

Biology 313-1: Cell Biology

Course Time: Monday, Wednesday, Friday 9:00-9:50 AM in SSMB 138

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

Office Hours: After lecture, before lab, or by appointment. Unfortunately Dr. Lazzaro's office is 2 miles from campus at 645 Meeting Street because the Rita Hollings Science Center is being renovated. It's difficult to just drop by but we can meet on campus as needed.

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.

Quizzes:

There are twelve brief quizzes during the semester, usually on Mondays. 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 5 points and there are 12 quizzes, which is 60 points. You can earn a maximum of 50 points for quizzes so you get EXTRA CREDIT for any additional quiz points (up to 10 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:

Quizzes	50 points	(10%)
Exam 1	100 points	(20%)
Exam 2	100 points	(20%)
Exam 3	100 points	(20%)
Exam 4	100 points	(20%)
<u>Final</u>	<u>50 points</u>	<u>(10%)</u>
TOTAL	500 points	(100%)

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

A	96-100	C	70-74
A-	90-95	C-	68-69
B+	85-89	D+	65-67
B	80-84	D	60-64
B-	78-79	D-	56-59
C+	75-77	F	0-55

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