

BICM – BIOCHEMISTRY

BICM 200

Introductory Biochemistry

3 Credits Weekly (3-0-0)

Biochemistry is the study of the chemistry of life. This course introduces students to the complexities of the cellular environment and its impact on the chemical reactions that occur in the cell. Structural and functional aspects of proteins and nucleic acids are examined. The course also introduces intermediary metabolism, focusing on carbohydrate metabolism. Emphasis is on the free energy changes that govern metabolic pathways, and their regulation and integration.

Prerequisites: Minimum grades of C- in BIOL 107 and CHEM 261.

BICM 310

Intermediary Metabolism

3 Credits Weekly (3-0-0)

This course explores the principles of intermediary metabolism, the chemical reactions by which organisms store and generate energy required for life. Topics include bioenergetics, as well as molecular mechanisms of regulation and integration of carbohydrate and lipid metabolism. Selected examples are used to illustrate how imbalances in metabolic pathways can lead to disease.

Prerequisites: Minimum grades of C- in BICM 200, CHEM 102, and CHEM 263.

BICM 340

Structure and Function of Biological Molecules

3 Credits Weekly (3-3-0)

Underlying the great diversity of living organisms is the unity of biochemistry - we are all made of the same biological molecules: proteins, lipids, carbohydrates and nucleic acids. In this course students will develop a fundamental understanding of the structural principles of biological molecules and connect it to the wide range of functions that are essential to life. Experimental methods used to study proteins, carbohydrates and nucleic acids will be introduced and applied in the laboratory.

Prerequisites: Minimum grades of C- in BICM 200 and CHEM 263.

BICM 450

Biochemistry of Viruses

3 Credits Weekly (3-0-0)

Viruses are the ultimate parasites. Possessing only the minimal components that they need to reproduce, they use ingenious biochemical trickery to invade a host cell and commandeer its biological functions in order to complete their infectious cycle. While the best-known viruses are agents of disease, they have also enabled the discovery of many biological phenomena and leading to development of medical and technological applications. In this course we will explore the structure and function of viruses, delving into some of the latest advances in our understanding of virus biochemistry.

Prerequisites: A minimum grade of C- in BICM 320, BICM 330, or BICM 340, plus a minimum grade of C- in one additional course from the following list: BICM 310, BICM 320, BICM 330, BIOL 300, BIOL 313, GENE 369, GENE 370.