

## **BIO 2600 – Introduction to Cell Biology Syllabus**

**Fall 2020**

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### **Class Hours:**

**Tues & Thurs – 11:30 AM to 12:45 PM (Virtual)**

### **Office Hours (Dr. Alcedo):**

**Wed – 12:30 PM to 1:30 PM; and Thurs – 1:30 PM to 2:30 PM (via Zoom; link will be provided)**

### **Required Text:**

**Alberts et al, Essential Cell Biology, 5<sup>th</sup> Edition, Published by W. W. Norton and Company, Inc., with access (to Smartwork5)**

*(Note: Every effort will be made to provide the lecture slides as PowerPoint files on Canvas a day before class.)*

### **Prerequisites:**

Students should have completed BIO 1500 and BIO 1510. If you have not already successfully completed both courses with a grade of C- or better, or transferred their equivalent from another institution, you **must** drop BIO 2600. The department will not make exceptions.

### **Course Description and Learning Outcomes:**

This course introduces the student to the structure and function of the cell, which is the fundamental unit of life. It is designed for undergraduate students majoring in Biological Sciences or other science majors, including science education, pre-allied health, and engineering. It is also intended for all students seeking introductory knowledge of cell biology. While the emphasis of the course will be on animal cells, aspects unique to prokaryotes or plants may also be discussed.

Upon completion of this course, the students should have learned to:

- (1) describe the basic structure of a eukaryotic cell and its different compartments (organelles)
- (2) integrate the relationship between an organelle's structure and function within different cells
- (3) model how molecules necessary for an organelle's function are routed to the correct organelle
- (4) depict the flow of information within a cell and between cells
- (5) predict outcomes when information flow within a cell or between cells is not correctly regulated
- (6) reconstruct how a cell grows, duplicates, and dies, and how defects in these mechanisms lead to disease; and
- (7) create a dynamic model of a cell and its behaviors under different conditions

The information learned from this course should provide a solid knowledge base for future classes in physiology, genetics, metabolism, and other advanced courses in biology.

### **Class Web Site:**

Go to Canvas [<http://canvas.wayne.edu/>] to access the class web site and click on the link of "Fall 2020 Intr to Cell Biolgy Sec 001 / BIO\_2600\_2009\_001". This site has the syllabus and lecture slides. CHECK this site OFTEN: it is continuously updated with (1) new class materials and (2) announcements concerning the class, e.g., lecture materials and exams. Each set of lecture slides that is uploaded as a PowerPoint file before the associated class will be found on the **course homepage** and under "**Modules**". Under "**Files**", the **BIO 2600 Lectures** folder will contain all lecture slides that are uploaded before and after each class.

In addition, you should be able to access through this site (1) all recorded lectures and (2) a Discussion Board under "**Discussions**" that will allow you to post concepts and questions that you want clarified.

**Virtual Attendance:**

The first lecture (Sep 1) and exams will be conducted live at the given class time, on Tues or Thurs from 11.30 am - 12.45 pm, with the exception of the final exam that has a 2-h format. Exams will **only** be conducted at these times, which means that you **must** be virtually present at these times. Please see the yellow highlights below. The first lecture will be conducted via Zoom (link will be provided beforehand) and exams will be conducted via Respondus Lockdown Browser (accessible from the Canvas site). Please make sure that you also have a webcam that can be used with the Lockdown Browser.

All other lectures will be pre-recorded and accessible at or before class time and until the semester ends. The recorded lectures can be accessed at the Class Canvas website "Fall 2020 Intr to Cell Biolgy Sec 001 / BIO\_2600\_2009\_001". Many of the lectures will be about 50 min in duration, which will then be followed by virtual discussions via Zoom during the last 25 min of the allotted class time. These discussions will be announced beforehand, as well as at the end of the associated pre-recorded lecture. They will cover concepts presented during the formal lectures and homework assignments. Homework assignments will use Smartwork5 and will be graded. Considering the course is deemed challenging by many students, I highly recommend virtual attendance of the discussion part of the class during the scheduled time.

**Course Schedule:**

Week	Lectures	Class Topic	Reading Assignment
<b>1</b>	<b>Sep 1</b>	<b>Introduction to Cells</b>	<b>Chapter 1</b>
	Sep 3	Membrane Structure	Chapter 11
2	Sep 8	Membrane Structure	Chapter 11
	Sep 10	Membrane Structure / How Cells Obtain Energy from Food	Chapters 11/13
3	Sep 15	How Cells Obtain Energy from Food	Chapter 13
	Sep 17	Energy Generation in Mitochondria	Chapter 14
4	Sep 22	Energy Generation in Mitochondria	Chapter 14
	<b>Sep 24</b>	<b>Exam 1</b>	<b>Lectures from 9/1 to 9/22</b>
5	Sep 29	Intracellular Compartments and Protein Transport	Chapter 15
	Oct 1	Intracellular Compartments and Protein Transport	Chapter 15
6	Oct 6	Transport Across Cell Membranes	Chapter 12
	Oct 8	Transport Across Cell Membranes	Chapter 12
7	Oct 13	Transport Across Cell Membranes / Cytoskeleton	Chapters 12/17
	Oct 15	Cytoskeleton	Chapter 17
8	Oct 20	Cytoskeleton	Chapter 17
	<b>Oct 22</b>	<b>Exam 2</b>	<b>Lectures on 9/29 to 10/20</b>

9	Oct 27	From DNA to Protein: How Cells Read the Genome	Chapter 7
	Oct 29	From DNA to Protein: How Cells Read the Genome / DNA Replication	Chapters 7/6
10	Nov 3	Federal Election Holiday (No classes)	
	Nov 5	DNA Replication, Repair and Recombination	Chapter 6
11	Nov 10	Control of Gene Expression	Chapter 8
	Nov 12	Control of Gene Expression	Chapter 8
12	<b>Nov 17</b>	<b>Exam 3</b>	<b>Lectures from 10/27 to 11/12</b>
	Nov 19	Cell Signaling	Chapter 16
13	Nov 24	Cell Signaling	Chapter 16
	Nov 26	Thanksgiving (No classes)	
14	Dec 1	Cell Signaling	Chapter 16
	Dec 3	The Cell Division Cycle	Chapter 18
15	Dec 8	The Cell Division Cycle	Chapter 18
	Dec 10	Review	
<b>16</b>	<b>Dec 15</b>	<b>STUDY DAY</b>	
	<b>Tue, Dec 22</b>	<b>FINAL EXAM (Comprehensive)</b>	<b>10:15 AM – 12:15 PM (Virtual)</b>

(Note: The course schedule is subject to change if circumstances arise that would require such changes. Any changes will be announced to the whole class and posted on Canvas.)

#### Dates to be aware of:

Sep 8 Last day to add

Sep 15 Last day to drop and receive tuition refund

Nov 15 Last day to withdraw. After this date, a letter grade will be issued.

#### Reading assignments:

The reading materials associated with each lecture are listed above.

#### Exams:

There will be **3 closed-book mid-term exams** and **1 closed-book comprehensive final exam**. Each exam will be derived from class lecture materials and the reading assignments. Thus, students are expected to know **both** sets of materials prior to each exam. **Each mid-term exam will be worth 105 points** and the mid-term exam with the lowest score will be dropped. In contrast, **the final exam will be worth 120 points** and cannot be dropped, *i.e.*, **the final is mandatory**. **The final exam will also be**

**cumulative.** All exams will consist of multiple choice, true/false and/or matching questions. **Make-up exams will not be given. Exams will begin promptly.**

**Class participation:**

The course will be taught through a combination of prepared lectures and class discussions and problem sets. The idea is to ensure that the students are **thinking** about the biology of the cell: what are the questions; how to ask and address these questions; and how to interpret any answers to such questions. Thus, participation in class discussions is highly encouraged.

**Homework assignments (Smartwork5):**

Homework assignments (**for a possible course total of 60 points**) will be distributed throughout the course of the semester via Smartwork5. Students will get points if they provide the right answers to the questions given. If the student gets 75% (or more) of all the homework questions correct during the semester, the student will get all 60 points. Anything less, will be normalized to 75%. (For example, if you get 65% correct, you will get 52 points.)

**Grading policy:**

In general, exam grades will be calculated on a straight scale. However, the instructor may decide to use a “curve” for certain exams to achieve a more normalized grade distribution.

Final grades will be based on the two highest mid-term exams, the homework assignments and the final exam.

Three 105-point mid-term exams	+315
One 120-point final exam	+120
Homework assignments	+60
One dropped mid-term exam	-105
<b>Total possible points</b>	<b>+390</b>

The final letter grade will be based on the following % of the total possible 405 points:

	A 92.5-100	A- 90.0-92.4
B+ 87.5-89.9	B 82.5-87.4	B- 80.0-82.4
C+ 77.5-79.9	C 72.5-77.4	C- 70.0-72.4
D+ 67.5-69.9	D 62.5-67.4	D- 60.0-62.4
	F 0-59.9	

**Academic conduct:**

The Wayne State University code of conduct specifically prohibits cheating and plagiarism. Anyone caught cheating or plagiarizing, or assist any student in such misconduct, will automatically receive a failing grade for the exam or class. The practice of science is based on trust. In real-life terms, violation of such trust automatically leads to loss of research grants, medical licenses and careers. This should serve as a reminder that cheating and plagiarism have real-life consequences.

**How to do well in class:**

- (1) Attend the lectures.
- (2) Attend discussion sessions led by supplemental instruction (SI) leader.
- (3) Ask questions, especially if you do not understand the material under discussion.
- (4) Read the assigned material. Complete the homework assignments.
- (5) Take all required exams.
- (6) Do not cram for the exams. The course covers a lot of material and cramming will not help you gain a solid understanding of the material, which is necessary for the exams.

**Academic Success Center (ASC):**

The ASC, located at 1600 David Adamany Undergraduate Library, provides several services to aid students in successfully completing this course. These services, which are listed below, are free of charge to all students. Students are strongly encouraged to take advantage of these resources:

- (1) supplemental instruction (SI)
- (2) individual and group tutoring
- (3) study skills counseling and workshop

The SI Leader for this course will be introduced to the class at the beginning of the term. Visit [www.success.wayne.edu](http://www.success.wayne.edu) for more information.

### **Students with disabilities:**

If you have a documented disability that requires accommodations, please register with the Student Disability Services (SDS), located at 1600 David Adamany Undergraduate Library (313-577-1851 or 313-577-3365; TTY--telecommunication device for hearing impaired students). I will be happy to meet with you during my office hours to discuss your needs, once you have your SDS academic accommodation letters. Please be aware that a delay in getting these letters may also delay the facilitation of your needed accommodations in a timely manner. The mission of the SDS at Wayne State University is to ensure that students with disabilities have equal educational opportunities.

### **Religious Holiday Conflicts:**

If you have a conflict with any of the scheduled class or exam times due to religious reasons, you must notify the instructor in writing within the first two weeks of classes. Otherwise, no accommodations will be made due to religious reasons after this time. Exam times have already been scheduled with certain religious holidays in mind.

### **Unexpected University closures:**

If the University is officially closed on an exam day, the exam will be held on the next regularly scheduled class day. Closure of the University is announced by the following mechanisms:

1. the University Newslines (313) 577-5345 \*
2. WSU Homepage ([www.wayne.edu](http://www.wayne.edu)) \*
3. WSU Pipeline ([www.pipeline.wayne.edu](http://www.pipeline.wayne.edu)) \*
4. WDET-FM (Public Radio 101.9)
5. by other local radio and television stations

\* Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcasted by local radio and television stations.

Finally, any specific issue not covered by this syllabus will be resolved using University policies. Disputes that cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University "Student Due Process".

### **Other**

Please turn off all cell phones during class and during exams. I am also happy to write letters of recommendations for students who earn a grade of A or A-.