.II B.A. III (*Compulsory English Course*)

1. Spoken communication and written communication.

2. Writing of Resume, letters of application, business letters.

3. Writing News-report, Essay, paragraph, review, etc.

 4. Narration of experience, daily routine.

 5. Interview Techniques.

B.A.I, B.A.II B.A. III (English Literature Course)

At the end of the each Semester, Students of literature are expected to acquire certain level of linguistic, critical and appreciative skills dealing with various forms and genres of literature. The following list of Course Outcomes of English Literature is broad and indicative in its nature and scope:

1.   The various ways to read literature

2.   The ways of critical appreciation of different genres

3.   Understanding and appreciation of poetry

4.   Introduction of various Literary Terms

5.   Introduction of various literary theories

6.   Understanding Prose-forms such Essay, Short Story, novel, biographies and autobiographies

7.   Developing a personal sense of aesthetics towards all the aspects of life

Environmental Science

A) Program Specific Outcomes:

- Broad understanding of the foundational concepts in environmental science.
- Understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving.
- Realization of importance of natural resources and their sustainable use.
- To propagate the desirability of biodiversity conservation including genetic diversity, species diversity, ecosystem diversity, landscape diversity etc.
- To provide awareness about control of environmental pollutions like air pollution, water pollution, soil pollution, solid waste pollution, noise pollution, electronic waste pollution, e-pollution, etc.
- Identification of complexity of surrounding issues and processes which contribute to an environmental problem.
- Understanding of laboratory and field experience that supports and expands basic concepts with specific practical skills.
- Demonstrate and awareness of ecosystems in the context of coupled human-environmental interactions
- Apply mathematical concepts, including statistical methods, to field and laboratory data to study scientific phenomena.
- Understanding of current national and global environmental problems; looking at the science behind them, the economics involved, and the policies regarding them.
- Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes

CO (Course Outcomes):

After getting success 6 semester course of Environmental Science the students will able to understand..

1. Concept, principles and scope of Environmental Science.
2. Divisions of Environment with respect to their composition, structure and significance.
3. Natural resources with respect to their reservoirs, demand, utilization, and future consequences.
4. Climatic zones and their characteristics, distribution of flora and fauna and their present status.
5. Ecology, branches of ecology, population, community, ecosystem, ecological succession, Biodiversity with respect types, causes of depletion and consequences.
6. Basic principles of Environmental chemistry, Toxicology, Chemistry of water.
7. Environmental pollution (Air, Water, Soil, Noise, Radiation) with respect to causes, consequences and impacts.
8. Air and water control technology.
9. Waste water characteristics, physical, chemical and biological treatment of waste water.
10. Sold waste, biomedical waste, radioactive waste and hazardous waste sources, characteristics, methods of disposal and treatments.
11. Environmental health and safety measures.

12. Environmental education with respect to principles, scope and levels; Environmental awareness.

13. Mining as a natural resource, mechanism of mining and impacts on environment.

14. Soil, water resources, utilization, conservation and management.

15. Biodiversity, levels of biodiversity, depletion, methods of conservation.

16. Environmental conservation rules and regulations, legislations, strategies and programmes.

17. Environmental impact assessment, audit and sustainable development.

18. Use of statistical method for environmental analysis.

History

PSO (Program Specific Outcomes)

1. Students will evaluat historical information from multiple Sources.

2. Students will distinguish difference between primary sources and secondary sources.

3. Students will develop their knowledge about Indian Ancient Culture, Mughal Art and Architecture.

4. Students will Identify Modern Indian Map and World map.

5. Students will describe rise of modern world

CO (Course Outcomes)

B.A.I

1. Students will develop their knowledge about Indian Ancient Culture.

2. Students will explain Ancient Indian Political Theory

3. Students will explain about Ancient Kingdoms in India.

4. Students will develop their knowledge about Ancient traditions.

5. Students will develop an Ability to convey verbally their historical knowledge.

B.A.II

1. Students will understand Delhi Mughal rulers.

2. They analyse Mughal rule administration.

3. Students will identify Mughal art and architecture.

4. They will understand grouth of Commerce in Mughal period.

5. Students will identify urban centers in Medieval period.

6. Students will evaluate consolidation of English Power in India.

7. They analyse social, religious consciousness in India.

8. They will analyse Nationalist movement.

9. Identify Modern Indian Maps sites of mutiny of 1857.

B.A.III

1. Students will describe rise of modern world

2. Students will classify growth of capitalism

3. Classification development of Democracy

4. Identify World maps

5. Map of Europe in 1914

6. Important stages of World War first & second

7. Features of UNO

M. Sc. Industrial Chemistry

Program Outcomes:

1. The students after completing the course would have fortified their ability in the field of chemical analysis by their exposure to the sophisticated analytical instruments.
2. Students should have a comprehensive understanding of the principles of Chemistry ·
3. Students should be able to design and carry out scientific experiments and interpret the data ·
4. 4) Students should understand the interdisciplinarindustry nature of Chemistry and to be aware of the emerging fields in Chemistry ·
5. 5) Students should inculcate a scientific temper and to learn the necessary skills to succeed in research or industrial field.
6. 6) Should able to define and resolve new problems in Chemistry and participate in the future development of Chemistry

PSO (Program Specific Outcomes of graduate program)

1.students will able to figure out the quantities of components required to manufacture specific chemicals, commercial products

2 students will able to choose sequence of unit operations essential to manufacture specific chemicals, commercial products

3 students will have technical knowledge of process equipments.

4 students will be able to analise the product using analytical techiniques.

CO (Course Outcomes of graduate program)

After Studying 06 Papers of Industrial Chemistry (One paper per Semester), student will be able to understand

1 Material balance equations and solve the material balance problems of some important mass transfer operations

2 Mole concept and stoichiometry.

3 General concept of conventional and non conventional energy sources.

4 Fundamentals of Fluid mechanics and Heat transfer

6 Surface chemistry and mechanical separation

7 Various organic processes and process equipments

PSO (Program Specific Outcomes of post graduate program)

To understand stereochemistry and bonding in main group elements.

To understand stereochemistry and chemical reactivity of organic molecule.

To understand quantum mecheanics,thermodynamics and chemical kinetics.

To understand saperation and analytical technique.

To understand concepts in environmental chemistry.

To understand manufacturing process of fine and specific chemicals.

Post Graduate Out Comes via Chemistry Learning:

Program Outcomes:

1.	The students after completing the course would have fortified their ability in the field of chemical analysis by their exposure to the sophisticated analytical instruments.

2.	Students should have a comprehensive understanding of the principles of Chemistry ·

3.	Students should be able to design and carry out scientific experiments and interpret the data ·

4.	Students should understand the interdisciplinarindustry nature of Chemistry and to be aware of the emerging fields in Chemistry ·

5.	Students should inculcate a scientific temper and to learn the necessary skills to succeed in research or industrial field.

6.	Should able to define and resolve new problems in Chemistry and participate in the future development of Chemistry

M. Sc. I

CO (Course Outcomes)

❖	To understand and learn structure, geometry and stereochemistry of inorganic complexes.
❖	To understand solvent solute interaction.
❖	To understand concept of Symmetry and Group theory.
❖	To understand the concept of structure and reactivity.
❖	To understand the Quantum chemistry.
❖	To understand the concept of Surface chemistry**.**
❖	To understand Thermodynamics.
❖	To understand the Nuclear Chemistry.
❖	To understand the concept of Chemical Dynamics.
❖	To understand the analytical techniques and statistical analysis.
❖	To understand the concept of Electron spectra of transition metal complexes.
❖	To understand the concept of magnetochemistry**.**
❖	To understand the Reaction mechanism of transition complexes.
❖	To understand the concept of Metal pi complexes, Metal nitrosyles.
❖	To understand the concept of Bioinorganic Chemistry of Fe and Co.
❖	To understand the concept of Mechanism of molecular rearrangement.
❖	To understand the Free Radical raections.
❖	To understand the types of Photochemistry of chemical reactions.
❖	To understand the concept of pericyclic of chemical reactions .
❖	To understand the concept of Green chemistry.
❖	To understand the concept of Chemical Dynamics.
❖	To understand Macromolecules.
❖	To understand the Electrochemistry of solutions.
❖	To understand types of Optical Method

M. Sc. II

❖	To understand the concept Raman, Photoelectron Spectroscopy.
❖	To understand the concept of X-Ray, Electron and Neutron diffraction

- ❖ To understand the Electron spin resonance Spectroscopy, Mossbaur Spectroscopy .
- ❖ To understand the concept of Radiochemical methods of analysis.
- ❖ To understand the Molecular Photofluorescence and Phosphorescence spectroscopy.
- ❖ To understand the concept of Optical Methods and Flow Injection analysis .
- ❖ To understand the concept of chemical analysis of Food and Cosmetics.
- ❖ To understand the Advantages and applications of Forensic and fuel analysis.
- ❖ To understand the photochemical reactions on solid surface.
- ❖ To understand the Properties of organ transition metal chemistry.
- ❖ To understand the concept of Transition metal pi complexes of carbon multiple bond**.**
- ❖ To understand the polymer, and types of polymer.
- ❖ To understand the synthesis, structure and applications of Insecticides, Herbicides, Fungicides, Rodenticides and pesticides.
- ❖ To understand the Manufacture, storage, hazards and uses of Industrial gases.

Marathi

PSO: Progrmmes Specific Outcomes (PSO's)B.A. (MARATHI)

a. Creating an interest in literature.

b. Availing the job opportunities in translation, transformation and media.

c. Developing language.

d. Increasing the critical attitude about literary studies.

e. Imbuing the literary research attitude.

2.2 Course Outcomes (CO's)

B.A I (Marathi)

1. Understanding the interrelation between literature and society.

2. Explaining the nature of language and literature.

3. Obtaining the skills of literary criticism.

4. Imbuing the essay writing skills.

5. Illustrating the nature of literary forms like one-act-play, travellogue and short story.

B.A.II (Marathi)

1. Introduction of the medieval Marathi language and literature.

2. Introduction of the contemporary literary works.

3. Acquiring the skill of translation.

4. Explanation of the need and significance of editing.

B.A.III Poetry:

1. Acquaintance with oriental poetry.

2. Understanding the nature and features of poetry.

3. Creating the skill of critical appreciation of a poem.

4. Developing the poetic devices and their usages

B.A.III Linguistics:

1. Getting acquainted with modern linguistics

2. Understanding origin, nature and function of language.

3. Getting information about phonetics.

4. Enhancing the interest in Marathi language.

B.A.III Medieval Marathi Literature:

1. Introduction of the historical survey of medieval Marathi literature.

2. Introduction of the literary forms in medieval literature.

3. Explanation of the trends and structure of medieval Marathi literature.

B.A.III Utility and Creativity of Marathi Language:

1. Understanding the formal and informal language.

 2. Developing various language skills.

3. Getting motivation for creative writing.

4. Understanding the technique of mass communication.

B.A.III Literary Criticism:

1. Introduction to various trends in literary criticism.

2. Understanding various trends in rural literature.

3. Understanding various trends in Dalit Literature.

Mathematics

Mathematics

B. Sc.

PSO (Program Specific Outcomes)

➢   To understand the basic concepts of Mathematics and Formulae.

➢   Recognize the importance and value of mathematical thinking, training and approach to problem solving, on a diverse verity of disciplines.

➢   Mathematics is open door in engineering, business, finance, computing, data science, health sciences, environment science and public policy.

➢   Identify and become familiar with the scope, methodology and application of mathematics and learn to appreciate its ability to explain various aspects.

➢   Explain how Mathematics is useful for social and real life problems.

CO (Course Outcomes)

➢   To Learn De Moivre's Theorem and Understand Relation Between Circular & Hyperbolic Function.

➢   To understand the Trigonometric Series & Euler's Series.

➢   To understand concept of Elements of Quaternion.

➢   Learn to Theory of equation & Descarte's rule of signs.

➢   Learn to concept of Matrices and Clayey –Hamilton theorem.

➢   To understand the definition of limit of a function and calculation of limit.

➢   To understand the Leibnitz theorem and L' hospital Rule.

➢   Learn to Mean Value Theorems.

➢   To understand Concept of Partial derivatives and Euler's Theorem.

- Learn to Integration and reduction formulae.
- To understand the First order differential equation
- To Learn Second order Linear differential equation.
- Learn to Reduction formulae
- To solved Partial Differential equation
- Learn to Charpits's general method of solution.
- To understand Concept of Vectors and its products.
- To get Knowledge of basic principles of Gradient, divergence, curl and Green theorem.
- To understand Concept of Sphere and Cone.
- To learn the definition of sequence and series and Sandwich theorem.
- To illustrate the working of Lebnitz Rule ,Abel's test and Dirichilet test.
- To get Knowledge of basic principles of limit and continuity , Taylor's theorem.
- To understand Lagrange's multipliers method and Jacobian.
- To understand Double and triple Integration and Gauss-stoke's theorem.
- To understand Divisibility & Euclidean algorithm.
- To learn prime number & linear Diophantine equation.
- To understand basic properties of congruence & Chinese remainder theorm.
- To learn the Arithmetic function & Euler's theorem.
- To understand Primitive roots and quadratic residues.
- To understand the concept of Group, Subgroup and Cosets.
- To learn the concept of Homomorphism & Isomorphism and its Theorem.
- To understand the properties of Ring and Ideals.
- To learn the constraints and Lagrange's equation of motion.
- To learn the central force motion and Virial Theorem.
- To understand concept of calculus of variation and Hamilton's principle.
- To understand concept of Rigid Body.
- To understand the Riemann Integral and Mean Value theorem.
- To understand the concept of improper integral and Beta-Gamma function.
- On Milne-Thomson Method.
- To learn the concept of metric space and Cauchy sequences.
- To understand the Legendre's and Bessal equation.
- To learn the concept of Laplace and Fourier Transform & its Application.
- To understand the concept of Vector Space, Basis and Linear Transformation.
- To Learn the Dual Space, Inner Product space & Modules.
- To understand the Concept of Graph & Operation graphs.
- To learn the concept of tree and Spanning tree.
- To find the fundamental circuit and planner graphs.
- To understand the vector spaces & orthogonal vectors.
- To Find the matrix of a Graph.

M.Sc. (Mathematics)

PSO (Program Specific Outcomes) To develop problem-solving skills and apply them independently to problems in pure and applied mathematics.

➢ To assimilate complex mathematical ideas and arguments.

➢ To improve your own learning and performance.

➢ To develop abstract mathematical thinking. Apply knowledge of Mathematics, in all the fields of learning including higher research and its extensions.

➢ To understand the basic concepts of Mathematics and Formulae.

➢ Recognize the importance and value of mathematical thinking, training and approach to problem solving, on a diverse verity of disciplines.

➢ Mathematics is open door in engineering, business, finance, computing, data science, health sciences, environment science and public policy.

➢ Identify and become familiar with the scope, methodology and application of mathematics and learn to appreciate its ability to explain various aspects.

➢ Explain how Mathematics is useful for social and real life problems.

CO (Course Outcomes)

➢ Innovate, invent and solve complex mathematical problems using the knowledge of pure and applied mathematics.

➢ To solve one dimensional Wave and Heat equations employing the methods in Partial Differential equations.

➢ Utilize Number Theory in the field of Cryptography that helps in hiding information and maintaining secrecy in Military information transmission, computer password and electronic commerce.

➢ Facilitate in the study of crystallographic groups in chemistry and Lie symmetry groups in physics.

➢ Demonstrate risk assessment in financial markets, Disease spread in Biology and Punnett squares in Ecology.

➢ Identify Simulation of ground freezing and water evaporation, Heat transfer analysis due to solar radiation, Calculation of temperatures and heat flow under steady-state or transient boundary conditions.

➢ Explain the knowledge of contemporary issues in the field of Mathematics and applied sciences.

➢ Work effectively as an individual, and also as a member or leader in multi-linguistic and multi-disciplinary teams.

➢ Adjust themselves completely to the demands of the growing field of Mathematics by lifelong learning.

➢ Effectively communicate about their field of expertise on their activities, with their peer and society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations

➢ Crack lectureship and fellowship exams approved by UGC like CSIR – NET and SET.

➢ To Learn De Moivre's Theorem and Understand Relation between Circular & Hyperbolic Function.

➢ To understand the Trigonometric Series & Euler's Series.

- ➢ To understand concept of Elements of Quaternion.
- ➢ Learn to Theory of equation & Descarte's rule of signs.
- ➢ Learn to concept of Matrices and Clayey –Hamilton theorem.
- ➢ To understand the definition of limit of a function and calculation of limit.
- ➢ To understand the Leibnitz theorem and L' hospital Rule.
- ➢ Learn to Mean Value Theorems.
- ➢ To understand Concept of Partial derivatives and Euler's Theorem.
- ➢ Learn to Integration and reduction formulae.
- ➢ To understand the First order differential equation
- ➢ To Learn Second order linear differential equation.
- ➢ Learn to Reduction formulae
- ➢ To solved Partial Differential equation
- ➢ Learn to Charpits's general method of solution.
- ➢ To understand Concept of Vectors and its products.
- ➢ To get Knowledge of basic principles of Gradient, divergence, curl and Green theorem.
- ➢ To understand Concept of Sphere and Cone.
- ➢ To learn the definition of sequence and series and Sandwich theorem.
- ➢ To illustrate the working of Lebnitz Rule, Abel's test and Dirichilet test.
- ➢ To get Knowledge of basic principles of limit and continuity, Taylor's theorem.
- ➢ To understand Lagrange's multipliers method and Jacobian.
- ➢ To understand Double and triple Integration and Gauss-stoke's theorem.
- ➢ To understand Divisibility & Euclidean algorithm.
- ➢ To learn prime number & linear Diophantine equation.
- ➢ To understand basic properties of congruence & Chinese remainder theorm.
- ➢ To learn the Arithmetic function & Euler's theorem.
- ➢ To understand Primitive roots and quadratic residues.
- ➢ To understand the concept of Group, Subgroup and Cosets.
- ➢ To learn the concept of Homomorphism & Isomorphism and its Theorem.
- ➢ To understand the properties of Ring and Ideals.
- ➢ To learn the constraints and Lagrange's equation of motion.
- ➢ To learn the central force motion and Virial Theorem.
- ➢ To understand concept of calculus of variation and Hamilton's principle.
- ➢ To understand concept of Rigid Body.
- ➢ To understand the Riemann Integral and Mean Value theorem.
- ➢ To understand the concept of improper integral and Beta-Gamma function.
- ➢ On Milne-Thomson Method.
- ➢ To learn the concept of metric space and Cauchy sequences.
- ➢ To understand the Legendre's and Bessal equation.
- ➢ To learn the concept of Laplace and Fourier Transform & its Application.
- ➢ To understand the concept of Vector Space, Basis and Linear Transformation.
- ➢ To Learn the Dual Space, Inner Product space & Modules.
- ➢ To understand the Concept of Graph & Operation graphs.
- ➢ To learn the concept of tree and Spanning tree.
- ➢ To find the fundamental circuit and planner graphs.
- ➢ To understand the vector spaces & orthogonal vectors.
- ➢ To find the matrix of a Graph.

B. Sc. Physics

1. **Program Specific Outcomes:**

In B. Sc. 1 (Physics), expected to be learnt to

- Understand & compare different types of pendulum for determination of 'g' (Variation of acceleration due to gravity).
- Understand the elastic properties of matter and expression of bending beam with its application as a cantilever, vibrating beam and torsion for rigidity.
- Understand concept of fluid flow and pressure energy in fluids.
- distinguish between Heat & Temperature
- Understand Concept of entropy & T-S diagram.
- compare specific heats
- Get Knowledge of basic principles of refrigeration methods
- Calculate & compare Thermal conductivity of an insulators
- Analyze different aspects related to transformer.
- Learn to verify basic theorems of using electrical networks.
- Electrical loop analysis by using Kirchhoff's laws
- Understand standards of measurements and calibration of instruments
- Graphical representation and analysis.

In B. Sc. 2 (Physics), expected to be learnt to

- Measure of capacitance, inductance and combined phasor diagrams.
- Study behavior of rectifiers and R-C circuit s with and without filter.
- Illustrate the working of electrical components
- Demonstrate & understand comparatively Lissajous figures by mechanical, optical and electrical methods.
- Learn Power of lens and lens systems
- Distinguish between Fresnel and Fraunhoffer diffraction.
- Understand concept of interference pattern due to reflected & refracted light
- Understand theory of plane transmission grating and its resolving power.
- Understand Construction of Polaroid, Quarter and Half wave plates, Nicol prism.
- Understand concept of sound and classification of sound frequencies.
- Understand piezoelectric effect, Magnetostriction effect.
- Distinguish between different diodes & voltage regulation due to it.
- Understand basic construction, operation and configurations of transistors
- Understand Laser, its types & applications
- Know about processes inside earth, especially earthquakes

In B. Sc. 3 (Physics), expected to be learnt to

- Understand atomic and crystal models and regularity in structure
- Understand matter waves, concept of wave group, wave packet and phase-group velocity
- Understand Uncertainty principle and its application
- Understand fundamental basic logic gates using diodes, transistors & its applications
- Understand the Use of C.R.O as a measurement tool
- Understand concept of conductivity and resistivity

- Compare between materials on the basis of electrical properties
- Know superconductivity, its mechanism and applications
- Concept the nanotechnology and its applications

B) Course Outcomes:

Expected to be learnt to

- Think and understand basic concepts, principles and theorems in physics.
- Distinguish between different Physical quantities, units and dimensions
- Skill the observations and its careful notings.
- Develop sense of application of knowledge
- Develop skills of defining problems and creative thinking independently.
- Distinguish between scientific, technical and non-technical aspects.
- Develop sense of problem solving.
- Develop data collection skills, an analytical approach, reasoning, constructing logical arguments and applying analytical skills.
- Develop sense of grasping complex problems.
- Develop sense of correlation of theory in Physics with abstract values through mathematics.
- Develop skills for construction of laboratory experiments.
- Acquire ability to learn new information quickly and effectively.
- Acquire skills of making proper decision and conclusion.
- Develop communication and management skills.

Political Science

PSO (PROGRAM SPECIFIC OUTCOME)

1. To Understand the basic structure of Indian political system
2 To Understand the preamble of Indian constitution
3 To Understand the importance of voting power
4 To Inculate interest in political field
5 To create the leadership qualities in students

CO (COURCE OUTCOME)

1. TO Understand the basic concept of democracy
2. To understand the basic structure of political system
   3.To Understand the fundamental rights in Indian contistution
   4.To understand the political theory
   5.To get the knowledge of political science
   6. To understand the comperative study of constitution and government.
7. To understand the importance of right of vote in indian democracy

Sociology

PSO (Program Specific Outcomes)

1. To understand the concept of sociology
2. To understand the basic structure of social system
3. To understand the concept of social theory
4. To get the knowledge of basic princiles of sociology
5. To understand the concept of culture.
6. To understand the concept of socialisation
7. To understand the concept of social movements.
8. To understand the concept of political system.
9. To understand the concept of social stratification.
10. To get the personal education to face the social and polical problems in life.
11. Educate the peoples to solve the various problems in the society.

2.2   CO (Course Outcomes)

1. To understand how sociology differ from social sciences.
2. To understand the basic concept of sociology and its fundament and theoritical inter-relations.
3. To define theory to illustarte to bulding sociologial knowledge.
4. To understand reciprocal co-relationship between induvidual and society.
5. To demonstare globle how process shape local social structures and its effect on individual.
6. To think critically about the causes and consequences of social equality

M. Sc. (Environmental Science)

Programme Outcomes

1.   Students after seeking principals of Environmental Science become a environmentally responsible citizen.

2.   Understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities, and ecosystems.

3.   Understand the processes and patterns of evolution, and the role of evolution as the central unifying concept in environmental science

4.   Understand the historical and social context of environmental science thought and research, and the contributions of environmental science to the resolution of ethical, social, and environmental issues in human affairs

5.   Be well-prepared for meaningful careers and post-graduate education in fields related to environmental science and beyond.

6.   Well-qualified post graduates can seek out opportunities in non-government and government programs in soil conservation, endangered species conservation, water resources management, biodiversity conservation, pollution control, environmental management, and natural resources management.

7.   Post Graduates are also qualified for employment in research organizations such as CSIRO, universities, environmental protection agencies and with environmental planning consultants.