

## Bi322 - Cell Biology - Spring 2019

**Instructor:** Dr. Nicola Barber  
**GE:** Denver Ncube  
**BULA:** Ryan Sayegh

nbarber@uoregon.edu  
denvern@uoregon.edu  
rsayegh@uoregon.edu

**Time:** Classes: Tuesday and Thursday 2-3:20 pm (Lillis 112)  
Discussion: Wednesday 9, 10, 11am (Science Library PSC B042)

<b>Office hours:</b> Nicola Barber	Tues./Thur. 3:20-3:50	Lillis 112
Denver Ncube	TBA	TBA

**Email:** Please include "Bi322" in the subject line, so your email can be attended to in time. We will try to answer your email in a timely manner; however, we do not often check our email in the evenings or during weekends.

**Website:** Canvas - Syllabus, course materials, assignments and grades will be posted.

**Text:**

Molecular Biology of the Cell, Sixth Edition (Alberts et al.) (see details below)

**Required supplies:**

i>clicker 2 (available in the Duck Store): Be sure to register your i>clicker on **Canvas**.  
4"x6" index cards: We will typically use 1 index card per class (so you can share a package).

**Course Description**

The cell is an amazing, complex and dynamic unit of life. We will explore various aspects of how eukaryotic cells in particular carry out their many basic functions while interacting with their environment. We will investigate how defects at the cellular level lead to disease states, examine the primary literature, and consider experimental design and analysis.

**Course Learning Goals**

By the end of the semester, you should be able to:

- Model the dynamic nature of cellular processes, and how a cell receives and responds to information from its environment.
- Explain and compare the structures and functions of organelles.
- Communicate how defects at the cellular level lead to disease states and could be targeted for specific therapies.
- Develop testable hypotheses based on provided information, design experiments to test hypotheses, and analyze and interpret provided data.
- Read, evaluate and synthesize primary literature articles in cell biology.

## Grading

Category	%	Point Breakdown
Class Prep Homework	10	15 Canvas "quizzes" due before each class (lowest 2 dropped)
iClicker	5	iClicker points in every class. Lowest two scores will be dropped. (see iClicker)
Discussion Assignments	10	10 assignments 1% each
Poster Presentation	20	Detailed rubric will be provided.
Midterm 1	15	
Midterm 2	15	
Final Exam	25	
<b>Total</b>	<b>100</b>	

Grade	%
A+	97-100
A	93-96.9
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	77-77.9
C	73-76.9
C-	70-72.9
D+	67-69.9
D	60-66.9
F	0-59.9

### Exams:

There will be two midterms and a final, collectively accounting for 55% of your course grade. Exams will be cumulative, because concepts will overlap substantially over the term, but the focus of each exam will be on material covered since the preceding exam. Exams can contain material from class work, assigned online lectures, assigned readings, and discussions, and will include both multiple choice and open-ended questions. The exam schedule is listed on the schedule below. Early exams and makeup exams will NOT be offered.

### Class preparation:

It is expected that you complete assigned readings and review any posted sources before attending class. Lecture homework is due immediately before Class. Discussion homework is due at the beginning of discussion unless otherwise noted.

**Lecture preparation homework:** Starting with Class 2 there will be a lecture prep homework assignment due before the beginning of each lecture class. These count for 10% of your final grade but the lowest 2 scores will be dropped.

**iClicker:** There will be iClicker questions in every class. Points will be earned two different ways: (1) 1-point questions: 1 point will be awarded based on participation alone, not on whether the question is answered correctly; (2) 2-point questions: 2 points for the correct answer, 1 point for an incorrect answer. Your two lowest daily iClicker scores will be dropped and the total weighted to 5% of your grade.

**Discussions:**

Discussions will be led by Denver Ncube (9, 10, 11am in PSC B042). The purpose of the discussion section is to give you practice tackling cell biological problems and dissecting primary literature articles. You will also form poster groups in discussion section and do follow up work on midterm exams. There are homework assignments associated with discussion section.

**Poster Assignment:**

During the last week of class we will hold a poster session similar to those held at academic conferences. Students will work in groups throughout the quarter to create poster presentations on a the cell biological basis of a disease and therapy. Attendance at the poster session is mandatory. Cost of poster printing is shared among students in a poster group (typically \$32 per poster).

**General policy on missed assignments:**

Assignments must be turned in on time and there are no early exams or make-up exams. If you miss a midterm or homework assignment due to unavoidable circumstances your grade will be calculated based on the remaining exams or assignments. If you anticipate an extended absence please contact the instructor.

**No Extra Credit**

There will be no opportunities for extra credit. Please do not ask for exceptions.

**Classroom etiquette:**

Please arrive on time. Classes and discussions begin promptly on the hour. Please do not leave early as this is disruptive to everyone. If you have an unusual circumstance and must leave early, please inform the instructor, and sit near the exit so your leaving is not disruptive. Finally, please be respectful of your fellow students.

**Devices in class:**

Research suggests that writing notes on paper helps you learn and study better. But if you have a need or preference to use a laptop, that's fine. Please avoid doing things that aren't related to the class.

**Academic integrity:**

You are expected to do your own work on homework, discussion section assignments, and exams. Academic misconduct, including cheating and plagiarism, will not be tolerated. You may not use an i>clicker registered to someone else or to allow someone else to use an i>clicker registered to you. You are encouraged to discuss ideas with other students and study together, but do not copy someone else's work or allow anyone to copy yours. All students are expected to conform to the [Student Conduct Code](#). Please note that Instructors are **required** to file a written report of any academic misconduct with the Director of Student Conduct and Community Standards.

**Inclusive Learning:**

We aim to build an inclusive learning environment. We understand that our members represent a rich variety of backgrounds and perspectives. We are committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs.
- be open to the views of others.
- honor the uniqueness of their colleagues.
- appreciate the opportunity that we have to learn from each other.
- value each other's opinions and communicate in a respectful manner.
- keep confidential discussions that the community has of a personal (or professional) nature.

If there are aspects of the instruction or design of this course that result in barriers to your participation, please let us know as early as possible, in person or via email. You may also wish to contact [Accessible Education Services](#) in 164 Oregon Hall, by phone at (541) 346-1155 or [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu). We welcome the chance to help you learn, and will work with you to make it a positive experience.

**Assigned text and online lectures:**

Assigned readings are from the 6th edition of Molecular Biology of the Cell (Alberts et al.) There will be several copies available in the science library on reserve. The [4th edition of Molecular Biology of the Cell](#) is also freely available for searching online through PubMed books. Please note that there are always some differences in page numbers for assigned readings, topic arrangement and current knowledge between editions. Online video lectures will be posted to Canvas and will usually be found on [iBiology.org](http://iBiology.org). It is essential to complete reading assignments and watch assigned online lectures prior to class as class time will be devoted to applying knowledge, solving problems and group discussions. Details of assigned lecture prep will be posted to Canvas.

**Overview of classes, discussions, readings, homeworks and exams**

Week	Class	Date	Lectures, Discussions and Exams	Readings, lecture preps, assignments
1	Class 1	4/2	Cellular organization	Read 641-645 (review).
	Discussion 1	4/3	Discussion 1: Primary literature intro	
	Class 2	4/4	Membrane proteins, transporters and channels	HW2 due. Read 576-581, 597-600, 607-611. Watch <a href="#">Yan</a> .
2	Class 3	4/9	Cell signaling	HW3 due. Read 153-158, 813-814, 818-821, 832-833, 850-857. Watch <a href="#">Wittinghofer</a> .
	Discussion 2	4/10	Discussion 2: Article 1	Read Article 1. Article 1 Assignment due.
	Class 4	4/11	Protein sorting	HW4 due. Read 645-657, 669-681. Watch <a href="#">NPC videos</a> .
3	Class 5	4/16	Vesicle transport 1	HW5 due. Read 695-703, 710-722. Watch <a href="#">Schekman</a> .
	Discussion 3	4/17	Discussion 3: Midterm 1 review	
	Class 6	4/18	Vesicle transport 2	HW6 due. Read 730-744. Watch <a href="#">Lippincott-Schwartz</a> .
4	<b>EXAM</b>	<b>4/23</b>	<b>MIDTERM 1</b>	
	Discussion 4	4/24	Discussion 4: Midterm 1 revisit	Poster groups and topics due.
	Class 7	4/25	Mitochondria and ATP production	HW7 due. Read 753-759, 774-778. Watch <a href="#">Nunnari</a> .
5	Class 8	4/30	Apoptosis	HW8 due. Read 1021-1032. Watch <a href="#">Wang</a> .
	Discussion 5	5/1	Discussion 5: Article 2	Read Article 2. Article 2 Assignment due.
	Class 9	5/2	Ubiquitin, proteasome, autophagy	HW9 due. Read 357-362, 722-730. Watch <a href="#">Deshaies</a> .
6	Class 10	5/7	Actin cytoskeleton	HW10 due. Read 889-914. Watch <a href="#">Pollard</a> .
	Discussion 6	5/8	Discussion 6: Midterm 2 review	
	Class 10	5/9	Cell migration and adhesion	HW11 due. Read 915-925, 951-960. Watch <a href="#">Theriot</a> .
7	<b>EXAM</b>	<b>5/14</b>	<b>MIDTERM 2</b>	
	Discussion 7	5/15	Discussion 7: Midterm 2 revisit	Abstract and annotated bibliography for poster due.
	Class 12	5/16	Microtubules	HW12 due. Read 925-944. Watch <a href="#">Hyman</a> .
8	Class 13	5/21	Cell cycle	HW13 due. Read 963-977. Watch <a href="#">Morgan</a> .
	Discussion 8	5/22	Discussion 8: Article 3	Read Article 3. Article 3 Assignment due
	Class 14	5/23	Mitosis	HW14 due. Read 978-1004. Watch <a href="#">McIntosh</a> .
9	Class 15	5/28	Meiosis	HW15 due. Read 1004-1010. Watch <a href="#">Dernburg</a> .
	Discussion 9	5/29	Discussion 9: Article 4	Read Article 4. Article 4 Assignment due.
	Class 16	5/30	Cancer	HW16 due. Read 1104-1113 Watch <a href="#">Beckerle</a> .
10	Class 17	6/4	Poster Presentations	Poster due
	Discussion 10	6/5	Discussion 10: Final review	Poster due
	Class 18	6/6	Poster Presentations	Poster due
11	<b>EXAM</b>	<b>6/13</b>	<b>FINAL EXAM 12:30 pm</b>	

*NOTE: Subject to change. Unless noted, readings are Molecular Biology of the Cell 6e, lectures [iBiology.org](#).*

## **Campus resources to support your learning**

*Tutoring and Academic Engagement Center* (<https://engage.uoregon.edu/services/>) Drop-in math and writing support in addition to tutoring, study skills support, and Class Encore. Located in the 4<sup>th</sup> Floor Knight Library (541) 346-3226, [engage@uoregon.edu](mailto:engage@uoregon.edu).

*Counseling Center* Call anytime to speak with a therapist who can provide support and connect you with resources. Located on the 2<sup>nd</sup> Floor of the Health Center(541)346-3227

*Accessible Education Center* The University of Oregon is working to create inclusive learning environments. The instructor believes strongly in creating inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please notify us as soon as possible. You are also encouraged to contact the Accessible Education Center. If you are not a student with a documented disability, but you would like for us to know about class issues that will impact your ability to learn, we encourage you to come visit during office hours so that we can strategize how you can get the most out of this course. Located on the 1<sup>st</sup> Floor of Oregon Hall (541) 346-1155, [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu)

*Center for Multicultural Academic Excellence (CMAE)* mission is to promote student retention and persistence for historically underrepresented and underserved populations. We develop and implement programs and services that support retention, academic excellence, and success at the UO and beyond. We reaffirm our commitment to all students, including undocumented and tuition equity students. Located on the 1<sup>st</sup> Floor of Oregon Hall (541) 346-3479, [cmae@uoregon.edu](mailto:cmae@uoregon.edu)

The *UO Access Shuttle* is an on-campus ride service provided at no cost to students with conditions that limit mobility. More information and a sign-up form can be found on the parking & transportation department website: <https://parking.uoregon.edu/content/access-shuttle>.

### **Class Courtesy**

Please arrive in class on time. Late arrivals distract the instructor and the other students. Please turn off cell phones during the class meeting times. Use your laptop only for class activities. Do not leave class early unless you have cleared it with the instructor in advance. Ask questions if you did not hear or understand something.

Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter (or before) so that I may address you properly.

Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities. Classroom courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Our classroom is a learning environment, and as such should be a safe, inclusive and respectful place. Being respectful also includes using preferred pronouns for your classmates. Disrespecting fellow students as well as combative approaches, tones and/or actions are not acceptable. Please make me aware if there are classroom dynamics that impede your (or someone else's) full engagement.

### **Academic integrity**

All students will be expected to adhere to the University's guidelines on academic integrity as outlined in the Student Conduct Code: <https://policies.uoregon.edu/vol-3-administration-student-affairs/ch-1-conduct/student-conduct-code>. As detailed in the policy, academic misconduct means the violation of university policy involving academic integrity. This includes cheating ("any act of deception by which a student misrepresents or misleadingly demonstrates that the student has mastered information on an academic exercise that the student has not mastered"), and plagiarism ("using the ideas or writings of another as one's own.") The instructor has a zero tolerance policy for academic dishonesty. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures.

### **Discrimination and Harassment**

#### *Prohibited Discrimination and Harassment*

Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help at [safe.uoregon.edu](https://safe.uoregon.edu). To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at [respect.uoregon.edu](https://respect.uoregon.edu) or [aaeo.uoregon.edu](https://aaeo.uoregon.edu) or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As

UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at [Discrimination & Harassment](#).

### *Reporting*

The instructor of this class is a Student-Directed Employee. As such, **if you disclose to me, I will respond to you with respect and kindness. I will listen to you, and will be sensitive to your needs and desires. I will not judge you. I will support you.** As part of that support, I will direct students who disclose sexual harassment or sexual violence to resources that can help. **I will only report the information shared to the university administration when you as the student requests that the information be reported** (unless someone is in imminent risk of serious harm or is a minor). Please note the difference between 'privacy' and 'confidentiality.' As a Student-Directed Employee I can offer privacy because I am not required to report certain information to the university. However, I cannot be bound by confidentiality in the same way that a counselor or attorney is. Confidential resources such as these means that information shared is protected by federal and state laws. Any information that I as a student-directed employee receive may still be accessed by university or court proceedings. This means, for example, that I could still be called as a witness or required to turn over any related documents or notes that I keep.

Please note also that I am required to report all other forms of prohibited discrimination or harassment to the university administration. Specific details about confidentiality of information and reporting obligations of employees can be found at [titleix.uoregon.edu](http://titleix.uoregon.edu).

### *Mandatory Reporting of Child Abuse*

UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. Child abuse pertains to individuals who are under the age of 18. This statement is to advise you that your disclosure of information about child abuse to the instructor may trigger my duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: [Mandatory Reporting of Child Abuse and Neglect](#).

### **Safe Ride**

**541-346-7433 ext 2**

**[pages.uoregon.edu/saferide](http://pages.uoregon.edu/saferide)**

Safe Ride is an **assault prevention shuttle** that works to provide free, inclusive, and accessible alternatives to traveling alone at night for **UO students, faculty, and staff**.

We are a schedule-ahead service and riders can (1) call once we open to schedule a ride with a dispatcher or (2) leave a voicemail on the day of their ride request. We do not call riders ahead of time to confirm due to capacity constraints, but riders are always welcome to call us to double-check that their ride was scheduled. We are a feminist, 'for-the-students/by-the-students' organization and operate out of the Women's Center in EMU 12F.

Operating hours:

**Spring term**      Sunday - Thursday | 7p - midnight  
Friday + Saturday | 7p - 2a

Policy and rules:

1. We are a **schedule-ahead service**, we **do not call ahead**, and we can only wait for riders for 5 minutes at their pick-up time and location.
2. We only give rides to groups of **3 or fewer** to prioritize groups that are at higher risk.
3. We are a **free service** and do not accept tips.