

## **COURSE OUTCOMES**

### **Department of English**

#### **Semester I program outcomes**

English for advancement has been prepared to meet the needs and interest of the students.

Each unit includes a section of short fiction, prose, poetry.

Students can improve their grammatical skills, vocabulary skills pronunciation ,language skills and soft skills.

With all the above skills the students can strengthen their understanding of the language.

By using all the above skills the students can improve their ability to communicate fluently in English.

#### **Semester II program outcomes**

From the second sem four units the students can improve not only the language abilities but also their life skills.

It offers language skills ,grammar vocabulary ,conversation and reading passages to suit the present day needs of the students.

The second sem syllabus comprises of number of exercises and activities have been included in the text to make the student interactive and friendly.

#### **Semester III program outcomes**

Third sem text contains selected literary pieces offering glimpses of life and the world from different aspects.

Students can learn the passages in the reading comprehension section includes information about eminent personalities as well as art forms indigenous to Telangana.

There are number of exercises in grammar in each unit this will help students in bettering their grasp of the language and increasing the level of confidence in day-to-day activities in which English has come to play an integral role in their lives.

### **Semester IV program outcomes**

Students will become accomplished by improving reading skills from this semester text. They can articulate their own interpretations with an awareness and curiosity for other perspectives.

From the text they can improve the writing skills. They can able to write effectively for a variety of professional and social settings by this text.

They can develop and Awareness of confidence in their own voice. students will develop an appreciation of how the formal elements of language and general shape meaning. From this text they can develop an ability to read text in relation to their historical and cultural contexts.

Students will demonstrate the skills needed to participate in a conversation that builds knowledge collaboratively by the syllabus.

## **Hindi :**

### **Semester I**

Through stories and Indian culture students can understand our rich culture and heritage.

Learning grammar can help students to improve their Hindi language speaking and writing skills.

Group discussions and seminar programs promote student-centric learning.

### **Semester**

#### **II**

Through karyalayeen Hindi translation students can improve their interest to joining in functional Hindi P.G. Course.

Various writer's essay topics can help students to know about human relations and become a good citizen.

Stories and can improve students

### **Semester**

#### **III**

By learning Hindi, students can improve their communication skills. Effective communication skills help in securing jobs.

Hindi literature helps the students to build the skills of creative and intellectual ideas and makes them to enrich their career.

Moreover, it makes to enquire everything with an awareness and curiosity as literature reflects the life.

### **Semester IV**

Through old and medieval poetry they learn the human values and practice in the day-to-day life.

The main outcome of studying literature will widely help to express and improve the ability to read works of literary, historical and cultural criticism

Essay writing in various topics can help to know about present day situation in the society.

## **HISTORY :**

### **Semester-1 INDIAN HISTORY**

Describe Prehistory and Protohistory .

Describe Prehistory and Protohistory

Understand the salient features of Indus valley civilization

Evaluate the features of Buddhism and Jainism

Visualize the administration of Mauryas and the art and architecture of Mauryas

Identify the administration of Guptas and their contribution to Nalanda University

Examine the Arab conquest of Sindh and the battle of Tarain.

The study of Indian history and culture has been studied with the understanding of the following.

About history customs .

About the geographical features of India.

About the emergence of society.

### **Semester-II HISTORY OF INDIA**

Understand the foundation of the Pallavas, Chalukyas and the administration, Economy and society and literature.

Understand the foundation of the Delhi sultanate and the Sultanate administration.

Recognise the Socio, economic and religious conditions and art and literature under Kakatiya .

Recognise the Socio, economic and religious conditions under Vijayanagar Empire.

Identify the condition of India under the Mughal Empire.

Explain the Administration and art and architecture of Mughals.

Analyse the rise of the Marathas and the contribution of Shivaji.

#### **SEMESTER III HISTORY OF INDIA**

The students studied for the first time with an understanding of these issues and their understanding through the study of Indian history and culture.

Identify the condition of India under the Mughal Empire.

Explain the Administration and art and architecture of Mughals.

Analyse the rise of the Marathas and the contribution of Shivaji.

This paper deals with political, economic and social changes of European countries like France, Spain, Austria, Russia etc.

This paper studies about Formation, Expansion and Consolidation of British Empire in India under East India Company

#### **SEMESTER IV HISTORY OF INDIA**

Describe Early Resistance against British East India Company

Recognizes the integration of Indian states and Sardar Vallabai Patel's effort for this.  
II0 Examine the internal and external policy of Jawaharlal Nehru,

Classify Socio-religious movement of India

Classification early Political cultural activities of India.

Evaluate consolidation of English Power in India

Analyse social religious consciousness in India .

Comparison of Nationalist movements Pre-Gandhi and Post-Gandhian Era

Trace the impact of Non Cooperation movement.

Highlight the significance of Government of India Act of 1935.

Learn the legacy of the British rule in India.

### **SEMESTER V WORLD HISTORY\*1**

Describe the Geographical discoveries and the Renaissance movement in Europe.

Assess the causes and effects of Reformation and Counter-Reformation movements.

Narrate the enlightened despotism in Europe, especially in France, Prussia and Austria.

Students learn about the reformation movement and counter reformation.

Students know about the glorious revolution in England,

Students understanding about the feudalism and industrial revolution.

Students learn about the French revolution and America revolution

### **HISTORY OF TELANGANA\*1**

Identify geo graphical features of Telangana.

Analysis the early human settlements .

Understanding of post satavahana period0 ikshvakus,vishnukundis,polity and economy literature and art.

Recognise the Socio, economic ,Administration and religious conditions and art and literature under Kakatiyas .

Student know about the sammakka and sarakka revolt.

Recognise the Socio, economic ,Administration and religious conditions and art and literature under qutb shahis of golconds.

## **SEMESTER VI WORLD HISTORY\*2**

Realize the cause and results of French Revolution and the achievements of Napoleon Bonaparte.

Visualize the importance of revolt of 1830 and 1848 in France and the efforts of Bismarck for the unification of Germany.

Understand the causes and results for the First world war.

Examine the Nazism and Fascism in German and Italy.

Understand the role of Peter the Great and Catherine II in Russia

Understand the causes and results of Second World War and the establishment of UNO.

## **HISTORY OF TELANGANA\*2**

Understanding of Asafjahi  
dynasty.

Analysis the rule of Mir osman ali khan

Students know about the development of nizam periods.

Classify Telangana culture

Students learn about the role of intellectuals and employees movement in 1969.

Students know about the gentle men s agreements.

Students understand the loses of union of Andhrapradesh.

Students learn of second phase movement for separate Telangana.

Students should understand the value of need to formation of Telangana.

## **ECONOMICS :**

### **Semester I BA I Year - Micro Economics – I**

#### **Upon completion of Micro Economics I, students should be able to**

- Understand the traditional and modern definitions of Economics
- Become familiar with the broad contours of Economics and its methodologies, tools and analysis
- Understand the different schools of Economic thought and various aspects related to methodology of social science research
- Analyse the behavior of consumers in terms of demand for goods
- Understand the working of the market forces of demand and supply
- Analyse the behavior of producers in trying to minimize costs and maximize profits

### **Semester II BA I Year - Micro Economics – II**

#### **Upon completion of Micro Economics II, students should**

- Understand the different concepts of costs and revenue and their effect on firm behavior
- Comprehend different objectives of the firm
- Be aware of conditions for equilibrium of firm in short run and long run
- Understand price determination under different market conditions
- Be familiar with the concepts of rent, wages, interest and profit and their determination

### **Semester III BA II Year - Macro Economics**

#### **Upon completion of Macro Economics , students should**

- Be able to comprehend the difference in analyzing micro economic concepts and macro economic theory
- Understand the classical theory and Keynesian theory of determination of income, output and employment
- Understand the concept of money and the various functions it performs
- Be familiar with the concept of trade cycles
- Understand the functions of commercial banks and the central bank

### **Semester IV BA II Year - PUBLIC FINANCE AND INTERNATIONAL TRADE**

#### **Upon completion of this course, students should be able to**

- Distinguish between public finance and private finance
- Identify the various sources of public revenue
- Understand the details of public expenditure and how public debt is redeemed
- Arrive at an understanding of the theories of international trade
- Understand the impact of tariffs, quotas on exports and imports
- Understand the components of balance of payments and analyze the causes for disequilibrium and measures to correct it

## **Semester V BA III Year - INDIAN ECONOMY**

### **Upon completion of this course, students should be able to**

- Comprehend the structure and planning of the Indian economy
- Be aware of the various measures of economic growth and economic development
- Understand the trends in growth of national income
- Identify the causes, consequences of poverty and unemployment and the remedial policy measures to tackle them
- Arrive at an understanding about the changing trends in agricultural production and productivity
- Identify the problems in the industrial sector and be aware of implementation of policy resolutions of 1948, 1956 and 1991
- Understand the expanding role of the service sector which includes transport, banking, insurance, etc

## **Semester V(A) BA III Year - Economics of Development and Infrastructure**

### **Upon completion of this course, students should be able to**

- Differentiate between the concepts of economic growth and economic development
- Analyse the factors affecting economic development
- Understand the trends in population growth based on the demographic theory of transition
- Understand the different theories of economic development
- Be aware of the role of technology and physical infrastructure in economic development

## **Semester VI BA III Year - Telangana Economy**

### **Upon completion of this course, students should be able to**

- Understand the economic history of Telangana
- Know the demographic features of Telangana
- Understand the trends in gross state domestic product, poverty, unemployment and inequalities
- Be aware of cropping pattern in the agricultural sector
- Understand the role of Special Economic Zones and industrial finance in the industrial policy of Telangana state

- Identify the growth in service sector in terms of transport, energy, information technology

### **Semester VI(A) BA III Year - Economics of Agriculture**

#### **Upon completion of this course, students should be able to**

- Understand the concept of agricultural economics
- Analyse the various land reforms that have been introduced
- Interpret the trends in agricultural production and productivity
- Understand the role of micro finance in agricultural credit
- Be aware of diversification of agricultural economic activities

## **POLITICAL SCIENCE:**

### **SEM-I B.A I Year CONCEPTS, THEORIES AND INSTITUTIONS.**

- To understand the nature and scope of political theory.
- To understand the significance of political theory.
- To acquaint with the theories, approaches, concepts and principles of political theory.
- To appreciate the procedure of different theoretical ideas in political theory.
- To Interpret and assess information regarding a variety of political theory.
- To understand the various traditional and modern theories of political science.
- To comprehend the sources of political information's

To evaluate the theories of origin of the state.

### **SEM-II B.A I Year CONCEPTS, THEORIES AND INSTITUTION**

- To understand the concept of state, nation and civil society
- . • To understand the elements and factors of state and

nation

- . • To know about the meaning sovereignty, types and characteristics.
- To analyse critically the theories of monism and pluralism.
- To learn the origin of the concepts such as Law, power, authority, and legitimacy.
- To understand the forms of government in various countries and their working pattern
- To compare with procedure of various social institutions and government institutions.
- To analyze the meaning of organs of government and theory of separation of power

**SEM III B.A II Year - INDIAN GOVERNMENT AND POLITICS  
(Government and Politics)**

1 To understand the philosophy of Indian constitutions.

1 To understand philosophical foundations, philosophy and preamble of the Indian constitution.

1 To identify the causes, impact of British colonial rule.

1 To appreciate the various phases of Indian national movement.

1 To create value in young youth regarding the patriotism.

1 To understand the various Government of Indian acts their provision and

reforms.

1 To know the salient features in making of Indian constitution

1 To appreciate the socio-economic political factors which lead to the freedom struggle

·SEM-IV B.A II Year - INDIAN GOVERNMENT AND POLITICS **(Government and Politics)**

- . • To understand the constitutional orderings and institutional arrangement.
- To appreciate the fundamental rights and duties and the directive principle of state policy
- To evaluate the evolution, functioning and consequences of political parties in India.
- To identify how electoral rules and procedure in India effect election outcomes.

**SEM-V PAPER-5 B.A.III - POLITICAL THOUGHT. (ANCIENT & MEDIEVAL POLITICAL THOUGHT.**

- To demonstrate knowledge of key thinkers and concepts
- To understand the nature, methods and significance of political thought.
- To analyse the theory of ancient & medieval political thought of Greek and India.
- To appreciate the ideas of them in context of classification of government, law and revolutions and slavery. • To acquire knowledge about modern political thinkers and theirs view on state craft

·SEM B.A.III - POLITICAL THOUGHT. (WESTERN AND **INDIAN POLITICAL THOUGHT)**

Getting information about western thinkers and their political thoughts.

Comparative study of the ancient thoughts and modern thoughts.

To understand the relationship between religion and politics in early modern western political thought

To appreciate the ideas of them in context of classification of government, law and revolutions and slavery of Mohan Das Karam Chand Gandhi- Ahimsa , satyagraha,.

To understand the Dr.BR. Ambedkar- Theory of caste , annihilation of caste and state socialism.

### **SEM-VI PAPER-7 B.A.III - INTERNATIONAL RELATIONS**

To understand the evolution, scope and significance of international relations and the rise of sovereign state system

To analyze the history of international relations through the causes and phases of colonialism.

To know the impact of first world war and second world war and its causes and consequences \*

To criticize the various ideologies which lead to the destruction of world. \*

To appreciate the post war developments through the emergence of third world. \*

To understand the concept of power, national, regional ,global and peace security \*

To acquaint with the international organizations and their modules nations. \* To

understand the international political economy. \*

**SEM-VI PAPER-8 B.A.III - INTERNATIONAL RELATIONS**

To analyse the international security Arms Race. Arms control and Disarmament. \* To understand the emerging area in international relations \*. To appreciate the foreign policy their determinants features& its relevance. \*

To critically analyse the Indian's bilateral relations with major power and neighboring countries. \* To identify various issues and challenges towards international relations \*  
To learn about issues of diversity and internationalism.

## **Mathematics:**

### **I Semester: Differential Calculus**

- o Explain the relationship between the derivative of a function as a function and the notion of the derivative as the slope of the tangent line to a function at a point.
  - o Compare and contrast the ideas of continuity and differentiability.
- o To inculcate to solve algebraic equations and inequalities involving the sequence root and modulus function
- o To able to calculate limits in indeterminate forms by a repeated use of L' Hospital rule.
- o To know the chain rule and use it to find derivatives of composite functions.
- o To find maxima and minima, critical points and inflection points of functions and to determine the concavity of curves.
  - o To able to evaluate integrals of rational functions by partial fractions

### **II Semester : Differential Equations**

- o . The main aim of the course is to introduce the students to the technique of solving various problems of engineering and science
- o Distinguish between linear, nonlinear, partial and ordinary differential equations.
- o Solve basic application problems described by second order linear differential equations with constant coefficients.
- o Find power series solutions about ordinary points and singular points. Find the transforms of derivatives and integrals.
- o Obtain an approximate set of solution function values to a second order boundary value problem using a finite difference equation.

- o Solve a homogeneous linear system by the eigenvalue method.
- o Obtain an approximate set of solution function values to a second order boundary value problem using a finite difference equation.

### **III Semester : Real Analysis**

Describe the basic difference between the rational and real numbers.

Give the definition of concepts related to metric spaces such as continuity, compactness, convergent etc.

Give the essence of the proof of Bolzano-Weierstrass theorem, the contraction theorem as well as existence of convergent subsequence using equicontinuity. Evaluate the limits of wide class of real sequences.

Determine whether or not real series are convergent by comparison with standard series or using the ratio test. Understand and perform simple proofs.

Students will be able to demonstrate basic knowledge of key topics in classical real analysis. The course provides the basic for further studies with in function analysis, topology & function Theory.

### **IV Semester :**

#### **Algebra**

To classify numbers into number sets.

To combine polynomial by addition or subtraction

To solve problems of simple  
Inequalities

Interpret basic absolute value  
expression

To simplify algebraic expressions, using the commutative, associative and Distributive

properties.

## **V Semester: Linear Algebra**

Linear Algebra emphasizes the concept of vector spaces and linear transformations which are essential in simplifying various scientific problems.

It aims at inculcating problem solving skills within students to enable them compute large linear systems.

The practical applications of “Linear Algebra” are in demography, archaeology, electrical engineering, fractal geometry and traffic analysis.

### **Elective: Solid Geometry**

- use key standards and conventions to communicate graphic ideas and information
- demonstrate knowledge and understanding of plane and solid geometry
- use geometrical skills to solve simple real-world problems
- develop technical skills in sketching and drawing
- develop skills in interpreting simple design briefs
- plan, organize and prepare a set of drawings to a design brief.

## **VI Semester**

### **1. Numeric Analysis**

Solve an algebraic or transcendental equation using an appropriate numerical method

Approximate a function using an appropriate numerical method.

Solve a differential equation using an approximate numerical method Evaluate a derivative at a value using an appropriate numerical method.

Solve a linear system of equations using an appropriate numerical method

Perform an error analysis for a given numerical method Prove results for numerical root finding methods.

Calculate a definite integral using an appropriate numerical method Code a numerical method in a modern computer language.

### **Elective : Vector**

#### **Calculus**

- o Vector calculus motivates the study of vector differentiation and integration in two and three dimensional spaces.

- o It is widely accepted as a prerequisite in various fields of science and engineering.

- o It offers important tools for understanding functions (both real & complex) non-Euclidean geometry and topology.

- o These tools are employed successfully in different branches of engineering and physics (such as electromagnetic fields, fluid flow and gravitational fields).

## PHYSICS :

BSc Physics course student will be able to understand the depth knowledge of various topics of physics demonstrate skills and competencies to conduct wide range of specific experiments. Identify their area of interest in academic and R&D. Perform job in various fields.

### BSC PROGRAMME

#### FIRST YEAR

#### SEMESTER – I

Title of Paper Mechanics Course code BS105 Credits 5

Total Hours 56

On successful completion of the course students have

CO1: Grasped the fundamentals of vector analysis, like gradient Divergence and

Curl and different types of Frames of Reference and transformation laws, both Galilean and Lorentz.

CO2: Learned conservation laws of energy and linear angular momentum and apply them to solve problem.

SECOND SEMESTER – II

Title of Paper Waves and Oscillation

Course code BS205 Credits 5 Total Hours 48

CO1: Learn the fundamentals of harmonic oscillator model, including damped and forced oscillators and grasp the significance of terms like quality factor and damping coefficient.

CO2: Study the general solution wave motion in general and TM Waves in stretched

strings and longitudinal waves.

## SECOND YEAR

### SEMESTER – III

Title of Paper Thermal Physics

Course code BS205

Credits 4+1 Total Hours 48

CO1: Become familiar with various thermodynamic process and work done in each process.

CO2: Have a clear understanding about Reversible and Irreversible process and knowing the concept of Entropy.

CO3: Familiarizing in depth weins, Raleigh Jeans and Planck's Theory and statistical distribution of Maxwell boltzmann, Bose Einstien and Fermi Dirac statistics.

### SEMESTER – IV

Title of Paper Optics Course code BS405

Credits 4+1 Total Hours 48

CO1: Use the Principles of wave motion and superposition to explain physics of interference, diffraction and polarization.

CO2: Understanding the basics of aberrations like spherical and chromatic and how to rectify them .

III YEAR

SEMESTER – V

Title of Paper Electromagnetism

Course code BS505

Credits 3+1 Total Hours 42

CO1: Have gained elaborated knowledge about electrostatics and laws governing charges, electric potential etc.

PAPER – VI (b)

Title of Paper Modern Optics

Course code BS506

Credits 3+1 Total Hours 42

CO1: In depth knowledge of lasers, their rate equations types and applications of lasers.

CO2: Concept of holography and Fiber Optics.

SEMESTER – VI

Title of Paper Modern Physics

Course code BS605

Credits 3+1 Total Hours 42

CO1: To Become familiar with Black body radiation ultra violet catastrophe photo electric effect, Compton effect have gained a clear knowledge about wave nature of particles De Broglie waves and implication of uncertainty principle.

CO2: Have gained ideas of Quantum Mechanics and schrodinger equation. Nuclear

composition and various nuclear models. Have a deep knowledge about Radio activity, Nuclear fusion, Fission and Nuclear Reactors.

Title of Paper Basic electronics

Course code BS606

Credits 3+1 Total Hours 42

CO1: Have a basic knowledge of Network Theorems and Semi conductor physics.

CO2: Understanding the basics of diode and working of Rectifier circuits Analyze the characteristics of transistor.

CO3: Understanding the fundamentals of Digital Electronics like number systems Boolean Algebra and logic gates.

## **Chemistry :**

Chemistry is referred to as the science that systematically studies the composition, properties, and reactivity of matter at atomic and molecular level. The study of chemistry comprises Organic chemistry, Inorganic Chemistry, Physical Chemistry and General Chemistry. The degree programme in chemistry also covers overlapping areas of chemistry with physics, biology, environmental sciences. To enhance employability of graduates of chemistry, the curricula include learning experience with industries and research laboratories as interns. In addition, employability of B.Sc. Chemistry graduate is given due importance such that their core competency in the subject matter, both theoretical and practical, is ensured. To expand the employability of graduates, a number of skill development courses are also introduced in this framework.

### **Program Learning**

#### **Outcomes**

The student graduating with the Degree B.Sc Chemistry should be able to acquire

(i). Systematic of the fundamental concepts in Physical chemistry, Organic Chemistry, Inorganic Chemistry,

Analytical Chemistry and all other related allied chemistry subjects.

(ii). The students will be able to understand the characterization of materials.

(iii). Students will be able to understand the basic principle of equipments, instruments used in

the chemistry laboratory.

(iv). Students will be able to demonstrate the experimental techniques and methods of their area of

specialization in

Chemistry.

(v). A graduate student is expected to understand both theoretical and experimental/applied chemistry

knowledge in various fields of interest like Analytical Chemistry, Physical Chemistry, Inorganic

Chemistry, Organic Chemistry, Material Chemistry.

### **Course Learning**

#### **Outcomes**

The course learning outcomes are aligned with program learning outcomes. The core courses shall be the backbone of this framework whereas discipline electives, generic electives and skill enhancement courses would add academic excellence in the subject together with multi-dimensional and multidisciplinary approach.

### **Inorganic Chemistry**

#### **(I-VI)**

On completion of this course, the students will be able to understand:

Learning objective:

Learning scientific theory of atoms, concept of wave function.

To predict the atomic structure, chemical bonding, and molecular geometry.

To understand atomic theory of matter, composition of atom.

Identity of given element, relative size, charges of proton, neutron and electrons, and their assembly to form different atoms.

Physical and chemical characteristics of elements in various groups and periods according to ionic size, charge, etc. and position in periodic table.

Characterize bonding between atoms, molecules, interaction and energetic, hybridization and shapes of atomic, molecular orbitals, bond parameters, bond- distances and energies.

Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.

Chemistry of s, p, d, f-block elements.

Chemistry of noble gases.

Structure, bonding of s and p block materials and their oxides/compounds.

Understanding chemistry of boron compounds and their structures.

Chemistry of noble gases and their compounds; application of VSEPR theory in explaining structure and bonding.

Coordination compounds – its nomenclature, theories, d-orbital splitting in complexes (tetrahedral, octahedral, square planar complexes).

Transition metals, its stability, color, oxidation states and complexes.

Lanthanides, Actinides – separation, color, spectra and magnetic behavior

Bioinorganic chemistry – metal ions in biological system, its toxicity; hemoglobin.

Understanding the transition metals stability in reactions, origin of colour and magnetic properties.

## **Organic**

## Chemistry-(I-VI)

On completion of this course, the students will be able to understand:

Learning objectives:

Basic of organic molecules, structure, bonding, reactivity and reaction mechanisms.

Stereochemistry of organic molecules – conformation and configuration, asymmetric molecules and nomenclature.

Aromatic compounds and aromaticity, mechanism of aromatic reactions.

Electrophile, nucleophiles, free radicals, electronegativity, resonance, and intermediates along the reaction pathways.

Mechanism of organic reactions.

Name reactions, uses of various reagents and the mechanism of their action.

Preparation and uses of various classes of organic compounds.

Nitrogen containing functional groups and their reactions.

Familiarization with polynuclear hydrocarbons and their reactions.

Heterocyclic compounds and their reactions.

Understanding the reactions and mechanisms of diazonium compounds.

Understanding the structure, mechanism of reactions of selected heterocyclic compounds.

Understanding the carbohydrates, amino acids.

Photochemistry principles.

### **Physical Chemistry-(I-VI)**

On completion of this course, the students will be able to understand:

Learning objective:

Familiarization with various states of matter.

Behavior of real gases, its deviation from ideal behavior, equation of state, isotherm, and law of corresponding states.

Physical properties of each state of matter and laws related to describe the states.

Electrolytes and electrolytic dissociation, salt hydrolysis and acid-base equilibria.

Liquid state and its physical properties related to temperature and pressure variation.

Solids, lattice parameters – its calculation, application of symmetry, solid characteristics of simple salts.

Ionic equilibria – electrolyte, ionization, dissociation.

Dilute solution and its properties.

Understanding the concept of system, variables, heat, work, and laws of thermodynamics.

Understanding the concept of entropy; reversible, irreversible processes. Calculation of entropy using 3rd law of thermodynamics.

Understanding the application of thermodynamics: Joule Thompson effects, partial molar quantities.

Understanding theories/thermodynamics of dilute solutions.

Phases, components, Gibbs phase rule, Phase diagrams and applications.

Catalyst – mechanism, acid base catalysis, enzyme catalysis.

Adsorption isotherms( Langmuir, Freundlich – adsorption isotherms).

Understanding the basics of chemical kinetics: determination of order, molecularity, and understanding theories of reaction rates, determination of rate of opposing/parallel/chain reactions with suitable examples.

## **General Chemistry (I-VI)**

After completion of the course, the student shall be able to understand:

Learning objective:

Familiarization with fundamentals of analytical chemistry.

Basics of spectroscopic, thermal, electrochemical techniques

Learning basics of separation techniques and its applications.

Understanding analytical tools, statistical methods applied to analytical chemistry.

Understanding principle of UV-Vis spectroscopy and its applications.

Understanding basics of electro-analytical techniques and its applications.

Understanding principles of separation technology and its use in advanced instrumentations.

Nano-structured materials, self-assembled structure.

Basic principles of IR Spectroscopy

Basic principles of Proton NMR.

Basic principles Mass Spectrometry

**Elective Paper  
(V-VI):**

Instrumental methods and analysis: Solvent extraction principles and techniques, chromatographic principles and methods.

Medicinal chemistry: Terminology of medicinal chemistry, synthesis and therapeutic uses of drugs, action of drugs, molecular messengers, health promoting drugs.

# **BOTANY:**

## **SEMESTER 1 PAPER 1 MICROBIAL DIVERSITY OF LOWER PLANTS**

Students are able to understand the difference between plants  
animals.

Students are able to classify the plant

Students will understand the microbial diversity

Students are able to understand the structure and reproduction in algae and fungi

## **SEMESTER 2 PAPER 2 BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS**

Students are able to understand the structure and reproduction BRYOPHYTES,  
PTERIDOPHYTES, GYMNASPERMS

Students are able to identify fossils

## **SEMESTER 3 PAPER 3 TAXONOMY OF ANGIOSPERMS AND MEDICINAL BOTANY**

Students will understand the different types of classification systems

Learn about various angiosperm families and its economic value

Learn about the different medicinal systems

## **SEMESTER 4 PAPER 4 PLANT ANATOMY, EMBRYOLOGY AND PALYNOLOGY**

Students are able to identify different tissues and tissue systems

Students are acquire the practical knowledge about latest techniques

Students are able understand the importance palynology

### **SEMESTER 5 PAPER 5 CELL BIOLOGY AND GENETICS**

Students are able to learn about the basics of cell and its inclusions

Understand the basic concepts of genetics and its applications

### **SEMESTER 5 PAPER 6 ECOLOGY AND BIO DIVERSITY**

Students will learn about the ecosystems and its components

Students will understand the importance of biodiversity

### **SEMESTER 6 PAPER 7 PLANT PHYSIOLOGY**

Students will and appreciate the plant world we depend on

Students will know about the basic principles of plant function, metabolism, secondary products, cell physiology and growth and development.

### **SEMESTER 6 PAPER 8 TISSUE CULTURE AND BIO TECHNOLOGY**

The students will understand the techniques of tissue culture

Students will understand the importance of bio technology in daily life.

## **ZOOLOGY :**

### **FIRST SEMESTER PAPER\$1**

#### **Animal Diversity ' invertebrate**

Familiar with the nonEchordate world that surrounds us

Able to appreciate the process of evolution (unicellular cells to complex, multicellular organisms)

Able to identify the invertebrates and classify them up to the class level with the basis of systematic Understand the basis of life processes in the nonEchordates and recognize the economically important invertebrate fauna.

### **SECOND SEMESTER PAPER \$2**

#### **ECOLOGY, ZOOGEOGRAPHY AND ANIMAL BEHAVIOUR**

Distribution of fauna in different realms  
interaction

Understand Animal behaviour and response of animals to different instincts

Interaction of biota  
abiota

Various kinds of Animal  
adaptations

### **THIRD SEMESTER PAPER\$3**

#### **VERTEBRATES AND ANIMAL DIVERSITY DEVELOPMENTAL BIOLOGY**

Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment

Classify phylum Protochordates to  
Mammalia  
Complex Vertebrate interactions

Basic concepts of developmental biology

#### **FOURTH SEMESTER PAPER\$4**

##### **CELL AND MOLECULAR BIOLOGY, GENETICS, EVOLUTION**

Structural and functional aspects of basic unit of life i.e. cell concepts

Mendelian and non mendelian inheritance

Concept behind genetic disorder, gene mutationsE various causes associated with inborn errors of metabolism

Theories of  
Evolution

Knowledge of eras and evolution of species

Develop deeper understanding of what life is and how it functions at cellular level.

Describe cellular membrane structure and function, fine structure and function of cell organelles. Perform a variety of molecular and cellular biology techniques.

#### **FIFTH SEMESTER PAPER\$5**

##### **Physiology and Biochemistry**

Seeks to understand the mechanisms that work to keep the human body alive and functioning Physiological and biochemical understanding through scientific enquiry into the nature of mechanical, physical, and biochemical functions of humans, their organs, and the cells of which they are composed Interactions and interdependence of physiological and biochemical process

Appreciate the contribution of great

immunologists

Distinguish Innate immunity and Acquired Immunity

Understand the importance of Immune system

Familiar with the tools and techniques used in Microbiology and pathogenic Microbes

Understand the function of various systems

Apply the knowledge to lead a healthy life

.Understand the importance of Bio molecules

#### **PAPER \$ 6 APPLIED ZOOLOGY**

Understands concepts of fisheries, fishing tools and site selection

Aqua culture systems, induced breeding techniques, post harvesting techniques

Understands about composition of blood, blood born diseases, autopsy and biopsy

Types of immunity, antigensEantibodies and their properties

#### **SIXTH SEMESTER PAPER\$7**

##### **Immunology and Animal Biotechnology**

Provides basics knowledge about immune system and allows the student to create insight as how to improve their immune system and good health.

Types of immunity, antigensEantibodies and their properties

Complement system, MHC/s and immune responses

Understanding of types of hypersensitivity reactions and auto immune diseases

Ability to understand concepts of tumor immunology and transplantation immunology

### **PAPERS8 Reproductive Biology**

Familiar with various stages involved in the developing embryo

Apply the knowledge to collect various Biological data

Understand the initial developmental procedures involved in Amphioxus, frog and chick

Familiar with types of placenta

Ability to explain various Prenatal Diagnosis

Familiarize with the principle of developmental biology

Familiarizes with various Techniques and tools of Embryology.

## **Commerce :**

### **1. Financial Accounting:**

- 1 To understand the concepts related to preparation of accounts of various organisations
- 1 To know and understand the difference of maintaining records of various types of business organisations like profit based, non-trading concerns, manufacturing organisations etc.,
- 1 To prepare the final accounts of different organisations
- 1 To get the knowledge of accounting standards and procedures prepared by ICAI.

### **2. Business Organisation and Management:**

- 1 To impart knowledge of various types of business organisations and their formation and procedure.
- 1 To know the provisions related to various acts like Partnership Act, 1932, Companies act, 1956 and 2013 etc.,

### **3. Business Statistics:**

- 1 To get the conceptual knowledge of Statistics(numbers)
- 1 To understand the process of collection, presentation and interpretation of data
- 1 To understand the calculation of various averages and measures of dispersion for analysis of data
- 1 To obtain the skill of calculation of various techniques of mathematical statistics like probability, Binomial Distributions, permutations and combinations etc.,

#### **4. Taxation:**

- 1 To understand the sources of income to meet the operating expenses of the government.
- 1 To understand the taxation system of the country which helps to analyse the redistribution of income and wealth
- 1 To know the taxation policy framed by the government

#### **5. Entrepreneurship Development**

- 1 To inculcate the entrepreneurship skills among the students
- 1 To provide to learn formulation, appraisal and implementation of a project.
- 1 To provide conceptual clarification of Small Scale industries and the procedure to establish them

#### **6. Cost & Management Accounting:**

- 1 To impart conceptual knowledge of Cost and Management accounting techniques.
- 1 To get the knowledge of finding unit cost of production using various methods of costing
- 1 To equip basic skills of analysis of financial information to be useful to the management.

#### **7. Financial Management:**

- 1 To gain the understanding of various basic concepts of decision making using financial information
- 1 To provide the conceptual framework of various tools and techniques of Financial Management.

1 To get the skill of applying financial management techniques in the real life situations.

## **Computer Science :**

### **I Semester**

#### **1.Object oriented Programming with C++**

To know the proper lines of C++, Encapsulation, Inheritance and Polymorphism.

To explain the various data types, operations and functions of C++.

To know the concept of constructors and destructors.

To explain the concept of inheritances, types of inheritance and polymorphism, virtual Functions.

To explain the types of streams, format and format of input and output operations.

### **II Semester**

#### **1.Data Structures in C++**

Able to choose an appropriate data structure to specific problem

Choose among alternative data structures to solve specific data-representation and algorithmic problems.

Students will be able to define basic static and dynamic data structures and relevant standard algorithms for them: stack, queue, dynamically linked lists, trees, graphs, heap, priority queue, hash tables, sorting algorithms.

Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.

Formulate new solutions for programming problems or improve existing code using

learned algorithms and data structures.

Evaluate algorithms and data structures in terms of time and memory complexity of basic operations.

### **III Semester**

#### **1.Data Base Management System**

Elucidation of Database system architecture and corresponding operations.

The relational approach and special relational operations

The Embedded SQL in detail.

To write up the Hierarchical Approach.

To give a detailed note on Network approaches.

### **IV Semester**

#### **1.Design & Analysis of Algorithm**

Analyze worst case running times of algorithms using asymptotic analysis.

Explain what an approximation algorithm is and the benefit of using approximation algorithms. Be familiar with some approximation algorithms that are PTAS or FPTAS. Analyze the approximation factor for an algorithm.

Describe the dynamic programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ the paradigm. Synthesize greedy algorithms, and analyzed them.

### **V Semester**

#### **1.Programming in JAVA**

Implement Object Oriented Programming Concepts (class, constructor, overloading, inheritance, overriding) in java.

Explain the fundamental concepts and features of Java Programming language.

Use and create Packages and Interfaces in a Java program.

Develop Graphical User Interface applications and Web based applications in Java by importing applet, AWT.

Implements Multithreading and Exception Handling in Java.

Use of Input/ Output Streams in java.

## **2. Visual Programming**

To introduce the concepts of visual programming.

Demonstrate knowledge of programming terminology and how applied using Visual Basic.

To enable the students to develop programs and simple application using Visual C++.

Demonstrate understanding of Visual Basic/VC++ & Concept about form Project, Application, Tools, Toolbox, Controls & Properties.

To introduce GUI programming using Microsoft Foundation Classes.

Gain both a conceptual understanding of specification and GUI design issues and their implementation, and hands-on experience implementing an IDE.

## **VI Semester**

### **1. Elements of Scripting Language**

Familiarity about the internet access, web browsing and hyper text.

Usage of the search engine and Electronic Mail.

To use the lists and add images in HTML.

Preparation of frame and display of multiform document.

Creating a link within a web page and creating a table.

Create links to Video  
Files.

## **2.PHP with My SQL**

It is used to developing web  
Applications.

Support to Developing server pages.

Support for object oriented programming.

## **Computer Applications :**

### **I Semester**

#### **1.Information Technology**

Learn to use search engines and visit various websites.

To explain the details about Hardware and Software.

To gain knowledge in types of computer system

Write up the components of computers input, output and storage devices.

To learn about the operating systems.

Understand the system analysis and design.

Demonstrate the various Menus and its operating usage in Ms Word.

Write up Ms Excel along with practical usage like preparation of final accounts by using formulae and different types of charts.

Creation of various slides with different formats with the help of Ms PowerPoint.

Formation of payroll for employee and creation of forms and reports by using Ms Access.

Preparation of trial balance, profit and loss account and balance sheet by adopting Tally.

Learn to use search engines and visit various websites.

#### **2.Computer Fundamentals**

To explain the details about Hardware and Software.

To gain knowledge in types of computer system

Write up the components of computers input, output and storage devices.

To learn about the operating systems.

Understand the system analysis and design.

## **II Semester**

### **Programming Concept with**

#### **C**

Understands the basic structure, operators and statements of C language.

Define decision making statements and solve problems based on it.

Learns that it serves as a basic language of all advanced computer languages.

Gains knowledge about arrays, functions and solve problems based on it. Implement different operations on Arrays.

Use Functions to solve the given problem.

Understand Pointers, Structures and Unions.

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## **III Semester**

### **1.Data Base Management System**

Elucidation of Database system architecture and corresponding operations.

The relational approach and special relational operations

The Embedded SQL in detail.

To write up the Hierarchical Approach.

To give a detailed note on Network approaches.

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## **IV Semester**

### **Internet Technology**

Familiarize students with Internet structure and with basic protocols.

Students will receive experience with the Internet, World Wide Web.

Use Internet/Web services as a resource for learning and discovery.

Explore career opportunities through Online Job Portal.

**V**

**Semester**

### **1.Object oriented Programming with C++**

To know the proper lines of C++, Encapsulation, Inheritance and Polymorphism.

To explain the various data types, operations and functions of C++.

To know the concept of constructors and destructors.

To explain the concept of inheritances, types of inheritance and polymorphism, virtual Functions.

To explain the types of streams, format and format of input and output operations.

**2.**

**E-Commerce**

To define about E-Commerce, Types and components of I way.

To explain Electronic Data Interchange and Work flow automation

To define Network Firewall Security and Client server Security.

To explain Consumer Oriented Application and mercantile Oriented Application.

To define electronic payment systems and smart card and Credit Card.

**1.Multimedia**

Explain applications, principles ,commonly used and techniques of computer graphics and algorithms for Line-Drawing, Circle- Generating and Ellipse-Generating.

Students will get the concepts of 2D and 3D, Viewing, Curves and surfaces, Hidden Line/surface elimination techniques

Studies concepts of Multimedia Systems, Text, Audio and Video tools

Learn MIDI Image and Video Image, synchronization accuracy specification factors

Creates Animation with special effects using algorithms

Compressing audio and video using MPEG-1 and MPEG-2

## **VI Semester**

### **1. Visual Programming**

To introduce the concepts of visual programming.

Demonstrate knowledge of programming terminology and how applied using Visual Basic

To enable the students to develop programs and simple application using Visual C++.

Demonstrate understanding of Visual Basic/VC++ & Concept about form Project, Application, Tools, Toolbox, Controls & Properties.

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## **2.PHP with My SQL**

It is used to developing web Applications.

Support to Developing server pages.

Support for object oriented programming.

## **3.Web Technologies**

Familiarity about the internet access, web browsing and hyper text.  
Usage of the search engine and Electronic Mail.

To use the lists and add images in HTML.

Creating a link within a web page and creating a table.

Create links to Video  
Files.

## **4.Relational Data Base Management**

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

Master the basics of SQL and construct queries using SQL. Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.

Be familiar with the relational database theory, and be able to write relational algebra expressions for queries.

Master sound design principles for logical design of databases, including the E1R method and Normalization approach.

Usage of DML and TCL statements.

Master the basics of PL/SQL Composite Data types like Procedures, Functions, Packages and Triggers.