**Biochem-708 MOLECULAR BIOCHEMISTRY 3(3-0)**

Structural organization of genes and chromosomes in prokaryotes and eukaryotes, nucleosomes, properties of DNA and RNA in solution. Replication of DNA: Replication theory and semi-conservative replication, molecular mechanism of replication in prokaryotes and eukaryotes. Enzymes involved in replication. Molecular nature of mutations, DNA damage and repair. Modification and restriction. Transcription: synthesis and processing of RNA. Reverse transcription and RNA replication in viruses. Genetic code and Wobble hypothesis. Translation, essential factors, enzymes, initiation, elongation and termination of protein synthesis. Post-translational modifications and targeting of proteins. Control of transcription and translation. Regulation of gene expression in prokaryotes. Recent advances in biotechnology and genetic engineering.

**SUGGESTED READINGS**


1. Berg, J.M., J.L. Tymoczko and L. Stryer. 2007. Biochemistry, 6th ed. W.H. Freeman and Company. New York.
2. Nelson, D.L and M.M. Cox. 2008. Lehninger Principles of Biochemistry. 5th ed. Worth Publishers, New York.
3. Old, R.W. and S.B. Primrose. 1995. 4th ed. Principles of Gene Manipulation: An Introduction to genetic Engineering. Blackwell Scientific Publications, London.
4. Sambrook, J. F., Russell, D. W. and Irwin, N. 2000. Molecular cloning: A laboratory manual, 3rd ed. Cold Spring Harbor Laboratory press, Cold Spring Harbor, N.Y.
5. Singer, M. and P. Berg. 1991. Genes and Genomes. University Science Books, Nill Valley, California.
6. Voet, D. , J.G. Voet and C. W. Pratt. 2006 . Fundamentals of Biochemistry. 2nd ed. John Wiley and Sons. Inc. New York.
7. Weaver, R. F. 2008. Molecular Biology. 4th ed. McGraw Hill Higher Education.