



# Advanced Cell Biology

The University of Toledo  
Department of Biological Sciences, College of Natural Sciences and Mathematics  
**BIOL8090-001, CRN: 12416**  
**4 credit hours**

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<b>Instructor:</b>	Dr. Fan Dong	<b>Term:</b>	Spring 2017
<b>Office Hours:</b>	T, F 12-2	<b>Class Location:</b>	WO 3246
<b>Office Location:</b>	WO 3257	<b>Class Times:</b>	M, W 5-7 pm
<b>Office Phone:</b>	419-530-1557	<b>Course Website:</b>	<a href="https://blackboard.utdl.edu">https://blackboard.utdl.edu</a>
<b>Email:</b>	<a href="mailto:fan.dong@utoledo.edu">fan.dong@utoledo.edu</a>		

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## COURSE/CATALOG DESCRIPTION

An advanced course that stresses the experimental basis for current concepts of cell structure and function.

## COURSE OVERVIEW

As a requirement for Biology graduate students, this 4-credit hour lecture course is offered in the Spring semester, following the Fall semester course, Advanced Molecular Biology. The topics of discussion focus on cell biology and provide the fundamental basis for our graduate students to succeed in our graduate program. The specific topics include cell biology methods, cell membranes, nuclear structure, protein sorting, mitochondria and chloroplasts, cytoskeleton, cell-cell interaction, signal transduction, cell cycle, apoptosis, cancer, development and immune system.

## STUDENT LEARNING OUTCOMES

Upon completion of this course, students will be able to:

- Understand the principles of some commonly used methods in cell biology research.
- Describe the structure and function of biological membranes, and cell-cell and cell-matrix interactions.
- Outline the major processes of intracellular transport of proteins.
- Describe the three main types of filaments and how they function through interaction with other proteins.
- Understand the major mechanisms of cell cycle regulation, apoptosis and tumorigenesis.
- Describe the mechanisms that control cell development in multicellular organisms.
- Understand the processes of immune response and immune cell development.
- Utilize critical thinking in the application of cell biology knowledge in research.

## **TEACHING STRATEGIES**

This course is designed to stimulate student learning through lectures and reviews of relevant research papers. Powerpoint slides will be made available to students through Blackboard, with lectures using both the powerpoint slides and whiteboard. Please be prepared when you come to class by reading the appropriate chapters of the textbook and completing any assigned readings.

## **PREREQUISITES**

Prerequisite: Admission into the graduate program of the Department of Biological Sciences.

## **REQUIRED TEXTS AND ANCILLARY MATERIALS**

All the required material is provided by the instructor and will be uploaded in Blackboard before the class starts.

Molecular Biology of the Cell, 5th Edition, by Bruce Alberts et al (ISBN-13: 978-0815341055; ISBN-10: 0815341059) is an excellent reference book, and is recommended. Most of the material for the class will come from this textbook. However, material covered in the lectures may come from external sources.

## **TECHNOLOGY REQUIREMENTS**

### **UNIVERSITY POLICIES**

#### **Policy Statement on Non-Discrimination on the basis of Disability (ADA)**

The University of Toledo is an equal opportunity educational institution. Please read [The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.](#)

#### **Academic Accommodations**

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the [Student Disability Services Office.](#)

### **ACADEMIC POLICIES**

#### **Academic Policies for Graduate Students**

As a student in my course and enrolled at the University of Toledo you should be familiar with the policies that govern the institution's academic processes, for example, Academic Dishonesty, Enrollment Status, and Grades and Grading. Please read [Graduate Academic Policies.](#)

#### **Missed Class Policy**

Students are expected to attend every class meeting of courses in which they are registered. Please read the [Missed Class Policy](#).

**STATEMENT OF ACADEMIC DISHONESTY** of Department of Biological Sciences is listed at the end of the syllabus.

### **COURSE EXPECTATIONS (IF APPLICABLE)**

Class attendance is mandatory and students are expected to attend all lectures. Unexcused absences will not be tolerated, and excused absences should be rare. Students are strongly encouraged to ask questions and participate in class discussions.

### **GRADING POLICIES**

Grades will generally be based upon four examinations: three in-class examinations and a final. The grade will consist of 20% from each of the three in-class examinations and 40% from the final examination. Pop quizzes might be introduced if attendance should become an issue, which could account for up to 10% of your final grade.

Examinations will be based entirely on lecture material presented in the class. The final examination will consist of 40% of material from the beginning of the course and 60% of material from the rest of the course following the last in-class examination. You will be given two hours to complete each in-class examination and three hours to complete the final examination. If you cannot make it to an examination on the specified date and time, you must notify the instructor at least 1 week prior to the examination date. There will be no exceptions unless the student brings in a doctor's excuse. If you feel that your examination has been graded unfairly, you must respond within one week of receiving the examination back from the professor. Inquiries after this time will **not** be honored.

Grading Scale:	92-100%	A	72-77%	C
	90-91%	A-	70-71%	C-
	88-89%	B+	68-69%	D+
	82-87%	B	62-67%	D
	80-81%	B-	60-61%	D-
	78-79%	C+	<60%	F

There may be adjustments made to this scale at the instructor's discretion.

### **COMMUNICATION GUIDELINES**

The instructor is available by appointment, or can answer Email questions.

### **TECHNICAL SUPPORT**

**If you encounter technical difficulties with Blackboard, please contact the UT Online Help Desk** at (419) 530-8835 or [utdl@utoledo.edu](mailto:utdl@utoledo.edu). The Help Desk offers extended hours in the evenings and on weekends to assist students with technical problems. When calling after hours, leave a detailed message, including your Rocket Number and phone number, and an Online

Learning staff member will respond on the next business day. The UT Online Help Desk website is available at: <http://www.utoledo.edu/dl/helpdesk/index.html>

**Technical questions related to on-campus Internet access, virtual labs, hardware, software, personal website hosting, and UTAD account management can be directed to UT's IT Help Desk** at (419) 530-2400 or [ithelpdesk@utoledo.edu](mailto:ithelpdesk@utoledo.edu). The IT Help Desk website is available at <http://www.utoledo.edu/it/CS/HelpDesk.html>.

## **LEARNER SUPPORT**

The University of Toledo offers a wide range of academic and student support services that can help you succeed:

### **University Libraries**

University Libraries are your gateway to information at the University of Toledo connecting you with the resources you need for education, and research.

### **eTutoring Services**

The Ohio eTutoring Collaborative, in partnership with The University of Toledo, now provides online tutoring support for all UT students. eTutoring Services are offered in a wide array of subjects, including Writing, Math, Calculus, Statistics, Accounting, Biology, Chemistry, and Anatomy and Physiology.

Learn more at: <https://www.etutoring.org/login.cfm?institutionid=232&returnPage>

### **Office of Academic Access**

The Office of Academic Access provides accommodations and support services to students with disabilities.

Learn more at: <http://www.utoledo.edu/utlc/academicaccess/index.html>

### **Counseling Center**

The Counseling Center is the university's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The Counseling Center staff provide counseling (individual and group), mental health and wellness programming, and crisis intervention services to help students cope with the demands of college and to facilitate the development of life adjustment strategies.

Learn more at: <http://www.utoledo.edu/studentaffairs/counseling/>

## **TENTATIVE CLASS SCHEDULE-Spring 2017 Semester**

January	9	Introduction to Cell Biology
	11	Techniques for studying cells
	<b>16</b>	<b>Martin Luther King Holiday</b>
	18	Techniques for studying cells and introduction to Organelles
	23	Membrane Structure/Function I
	25	Membrane Structure/Function II*

January	30	Protein Sorting I
February	1	Protein Sorting II
	6	Nuclear Structure*
	<b>8</b>	<b>Examination I</b>
	13	Mitochondria and Chloroplasts I
	15	Mitochondria and Chloroplasts II*
	20	Cytoskeleton I
	22	Cytoskeleton II
	27	Cell-Cell Interaction I
March	1	Cell-Cell Interaction II
	<b>6</b>	<b>Spring Break</b>
	<b>8</b>	<b>Spring Break</b>
	<b>13</b>	<b>Examination II</b>
	15	Signal transduction
	20	Cell Cycle I
	22	Cell Cycle II
	27	Apoptosis I
	29	Apoptosis II
April	<b>3</b>	<b>Examination III</b>
	5	Cancer I
	10	Cancer II
	12	Cancer III/Paper Discussion
	17	Development of multicellular organisms
	19	Specialized Tissues and Stem Cells
	24	Immune System I
	26	Immune System II

**Final examination date: Wednesday, May 3 from 5:00-8:00 pm**

\*Lecture given by invited speaker.

*Note: Both the class schedule and covered topics may be adjusted at the instructor's discretion.*

## STATEMENT OF ACADEMIC DISHONESTY

### Department of Biological Sciences

Academic dishonesty by students enrolled in undergraduate and graduate courses and programs offered by the Department of Biological Sciences will not be tolerated. Academic dishonesty includes but is not limited to:

1. Obtaining assistance from another individual during an examination.
2. Giving assistance to another individual during an examination.
3. The unauthorized use of study material or textbooks during an examination.
4. Changing answers on an examination after it has been returned and then submitting it for regrading.
5. Plagiarizing written assignments. Plagiarizing includes but is not limited to: a) Copying laboratory reports from previous years, b) copying or paraphrasing reports, term papers, or these prepared by other students, c) unauthorized collaboration in the preparation of reports, term papers, or theses, and d) use of another author's materials without appropriate acknowledgement through quotation and citation.
6. Attempting to bribe or otherwise induce an instructor to alter either a grade or examination score.
7. Obtaining or attempting to obtain a copy of an examination prior to its administration.

In accordance with policies presented in The Student Handbook and The University Catalog, Instructors have the responsibility and right to report cases of alleged dishonesty to departmental, college, and university administrative units. Students involved in academic dishonesty may expect to receive a grade of F on specific assignments as well as in the course where the assignment was made. In addition, disciplinary action may be recommended through appropriate college and university disciplinary committees. Please consult your instructor for instructions on the implementation of this policy.