

# **Biol 5303, Cellular Physiology**

Spring 2024

Course Syllabus

We 5:00-7:45

## **PROFESSOR**

Ali Azghani, Ph.D.

Professor of Biology

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## **OFFICE HOURS**

Tue & Wed 11:00 – 12:00; BEP 105 or by appointment.

## **TEXTBOOK**

### **Recommended - Available at UT Tyler Library:**

1. MOLECULAR CELL BIOLOGY, LODISH 9<sup>TH</sup> EDITION, 2021, FREEMAN,

ISBN:9781319365028

[www.whfreeman.com/launchpad/lodish8e](http://www.whfreeman.com/launchpad/lodish8e)

*EDITION 7<sup>TH</sup> OF THIS BOOK IS ON RESERVE FOR A 3- HOURS CHECKOUT AT UTT LIBRARY.*

2. CELLULAR PHYSIOLOGY SOURCE BOOK, ESSENTIALS OF MEMBRANE BIOPHYSICS, 4<sup>TH</sup> EDITION, NICHOLAS SPIRELIKE, EBOOK,

The eBooks are located at ***EBL eBooks on Demand***

<https://www.ebl.com/services/ebook>

Current UTT students can access it anytime via **eBooks on Demand** after login with their Patriots.

**PRIMARY RESEARCH ARTICLES** (CLASSIC AND RECENT) FOR CLASS DISCUSSIONS WILL BE POSTED ON BLACKBOARD FOR ALL TO READ IN ADVANCE.

## **COURSE DESIGN**

Dr. Azghani will present the topic and introduce relevant journal articles and significant human diseases. He will also direct a student-led discussion on the concept, clinical case reports,

relevant modern technologies, and major questions in the field. Participation from each student is expected and necessary in class discussions to ensure a high-level analysis. Students' final evaluation will reflect participation in student-led discussions, a formal presentation, and a comprehensive take home exam.

### **COURSE DESCRIPTION**

Cellular Physiology will focus on the fundamentals of cellular function and explore current developments in the field. New experimental technologies that have enhanced our understanding of molecular processes, concepts in cell functions, and consequences of aberrant cell structure and function (clinical case study) will be discussed as well.

### **SPECIFIC OBJECTIVES**

1. Understand how cellular organelles and specialized cells perform their tasks on a molecular level.
2. Assess the molecular basis of significant diseases in human or your research organisms.
3. Learn how to extract, comprehend, and teach key elements introduced in peer-reviewed Scientific Journals.
4. Discover new experimental technologies that you can utilize in your thesis research.

### **Topics - Foundation knowledge**

Model Organisms, Cells in Culture  
Biomembrane Structure  
Transmembrane transport  
Signal transduction

### **Chapters in Lodish**

1, 4  
7  
11  
15

### **Samples of specialized cells**

Nerve cells  
Blood / Immune cells  
Cancer cells

22  
23  
24

### **CLASS SESSIONS MANAGEMENT**

“TBD” based on students learning objectives and interest.

### **ASSIGNMENTS/GRADING**

Project 1: Class readings and discussions 30%

Project 2: Topics - related presentations of original article and case studies 40%

Project 3: Comprehensive final exam (30%)

### **Copy right- Recording of class sessions**

Class sessions may be recorded by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

I RESERVE THE RIGHT TO MODIFY THIS SYLLABUS AT ANY TIME. THEREFORE, YOUR ATTENDANCE AND ATTENTION TO THE ANNOUNCEMENTS IN CANVAS ARE CRUCIAL BECAUSE IT WILL ASSIST YOU TO REMAIN CURRENT ON THE MATERIAL AND KNOW WHEN THE SYLLABUS MAY BE MODIFIED.

**General information** *Resources for UT Tyler Students Success*

Please refer to “Student Resources” and “University Policies and Information” on the course Modules/Canvas.