

B. Sc. I, II, and III Year

PRACTICAL SCHEME

Major- Any One	-	10
Minor-Any Two	-	(5+5)
Spotting	-	10
Viva voce	-	10
Sessional/Record	-	10
TOTAL	-	50

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application of simple staining, negative staining, differential staining, Enrichment culture and micromanipulator; Maintenance and preservation of pure cultures.

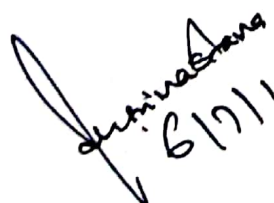
List of recommended books:


1. Microbiology- Pelczar, Chan and Kreig. Ingraham
2. General Microbiology- Stainier, Ingharam, Wheelis and Painter.
3. Biology of Microorganisms Brook and Madigan.
4. Fundamental Principles of Bacteriology, - A.J. Salle.
5. Introduction to Microbiology, - Ingraham and Ingraham.
6. Tools and techniques In microbiology by Nath and Upadhyay
7. Powar C. B. and H. F. Daginawala (2003). General Microbiology Vol. 2; Himalaya Publishing House.
8. Dubey R. C. and D. K. Maheshwari (2004). A Text book of Microbiology. 1st Edition; S.Chand and Company Ltd.
9. H. C. Dube (2005) A Textbook of Fungi, Vikas Publishing House.
10. Anuja. K. R. Experiments in Microbiology, Plant pathology, Tissue culture and Mushroom Cultivation; New Age International, New Delhi.
11. Atlas R. M. Microbiology – Fundamentals and Applications, Mac Millan Publishing Company, New York.



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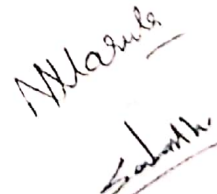

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Monika Saini



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St. Aloysius College (Autonomous), Jabalpur, M.P.

Department of Botany and Microbiology

Department of Higher Education, Govt. of M.P.

Under Graduate Industrial Microbiology Syllabus

as recommended by Central Board of Studies and approved by the Governor of M.P. Session 2019 onwards

Class: B. Sc.

Semester: I Year

Subject: Industrial Microbiology

Paper: II

Title of Subject: Microbial Biochemistry and Immunology

Max. Marks: 40 (TH)+10 (CCE) =50

Course Outcome: Student develops fundamental knowledge of immunology and bio-molecules, acquire skills to analyse carbohydrates, proteins and lipids in various samples applicable in biochemical test.

UNIT - I: CARBOHYDRATES :-

Classification; Chemical structure and properties of monosaccharides, oligosaccharides and polysaccharides.

UNIT - II: LIPIDS AND NUCLEIC ACID :-

Saturated and unsaturated fatty acids; structure, classification, properties and functions of lipids.

Structure and properties of purines and pyrimidines, structure and types of nucleic acids.

UNIT - III: PROTEINS :-

Structure, classification and properties of amino acids, classification and properties of proteins, primary, secondary and tertiary structures of proteins.

UNIT- IV : ENZYMES :-

Classification of enzymes, coenzymes and cofactors, mechanism of enzyme action, competitive and non competitive inhibitions, allosteric regulation of enzymes, isoenzymes, factors affecting enzyme action.

UNIT- V :- IMMUNOLOGY

History & Scope of immunology, antigens- types of antigens, antigenic determination, determinants of antigenicity. Antibodies- nature, function, structure of immunoglobulin, types of Ig and abnormal immunoglobulins. Production of vaccines & Monoclonal antibodies. Antigen-antibody reactions-precipitation, agglutination, neutralization, opsonisation. Immunodiffusion, immunoelectrophoresis, ELISA.

List of recommended books:

1. Principles of Biochemistry - A.L. Lehninger.
2. Fundamentals of Biochemistry - J.L. Jain
3. Biochemistry- Voet and Voet.
4. Microbial Genetics - Freifelder.
5. Text book of Microbiology - Murray, Baron, Tenenbaum & Tenenbaum.

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Under Graduate Industrial Microbiology Syllabus

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Class: B. Sc.

Semester: II Year

Subject: Industrial Microbiology

Paper: II

Title of Subject: Microbial Genetics and Molecular Biology

Max. Marks: 40 (TH) + 10 (CCE) = 50

Course Outcome: Scholars develop basic concepts and techniques regarding Microbial physiology and metabolism. It develops understanding of various application of microbial techniques in the field of molecular biology.

UNIT - I - DNA REPLICATION AND PROTEIN SYNTHESIS:

Types and mechanism of DNA Replication; DNA topology; DNA Replication in prokaryotes and eukaryotes, Protein synthesis.

UNIT-II- GENE REGULATION IN PROKARYOTES AND EUKARYOTES:

Operon concept- Lac and trp; Britten Davidson model of gene expression.

UNIT- III- MUTATION:

Types of mutation: Molecular basis; Mutagenic agents DNA damage and repair mechanism: Auxotrophs; Prototrophs and ame's test

UNIT- IV- GENETIC RECOMBINATION IN BACTERIA

Transformation, Transduction and Conjugation, Genetic mapping, extrachromosomal genetic material: Plasmid, cosmid, transposon, overlapping gens, silent genes.

UNIT- V- RECOMBINANT DNA TECHNOLOGY:-

Isolation of DNA; Enzymes used in recombinat DNA Technology; Use of vectors:- PBR322, PUC 8 phage vectors-M.13.λ, Cosmid, phagemic, Ti plasmid, SV40; Gene cloting in prokaryotes; Southern and western blotting,

rDNA products: Insulin, Interferons and Immunotoxins.

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