GRANDE PRAIRIE REGIONAL COLLEGE

SCIENCE AND TECHNOLOGY DEPARTMENT

Course : BC 2050 - Introduction Biochemistry II

Prerequisites : BC 2030

Sections : One lecture section will be offered in the winter term.
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Transferability : U of A - BIOCH 205

Description : Chemistry and metabolism of lipids, amino acids, and nucleotides; membrane structure and assembly ; molecular biology of nucleic acids.

Requirements :
i). Attendance of lectures/seminars and completion of course work as outlined in the Academic Guidelines of the College.
ii). Two Midterm Exams
iii). Final Lecture Exam

Evaluation :

Midterm Exam I	- 25%
Midterm Exam II	- 25%
Final Exam	- 50%

Textbook : Donald Voet and Judith G. Voet, Biochemistry (Second Edition), John Wiley and Sons Inc. Publishers, 1995.
ISBN: 0-471-58651-X

Introduction Biochemistry II - BC 2050

Topic Outline

Lipids and Membranes

1. Structure and properties of fatty acids
2. Lipid catabolism; mobilization of triacylglycerols; β-oxidation
3. Biosynthesis of fatty acids and triacylglycerols
4. Regulation and integration of fatty acid metabolism
5. Phosphoglycerides; sphingolipids; steroids (cholesterol); eicosanoids (prostaglandins)
6. Membrane structure: membrane lipids / proteins
7. Functions of biological membranes; active and passive transport

Amino Acid and Nucleotide Metabolism

1. Catabolism of amino acids; transamination; urea cycle; inborn errors of metabolism
2. Biosynthesis of amino acids; fixation of nitrogen; regulation
3. Structure and biosynthesis of nucleotides
4. Catabolism of purines and pyrimidines

Nucleic Acids and Protein Biosynthesis

1. Genetic definitions and terminology; "The Central Dogma"
2. Brief review nucleotides: structure, nomenclature / abbreviations
3. Structure of DNA and RNA; physical and chemical properties of nucleates
4. Replication of DNA; components and mechanism; DNA polymerases; reverse transcriptase; mutations; repair
5. Eukaryotic chromosomes; nucleosome / chromatin structure; introns / exons
6. RNA transcription; components and mechanism; RNA polymerase; the bacterial operon; eukaryotic gene expression
7. Components of translation; ribosomes; transfer RNA; mRNA
8. The genetic code
9. Translation; mechanism of protein synthesis; regulation
10. Other topics: DNA sequence determination, DNA amplification (polymerase chain reaction); cloning ("genetic engineering")