TRINITY
SCHOOL OF MEDICINE

BIOCHEMISTRY

BCHE 306

Course Description

The purpose of this course is to provide students with a basic understanding of: the chemical components of the human body and their functions, the molecular architecture of eukaryotic cells and organelles, the principles of bioenergetics and enzyme catalysis; the chemical nature of biological macromolecules, their three-dimensional conformation, the principles of molecular recognition, and the major metabolic pathways in health and their most frequent disorders.

Credit: 5 semester credits Repeatable: No

Competencies: At the end of Biochemistry, the student will have had the opportunity to practice the following competencies through meeting the objectives of the course:

Medical Knowledge

MK1 Demonstrate knowledge of normal and abnormal structure and function of the human body on the macroscopic, microscopic and molecular levels.

MK2 Identify the pathology and pathophysiology of various diseases and correlate them with clinical signs and symptoms.

MK3 Demonstrate knowledge of common or significant, acute and chronic clinical problems.

MK5 Demonstrate comprehension of clinical interventions and agents including pharmaceutical, surgical, genetic, complementary and alternative medicines, and other therapies.

MK7 Demonstrate knowledge of preventive medicine and current guidelines for health promotion and disease screening.

Patient Care

PC5 Construct a differential diagnosis for common clinical presentations.

Professionalism

PR1 Demonstrate honesty, integrity, and ethical behavior in all interactions with patients and other health care professionals

PR6 Maintain appropriate professional appearance and composure.

Course Structure

Course material will be presented in a lecture and discussion format. The power point presentations will be available on the server.

Objectives:

Upon completion of this course, the student should understand and be able to explain

- Basic concepts of protein structure, function, and regulation.
- Applications of protein functions as transport, structural and, enzymatic molecules.
- The cell cycle, synthesis of information molecules and their regulation in eukaryotes and prokaryotes.
- The various patterns of genetic and molecular diseases disease and their causes.
- Basic concepts of cell signaling.
- Functions and pathways for the synthesis, assembly, and degradation of major biomolecules.

Schedule: It is posted at the beginning of the term on the online calendar.

Textbooks and Reference Materials

- Victor Rodwell, David Bender, Kathleen M. Botham, Peter J. Kennelly), P. Anthony Weil. *Harpers Illustrated Biochemistry* 30th Edition, McGraw-Hill
- Champe, P.C., Harvey, R.A. and Ferrier, D.R.: *Lippincott's Illustrated Reviews Biochemistry*, 6th edition, Lippincott Williams and Wilkins.
- Smith, C., Marks, A.D., and Lieberman, M. *Basic Medical Biochemistry – A Clinical Approach*, latest edition, Lippincott Williams& Wilkins
- Devlin, TM. *Biochemistry with Clinical Correlations*, latest edition, Wiley-Liss
- Cooper, GM and Hausman RE. *The Cell – A Molecular Approach*, latest edition, Sinauer Associates.

Evaluation:

- One midterm exam and one NBME exam will be given to assess your command of the course material.
- The exams will be in the multiple choice format.
- Every attempt possible will be made to phrase exam questions clear and unambiguous.
- Exams will focus on the material presented in class.
- You will have 2 quizzes:
- Quiz 1 will occur during week 3 or 4 before the midterm exam and will cover material up to the day before the quiz.
- Quiz 2 will occur during week 11 or 12 before the final exam.
- Quizzes and the midterm exam will contribute 80% toward the final course grade.
- The NBME exam will contribute 20% toward the final course grade.
- The final NBME exam is comprehensive and may include all material covered during the term.

Grade:

Percent of Points	Letter Grade
95-100%	A+
90-94%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
<70%	F

Attendance and Policies:

- The general University policy regarding absences applies. Please refer the student handbook.

Faculty:

Dr. Miguel Miyares, MD, PhD (course Director)

Dr. Manish Mishra, MSc, PhD