# Grande Prairie Regional College

## Dept. of Science & Technology

# BC 2050

# INTRODUCTORY BIOCHEMISTRY II

**Instructor**
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| Schedule: | Classes | - Monday 13:00-14:20<br>- Friday 11:30-12:50 |
| Description: | BC 2050 is a continuation from BC 2030 and includes material on the chemistry and metabolism of lipids, amino acids and nucleotides; structure and assembly of membranes; transport across membranes; the molecular biology of nucleic acids. | |
| Pre-requisites: | BC 2030 | |
| Transferability: | University of Alberta - BIOCH 205<br>University of Calgary - Senior BCEM<br>University of Lethbridge - CHEM 3320 | |
| Text-book: | "Fundamentals of Biochemistry"<br>Donald Voet, Judith G. Voet and Charlotte W. Pratt<br>John Wiley & Sons Inc. Publishers 1999 | |
| Other Resourses: | BC 2050 web page (GPRC)<br><br>BIOCH 205 web page (University of Alberta) | |
| Evaluation: | Mid-term Exam I | 25% |
| | Mid-term Exam II | 25% |
| | Final Exam | 50% |

# BC 2030 - Topic Outline

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| **Lipids and Membranes** | | | |
| 1 | Structure and Properties of lipids | Chapter 9 | Jan 7 |
| 2 | Lipid catabolism; Fatty acid oxidation | Chapter 19 | Jan 11 |
| 3 | Biosynthesis of fatty acids and triacylglycerols | Chapter 19 | Jan 14 |
| 4 | Regulation and integration of fatty acid metabolism | Chapter 19, Chapter 21 | Jan 14 |
| 5 | Phosphoglycerides; sphingolipids; steroids; eicosanoids | Chapter 19 | Jan 18 |
| 6 | Structure and assembly of membranes | Chapter 10 | Jan 18 |
| 7 | Transport across membranes | Chapter 10 | Jan 21 |
| **Amino Acid and Nucleotide Metabolism** | | | |
| 8 | Catabolism of amino acids; urea cycle | Chapter 20 | Jan 25 |
| 9 | Biosynthesis of amino acids; fixation of nitrogen; regulation | Chapter 20 | Jan 28 |
| 10 | **Mid term I** | | **Feb 4** |
| 11 | Structure and biosynthesis of nucleotides | Chapter 3, Chapter 22 | Feb 8 |
| 12 | Catabolism of purines and pyrimidines | Chapter 22 | Feb 11 |
| **Nucleic Acids and Protein Biosynthesis** | | | |
| 13 | Nucleic acid structure and function | Chapter 3, Chapter 23 | Feb 15 |
| 14 | DNA/protein interactions | Chapter 23 | Feb 22 |
| 15 | Replication of DNA; reverse transcriptase; mutations; repair and recombination | Chapter 24 | March 4 |
| 16 | **Mid term II** | | **March 11** |
| 17 | RNA transcription; Post-transcriptional processing | Chapter 25 | March 15 |
| 18 | Genetic code; components of translation; ribosomes; tRNA | Chapter 26 | March 18 |
| 19 | Translation; mechanisms of protein synthesis; regulation | Chapter 26 | March 22 |
| 20 | Eucaryotic chromosomes and genome organization; regulation of gene expression | Chapter 23, Chapter 27 | March 25, April 1 |
| 21 | DNA sequence determination; polymerase chain reaction; genetic engineering | Chapter 3 | April 5 |