B.Sc-I Chemistry

Course Outcome

1.To promote understanding of basic facts and concepts in Chemistry while retaining the excitement of Chemistry

2.To make students capable of studying Chemistry in academic and Industrial courses and to expose the students to different processes used in Industries and their applications.

3.To expose the students to various emerging new areas of Chemistry and apprise them with their prevalent in their future studies and their applications in various spheres of chemical sciences.

4.To develop problem solving skills in students.

5.To developed ability and to acquire the knowledge of terms, facts, concepts, processes, techniques and principles of subjects.

6.To develop ability to apply the knowledge of contents of principles of chemistry.

7.To inquire of new knowledge of chemistry and developments therein.

8.To expose and to develop interest in the fields of chemistry

9.To develop proper aptitude towards the subjects

10.To develop the power of appreciations, the achievements in Chemistry and role in nature and society.

11.To develop skills required in chemistry such as the proper handling of appara tus and chemicals

B.Sc-II Chemistry
Course Outcome

- To impart knowledge about the synthesis, reactivity and applications of carboxylic acids.
- Student will learn the basic knowledge of conformational analysis of some organic compounds
- Knowledge about classification, preparation and applications of amines and diazonium salts.
- Understanding the classification, configuration and structure of carbohydrates.
- Student will be capable of understanding the nomenclature and reactivity of aldehydes and ketones.
- Learning and understanding basic concepts about coordination complexes.
- Gain knowledge about applications of chelates in Analytical chemistry.
- Student will be capable of understanding the properties of 3d series elements
- Understanding the properties of 4f elements
- Student will learn the basic knowledge about the qualitative analysis of inorganic compounds.
- Learning and coherent understanding of conductivity and transport number of the aqueous solutions with different applications. Experimental determination of transport number and numerical problems
- Knowledge and coherent understanding of basic concepts in thermodynamics and concept of Entropy will be gained by the student.
- Learning and understanding the knowledge about basic concepts in kinetics and third order reaction with characteristics, suitable examples, and methods for determination of order of reactions and numerical problems.
- Learning and coherent understanding of behavior of gases, ideal gas as model system and its extension to real gases. The dependence of physical state on P, V and T. Liquid crystals are essentials in all common and research devices, hence they are introduced with suitable examples.
- Learning and understanding of theoretical basis of adsorption phenomenon, dynamic nature of surface and its applications.
- Learning and understanding of basic concepts in gravimetric analysis
- Students will learn the different water analysis techniques
- Learning and understanding the knowledge about basic concepts in corrosion and electroplating, mechanism of corrosion, principle of electroplating
- Learning and coherent understanding of column and ion exchange chromatography
- Learning of working of petroleum industries, understanding of biofuels, copyrights and trademarks

B.Sc-III Chemistry

Course Outcome

1- Students will gain fundamental knowledge of chemistry which will help them with PG Studies and Research

2- Students will be able to know good laboratory practices and lab safety.

3-To make the learner proficient in analyzing the various observations and chemical phenomena presented to him during the course.

4- Students will be able to apply the fundamental knowledge to address cross- cutting issues such as sustainable development

5- Students will be able to solve various problems by identifying the essential parts of a problem, formulating a strategy for solving the problem, applying appropriate techniques to arrive at a solution, testing the precision and accuracy of the solution and interpreting the results.

6- Students will be able to communicate effectively, i.e., articulate, comprehend and write effective reports, make effective presentations and documentation and express the subject through technical writing and oral presentation.

7-Students will be able to explain fundamental concepts of inorganic, physical, organic, industrial and analytical chemistry.

8- Identify chemical formulae and solve numerical problems.

B.Sc-I Drug Chemistry
Cource Outcome

- To introduce Drug Chemistry which include detail study of Drug will help them to enhance their interdisciplinary approach with vigor.
- To understand the Fundamentals, principals,mathematical concepts and recent developments in the subject area.
- To create a skilled workforce to match the requirements of the society.
- To develop scientific attitude is the major objective so as to make the students open minded,and curious.
- To develop laboratory skills through Practical work and equipments along with the collection and interpretation of scientific data to contribute to science.
- Able to apply the knowledge gained during the of the program from biochemistry, Drug analysis, Medicinal Chemistry and environmental studies.
- Able to communicate easily and Confidently.
- Able to perform multitasking in the fields including Pharmaceuticals and Research.
- The students will graduate with proficiency in the subject of Drug Chemistry.
- Equipped to Understand and Assess Drug Safety and Efficacy

B.Sc-II Drug Chemistry
Cource Outcome

- Recollect the fundamental concepts of Medicinal Chemistry.
- Analyze different Indian systems of medicine and can choose appropriate one.
- Acquire the knowledge of absorption metabolism and distribution of Drugs
- Elustrate Drug metabolism.
- Understand the basic concepts of Bio- instruments
- Understand Centrifugation process and it's type.
- Learn different chromatographic Techniques.
- Introduce advanced chromatographic Techniques.
- Apply different chromatographic Techniques for separation and Purification.
- Synthesis organic Pharmaceutical compounds.
- Separate out compounds by chromatographic Techniques.
- Prepare ayurvedic Dosage from.
- Explain Thermoregulation in body.
- Differentiate and Evaluate different electrophoresis Technique
- Illustrate the mechanisms of adsorption
- Calculate equilibrium constant from electromotive force.
- Introduce mixing and homogenization Technique
- Analyze extraction method for galenical product and able to select appropriate method.
- Differentiate distillation methods and select suitable distillation method
- Develope Preparative skill in syrup Preparation
- Prepare Elixirs
- Prepare various solutions
- Synthesis different types of creams
- Recapitulate the knowledge about Amine, diazonium salts
- Explain reactions and Synthesis of amino acids, nucleic acids and protein
- Explain application of various name reactions
- Discuss nomenclature of conformation isomers.
- Explain basic terms related to spectrothotometer
- Illustrate electro analytical methods and it's principal
- Predict analysis method for various materials
- Compare the various analysis Techniques
- Identify organic compounds by qualitative analysis
- Standardize and estimate Quantity of acetone, glycine etc.
- Synthesize organic compounds and calculate precent Practical yield of various organic compounds
- Explain carbohydrate metabolism
- Interpret knowledge about lipids

- Illustrate fundamental of lipids metabolism
- Recite the knowledge about Vitamin and Minerals
- Recite the knowledge about titration and know about it's type.
- Explain various application of various titrations in different fields
- Interpret the importance of different analytical Technique.
- Compute basic terms related to Turbidimetric analysis.
- Remember limits tests for inorganic compounds in drugs and Phamaceutical
- Determine amount of substance present in given sample by precipitation titration
- Analyze the acidity or alkalinity of various samples
- Calculate TDS of water
- Recapitulate basic knowledge about spectroscopy
- Illustrate fundamental of IR Spectroscopy
- Explain the basic concepts of UV-Visible Spectroscopy
- Discuss importance of Nuclear Magnetic Resonance Spectroscopy
- Interpret crystal structure by X-ray diffraction
- Describe the impof Magnetic Resonance Imaging
- Explain Applications of radioactive elements in medicine.
- Elaborate customized Drug Delivery system

B. Sc. I Botany

Course Outcomes

CO1. Students will able to recognize the structure, types and multiplication of viruses.

CO2. Students will able to understand the bacterial types, structure and mode reproduction

CO3. Students will able to identify the different types of algae and their importance in day today life.

CO4. Students will able develop the skills for the production of different type of Bio fertilizers,

CO5. Students will able to distinguish the prokaryotic and eukaryotic organisms and acquire the knowledge of different plant cell organelles and its role in the plant body.

CO6. Students will able to understand the different types of cell division and it's phases.

CO7. Students will able to handle all types of microscope.

CO8. Students will able to develop a skill in the chromatography techniques.

CO9. Students will able to identify and classify the different fungi and also realize the economic importance of fungi.

CO10. Students will able to identify the lichens on the basis of morphology and to know the medicinal value of the lichens.

CO11. Students will be able to recognize the different plant diseases and their management

CO12. Students will able to develops the soft skill technique in the Mushroom Cultivation and realize the commercial status of the mushrooms.

CO13. Students will able to identify the bryophytes their importance.

B. Sc. II Botany

Course Outcomes:

Paper V:

Aftersuccessful completion of the course, the students will be able

1. To know the scope and importance of the plant systematics.
2. To understand plants morphology, nomenclature and classification
3. To prepare and demonstrate herbarium and to understand importance of Botanical gardens
4. To examine internal organization of plant organs
5. To differentiate and understand plant tissue systems.
6. To analyze the composition of different parts of plant.

Paper: VI

After successful completion of the course, the students will be able

1.To understand the principles of Mendelian inheritance and gene interaction

2. To differentiate between structural and numerical variations in chromosomes

3. To analyze and solve genetic problems on linkage and crossing over.

4. To know the composition anal significance of nucleic acids

5. Tosummarize concept of central dogma andgenetic code

Paper VII:

After successful completion of the course, the students will be able

1. To understand core concepts of biotic and abiotic components.
2. To gain and insight in to the diverse ecosystem, related food web and ecological pyramid.
3. To prepare map of Phytogeographical regions of India.
4. Know importance of plants and plant products and their utility.
5. To know the canter of origins of different crop plants.
6. To understand importance and conservation of Germplasm

Paper VIII:

After successful completion of the course, the students will be able

1. To understand various physiological processes in plants.
2. To understand significance and mechanism of photosynthesis.
3. To know the process of respiration in higher plants.
4. To design outlines of landscaping and home gardening.
5. To propagate plants by seed and vegetative propagation.
6. To prepare different types of gardens and to know garden equipment's.

Bsc I Computer Science

Course Outcomes

1. Demonstrate a familiarity of computer programming language concepts.
2. Understand to develop C programs on Linux platform.
3. Use basics of C language syntax as identifiers, keywords, variables, data types and operators
4. Apply the concept of branching, looping, decision-making statements and Array for problem solving
5. Describe the basic concepts of DBMS and various databases used in real applications.
6. Demonstrate the principles behind systematic database design approaches.
7. Describe the fundamental elements of Relational Database Management Systems.
8. Use various commands in data languages with example.
9. Understand basic structure if C Programming, declaration and usage of variables, use of data type and operators.
10. Implement control structures and array to develop a C program.
11. Design database for business applications.
12. Use various commands in data languages on databases.
13. Demonstrate a familiarity of computer programming language concepts.
14. Understand to develop C programs on Linux platform.
15. Use basics of C language syntax as identifiers, keywords, variables, data types and operators.
16. Apply the concept of branching, looping, decision-making statements and Array forproblem solving.
    a. Describe the basic concepts of DBMS and various databases used in real applications.
    b. Demonstrate the principles behind systematic database design approaches.
    c. Describe the fundamental elements of Relational Database Management Systems.
    d. Use various commands in data languages with example.
17. Understand about the use of Office Package and internet in daily life
18. Surf details through Internet.
19. Understand the components of office automation
20. Prepare different types of official documents using OpenOffice Writer.
21. Perform various activities based on internet.
22. Perform operations using OppenOffice Writer.

.Learn HTML tags and programming concepts and techniques.

24.Analyze a web page and identify its elements and attributes.

25.Develop the ability to logically plan and develop web pages.

26.Learn to write, test, and debug web pages using HTML.

27.Understand the concept and importance of pointers in C language.

28.Demonstrate an understanding of functions in problem solving.

29.Understand working of structure and dynamic memory allocation.

30.Apply file handling techniques using C language.

31.Understand various functions and subqueries.

32.Understand various joins and views.

33.Use the control statements and stored procedures. 4) Use the cursors and triggers.

34.Understand how to reuse code using functions and pointers and MLA functions to allocate memory at run time.

35.Define a structure to declare the data members of different data types according to needs and handles different file handling techniques using C language.

36.Use of functions, queries, sub queries, joins and views on databases.

37.Use of stored procedures and triggers on databases.

38.Understand the concept and importance of pointers in C language.

39.Demonstrate an understanding of functions in problem solving.

40.Understand working of structure and dynamic memory allocation.

41.Apply file handling techniques using C language.

42.Understand various functions and subqueries.

43.Understand various joins and views.

44.Use the control statements and stored procedures.

45. Use the cursors and triggers.

46.Understand how to reuse code using functions and pointers and MLA functions to allocate memory at run time.

47.Define a structure to declare the data members of different data types according to needs and handles different file handling techniques using C language.

48.Use of functions, queries, sub queries, joins and views on databases.

49.Use of stored procedures and triggers on databases.

50.Apply data validation, data formatting and conditional formatting using OpenOffice Calc.

51.Perform the data analysis computations by using various functions and formulae in OpenOffice Calc.

52.Improve presentation skills using OpenOffice Impress.

53.Create business multimedia presentations using OpenOffice Impress.

54. Apply CSS to HTML documents to create visually appealing and well-organized web pages.
55. Design and implement responsive layouts that adapt to different screen sizes.
56. Use developer tools to identify and fix common CSS problems.
57. Implement layouts using Flexbox and Grid for efficient and modern design.
58. Apply CSS to HTML documents to create visually appealing and well-organized web pages.
59. Design and implement responsive layouts that adapt to different screen sizes.
60. Use developer tools to identify and fix common CSS problems.
61. Implement layouts using Flexbox and Grid for efficient and modern design.

Bsc II Computer Science

Course Outcomes

1. understand the principles of web design.
2. construct basic websites using HTML and Cascading Style Sheets.
3. build dynamic web pages with validation using JavaScript.
4. develop a modern web application that meets the current industry requirement.
5. understand the principles of web design.
6. understand how C++ improves C with object oriented features
7. learn syntax and semantics of C++ programming language
8. learn how to write inline functions for efficiency and performance.
9. learn how to overload functions and operators in C++.
10. learn how to design C++ classes for code reuse.
11. learn how inheritance promotes code reuse in C++.
12. learn how inheritance and virtual functions implement dynamic binding with polymorphism.
13. understand the concept of information security management.
14. learn different access control methods.
15. understand wireless network security.
    learn cyber security laws and the importance of security audit.
16. understand the basic concepts such as Abstract Data Types, Linear and Non-Linear Data structures.
17. choose appropriate data structures to represent data items in real-world problems.
18. analyze the time and space complexities of algorithms.
19. design programs using a variety of data structures such as array, stacks, queues, and linked list.
20. analyze and implement various kinds of searching and sorting techniques.

Bsc III Computer Science

Course Outcomes

1. use the syntax and semantics of java programming language and basic concepts of OOP.
2. apply the concepts of Multithreading and Exception handling to develop efficient and error free code
3. develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
4. design and program stand-alone Java applications and GUI
5. understand framework and architecture of .NET.
6. learn common type system of .NET.
7. learn object oriented concepts of C#.net
8. learn graphical user interface (GUI) with windows form controls their properties, methods and events.
9. learn architecture and basics of Linux Operating System.
10. understand the kernel-shell and general purpose utilities.
11. understand file system of Linux operating system.
12. understand why Python is a useful scripting language for developers.
13. learn how to write loops and decision statements in Python.
14. learn how to use lists, tuples and dictionaries in Python programs.
15. use of functions and modules in Python programs.
16. develop distributed business applications, develop web pages using advanced server-side programming through servlets and Java server pages.
17. demonstrate approaches for performance and effective coding.
18. learn database programming using Java.
19. study web development concept using Servlet and JSP.
20. understand Web server, HTTP request response architecture.
21. learn Web forms and their controls.
22. learn state management in web forms.
23. learn filters with the help of regular expression.
24. learn advanced BASH shell Programming.
25. learn how to use exception handling in Python applications for error handling.
26. makes code more reusable and easier to work with larger programs using oops.
27. understand Python programming using Django framework.
28. develop web pages or web applications using Django.

Shivaji University, Kolhapur
Physics

B.Sc-I Course Outcomes

1: Highlight different types of velocities of gas molecules.

2: Acquire Knowledge of Maxwell's distribution of gas molecules

3: Visualize Merits and drawbacks of thermometers.

4: Apply knowledge of thermodynamic processes in design of heat engine.

5: Apply superposition principle to develop mathematical model of harmonic oscillators

.

6: To develop the mathematical model for coupled oscillations.

7: Understand the ultrasonic waves and their applications.

8: Use of Basic principles of sound in context of acoustics of buildings.

9: Develop Conceptual clarity of thermodynamic functions and Clausius-Clapeyron equation.

10: Appreciate the problem associated with the black body radiation spectrum

.

11: Know, how the problems can be solved by using Planck's law of radiation.

12: Acquire preliminary knowledge of classical and quantum statistical mechanics.

13: Draw ray diagrams to demonstrate Cardinal points.

14: Determine the resolving power of prism and grating by making use of Rayleigh criterion.

15: Qualitatively study phenomenon of polarization of light.

16: Apply phenomenon of interference of light for determination of its wavelength.

17.Students are able to understand the physical significance of gradient, divergence and curl .

18 Students are able to apply concepts in vector calculus such as gradient, divergence and curl related to vector and scalar fields using Gauss, Stokes and green`s theorem.

19Students are able to understand and apply concepts of electrostatic field, potential to point charges, electric dipole and geometrically regular charged bodies.

20. Students are able to understand and apply concept of capacitor to isolated conductor, parallel plates, cylindrical and spherical capacitors and allied modifications in it.

21.Students are able to understand and apply concept of energy density in electric field.

22. Students are capable of applying above concepts to solve numerical exercise in electrostatics.

Shivaji University, Kolhapur
Physics

B.Sc - II course outcomes

1.Students are able to understand and identify scalar and vector physical quantities in mechanics .

2. Students are able to understand and apply vector algebraic methods to elementary exercises in mechanics .

3.Students are able to understand and identify degree and order of given differential equations.

4.Students are able to solve second order, homogenous ordinary differential equations in mechanics.

5. Students are able to understand the conceptual evolutionof conservation laws of momentum and energy for both single and system of particles.

6. Students are able to understand and apply basicconcepts of rotational motion In general.

7.students are capable of correlating above concepts and methods in mechanics to both theoretical and experimental domains revealing analytical as well as numerical skills.

8.Students are able to understand and apply Newtons Law of Gravitation to celestial objects.

9. Students are able to understand geometry of planetary orbits under the action of central force.

10. Students are able to solve numerical problems based on Kepler`s Laws of planetary motion .

11.Students are able to understand simple concepts like weightlessness, Geosynchronous satellite and GPSStudents are able to setup differentialequation

for simple harmonic motion and its allied cases. Students are able to calculate time averages of KE, PE and TE.

12. Students are able to revise basic concepts such as stress, strain and elastic constants of elasticity.

13. Students are able to derive elastic constants for beam supported at both ends and at one end.

14.Students are able to derive elastic constant (eta) of a wire under torsional oscillations (Searle's Method).

15.Students are able to explain the phenomenon of surface tension on the basis of molecular forces.

16.Students are able to derive the relation between surface tension and excess pressure.

17.Students are able to understand the physical significance of gradient, divergence and curl .

18. Students are able to apply concepts in vector calculus such as gradient, divergence and curl related to vector and scalar fields using Gauss, Stokes and green`s theorem.

19. Students are able to understand and apply concepts of electrostatic field, potential to point charges, electric dipole and geometrically regular charged bodies .

20.Students are able to understand and apply concept of capacitor to isolated conductor, parallel plates, cylindrical and spherical capacitors and allied modifications in it.

21. Students are able to understand and apply concept of energy density in electric field.

22.Students are capable of applying above concepts to solve numerical exercise in electrostatics.

Course Objectives

- **Course Objectives (COs): Animal Diversity**

The course on animal diversity is aimed at making the student to:

1. understand the concept and importance of biodiversity

2. Enable the students to identify the similarities and differences among the animals in different Phyla and classes.

3. develop sensitivity for the conservation of biodiversity in their day-to-day life.

4. equip the students with the skills of dissection.

- **Course Objectives (COs): Cell Biology**

The Course on cell biology is aimed at making the students to:

1. understand the general organization of cell organelles and their functions.

2. apply their knowledge to study the functioning of a cell and cell divisions and its regulation.

3. analyze the role of cell organelles and cell cycle checkpoints with examples of anemia, diabetic wounds, and cancer.

4. equip the students with skills like handling the microscope, micrometry, staining techniques, etc.

- **Course Objectives (COs): Genetics**

The course in Genetics is aimed to make the students to:

1. understand heredity and variation.

2. apply their knowledge to draw the genetic crosses based on patterns of heredity.

3. Culture the Drosophila and handling skills among the students.

4. enable the students to develop a. a gene map using data of crossing over and linkage study, b. draw, and analyze pedigree c. analyze karyotypes.

- **Course Objectives (COs): Ecology, Ethology, Evolution, and Entomology**

The Course in ecology, ethology, evolution, and entomology is aimed to make the students to:

1. understand the basic concepts.

2. enable the students to identify the amazing features of the insect world.

3. train students to arrange the animals on a geological time scale.

4. mold the student to apply their knowledge to construct food chains, food webs, and ecological pyramids.