

BSC 360: Cell Physiology (Cell Biology)

Fall Semester 2006

Lecture time and place: TTH, 9:30 - 10:45 am in PSRC Rm101

Instructor: Dr. Yanlin Guo

Office Hours: TTH 11:00 - 12:00 pm or by appointment, JST 618

Required Texts: *Essential Cell Biology*. Second Ed., by Alberts *et al.*

Reference Book: *Biology*, 6th or 7th Ed. by Campbell and Reece

Prerequisites: Principles of Biology, General Chemistry, and Organic Chemistry

Course Description: “*The key to every biological problem must be finally be sought in the cell, for every living organism is, or at some time has been, a cell.*” The central importance of Cell Biology in biological sciences was well summarized by E.B. Wilson eight decades ago. This course introduces the major concepts of cell biology to upper level undergraduate students. The emphasis will be on the structure and function of eukaryotic cells. Both classical and modern experimental approaches to studying cells will be introduced. The biochemistry of macromolecules, such as proteins, carbohydrates and nucleic acids, will be discussed in the context of cell structure and function. Basic knowledge of biochemistry or concurrent enrollment with a biochemistry course is helpful and strongly recommended. The objective of this course is to provide essential knowledge of cell biology for students to understand the biomedical, as well as the broader biological issues.

Grading : The course grade will be determined from the scores of three scheduled exams (80%) and quizzes (20%). The final exam will be comprehensive. Class attendance will be selectively taken and it carries a maximum of 5 bonus points to your final grade. The grading scales are as follow:

A, 90-100%; **B**, 80-89%; **C**, 70-79%, **D**, 60-69%; **F**, 0-59%.

No make-up for quizzes. Only under truly unusual circumstances, which have to be verified in writing by the Office of Vice President for Student Affairs, one make-up exam will be considered and will be combined with the final exam.

Attendance and Classroom Conduct: Lecture attendance is required. The textbook has much more information than that can be covered in lectures. It is in your best interest to selectively study the sections in the textbook using lecture notes as guidelines. Please arrive on time and show respect to your classmates/yourself. The use of cell phones and other electronic devices irrelevant to the class is strictly prohibited.

Drop Policy: No permission will be given to drop this course after the designated last day to drop. The University's policy for dropping a class is strictly enforced.

Academic Honesty: Cheating and plagiarism are violations of the Code of Student Conduct. It is your responsibility to understand the definition and consequence of such violations (see your Student Handbook and University policy).

Disability: If you have a disability that qualifies under the Americans with Disability Act and requires accommodations, you should contact the Office of Disability Accommodations for information on appropriate policies and procedures.

List of Topics

Introduction

Cell, Cell Biology, and Molecular Cell Biology

The Chemical Components of a Cell

Proteins – Structure and Function

Enzymes

DNA and Chromosome

Control of Gene Expression

Methods in Cell Biology

Membrane Structure

Membrane Transport

Intracellular Compartments and Protein Sorting

Membrane-enclosed Organelles

Intracellular Vesicular Traffic

Energy Conversion: Mitochondria and Chloroplasts

Cell Communication (Cell Signaling)

The Cytoskeleton

The Cell Cycle

Programmed Cell Death

Cancer Biology