2nd Year, Semester III

Biochemistry (B202)

Course Title : Biochemistry
Course Code : B202
Credits : 8 Credits
Course Category : Core
Course Prerequisites : No prerequisites
Contact Hours (28/42/56) (including tutorials) : 56

Outcome of the Course:

- Understanding the principles governing Protein structure & function
- Basic concepts on metabolism and their implications in living organisms
- Concept on signal transduction
- Implications in Evolution, Health and disease.

Course Contents:

1. Overview of Biochemistry (1 lecture)
2. Protein structure & function, Protein Folding, Protein Degradation (3 lectures + 1 tutorial)
3. Enzymes: Classification, Mode of action, kinetics, regulation and inhibition, examples of enzymatic reactions and regulatory enzymes (2 lectures + 1 tutorial)
4. Lipids: Transmembrane lipids, receptors, lipids as signals, co-factors and pigments (3 lectures + 1 tutorial)
5. Membrane (3 lectures + 1 tutorial)
6. Intermediary Metabolism and Energetics: (3 lectures + 1 tutorial)
7. Carbohydrate Metabolism: Glycolysis, TCA cycle, Gluconeogensis, Pentose phosphate pathway, Glycogenesis and Glycogenolysis, co-ordinated regulation of glycolysis and gluconeogensis, Phosphorylation and bioenergetics of above processes. (6 lectures + 2 tutorials)
8. Electron Transport Chain and Oxidative Phosphorylation (3 lectures + 1 tutorial)
9. Fatty acid biosynthesis and degradation, Synthesis of Cholesterol, Steroid Hormones and Eicosanoids (3 lectures + 1 tutorial)
10. Amino acid biosynthesis and degradation (3 lectures + 1 tutorial)
11. Nucleotide biosynthesis and degradation (3 lectures + 1 tutorial)
12. Hormones: Mechanism of action, regulation and integration in mammalian metabolism (3 lectures + 1 tutorial)
13. Biochemistry of signal Transduction (3 lectures + 1 tutorial)

Recommended Books:
a) Lehninger Principles of Biochemistry, Fourth Edition by David L. Nelson, Michael M. Cox
b) Biochemistry by Berg and Stryer
c) Biochemistry by Voet and Voet
d) Harper's book of Biochemistry

Suggested References:

Relevant research articles with updates in knowledge as decided by the Instructor.