



PCB 3023
Cell Biology
89262 005
Fall 2026

Instructor Name

Gary Daughdrill

University Course Description

Cell Biology is the study of living properties of cells and encompasses a broad area of the life sciences that includes cellular physiology and life cycle, organelle structure and function, and biomolecular structure and function.

Course Requisites

Prerequisite(s):

(BSC 2010C Minimum Grade: C-
or BSC 1010C Minimum Grade: C-
or BSC 2010 Minimum Grade: C-
or BSC 1010 Minimum Grade: C-
or Biology Minimum Score: 4)
and (BSC 2010L Minimum Grade: C-
or BSC 1010L Minimum Grade: C-
or BSC 2010C Minimum Grade: C-
or BSC 1010C Minimum Grade: C-
or Biology Minimum Score: 4)
and (CHM 2046C Minimum Grade: C-

or CHM 1046C Minimum Grade: C-
or CHM 2046 Minimum Grade: C-
or CHM 1046 Minimum Grade: C-
or Chemistry Minimum Score: 5)

Corequisite(s):

Course Format

Most class sessions will have two parts that include a didactic lecture and a problem solving exercise. In some case the problem solving exercises will be completed individually and in other cases it will be a group effort.

Student Learning Outcomes

Students are expected to develop a broad and detailed understanding of the functioning of eukaryotic cells. By the end of this course students should understand:

1. The structure and function of biomolecules, including proteins, enzymes, and DNA.
2. The organization and function of membranes.
3. The basic principles of molecular transport across membranes.
4. The organization of the cytoskeleton and how molecular motors work.
5. Chromosome structure and the mechanisms of DNA replication.
6. The mechanisms of transcription and translation and the regulation of gene expression.
7. The basic principles of cell signalling.
8. How the cell cycle is controlled.
9. The molecular basis of cancer.

Course Objectives

My primary goal is to ensure that all students meet the learning outcomes. It would also be nice if you had some fun.

Required Texts and/or Readings and Course Materials

Essential Cell Biology, 6th Ed. by Alberts, et al.

- **Print ISBN:** 1324033355

- **eBook ISBN:** 1324033486

How to Succeed in this Course

1. To succeed in this course it is essential to come to class. 25% of your grade will be based on active learning exercises that will be conducted in class and not available online.
2. To succeed in this course it is also necessary to develop your quantitative and analytical problem solving skills. This will be facilitated by the active learning exercises.
3. Success also depends on taking thorough notes, reviewing lecture material, keeping up with assigned reading, and completing all assignments by their due dates.
4. Depending on your learning style, working with a study group or partner, describing concepts to others, and diagramming cellular processes are also recommended. It is best to study each day and you are expected to work outside of class from 2-3 hours a week for every course credit hour.

Grading Scale

Letter grades for the course are assigned based on the following scale:

A+ = 96.5-100%

A = 89.5-96.4%

B+ = 86.5-89.4%

B = 79.5-86.4%

C+ = 76.5-79.4%

C = 69.5-76.4%

D+ = 66.5-69.4%

D = 59.5-66.4%

F < or = 59.4

Grade Categories and Weights

Your grade in Cell Biology will be determined by your performance on the following assignments.

- There will be active classroom exercises, worth 25% of the total grade or 250 points . These assignments will only be available during class

and you will not be able to make up an active learning exercise. These assignments are designed to improve your analytical and problem-solving skills. You can find the classroom activity schedule on page 3. For most of these exercises you will receive half the points for participating, 20% of the points for attempting the problems, and 30% of the points for the correct answer. You can miss 40 points worth of classroom activities without a penalty.

- There will be 14 online Smartworks quizzes, worth a total of 400 points, that will test your knowledge on basic material in Cell Biology. These 14 quizzes will correspond to the 14 chapters we cover during the semester. You can find the Smartworks quiz schedule and the points for each quiz on page 4.
- There will be a comprehensive final exam worth 400 points. The final exam schedule can be found on page 2.

Major Topics and Course Schedule

<u>Classroom Lecture Schedule</u>		
Date	Topic	Chapter(s)
08/25	Introduction to Protein Structure and Stability	2-4
08/27	Introduction to Protein Structure and Stability	2-4
09/01	Labor Day No Classes	
09/03	Kinetics of Protein Ligand Interactions	2-4
09/08	Protein Structure Function and Regulation	2-4
09/10	Advanced Problem Solving	
09/15	Membrane Proteins and Transport	11,12
09/17	Membrane Proteins and Transport	11,12
09/22	Protein Sorting and Membrane Trafficking	15
09/24	Cytoskeleton and Molecular Motors	17
09/29	Cytoskeleton and Molecular Motors	17
10/01	Visualizing protein structures	

10/06	Visualizing protein structures	
10/08	Chromosome Structure	5
10/13	Chromosome Structure	5
10/15	Mechanisms of DNA Replication and Repair	6
10/20	Mechanisms of DNA Replication and Repair	6
10/22	Mechanisms of Transcription	7
10/27	Mechanisms of Transcription	7
10/29	Mechanisms of Translation	7
11/03	Control of Gene Expression	8
11/05	Cell Signaling	16
11/10	No Class	
11/12	Cell Signaling	16
11/17	Control of the Cell Cycle	18
11/19	Cancer	20
11/24	Cancer	20
11/26	Review of Classroom Exercises	
12/01	Test Free Week: Review for comprehensive final	
12/03	Test Free Week: Review for comprehensive final	
12/08	Final Exam for Section 4: 12:30pm-2:30pm CMC13	
12/10	Final Exam for Section 5: 7:30am-9:30am ISA3048	

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<u>Classroom Activity Schedule</u>			

Date	Topic	Handout	Points
08/25	The n rule for protein sequences and conformations	PS1a	12
08/27	The n rule for protein sequences and conformations	PS1b	12
09/01	Labor Day No Classes		
09/03	Structure and properties of amino acids	PS2a,b	12
09/08	Michaelis-Menten Kinetics	PS3a	12
09/10	Michaelis-Menten Kinetics	PS3b	12
09/15	Physiological response to ligand binding	PS4	12
09/17	Physiological response to ligand binding	PS5	12
09/22	Action Potential and the Tetherball Problem	PS6	12
09/24	Protein Sorting and Membrane Trafficking	PS7	12
09/29	The Mechanism of Molecular Motors		
10/01	Visualizing protein structures	PS8	12
10/06	Visualizing protein structures	PS9	12
10/08			
10/13	Packaging DNA in the nucleus	PS10	12
10/15	Histones binding to DNA	PS11	12
10/20			
10/22	Mechanisms of DNA replication	PS12	12
10/27	Mechanisms of DNA repair	PS13	12

10/29	Mechanisms of transcription	PS14	12
11/03	Mechanisms of translation	PS15	12
11/05	Control of gene expression	PS16	12
11/10			
11/12	Cell Signaling	PS17	12
11/17	Cell Signaling	PS18	12
11/19	Control of the Cell Cycle	PS19	12
11/24	Oncogenes and tumor suppressors	PS20	12
11/26			
12/01	Test Free Week/Review for comprehensive final		
12/03	Test Free Week/Review for comprehensive final		
12/08	Final Exam for Section 4: 12:30pm-2:30pm CMC13		
12/10	Final Exam for Section 5: 7:30am-9:30am ISA3048		

<u>Smartworks Quiz Schedule</u>			
Date Open	Relevant Chapter(s)	Date Closed	Points
08/25			
08/27			
09/01	Labor Day No Classes		
09/03	Chapters 2 and 3	09/10	18 each

09/08	Chapter 4	09/15	18
09/10			
09/15	Chapters 11 and 12	09/22	18 each
09/17			
09/22	Chapter 15	09/29	18
09/24			
09/29	Chapter 17	10/06	18
10/01			
10/06			
10/08	Chapter 5	10/15	18
10/13			
10/15			18
10/20	Chapter 6	10/27	18
10/22			
10/27	Chapter 7	11/03	18
10/29			
11/03	Chapter 8	11/10	18
11/05			
11/10			
11/12	Chapter 16	11/19	18
11/17	Chapter 18	11/24	18
11/19			
11/24	Chapter 20	11/30	18
11/26			

12/01	Test Free Week/Review for comprehensive final		
12/03	Test Free Week/Review for comprehensive final		
12/08	Final Exam for Section 4: 12:30pm-2:30pm CMC13		
12/10	Final Exam for Section 5: 7:30am-9:30am ISA3048		

USF Core Syllabus Policies

USF has a set of central policies related to student recording class sessions, academic integrity and grievances, student accessibility services, academic disruption, religious observances, academic continuity, food insecurity, pregnancy and related conditions, and sexual harassment that **apply to all courses at USF**. Be sure to review these online:

<https://www.usf.edu/provost/faculty-success/resources-policies-forms/core-syllabus-policy-statements.aspx>

Student Recordings

Florida Statute 1004.097 Free Expression on Campus

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal, educational use (USF Policy 10-048). A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, private conversations between students in the class or between a student and the faculty member is prohibited. Recordings may not be used as a substitute for class participation and class attendance and

may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the USF Student Conduct Code.

Course Policies: Grades

See sections on grading scale and grade categories and weights.

Grades of "Incomplete"

The current university policy concerning incomplete grades will be followed in this course.

For undergraduate courses: An “I” grade may be awarded to a student only when a small portion of the student’s work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the “I” is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first. For graduate students, this time limit may not exceed one academic semester. “I” grades not removed by the end of the time limit will be changed to “IF” or “IU,” whichever is appropriate.

Campus Free Expression

It is fundamental to the University of South Florida’s mission to support an environment where divergent ideas, theories, and philosophies can be openly exchanged and critically evaluated. Consistent with these principles, this course may involve discussion of ideas that you find uncomfortable, disagreeable, or even offensive.

In the instructional setting, ideas are intended to be presented in an objective manner and not as an endorsement of what you should personally believe. “Objective” means that the idea(s) presented can be tested by critical peer review and rigorous debate, and that the idea(s) is supported by credible research.

In this course you may be asked to engage with complex ideas and to demonstrate an understanding of the ideas. Understanding and engaging with an idea does not require you to believe it or to agree with it.

Course Policies: Technology and Media

Cellular phones: Making or receiving calls, text messaging, and taking photos with a cell phone during lectures are extremely distracting and prohibited in this class. As a courtesy to your fellow students and instructor, please keep cell phones and pagers switched completely off for the duration of this class.

Laptops: The use of laptops for taking class notes is permitted and you will need a laptop with admin privileges for visualizing protein structures. Using your laptop to surf the Internet, check e-mail, instant message, etc. is distracting to nearby students and is unacceptable.

Generative AI: Generative AI will not be used in the course.

Course Policies: Student Expectations

Health and Wellness

Your health is a priority at the University of South Florida. We encourage members of our community to look out for each other and to reach out for help if someone is in need. If you or someone you know is in distress, please make a referral at www.usf.edu/sos so that the Student Outreach & Support can contact and provide helpful resources to the student in distress. A 24-hour licensed mental healthcare professional, offered through the counseling center, is available by phone at 813-974-2831, option 3. Please remember that asking for help is a sign of strength. In case of emergency, please dial 9-1-1.

Title IX Policy

USF is committed to fostering a safe and respectful learning environment, free from sex discrimination and sexual harassment, in accordance with Title IX and USF Policy 0-004. If a student shares an experience of sexual harassment, sexual assault, stalking, or relationship violence with a USF employee (including faculty), that employee will notify the Title IX Office. This allows the Title IX Office to send the student an email with information about support resources and options—if it is safe to do so. Students are not required to respond to this email. The Title IX Office is a private

resource. Information is shared only on a need-to-know basis to provide students with support measures. To speak to a confidential resource, students may contact USF Center for Victim Advocacy at 813-974-5757. Confidential resources do not notify the Title IX Office unless the student requests it. For more information about Title IX, available resources, or to make a report, please visit www.usf.edu/title-ix.

Course Hero / Chegg Policy

The USF Policy on Academic Integrity specifies that students may not use websites that enable cheating, such as by uploading or downloading material for this purpose. This does apply specifically to Chegg.com and CourseHero.com – almost any use of these websites (including uploading proprietary materials) constitutes a violation of the academic integrity policy.

Professionalism Policy

Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

Turnitin.com

In this course, turnitin.com may be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you may be expected to submit all assignments in both hard copy and electronic format. After the assignment is processed, as instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit <http://www.turnitin.com>.

Netiquette Guidelines

- Act professionally in the way you communicate. Treat your instructors and peers with respect, the same way you would do in a face-to-face environment. Respect other people's ideas and be constructive when explaining your views about points you may not agree with.
- Be sensitive. Be respectful and sensitive when sharing your ideas and opinions. There will be people in your class with different linguistic backgrounds, political and religious beliefs or other general differences.
- Proofread and check spelling. Doing this before sending an email or posting a thread on a discussion board will allow you to make sure your message is clear and thoughtful. Avoid the use of all capital letters, it can be perceived as if you are shouting, and it is more difficult to read.
- Keep your communications focused and stay on topic. Complete your ideas before changing the subject. By keeping the message on focus you allow the readers to easily get your idea or answers they are looking for.
- Be clear with your message. Avoid using humor or sarcasm. Since people can't see your expressions or hear your tone of voice, meaning can be misinterpreted.

Email and Discussion Board Guidelines

- Use the subject line effectively by using a meaningful line of what your email or discussion is about.
- Keep your emails and postings related to the course content. You should not post anything personal on a discussion board unless it is requested by the instructor.
- Any personal, course or confidential issues should be directly communicated to the instructor via email. The discussion boards are public spaces; therefore, any issues should not be posted there.

End of Semester Student Evaluations

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Food and Drink Policy (for in-campus sessions only).

Please adhere to the firm policy of no beverages (other than bottled/capped water), food, tobacco products, or like items in the classroom. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

Learning Support and Campus Offices

Academic Accommodations

Students with disabilities are responsible for registering with Student Accessibility Services (SAS) in order to receive academic accommodations. For additional information about academic accommodations and resources, you can visit the SAS website.

[SAS website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[SAS website for the St. Pete campus.](#)

Academic Support Services

The USF Office of Student Success coordinates and promotes university-wide efforts to enhance undergraduate and graduate student success. For a comprehensive list of academic support services available to all USF students, please visit the [Office of Student Success website](#).

Canvas Technical Support

If you have technical difficulties in Canvas, you can find access to the Canvas guides and video resources in the “Canvas Help” page on the homepage of your Canvas course. You can also contact the help desk by calling 813-974-1222 in Tampa or emailing help@usf.edu.

[USF IT Services](#)

Center for Victim Advocacy

The [Center for Victim Advocacy](#) empowers survivors of crime, violence, or abuse by promoting the restoration of decision making, by advocating for

their rights, and by offering support and resources. Contact information is available online.

Counseling Center

The Counseling Center promotes the wellbeing of the campus community by providing culturally sensitive counseling, consultation, prevention, and training that enhances student academic and personal success. Contact information is available online.

[Counseling Center website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Counseling Center website for the St. Pete campus.](#)

Tutoring

The Tutoring Hub offers free tutoring in several subjects to USF undergraduates. Appointments are recommended, but not required. For more information, email

asctampa@usf.edu.

[Tutoring website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Tutoring website for the St. Pete campus.](#)

Writing Studio

The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you, at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, email: writingstudio@usf.edu.

[Writing studio website for the Tampa campus and Sarasota-Manatee Teachout Site.](#)

[Writing studio website for the St. Pete campus.](#)

Student Ombuds Office

Florida Statute 1006.51 and Florida Board of Governors Regulation 6.011 require that all public institutions provide ombuds services to students. The Student Ombuds Office at USF is a confidential, impartial, informal, and independent resource for students experiencing challenges related to the university. Ombuds can help students safely explore options, clarify processes, and consider next steps. [Learn more or make an appointment at usf.edu/student-ombuds.](https://usf.edu/student-ombuds)