BIME 6004
Biology for Bioengineers

Fall 2018

CLASS DAYS and TIME: Wednesdays and Fridays 3:00 to 4:30 PM

CLASSROOM: 444B (tentative)

COURSE FACULTY: Susan Weintraub, Ph.D. (Course Director); Yidong Bai, Ph.D.; Lily Dong, Ph.D.; Jean Jiang, Ph.D.; Yuzuru Shiio, M.D., Ph.D.; Rui Sousa, Ph.D.; Kexin Xu, Ph.D.

OFFICE LOCATION and HOURS: To be arranged with individual faculty

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TELEPHONE: Contact faculty by e-mail

READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.

COURSE DESCRIPTION AND OBJECTIVES

This course provides a broad background in biological concepts with specific attention given to biological processes important in bioengineering. Topics will include biochemistry, genetics, molecular biology, cell biology, and physiology. Applications will emphasize understanding cellular processes important in bioengineering, such as gene therapy and tissue repair and regeneration.

Pre-requisites – (none)

Semester credit hours – 3

By the end of this course, each student should be able to:

- Understand the basic concepts of biology and biochemistry
- Understand the basic concepts of methodology and technology used for biomedical research

COURSE ORGANIZATION

The main teaching modalities used in this course include:

1) Didactic lectures designed to covey information to the students in traditional lecture format

2) Student presentations about methodology and technology

Materials – There are no specific course materials required for this course

Computer Access – Students will need access to a computer and the Internet to obtain course materials and for preparation of methodology/technology presentations.

Reading Assignments – Reading assignments will be posted prior to lectures.

ATTENDANCE

Attendance is mandatory. Students are expected to attend all classes and to be on time. In cases of illness or other serious event, the student is responsible for all materials presented on that day. There will be no make-ups for missed lectures or discussions. A student who misses an assigned presentation will receive no credit for that assignment.

TEXTBOOKS

Required: (none)
Strongly recommended: *The Cell: A Molecular Approach*; seventh edition (Geoffrey M. Cooper and Robert E. Hausman), Sinauer Associates, 2016; ISBN-13: 978-1605352909

GRADING POLICIES AND EXAMINATION PROCEDURES

The course will have two equally-weighted closed-book, in-class exams and graded student presentations. The content and format of the exams will vary, depending on the instructor. In case of illness, a doctor's note will be required attesting to the seriousness of the illness. A make-up exam will be arranged when justified. Requirements for student presentations will be announced after the beginning of the semester, and will depend on the number of students enrolled.

Grading System

A = 90-100% B = 80-89% C = 70-79% F = < 69%

REQUESTS FOR ACCOMMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100) to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at http://uthscsa.edu/eeo/request.asp.

ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at
http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/

TITLE IX AT UT Health San Antonio

Title IX Defined:

Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

UT Health San Antonio's Commitment:
UT Health San Antonio is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UT Health San Antonio does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at http://students.uthscsa.edu/titleix/

EMAIL POLICY

All course communication will be conducted by e-mail using the student's Livemail account. Students are expected to check their e-mail accounts regularly and are responsible for materials, assignments, notifications, and test materials distributed by e-mail.

USE OF RECORDING DEVICES

The use of recording devices is allowed.

ELECTRONIC DEVICES

Cell phones may not be used in class and must be shut off during class. Computers or tablets can be used in class for class—related purposes and note taking. They may not be used for e-mail, web surfing, or any activity not related to class.

TENTATIVE CLASS SCHEDULE

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Biology for Bioengineers

Fall 2018

Week	Date	Topic	Instructor
1	8/22/18	An Overview of Cells and Cell Research (Chapter 1)	Weintraub
	8/24/18	Molecules and Membranes (Chapter 2)	Weintraub
2	8/29/18	Bioenergetics and Metabolism (Chapter 3)	Bai
	8/31/18	Genes and Genomes; The Nucleus (Chapters 6 & 10)	Xu
3	9/5/18	Epigenetics (video)	Xu
	9/7/18	Replication, Maintenance, and Rearrangements of Genomic DNA (Chapter 7)	Sousa
4	9/12/18	RNA Synthesis and Processing (Chapter 8)	Sousa
	9/14/18	Protein Synthesis, Processing, and Regulation (Chapter 9)	Sousa
5	9/19/18	Protein Sorting and Transport: The Endoplasmic Reticulum, Golgi Apparatus, and Lysosomes (Chapter 11)	Jiang
	9/21/18	*Review*	
6	9/26/18	*Exam-1*	
	9/28/18	The Cytoskeleton and Cell Movement (Chapter 13)	Dong
7	10/3/18	The Plasma Membrane (Chapter 14)	Jiang
	10/5/18	**No class**	
8	10/10/18	Mitochondria, Chloroplasts, and Peroxisomes (Chapter 12)	Bai
	10/12/18	Cell Walls, the Extracellular Matrix, and Cell Interactions (Chapter 15)	Dong
9	10/17/18	The Cell Cycle (Chapter 17)	Dong
	10/19/18	Cell Signaling (Chapter 16)	Shiio
10	10/24/18	Cell Death and Cell Renewal (Chapter 18)	Shiio
	10/26/18	Cancer (Chapter 19)	Shiio
11	10/31/18	Proteomics (Chapter 5)	Weintraub
	11/2/18	*Review*	
12	11/7/18	*Exam-2*	
	11/9/18	Student presentations	Students
13	11/14/18	Student presentations	Students
	11/16/18	Student presentations	Students
14	11/21/18	*Thanksgiving*	
	11/23/18	*Thanksgiving*	
15	11/28/18	Student presentations	Students
	11/30/18	Student presentations	Students
16	12/5/18	Student presentations	Students
	12/7/18	Student presentations	Students