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Curriculum Guide

B.Sc. Biotechnology & B.Sc. Microbiology

Introduction

This guide outlines the year-wise syllabus of B.Sc. Biotechnology and B.Sc. Microbiology, helping students understand their academic journey step by step.

B.Sc. BIOTECHNOLOGY

Year-Wise Curriculum Overview

FIRST YEAR

Subject	Brief Description
Cell Biology	Study of cell structure, functions, and organization.
Biomolecules	Understanding proteins, carbohydrates, lipids, and nucleic acids.
Basic Microbiology	Introduction to microorganisms and their importance.

Genetics	Principles of heredity and inheritance.
Biochemistry	Chemical processes occurring in living organisms.
Plant Biology	Structure, growth, and functions of plants.
Biotechnology Practical	Basic laboratory techniques and experimental skills.

SECOND YEAR

Subject	Brief Description
Molecular Biology	Study of DNA, RNA, and protein synthesis.
Immunology	Understanding the body's defense mechanisms.
Environmental Biotechnology	Biotechnology applications in environmental management.
Bioinstrumentation	Scientific instruments used in biotechnology laboratories.
Genetic Engineering	DNA modification and recombinant technology concepts.
Fermentation Technology	Industrial use of microorganisms for product development.
Biotechnology Practical	Advanced molecular and microbiological laboratory work.

THIRD YEAR

Subject	Brief Description
Industrial Biotechnology	Applications of biotechnology in industries.

Enzymology	Study of enzymes and their practical uses.
Animal Tissue Culture	Growth and maintenance of animal cells in laboratories.
Agricultural Biotechnology	Biotechnology applications in agriculture and crop improvement.
Bioinformatics	Computer-based analysis of biological data.
Biosafety, Bioethics & IPR	Safe biotechnology practices and intellectual property concepts.
Research Project / Internship	Practical training and project-based learning experience.

B.Sc. MICROBIOLOGY

Year-Wise Curriculum Overview

FIRST YEAR

Subject	Brief Description
Introduction to Microbiology	Study of microorganisms and their characteristics.
Cell Biology	Structure and functions of living cells.
General Chemistry	Basic chemistry concepts for biological sciences.
Biological Diversity	Classification and diversity of living organisms.
Genetics	Principles of genes and heredity.
Biochemistry	Chemical activities occurring in living systems.
Microbiology Practical	Laboratory techniques including microscopy and culturing.

SECOND YEAR

Subject	Brief Description
Microbial Physiology	Growth, metabolism, and nutrition of microorganisms.
Medical Microbiology	Disease-causing microorganisms and infections.
Immunology	Study of immunity and defense mechanisms.
Environmental Microbiology	Role of microbes in ecosystems and the environment.
Microbial Genetics	Genetic systems and variation in microorganisms.
Food Microbiology	Microorganisms involved in food production and preservation.
Microbiology Practical	Laboratory experiments and microbial identification.

THIRD YEAR

Subject	Brief Description
Industrial Microbiology	Industrial applications of microorganisms.
Pharmaceutical Microbiology	Microbial applications in pharmaceutical production.
Microbial Biotechnology	Biotechnology based on microbial systems.
Soil Microbiology	Study of microorganisms present in soil ecosystems.

Microbial Bioremediation	Use of microbes for environmental cleanup.
Biosafety & Intellectual Property Rights	Laboratory safety and intellectual property awareness.
Internship / Project Work	Research project and industry exposure.

Note

This curriculum is designed as per the **DAVV NEP framework** and follows the standard structure of Biotechnology and Microbiology programs. It includes core academic concepts, laboratory training, applied sciences, and research-based learning. The subjects listed in this document represent **Major Subjects only** of the B.Sc. Biotechnology and B.Sc. Microbiology courses.