Course outcome Semester wise

Course: BSc

Subject: Botany

I Semester

Microbial diversity, Algae, Fungi, Plant Pathology and Bryophytes

- Acquaint knowledge about distribution of microbes
- Importance and role of microbes
- Knowledge about diseases of economically important plants

II Semester

Pteridophytes, Gymnosperms, Anatomy of Angiosperms and Reproductive Biology

- Diversity of spore bearing plants
- Distribution of naked seeded plants
- Fossil formation and extinct plants
- Internal, epidermal structures of Angiosperms
- Reproductive Biology helps in understanding plant breeding, crop improvement activities

III Semester

Morphology and Taxonomy of Angiosperms and Plant Propagation

- Diversity of flowering plants
- Useful plants products
- Medicinal uses to cure ailments
- Learning the methods of propagation

IV Semester

Plant physiology and Evolution

- Knowledge of physiology helps in understanding the basic requirements of plants growth and development of plants.
- Unique features of plants like maintaining ecological balance by evolving oxygen and carbon dioxide etc.,
- Understand the evolving of present day plant groups

V Semester

Cell biology, Molecular Biology and Ecology (Elective 1)

- Learning basic structural organization at molecular level
- It helps in understanding the genetic engineering techniques
- Understand nature of plants with their habitat

VI Semester

Genetics, Genetic Engineering, Plant Breeding And Plant Biotechnology (Elective 3)

- Learning gene action in plants
- Importance of genetic engineering in the field of agriculture, medicine etc.,
- Knowledge about bringing new varieties of crop plants by plant breeding centres particularly in India

Subject: Biochemistry

I Semester

- Cellular basis and chemical foundations of life.
- Unique properties of water & concentration units,
- Biophysical chemistry - Photochemistry, radioactivity, its units and measurement & buffers
- Bio organic chemistry – Classification, structure and importance of Alkaloids, Terpenes & pytochemicals
- Stereochemistry – Types, nomenclature with examples
- Reaction mechanism – Concept of reaction intermediates and mechanism with examples
- Biomolecules – Classification, structure and biological functions of Carbohydrates, amino acids , proteins and nucleic acids

II Semester

- The classification, structure & biological importance of lipids.
- The classification, characteristic properties and importance in different fields of enzymes.

III Semester

- Physiology of muscular system, Nervous system, Cardiovascular system, Excretory system & Gastrointestinal, Endocrine system & hepatic system

IV Semester

- Metabolism of Carbohydrates, amino acids, lipids & nucleic acids
- Oxidative phosphorylation & Phtophosphorylation.

V Semester

(Elective paper 1)

- Knowledge of Nutrition and Assessment of nutritious status
- Dietary sources, requirement, Biological functions & deficiency disorders of macro & micro nutrients.
- Energy requirement for BMR & different physical activities and their determination
- Nutraceuticals

(Elective paper2)

- Nutritional disorders such as Kwashiorkor and Marasmus, Scurvy, beri beri, pellagra, Xerophthalmia and Night blindness with relation to biochemical basis for symptoms.
- Metabolic and Lifestyle disorders such as Obesity, diabetes Miletus & cardiovascular disorders
- Mulifactorial disorders & cancer
- Inborn errors of Metabolism & Diseases due to misfolded proteins

(Compulsory Paper-1)

- Biochemical techniques such as Chromatographic, Electrophoresis, Spectroscopy & centrifugation techniques

(Compulsory Paper-2)

- Protein isolation, purification & characterization techniques

VI Semester

(Elective paper1)

- Structure of prokaryotic & eukaryotic genes Replication of DNA,Transcription
- translation & mutation under Molecular biology
- Different types of immunity
- Structure & characteristics of Antibodies & Antigens
- Antigen antibody interaction
- Hypersensitivity reactions
- Vaccination

(Elective paper2)

- Plant cell structure.
- Photosynthesis and Carbon assimilation.
- Nitrogen metabolism.
- Regulation of plant growth and Plant tissue culture.

(Compulsory Paper-1)

- Analysis of Urine & blood for various constituents & their clinical significance.
- Disorders of Carbohydrate metabolism.
- Gastric function, Pancreatic Function, Kidney function & Liver function tests
- Serum enzymes in liver disease
- Cardiac injury profile

(Compulsory Paper-2)

- Basics in Biostatistics
- Bioinformatics - Biological databases and data retrieval &- Sequence alignment

Subject: Microbiology

I Semester

Introduction to Microbiology and Bacteriology

- Adoption of concepts of Microbiology for healthy, hygienic and better living.
- Student gains better knowledge in handling Microscopy, Staining techniques, Sterilization techniques, Preparation of Culture media, Culture techniques.
- Student understands the structure of bacterial cell and its nutritional requirements and nutritional types

II Semester

Microbial Diversity and Environmental Microbiology

- Student understands the Diversity in microbial life and its role in environment
- Student learns the method to classify and naming of microbes.

- Student understands the role of microbes in biogeochemical cycles for sustainment of plant, animal and human life.

III Semester

Virology, Microbial Physiology, Microbial Genetics and Dairy Microbiology

- Student understands the concepts of virology, bacterial growth and bacterial photosynthesis.
- Student learns role of microbes in understanding genetics.
- Student understands the role of microbes in preparation of fermented dairy products and Preservation of dairy products.

IV Semester

Microbial Metabolism, Genetic Engineering and Food Microbiology

- Student understands the concepts of Microbial metabolism.
- Student learns role of microbes in development of the field Genetic Engineering.
- Student understands the role of microbes in food spoilage, food borne diseases, preparation of fermented food products.

V Semester

Agricultural Microbiology, Industrial Microbiology and Microbial Biotechnology (Elective paper1)

- Student understands the eco-friendly role of biofertilizers and biopesticides in agriculture.
- Student learns role of microbes in fermentation process for Industrial production.
- Student understands the role of microbes in prevention of pollution of environment by secondary treatment of sewage.
- Student understands the role of microbes in cost effective immobilization process and eco-friendly bioremediation.

Plant Pathology (Elective Paper2)

- Student understands role of plant pathogen in stages of disease development.
- To study the different plant diseases with its causative agents.
- Student learns epidemiology and control of disease.

Food Fermentation Techniques
Compulsory paper1

- Student understands the role of starter culture in preparation of fermented food products.
- Student learns the preparation of different types of fermented foods its health benefits.

Biofertilizers and Biopesticides
Compulsory paper2

- Student understands the role of biofertilizers and biopesticides.
- Student learns the preparation of different types of biofertilizers and biopesticides.

VI Semester

Immunology, Medical Microbiology and Phytopathology

Elective paper3

- Student understands concepts of immune system.
- Student learns immunoprophylaxis, immunotherapy, immunopathology and diagnosis.
- Student study the different types of human diseases and its treatment.
- To study the different types of plant diseases and its treatment.

Microbes in Sustainable Agriculture and Development

Elective paper4

- Student understands the role of microbes in soil formation, soil microflora and mineralization.
- Student learns the preparation of different types of biofertilizers and biopesticides.

Microbial Diagnosis in Health Clinics

Compulsory paper3

- Student learns the collection of different types of lab specimen for disease diagnosis.
- Student learns the different methods used in disease diagnosis.

Management of Human Microbial Diseases

Compulsory paper4

- 1. Student learns about emerging human microbial diseases.
- 2. Student learns prevention of microbial diseases of human.