

BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
CHEM-418	Biochemistry (Sp. Theory-I)	4	VII
Year	Discipline		
4	Chemistry		

SYLLABUS OUTLINE:

1. Basis of Metabolism:

Methods of metabolism study. Cell bioenergetics and Role of ATP. Biological oxidation and reduction. Electron Carriers involved in the oxidation of fuel molecules. Oxidative phosphorylation and regulation of ATP production. Inhibitors of electron transport chain. Uncouplers of oxidative phosphorylation.

2. Metabolism of Carbohydrates:

Digestion, Absorption, and Transport of Carbohydrates. Glycolysis, Citric acid Cycle. HMP pathway. Uronic acid pathway. Gluconeogenesis. Glycogenesis, Glycogenolysis, Photosynthesis and their control. Regulation of carbohydrate metabolism.

3. Metabolism of Lipids:

Digestion and absorption of Lipids. Detailed Synthesis and Oxidation of fatty acids, Involving Acyl carrier protein and Carnitine carriers. Metabolism of essential fatty acids and their metabolic disorders. Control of fatty acid Metabolism. Ketone Bodies. Phospholipids, steroids and Prostaglandins.

4. Endocrine system:

Mechanisms of action of hormones. Chemistry, Metabolism and Biological functions of Pancreatic, Pituitary, Gonadal, Adrenal, Thyroid, Parathyroid, Intestinal and Renal hormones. Pheromones. Hormonal control mechanisms.

RECOMMENDED BOOKS:

1. Principles of Biochemistry by Lehninger AL, Nelson DL and Cox MN, 2000 Pub: Worth Publishers
2. Biochemistry by Lubert Stryer(2006) Pub: Freeman and Company
3. Lippincott's Biochemistry by Champe.P C; Harvey. R. A and Ferrier. D. R. 3rd ed., 2004 Pub: J. b. Lippincott Company
4. The Biochemistry of Cell signaling by Ernst J. Helmreich 2001 Pub: Oxford University Press.
5. Harpers Biochemistry, 27th ed. 2006 Pub: McGraw Hill Inc