

BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
CHEM-438	Biochemistry (Sp. Theory-II)	4	VIII
Year	Discipline		
4	Chemistry		

SYLLABUS OUTLINE:

1. **Physiological Chemistry:**

Structure and detoxification function of liver. Structure of Kidney with special reference of excretion and detoxification function. Muscular contraction and relaxation. Nerve conduction and action potential. Ionization of water, weak Acids and weak Bases. Buffering against pH changes in Biological systems. Water metabolism and acid base balance.

2. **Molecular Biology:**

DNA as a genetic material. Eukaryotic chromosomes. Genes and mutational units. Replication, transcription and translation. Protein Synthesis and Genetic code. DNA repair and recombination. Restriction enzymes. Regulation of gene expression in Prokaryotes & Eukaryotes and Operon model. Constitutive, repressed and induced enzymes. Plasmids, bacteriophages, cosmids. Methods of recombinant DNA, Viruses. RNA Processing.

3. **Drug Metabolism and chemotherapy:**

Chemistry, metabolism and mechanism of action of antimalarials, antibacterials, antivirals and antifungal drugs. Drug resistance, Biochemical transformation of drugs. Anticancer drugs.

4. **Microbial Biochemistry:**

Microorganisms and their gross Classification, Bacterial growth and cultivation techniques. Identification of Microorganisms, Factors for the growth of microbes. Culture medias and their composition. Methods of Growth measurement, Growth under extreme environments. Mutation and protoplast fusion in cultures and its benefits. Gene transfer: transformation, transduction and conjugation. Bacteriophages.

RECOMMENDED BOOKS:

1. Principles of Biochemistry by Lehninger AL, Nelson DL and Cox MN, 2000 Pub: worth Publishers
2. Molecular Biology of the cell by Albert. B and Bray. D 3rd ed. 1994 Pub: Garland Publishing Inc.
3. Principles of cell and Molecular Biology by Kleinsmith.L. J. and Kish. V. M. 2nd ed. 1995, Pub: Harper Collins
4. Harpers Biochemistry, 27th ed. (2006) McGraw Hill Inc
5. Human Physiology- From Cells to Systems by Lauralee Sherwood 4th ed. 2004 Pub: Cole Publishing Co.
6. Fundamentals of Microbiology by E. Alcamo 1994 Pub: Benjamin cummings Co.