



ADMINISTRATIVE MANAGEMENT COLLEGE

DEPARTMENT OF BIOTECHNOLOGY

B.Sc. (Chemistry, Zoology, Biotechnology)

COURSE OUTCOME

SUBJECT: BIOTECHNOLOGY

Semester: I Semester

Course: Cell Biology and Genetics [BTP 101]

Upon completion, students should be able to

CO - 1 Answer questions regarding the cell biology and surface architecture.

CO - 2 Understand the basic principles of cellular organisation.

CO - 3 Understand concepts of cell divisions and senescence.

CO - 4 Understand the concepts of chromosomes and its structure.

CO - 5 Understand Mendelism, interaction of genes and human genetics.

CO - 6 Grasping the concept of linkage and maternal inheritance.

SUBJECT: BIOTECHNOLOGY

Semester: II Semester

Course: General Microbiology and Biostatistics [BTP 201]

Upon completion, students should be able to

CO - 1 Answer questions regarding the history and scope of Microbiology.

CO - 2 Understand the basic principle and working of different types of microscopes and their applications.

CO - 3 Demonstrate the basic concepts of sterilization and staining concepts in microbiology.

- CO - 4 Understand concepts of Microbial classification and Taxonomy
- CO - 5 Answer questions regarding general account of Bacterial and Viral structure
- CO - 6 Understand the salient features and classification of eukaryotic microbes.
- CO - 7 Understand concepts of pathogenic microorganisms and the diseases caused by them.
- CO - 8 Understand the concepts of microbial metabolism
- CO - 9 Understand the salient features and classification of data.
- CO - 10 Understand concepts of Central tendencies and variations.
- CO - 11 Understand the concepts of probability and distribution.

SUBJECT: BIOTECHNOLOGY

Semester: III Semester

Course: Biochemistry and Biophysics[BTP 301]

Upon completion, students should be able to

- CO - 1 Understand the basic concepts of amino acids and proteins
- CO - 2 Understand concepts of enzymes and their kinetics.
- CO - 3 Understand the salient features and classification of carbohydrates and Lipids.
- CO - 4 Understand concepts of hormones and their functioning.
- CO - 5 Understand the concepts of pH and buffers.
- CO - 6 Understand the concept of chemical bonding.
- CO - 7 Understand concepts of spectroscopic techniques.
- CO - 8 Introduction to radioactivity and half-life.

SUBJECT: BIOTECHNOLOGY

Semester: IV Semester

Course: Molecular Biology [BTP 401]

Upon completion, students should be able to

- CO - 1 Demonstrate the molecular basis of life and the evidence of DNA as a genetic material.
- CO - 2 Understand the structural concepts of nucleic acids.

CO - 3 Understand the basic principle of DNA replication and the enzymes in prokaryotic and eukaryotic mode of replication

CO - 4 Demonstrate the causes and mechanisms of different DNA repair mechanisms.

CO - 5 Understand concepts of recombination in prokaryotes

CO - 6 Answer questions regarding structure of eukaryotic and prokaryotic gene

CO - 7 Understand the salient features of transcription and translation in prokaryotes and eukaryotes.

CO - 8 Understand concepts of prokaryotic and eukaryotic gene regulation.

CO - 9 Understand the concepts of Gene organization and expression in Mitochondria and chloroplasts

CO - 10 Demonstrate the Insertional elements and transpositions in Maize and Drosophila .

SUBJECT: BIOTECHNOLOGY

Semester: V Semester

Course: Genetic Engineering and Environmental Biotechnology [BTP 501]

Upon completion, students should be able to

CO - 1 Understand the tools of genetic engineering.

CO - 2 Understand the basic principle of in vitro construction of recombinant DNA molecules.

CO - 3 Understand concepts of gene libraries.

CO - 4 Understand the salient features of transformation, screening and expression of recombinant molecule.

CO - 5 Understand Techniques such as PCR, Hybridization production of recombinant molecules.

CO - 6 Understand the concept of environment and energy resources.

CO - 7 Concepts of leaching, Bio fertilizers

SUBJECT: BIOTECHNOLOGY

Semester: V Semester

Course: Immunology and Animal Biotechnology [BTP 503]

Upon completion, students should be able to

CO - 1 Understand the history and scope of immunology

CO - 2 Understand the concept of antigen and antibodies

CO - 3 Understand concepts of blood typing and Rh factor.

CO - 4 Understand the salient features of complement systems and allergy.

CO - 5 Understand concepts of vaccines and immunization.

CO - 6 Understand the concept of growth factors and media in cell culture.

CO - 7 Concepts of transfection of animal cell lines

CO - 8 Thorough understanding of applications of animal tissue culture.

SUBJECT: BIOTECHNOLOGY

Semester: VI Semester

Course: Plant Biotechnology [BTP 601]

Upon completion, students should be able to

CO - 1 Understand the media composition and aseptic conditions for tissue culturing.

CO - 2 Understand the role of tissue culturing and its importance.

CO - 3 Understand the basic principle of single cell culture and organ culture.

CO - 4 Understand concepts of transgenic plants.

CO - 5 Understand the salient features of patents and IPR.

SUBJECT: BIOTECHNOLOGY

Semester: VI Semester

Course: Industrial Biotechnology [BTP 603]

Upon completion, students should be able to

CO - 1 Understand the scope and importance of fermentation technology.

CO - 2 Understand the basic principle of strain selection and improvement.

CO - 3 Understand concepts of upstream and downstream methods.

CO - 4 Understand the salient features of microbial assisted production of enzymes, molecules etc.

CO - 5 Understand the concept of fermented foods.

SUBJECT: ZOOLOGY

Semester: I Semester

Course: Non Chordate -I

Upon completion students should be able to

CO - 1 Understand the animal architecture in non-chordate

CO - 2 Understand the various types of nutrition

CO - 3 Describes the basic concepts of locomotion in protozoa

CO - 4 Understand the concepts in biochemical genetics

CO - 5 Learn the value of economic zoology and concepts in parasitology

CO - 6 Understand the concepts of genetic engineering

CO - 7 Learn the adaptations of parasites

SUBJECT: ZOOLOGY

Semester: II Semester

Course: Non Chordate -II

Upon completion students should be able to

CO - 1 Understand the brief explanation of arthropods

CO - 2 Understand the features of hemichordate

CO - 3 Demonstrates the principles and different culturing methods in economic zoology

CO - 4 Explains the significance of rotifers

CO - 5 Learn the concepts of unio its type study

CO - 6 Learn the parasitic nature of arthropods

SUBJECT: ZOOLOGY

Semester: III Semester

Course: Chordate -I

Upon completion students should be able to

CO - 1 Understand the characteristics of protochordata, cephalochordate and urochordata

CO - 2 Describes the salient features of agnatha

CO - 3 Demonstrates the principles and different culturing methods in economic zoology

CO - 4 Explains the characters, classification and dentition in mammals

CO - 5 Learn the features of fishes, amphibian and reptilian

CO - 6 Learn the value of economic zoology and different culturing methods.

CO - 7 Understand the flight adaptation in aves

SUBJECT: ZOOLOGY

Semester: IV Semester

Course: Chordate-II

Upon completion students should be able to

CO - 1 Understand the comparative study between different chordates

CO - 2 Describes the various respiratory and excretory structures in animals

CO - 3 Demonstrates the principles and different culturing methods in economic zoology

CO - 4 Explains the evolutionary trends in different organisms

CO - 5 Learn the concepts of biology of cancer

CO - 6 Learn the histochemistry and histopathology.

CO - 7 Understand the immunity and body defence mechanism

SUBJECT: ZOOLOGY

Semester: V Semester

Course: Environmental biotechnology and ethology

Upon completion students should be able to

CO - 1 Understand the concepts in solid waste management

CO - 2 Understand the concepts in integrated pest management

CO - 3 Understand the concepts greenhouse gases and globalization

CO - 4 Learn the concepts of animal behaviour

CO - 5 Understand the types of animal behaviour

CO - 6 Learn the types of error and trial mechanism

SUBJECT: ZOOLOGY

Semester: V Semester

Course: Developmental Biology & Organic evolution

Upon completion students should be able to

- CO - 1** Understand the concepts embryonic stages in animals
- CO - 2** Understand the concepts in embryonic development and its stages
- CO - 3** Understand the different types placenta in mammals
- CO - 4** Learn the concepts of organic evolution
- CO - 5** Understand the concepts of fossils of mammals
- CO - 6** Learn the analogous and homologous organs

SUBJECT: ZOOLOGY

Semester: VI Semester

Course: Genetics and Biotechnology

Upon completion students should be able to

- CO - 1** Understand the concepts in heredity and environment
- CO - 2** Understand the concepts in deviation from mendelism
- CO - 3** Understand the concepts in biochemical genetics
- CO - 4** Learn the chromosomal aberrations
- CO - 5** Understand the concepts of genetic engineering
- CO - 6** Learn the concepts of applications of biotechnology

SUBJECT: ZOOLOGY

Semester: VI Semester

Course: Animal physiology and Techniques in biology

Upon completion students should be able to

- CO - 1** Understand the concepts in vegetative functions
- CO - 2** Understand the concepts in muscle physiology
- CO - 3** Understand the concepts in physiology of sense organs

CO - 4 Learn the concepts of energy metabolism

CO - 5 Understand the concepts of homeostatic functions

CO - 6 Learn the common disorders of man

SUBJECT: Chemistry

Semester: I Semester

Course: Chemistry-I

Upon completion students should be able to

CO - 1 To understand the objectives of their chemical experiments, properly carryout the experiment and appropriately record and analyse the results.

CO - 2 Understand mathematical concepts of chemistry such as logarithmic relations, differentiation and probability.

CO - 3 To describe the laws of photochemistry and photosensitization also the periodic table and its properties.

CO - 4 To demonstrate the knowledge of collision frequency, collision no, joule Thomson effect and its application

CO - 5 Answer the questions regarding the types of reactions in Organic chemistry.

SUBJECT: Chemistry

Semester: II Semester

Course: Chemistry-II

Upon completion students should be able to

CO - 1 Answer the questions regarding the Valence bond approach and types of Hybridisation.

CO - 2 Understand the basic concept of aromatic hydrocarbon and to determine the aromatic nature of components.

CO - 3 To demonstrate the basic principles of Ionic, Covalent and Metallic bond.

CO - 4 To understand the basic concepts in Noble gas and transition elements

CO - 5 Answer the questions regarding the quantum mechanics and atomic structure.

SUBJECT: Chemistry

Semester: III Semester

Course: Chemistry-III

Upon completion students should be able to

- CO - 1** Acquire the knowledge of extracting metals from their metal ores.
- CO - 2** Understand the basic concepts in Thermodynamics-I and II such as entropy, enthalpy etc.
- CO - 3** To demonstrate the basic principles in surface chemistry such as adsorption, catalysis etc.
- CO - 4** To understand the basic concepts in mechanism and synthesis of Organic compound.

SUBJECT: Chemistry

Semester: IV Semester

Course: Chemistry-IV

Upon completion students should be able to

- CO - 1** Answer the questions regarding the Theories of Nuclear and Radio chemistry.
- CO - 2** Understand the different types of methods in treat in water.
- CO - 3** To demonstrate the basic applications in Phase Equilibria.
- CO - 4** To gain knowledge regarding the basic concepts in mechanism of Organic compound.
- CO - 5** Answer the questions regarding the types of synthesis in organic compound.

SUBJECT: Chemistry

Semester: V Semester

Course: Chemistry-V

Upon completion students should be able to

- CO - 1** To learn about the chemistry of natural products such carbohydrates, disaccharides, terpenes and alkaloids.
- CO - 2** Understand the basic concepts and applications in Spectroscopy of Organic compounds.
- CO - 3** To demonstrate the basic principles in stereo chemistry such as optical and geometrical isomerism.
- CO - 4** Answer the questions regarding the types of synthesis and reactions in Heterocyclic Compounds.

SUBJECT: Chemistry

Semester: V Semester

Course: Chemistry-VI

Upon completion students should be able to

- CO - 1 To gain the knowledge regarding buffer capacity, pH, buffer action etc.
- CO - 2 Understand the basic concepts and applications in Spectroscopy of Organic compounds.
- CO - 3 To demonstrate the basic properties in Physical and Molecular structures.
- CO - 4 Answer the questions regarding the types of Spectroscopy and Electro analytical Methods.

SUBJECT: Chemistry

Semester: VI Semester

Course: Chemistry-VII

Upon completion students should be able to

- CO - 1 Answer the questions regarding the basics of Industrials Materials LIKE Refractories, glass, ceramics and cement.
- CO - 2 Understand the basic concepts in organometallic compounds.
- CO - 3 To demonstrate the basic principles in bio inorganic chemistry.
- CO - 4 To gain the knowledge regarding fuels, propellants, explosives, paints and varnishes.

SUBJECT: Chemistry

Semester: VI Semester

Course: Chemistry-VIII

Upon completion students should be able to

- CO - 1 To acquire the knowledge regarding fatty acids, triglycerides, phosphoglycerides, cholesterol and sphingolipids
- CO - 2 Understand the basic concepts in carbohydrates.
- CO - 3 To learn the basic principles in Enzymes and Proteins
- CO - 4 To know the information regarding Biological Oxidation, bioenergetics, high energy phosphates etc.