

B.Tech Biotechnology: Semester-I
BBT-104 - Introduction to Biotechnology

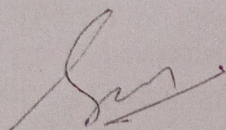
Teaching Scheme	Examination Scheme
Lectures: 2 hrs/Week	Internal Marks : 25 Marks
Tutorials: 1 hr/Week	
Credits: 3	End Semester Exam: 50 Marks

Course Objectives:

- To give an overview of biomolecules and their significance. To give basic knowledge of Structure, biosynthesis and function of Macromolecules (Carbohydrates, Proteins and Lipids).
- To have an overview of Microorganism: Origin of microbiology, Types of microbes, Classification of microbes.
- To explain about the Introduction Genes & Genome.
- To explain the Bioinformatics, Biological databases (nucleotide and Protein Databases, Structure databases).
- To explain the Human Health & Hygiene: Population and birth control, sexually transmitted diseases.

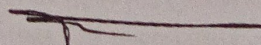
Course outcomes:

- CO1: To define the basic Science and biotechnology, basic principles of Biomolecules and their brief introduction -Carbohydrates, Proteins and Lipids. DNA and RNA
- CO2: To summarize the different types of Origin of microbiology, Types of microbes, Classification of microbes, macro and micro molecules required for growth of microorganism
- CO3: To determine Properties of Tools and Techniques: Brief Concept, types and applications of Chromatography, spectrophotometry, Electrophoresis and PCR
- CO4: compare Introduction to Genes & Genome, Human Genome Project.
- Enzymes: History, Nomenclature & Classification of Enzymes and its function
- CO5: To judge the significance of various Media: defined and undefined, Study of Microbes (culture techniques and staining method)
- CO6: To create a model on. Introduction to Recombinant DNA technology: Restriction enzymes, vectors, how to isolate and clone a desired gene, Applications of RDT



Head

Department of Biotechnology
Invertis University, Bareilly (U.P.)



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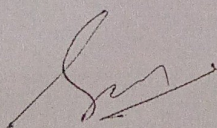
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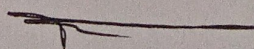
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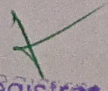
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UNIT –I Introduction to Biotechnology

Introduction to Biotechnology

Fundamentals of Biochemical Engineering, Biotechnology and Society. Principles and Processes; Application in Health, food, medicine and Agriculture; genetically modified (GM) organisms; biosafety issues.

Biomolecules

Building Blocks of Biomolecules-Structure and dynamics. Structure and function of Macromolecules (Carbohydrates, Proteins, Lipids). Classification of Enzymes; Purification and characterization of enzymes from natural sources. Comparison of chemical and enzyme.

UNIT- II Cell as a basic unit of life

Cell as a basic unit of life. Introduction: Definition, Study of Microbes, Types of microbes, Classification of microbes. Origin of microbiology. Application of microbes in fermentation Biotechnology. Cellular Techniques including chromatography.

UNIT- III Biological databases

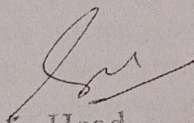
History of Bioinformatics. Introduction and application. Biological databases (nucleotide and protein data bases, Structure databases) and their retrieval. Sequence file formats

Information Sources Analysis using Bioinformatics tools.

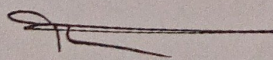
Genomics: Introduction Genome Sequencing Projects, Gene Prediction and counting, Genome similarity, SNP's and comparative genomics.

Suggested Readings

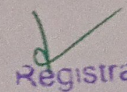
- B.D.Singh, "Biotechnology " (Kalyani Publishers)
- R.C.Dubey, "Text book of Biotechnology" (S.Chand and company)
- William J. Thieman , " Introduction to Biotechnology", Michael A. Palladino, Publisher: Benjamin
- Cummings
- Colin Ratledge, " Basic Biotechnology Publisher": Cambridge University Press


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