

PCB 3023 - Molecular Cell Biology - Spring 2023

Lecture Section 0001 MWF 9:30-10:20 am (BA1-119)

3 credit hours

Instructor: Dr. Cynthia Bayer

Email: Webcourses *Inbox*

Office Hours - BIO 202D: Mon 12:30-2:00 pm, Wed 10:30-11:20 am, Fri 12:30-2:00 pm

Undergraduate Teaching Assistant: Stephen

Course Prerequisites: General Genetics (PCB 3063) and Organic Chemistry I (CHM 2210)

Course Description: To examine all aspects of the biology of the cell. We will study the structure and function of eukaryotic cells from the level of molecules to sub-cellular components, as well as the regulation of biological processes. Topics will emphasize integrating the physiologic, biochemical and genetic components of the cell and multicellular organisms.

Student Learning Outcomes: Successful students will demonstrate a broad understanding of the basic principles of molecular and cell biology, demonstrate an ability to apply information to new scenarios, and be able to draw connections between concepts. Students will be expected to demonstrate understanding of:

- How molecular and cellular structure dictates cellular function
- How genes and genomes are organized and the mechanisms by which they evolve
- How cells acquire and generate the energy to drive metabolic processes
- Cytoskeletal and membrane structure and roles in movement, support and transport
- Cell communication with and response to its environment via signal transduction pathways.
- The processes regulating the cell cycle, cell renewal, and cell death
- How defects in cell cycle control lead to cell over-proliferation and cancer

Students will be evaluated on meeting these objectives via participation in *iClicker* polling sessions during lecture and 5 in-person exams.

REQUIRED Textbook: Essential Cell Biology, 5th edition by Alberts *et al.*, 2019. W.W. Norton, Inc.

- The 5th edition comes with access to the eBook and the digital resource *Smartwork5*, which contains animations, videos, and online assignments. I have chosen a subset of these assignments (Student Set 676243) as recommended homework for students to preview, review and test their understanding. See the Webcourses link for purchasing options.
- Although I strongly encourage students to use these digital *Smartwork5* resources (along with solutions) associated with the 5th edition, homework will not be submitted or graded, so you may choose instead to use the 3rd or 4th ed of Essential Cell Biology as a resource.

REQUIRED *iClicker Student Mobile App*: I will use *iClicker* polling daily in lecture for course points. You are required to participate with the *iClicker Student* app on a smartphone, tablet, or laptop. See the link on our Webcourses homepage to create an *iClicker* account and link it to my course by **Fri, Jan 20**.

Course website: Access our course website at Webcourses@UCF via the myUCF portal using your NID and password. You will find links to the **Syllabus, Weekly Modules, Lecture PowerPoints, Smartwork5, Grades**.

Academic Activity - Course Expectations:

- To meet the registrar's requirement for documentation of your participation in this course, please complete the **Course Expectations/Syllabus Quiz**, found in our Webcourse Quiz section, by **5:00 pm Friday, Jan 13**. Failure to do so will result in a delay in the disbursement of your financial aid.
- All students will receive credit for completion of the Course Expectations/Syllabus Quiz.

Communication via *Inbox*:

- Please contact me via Webcourses *Inbox*. Emails sent to my UCF address will not be answered.
- Compose a clear and succinct email message, including your name and course.
- I will refer your question to the Syllabus or Announcement if it is already answered there.
- I will carve out time once per weekday to answer emails and attempt to answer your message within 24 h.

Classroom Conduct: Please use common courtesy in class by arriving and departing on time, refraining from talking during class, and silencing cell phones and other electronic devices.

Course Grade: 90% = Best 4 out of 5 exams
10% = *iClicker* polling points

- Students are responsible for keeping track of their grades and identifying issues within 2 days of any grade posting in Webcourses.
- Letter grades for the semester will be awarded according to the scale below. Letter grades will adhere to this percentage range with no exceptions. There will be **no curving** of final grades.

A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 59% and below

Course Exams: 4 lecture exams plus a COMPREHENSIVE Final exam are each worth 100 points. Exams will be based on material covered in lecture, which includes some topics not covered in the textbook. The lowest score of all 5 exams will be dropped automatically. The score of the Final exam will be dropped if it turns out to be the lowest of your scores, or you may choose to not take the Final exam.

***iClicker* points** are earned from class participation and graded questions. Each day, 3 points are earned for participation (= answering all but one question) plus additional points for graded questions (1 point for each correct answer and 0.25 point for each incorrect answer). Only a subset of questions will be graded each day. The two lowest *iClicker* day scores will be dropped automatically.

Extra Credit: Approximately once per week, you have the opportunity to earn extra credit points by working as a group of 4-5 students to compose an *iClicker*-type **Group Review Question**. Each member of a group will earn 0.5 pt. when a Review Question form is submitted as a Webcourses Assignment by 5:00 pm on the due date. The completed form must include a properly formed question, appropriate answer choices (with the correct answer indicated), and the name of each participating group member. I will choose several of the best questions to use for review in the class prior to each exam day. Each student in the group that wrote a question chosen for the review will earn an additional 1 pt. (*i.e.*, each student can earn a maximum of 2.5 extra credit points per exam.)

Taking Exams: I will provide scantrons for all exams. It is your responsibility to fill in scantron bubbles completely and erase clearly. You will need to bring a #2 pencil and your UCF Student ID card. Your name and ID number must be printed on the scantron and will be checked as you leave the room. If you arrive within 30 min of the start of an exam you will be allowed to take the exam. However, you must turn in the exam paper at the regular scheduled end of the exam period and will not be allowed extra time unless a documentable emergency has occurred. All electronic devices must be inaccessible during exams. Turn baseball caps backward while taking exams. Go to the restroom before the exam.

Reviewing Exams: Scantrons will not be returned to students. Individual test report sheets with responses marked as correct or incorrect will, however, be available. Scores will be posted at our Webcourses site. Exam papers and scantrons can be reviewed in my office, during regularly scheduled office hours, for the period of time up until the next exam (*e.g.*, Exam 1 can be reviewed up until the time that Exam 2 is administered).

Excused Missed Exams:

- If an exam is missed due to an official, documented, University-accepted absence, a makeup exam will be permitted. Excused absences include official UCF business at which your presence is required, U.S. Military-related business (e.g., Reserve Duty), legal obligation (e.g., jury duty).
 - You must provide to me documentation with your name and the date affected **1 week prior** to the scheduled exam date.
 - A make-up exam may include short answer questions in addition to multiple choice.
- A makeup exam **may** be permitted if any other legitimate* documented reason that circumstances beyond your control, an EMERGENCY, prevented you from taking the scheduled exam (including, but not limited to, your hospitalization or a death in your immediate family)
 - *Official documentation from an appropriate authority* (doctor, police, judge, etc.) must be **provided within 24 hours of the missed exam**. *A doctor's note must be written on letterhead paper with a date and contact phone number and must indicate that a medical condition was treated or that a medical procedure or hospitalization occurred.
 - *If I approve your excuse*, I will arrange a make-up exam at a mutually convenient time. The make-up may include short answer questions in addition to multiple choice.
- If a student is permitted to take a makeup exam, they will **not** be permitted to take a makeup for a second exam later in the semester.

Unexcused Missed Exams: If a student misses an exam for an unexcused event (e.g., forgetting there was an exam, vacations, family gatherings or weddings) or *cannot provide acceptable documentation*, then they will receive a score of zero for that exam. The first zero score will be dropped as the lowest scoring exam. Any additional zero exam scores due to unexcused absences will count towards the final course grade.

Excused iClicker points: In order for any absence from class that results in missed iClicker points to be excused, documentation must be provided according to the same policy described above for excused missed exams.

Academic Integrity:

As reflected in the UCF creed, integrity and scholarship are core values that should guide our conduct and decisions as members of the UCF community. Plagiarism and cheating contradict these values and are serious academic offenses. Students enrolled at UCF are expected to familiarize themselves and follow the University's *Rules of Conduct* (Section UCF-5.008) in the Golden Rule handbook <http://goldenrule.sdes.ucf.edu>.

Students are prohibited from engaging in **Academic Misconduct**:

- a) Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
- b) Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
- c) Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
- d) Falsifying or misrepresenting the student's own academic work.
- e) Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.

- f) Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
- g) Helping another violate academic behavior standards.
- h) Soliciting assistance with academic coursework and/or degree requirements. The solicitation of assistance with an assignment, lab, quiz, test, paper, etc., without authorization of the instructor of record or designee is prohibited. This includes but is not limited to asking for answers to a quiz, trading answers, or offering to pay another to complete an assignment. It is considered Academic Misconduct to solicit assistance with academic coursework and/or degree requirements, even if the solicitation did not yield actual assistance (for example, if there was no response to the solicitation).

Students are prohibited from **Possessing and/or Providing False and Misleading Information and/or Falsification of University Records:**

- a) Withholding related information or furnishing false or misleading information (oral or written) to University officials, university and non-university law enforcement officers, faculty or staff.
- b) Possession, use or attempted use of any form of fraudulent identification.
- c) Forgery, alteration or misuse of any University document, material, file, record or instrument of identification.
- d) Deliberately and purposefully providing false or misleading verbal or written information about another person.
- e) Falsification, distortion, or misrepresentation of information during an investigation, the Student Conduct Review Process, including knowingly initiating a false complaint.

Unauthorized Use of Websites and Internet Resources: There are many websites claiming to offer study aids to students, but in using such websites, students could find themselves in violation of academic conduct guidelines. These websites include (but are not limited to) Quizlet, Course Hero, Chegg Study, and Clutch Prep. UCF does not endorse the use of these products in an unethical manner, which could lead to a violation of our University's Rules of Conduct. They encourage students to upload course materials, such as test questions, individual assignments, and examples of graded material. Such materials are the intellectual property of instructors, the university, or publishers and may not be distributed without prior authorization. Students who engage in such activity could be found in violation of academic conduct standards and could face course and/or University penalties. Please let me know if you are uncertain about the use of a website so I can determine its legitimacy.

Unauthorized Distribution of Class Notes: Third parties may attempt to connect with you to sell your notes and other course information from this class. Distributing course materials to a third party without my authorization is a violation of our University's Rules of Conduct. Please be aware that such class materials that may have already been given to such third parties may contain errors, which could affect your performance or grade. If a third party should contact you regarding such an offer, I would appreciate your bringing this to my attention. We all play a part in creating a course climate of integrity.

Responses to Academic Dishonesty, Plagiarism, or Cheating: Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, *The Golden Rule* handbook <http://goldenrule.sdes.ucf.edu>. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Student Conduct and Academic Integrity <https://scai.sdes.ucf.edu> which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Time commitment: For most students striving for B grades or higher, I recommend scheduling 9 hours per week for engaging with this course. Your background knowledge/experience and other variables may require you to spend additional time. Please plan accordingly by scheduling time on your calendar now. Several factors influence student academic performance and long-term learning. Active engagement in all course activities (e.g., lecture, *iClicker* polling, textbook readings, *Smartwork5* homework, reviewing) will contribute to your learning and to success in this course.

Course Accessibility and Inclusion: It is my goal that this class be an accessible and welcoming experience for all. UCF and I consider the diversity of our students, faculty, and staff to be a strength and critical to our educational mission. UCF expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. Dimensions of diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexual orientation, income, faith and non-faith perspectives, socio-economic class, political ideology, education, primary language, family status, military experience, cognitive style, and communication style. The individual intersection of these experiences and characteristics must be valued in our community. If there are aspects of the design, instruction, or experiences within this course that result in barriers to your inclusion or accurate assessment of achievement, please notify me to discuss reasonable options or adjustments. You may also want to contact SAS at sas.sdea.ucf.edu (Ferrell Commons 185; 407-823-2371) to talk about academic accommodations.

Help & SARC: Please ask for help if you need it! I am here to answer your questions. Additionally, help is available through SARC (Student Academic Resource Center, Howard Phillips Hall, Room 113; 407-823-5130; <http://www.sarc.sdes.ucf.edu>). Students can request a Learning Consultation with a Learning Skills Specialist or attend Academic Success Workshops to improve study skills & strategies.

Deployed Active-Duty Military Students: Students who are deployed active-duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

UCF Cares: UCF and I care not only about your academic success, but also your overall well-being. Please visit [UCFCares.com http://cares.sdes.ucf.edu/](http://cares.sdes.ucf.edu) if you are seeking resources or support, or if you are worried about a friend or classmate. Free services and information are included for a variety of student concerns, including but not limited to alcohol use, bias incidents, mental health concerns, sexual harassment or assault, and financial challenges. You can also e-mail ucfcares@ucf.edu with questions or for additional assistance. You can reach a UCF Cares staff member Student Care Services, <http://scs.sdes.ucf.edu>, Ferrell Commons 142, between 8 a.m. and 5 p.m. by calling 407-823-5607.

If you are in immediate distress, please call Counseling and Psychological Services (CAPS), Counseling Center 101 <http://caps.sdes.ucf.edu> to speak directly with a counselor 24/7 at 407-823-2811, or call 911.

Academic Services and Resources: A list of available academic support and learning services is available at [UCF Student Services](#). Click on "Academic Support and Learning Services" on right-hand side to filter.

Non-Academic Services and Resources: A list of non-academic support and services is also available at [UCF Student Services](#). Click on "Support" on the right-hand side to filter.

Campus Safety Statement: Emergencies on campus are rare, but everyone should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
 - Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Please make a note of the guide's physical location.
 - Familiarize yourself with evacuation routes from each of your classrooms and have a plan for finding safety in case of an emergency.
 - If there is a medical emergency during class, a first aid kit or AED (Automated External Defibrillator) may be required. To learn where those items are located in any building, see <https://ehs.ucf.edu/automated-external-defibrillator-aed-locations> (In BA1, building 45, they are located on the 2nd floor near elevator).
 - To stay informed about emergency situations, sign up to receive UCF text alerts by going to my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the tool bar, scroll down to the blue "Personal Information" heading on your Student Center screen, click on "UCF Alert", fill out the information, including your e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
 - Consider viewing this video [You CAN survive an active shooter](#) about how to manage an active shooter situation on campus or elsewhere.
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COVID-19 and Flu Illness:

Students who are experiencing symptoms of COVID-19 or Influenza or have tested positive for COVID-19 or Influenza should not come to campus until they are medically cleared. CDC guidance for COVID-19 symptoms is located here: (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>.)

- Students who have tested positive for COVID or believe they may have a COVID-19 diagnosis should follow the guidance of their physician.
- Dr. Bayer may choose to wear a mask during lecture based on transmission levels in the community. Students may wear a mask or not based on their personal decision and risk analysis.
- Whether in attendance or not, all students will be expected to be fully aware of all information presented in class.

Note that the instructor reserves the right to make changes to the syllabus or other aspects of the course at any time. These changes will be announced in class or Webcourses.

Lecture Schedule

Jan 09: *Course introduction & Chapter 1 - Cells*

Jan 11: Chapter 1

*Jan 13: Chapter 2 - *Molecules of the Cell*

Jan 13: ADD/DROP deadline 11:59 pm

Jan 16: **MLK Holiday**

Jan 18: Chapter 2 & 4 - *Proteins*

*Jan 20: Chapter 4

Jan 23: Chapter 4

Jan 25: Chapter 5 - *Genome Organization*

*Jan 27: Chapter 5

Jan 30: Chapter 6 - *DNA Repair & Rearrangement*

Feb 01: Chapter 6

Feb 03: **Exam 1 (Chapters 1, 2, 4, 5, 6)**

Feb 06: Chapter 9 - *Evolution of Genes & Genomes*

Feb 08: Chapter 11/12 - *The Cell Membrane*

*Feb 10: Chapter 11/12

Feb 13: Chapter 11/12 - *Membrane Transport*

Feb 15: Chapter 3 - *Energy*

*Feb 17: Chapter 3

Feb 20: Chapter 13/14 - *Respiration*

*Feb 22: Chapter 13/14

Feb 24: Chapter 14

Feb 27: **Exam 2 (Chapters 9, 11, 12, 3, 13, 14)**

Mar 01: Chapter 14 - *Biosynthesis*

*Mar 03: Chapter 14

Mar 06: Chapter 15 - *Secretion*

Mar 08: Chapter 15

*Mar 10: Chapter 16 - *Cell Communication*

Mar 13-17: Spring Break

Mar 20: Chapter 16

Mar 22: Chapter 16 - *Signal Transduction*

*Mar 24: Chapter 16

Mar 24: WITHDRAWAL deadline 11:59 pm

Mar 27: Chapter 16

Mar 29: **Exam 3 (Chapters 14, 15, 16)**

*Mar 31: Chapter 17 - *Cytoskeleton*

Apr 03: Chapter 17

Apr 05: Chapter 17 & 18/20 - *Apoptosis/Cell Renewal*

*Apr 07: Chapter 18/20

Apr 10: Chapter 18/20

Apr 12: Chapter 18 - *Cell Cycle*

*Apr 14: Chapter 18

Apr 17: Chapter 18

Apr 19: **Exam 4 (Chapters 17, 18, 20)**

Apr 21: Chapter 20 - *Cancer*

Apr 24: Chapter 20

Apr 28: **Comprehensive Final Exam** (Friday, 7:00 - 9:50 am)

* indicates a **Group Review Question** due date