

# BIOCHEMISTRY (BIOC)

## **BIOC\*2580 Introduction to Biochemistry Summer, Fall, and Winter (LEC: 3, LAB: 3) [0.50]**

This course introduces students to the evolution, chemical structure, and biological roles of the major molecular components of the cell: including proteins, nucleic acids, lipids, and carbohydrates. Topics and processes integrated through understanding biological macromolecules include enzymology and intermediary metabolism, with emphasis on catabolic processes. Students will gain basic investigative skills through hands-on experiences in a laboratory setting.

**Prerequisite(s):** CHEM\*1050

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph

## **BIOC\*3560 Structure and Function in Biochemistry Summer, Fall, and Winter (LEC: 3) [0.50]**

This course develops the understanding of biochemical processes by examining the molecular mechanisms underlying the regulation of specific cellular and physiological systems. Examples may include: oxygen binding and transport; regulation of enzyme function; carbohydrate and lipid metabolic pathways and metabolic integration; structure of membranes and membrane proteins; and membrane transport and signaling.

**Prerequisite(s):** BIOC\*2580

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph

## **BIOC\*3570 Analytical Biochemistry Fall Only (LEC: 3, LAB: 4) [0.75]**

This course covers the tools and techniques by which biological molecules are isolated, separated, identified, and analyzed. Detailed discussion of experimental methods for macromolecule purification and characterization is included.

**Prerequisite(s):** BIOC\*2580, (CHEM\*2400 or CHEM\*2480)

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph

## **BIOC\*4050 Protein and Nucleic Acid Structure Fall Only (LEC: 3) [0.50]**

This course explores the relationship between the functions and the three dimensional structures of DNA, RNA and proteins. Topics covered include how these structures are determined, the principles governing their folding and architecture, why some proteins don't fold at all, and the use of these structures to guide drug discovery. Practical skills are emphasized, including the use of bioinformatics and visualisation tools to analyse sequences and structures.

**Prerequisite(s):** BIOC\*3560

**Equate(s):** MCB\*4050

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph

## **BIOC\*4520 Metabolic Processes Fall Only (LEC: 3) [0.50]**

This course is an in-depth study of the role of bioenergetics, regulation, and chemical mechanisms in carbohydrate, lipid, and nitrogen metabolism.

**Prerequisite(s):** BIOC\*3560 or BIOC\*3570

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph

## **BIOC\*4540 Enzymology Winter Only (LEC: 3, LAB: 3) [0.75]**

This is a laboratory-intensive course where the topics studied include enzyme active sites and the mechanisms of enzyme action; enzyme kinetics and regulation; recombinant proteins and site-directed mutagenesis as tools for understanding enzymes.

**Prerequisite(s):** BIOC\*3560 (may be taken concurrently), BIOC\*3570

**Co-requisite(s):** BIOC\*3560 (may be taken concurrently), BIOC\*3570

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph

## **BIOC\*4580 Membrane Biochemistry Winter Only (LEC: 3) [0.50]**

This course is a molecular examination of the structure and functions of cell membranes, cell surfaces and associated structures. Topics may include: membrane lipids; membrane protein structure; membrane transporters; ATP production; cytoskeleton; cell surface carbohydrates; membrane biogenesis; signal transduction.

**Prerequisite(s):** BIOC\*3560 or BIOC\*3570

**Department(s):** Department of Molecular and Cellular Biology

**Location(s):** Guelph