

Biology 313-1: Cell Biology

Course Time: Monday, Wednesday, Friday 11:00-11:50 AM in RITA 154

Instructor: Dr. Mark D. Lazzaro (lazzarom@cofc.edu), RITA 219, 843-953-7180

Office Hours: By appointment, just send an email.

Course Objectives:

This course focuses on the structure and function of cells. Specific topics include cell metabolism, membrane organization, organelles, compartmentation, membrane trafficking, the cytoskeleton, cell division, and cell signaling.

Student Learning Outcomes:

Students will demonstrate:

- A detailed understanding of the underlying components of modern cell biology, including cell metabolism, membrane organization, organelles, compartmentation, membrane trafficking, the cytoskeleton, cell division, and cell signaling.
- The ability to use the scientific method in obtaining, analyzing and evaluating empirical evidence for cellular structure and processes.

How to do well in this course:

Cell biology is a complicated subject. Most of you are seniors and I will expect you to work hard, come to class prepared and study effectively for exams. Attendance at lectures is required. I will expand on topics beyond what is covered in the text and you will be responsible for this material. Reading the text is required. This is a detail-oriented course and you will not do well if you never read the book. Lectures will make more sense if you read the text beforehand. If you must miss lecture, get the notes from a friend or from the website. Don't make the mistake of skipping lecture because you can get the notes to read just before the exam.

Required Text:

Hard copy or electronic access to Molecular Cell Biology, 8th edition (2016), by Lodish et al.

Recommended Materials:

Buy colored pens or pencils for your notes. I use several colors of markers in lecture.

Course Website:

Powerpoint presentations and videos are available after class on the course website. Go to OAKS, select this class, click on CONTENT.

Entry Exam:

There is a multiple choice exam on OAKS that covers material you should know from the prerequisite freshman biology course (BIOL 111/HONS 151). Your completion of the exam helps Dr. Lazzaro set the background level for the course. Go to OAKS, select GRADES, then QUIZZES.

Your score on this exam does not count in your course grade, but you earn 10 points for completing the exam by deadline (**11:59 PM Friday January 11**). Take the exam - it's an easy way to earn 10 points! You will wish you had this 10 point buffer later in the semester.

Quizzes:

There are brief quizzes during the semester, usually on Monday. The quizzes are based on the material from the previous few lectures and encourage you to stay up to date on your studying. Each quiz is 4 points and there are 11 quizzes, which totals 44 points. You can earn a maximum of 40 points for quizzes so you get EXTRA CREDIT for any additional quiz points (up to 4 more points). This is the only extra credit for the course. You can only make up a quiz with a documented excuse (ex: documented illness, interview for post-graduate program, death in the family).

Exams:

Exams are essay, short answer, and multiple choice. For Exam 1, sample questions will be on OAKS so you can see the testing style. There are four exams and a cumulative final in this course. Each exam is worth 100 points. The cumulative final is worth 50 points. My exams are challenging and require you to know detail and think analytically. Exam material is based primarily on lecture and the related sections in the text.

You cannot make up exams without a documented excuse approved by the Division of Student Affairs. Do not ask me to take an exam other than that scheduled for the rest of the class. All exams count.

Grades:

Points for the course are earned as follows:

Entry Exam	10 points
Quizzes	40 points
Exam 1	100 points
Exam 2	100 points
Exam 3	100 points
Exam 4	100 points
<u>Final</u>	<u>50 points</u>
TOTAL	500 points

Your final grade is determined as a percentage of the 500 total points as follows:

A	94-100	C	74-76
A-	90-93	C-	70-73
B+	87-89	D+	67-69
B	84-86	D	64-66
B-	80-83	D-	60-63
C+	77-79	F	0-59

Student conduct in this course is governed by the College of Charleston Honor Code. If you will require special accommodations to complete any of the reading, speaking, or writing requirements for this course, please come and see me as soon as possible. Please see the syllabus insert posted on OAKS to read the required official language on academic integrity and on accommodations for students with disabilities.

Date	Topic	Chapter
W January 9	1 Intro to Cells and Chemistry	1 (all), 2.1, 2.2
F January 11	2 Cellular Chemistry and Thermodynamics	2.4
M January 14	3 Protein Structure, QUIZ 1	3.1, 3.2
W January 16	4 Enzymes	3.3, 3.4
F January 18	5 Membrane organization	7.1, 7.2, 7.3
M January 21	MARTIN LUTHER KING JR. HOLIDAY	
W January 23	6 Transport across membranes, QUIZ 2	11.1, 11.2, 11.4
F January 25	7 Transport across membranes	11.3, 11.5 11.6
M January 28	8 Metabolism and Mitochondria, QUIZ 3	12.1, 12.2
W January 30	9 Mitochondria-Electron Transport	12.3, 12.4
F February 1	Exam 1: 1-Cellular Chemistry through 8-Metabolism/Mitochondria	
M February 4	10 Mitochondria-Electron Transport	12.3, 12.4
W February 6	11 Mitochondria-Electron Transport	12.3, 12.4
F February 8	12 Mitochondria ATP synthesis	12.5
M February 11	13 Chloroplasts and photosynthesis, QUIZ 4	12.6, 12.7
W February 13	14 Chloroplasts and photosynthesis	12.6, 12.7, 12.8
F February 15	15 Transcription and Translation	5.1, 5.2, 5.3
M February 18	16 Translation, QUIZ 5	5.3, 5.4
W February 20	17 Translation	5.4
F February 22	18 Translation	5.4
M February 25	19 Signal Transduction, QUIZ 6	15.3, 15.5
W February 27	20 Signal Transduction	15.6
F March 1	Exam 2: 9-Electron Transport through 18-Translation	
M March 4	21 Transport through Nuclear Pores	10.3, 13.6
W March 6	22 Transport through Nuclear Pores	10.3, 13.6
F March 8	23 Protein targeting to Organelles	13.4, 13.5
M March 11	24 Endoplasmic Reticulum and Protein synthesis, QUIZ 7	13.1
W March 13	25 Endoplasmic Reticulum and Protein synthesis	13.1
F March 15	26 Endoplasmic Reticulum and Protein synthesis	13.2, 13.3
M March 18	SPRING BREAK	
W March 20	SPRING BREAK	
F March 22	SPRING BREAK	
M March 25	27 Golgi-organization and protein sorting, QUIZ 8	14.2
W March 27	28 Golgi-coated vesicle formation	14.3
F March 29	29 Golgi-vesicle sorting and delivery	14.3
M April 1	30 Cytoskeleton-microfilaments and assembly dynamics, QUIZ 9	17.1, 17.2
W April 3	31 Cytoskeleton-microfilament associated proteins	17.3, 17.4
F April 5	Exam 3: 19-Signal Transduction through 29-Golgi	
M April 8	32 Cytoskeleton-myosin and motility	17.5, 17.7
W April 10	33 Cytoskeleton-muscle cells	17.6
F April 12	34 Cytoskeleton-intermediate filaments and microtubules	18.7, 18.1, 18.2
M April 15	35 Cytoskeleton-microtubule dynamics, kinesin and dynein, QUIZ 10	18.3, 18.4
W April 17	36 Mitosis-control of the cell cycle	19.1, 19.3, 19.5
F April 19	37 Mitosis-spindle alignment and chromosome capture	18.6
M April 22	38 Mitosis-chromosome alignment and separation, QUIZ 11	18.6
T April 23 (M)	39 Mitosis-cytokinesis	18.6, 19.6
F April 26 (8-11AM)	Exam 4: 30-Cytoskeleton through 39-Cytokinesis and CUMULATIVE FINAL	