

SARDAR PATEL UNIVERSITY
Programme: MSc (Genetics)
Semester: I
Syllabus with effect from: June 2010

Paper Code: PS01EGEN01	Total Credits: 4
Title Of Paper: Essentials of Biochemistry	

Unit	Description in detail	Weightage (%)
1	Basic Biochemistry: Introduction to biomolecules, structure and biological significance of the different biomolecules. Nomenclature and classification of enzymes; enzyme Kinetics: Unisubstrate enzyme kinetics, factors affecting the rate of enzyme catalyzed reactions; forms and derivation of Michaelis-Menten's equation, significance of V _{max} and K _m ; Enzyme inhibition- reversible and irreversible (competitive, non-competitive and uncompetitive). General regulations of various metabolic pathways (Feedback, Allosteric, Covalent Modification).	25 %
2	Carbohydrate Metabolism: Overall pathways and regulation of different carbohydrate metabolism (Glycolysis, Gluconeogenesis, Phosphopentose Pathway, TCA, Glycogenesis and Glycogenolysis). Interaction of carbohydrate molecule with membrane receptor proteins.	25 %
3	Lipid Metabolism: Fatty acid synthesis and oxidation, Metabolism of phospholipids, triglycerides and cholesterol molecules. Interaction of different lipid molecule with membrane receptor proteins and their regulation.	25 %
4	Amino acids and Nucleic acid Metabolism: Amino acids: Overall pathways and regulation of amino acid metabolism (Transamination, Deamination, Specific reactions – Oxidation / decarboxylation and Urea cycle). Biogenic amines formation and their involvement in metabolism. Interaction of different amino acid with membrane receptor proteins. Nucleic acid: Catabolism and anabolism of purines and pyrimidines and their regulation. De novo synthesis of nitrogen bases.	25 %

Basic Text & Reference Books:

- Lehninger Principles of Biochemistry by Nelson David L & Cox, Michael M. W. H. Freeman and Company. 5th Edition. ISBN: 978-0-2302-2699-9.
- Harpers's Biochemistry. Harper, Mc Graw Hill Publishing Company. 27th Edition. ISBN – 10: 0071461973.
- Fundamentals of Biochemistry by Voet, Donald & Pratt, Charlotte W., John Wiley and Sons, Inc, New York, 2nd Edition. ISBN: 0-471-74268-6.
- Biochemistry. Lubert Stryer. W. H. Freeman and Company. 6th Edition. ISBN- 0716720094.
- Textbook of Medical Biochemistry. Chatterjee M.N and Rana Shinde. Jaypee Brothers Medical Publisher PVT Ltd. ISBN – 8184481349.
- An Introduction of Practical Biochemistry 3rd edition by Plummer, David T. Tata McGraw-Hill Publishing Co. Ltd, New Delhi., ISBN: 0-07-099487-0.
- Textbook of medical Laboratory Technology. Praful B. Godkar. Bhalani Pulishing house, Mumbai. 2nd Edition. ISBN – 81-85578-10-9.

