BIO 236
Cell and Molecular Biology Syllabus
Spring 2009

Instructor: Dr. André Walther
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Office hours: MWF 10 AM - 11 AM, or by appointment

Class time & place: Monday, Wednesday, Friday 9:00 - 9:50 am (3 credits),
Miller Building 33

Prerequisites: BIO 121 and 122 (C- or better) and CHE 111 and 112 strongly recommended

Course Description:

This course covers fundamental concepts in the areas of cell and molecular biology. of cellular reactions in the context of functional structures located in the cell. There will be a special emphasis on the molecular reactions and cellular structures found inside of eukaryotic cells. Topics will include microscopy; cell structure and function; cell-cycle and reproduction; gene expression and its control; molecular mechanisms of inheritance, inter- and intracellular signaling and interactions. In conjunction with the lecture course, the laboratory sections will provide the students with firsthand experience in commonly used experimental techniques in cell and molecular biology.

Objectives

The objectives for students in this course are to:

- Achieve a detailed understanding of the diversity, structure, and function of cells.
- Understand the experimental approaches used in the investigation of cell biology.
- Develop expertise in logical problem solving.

Course Outcomes

Upon successful completion of the course, students will:

- Demonstrate the ability to engage in scientific reasoning by interpreting and applying the concepts cell structure and function
- Demonstrate the ability to communicate these concepts orally and in writing

Assessment

The outcomes described above will be assessed through:

- Written exams and quizzes: scientific / quantitative reasoning, written communication ability
- Class participation: oral communication ability

Student Responsibilities

Readings:

Although lectures will emphasize the most important material, you are responsible for all material in the assigned reading, whether or nor it is discussed in lecture. Anything in the assigned reading or lecture notes is fair game for exams and quizzes.

Attendance:

It is strongly recommended that you attend class, as class material may be covered that is not in your text, and you are responsible for this material even if you are absent. Repeated absences may affect your participation grade.

Scholarship and Integrity:

I fully support the Cedar Crest College Honor Code and the Classroom Protocol code as stated in the Customs Book. You are required to abide by the Honor Code and by accepted practices of scholarship and integrity. All writing and other material that you submit must be your own, original work, unless otherwise acknowledged. Material that is quoted from another source must be clearly indicated as a quotation and must be followed immediately by a citation to the original source. Paraphrasing is not acceptable as original work; editing someone else's writing does not make it your own work. Cheating or plagiarism will result in a grade of F for the assignment or the entire course, at the instructor's discretion. If you have any questions about these issues, please discuss them with an instructor.

Classroom protocol:

The Honor Code states, "Appropriate classroom behavior is implicit in the Cedar Crest Honor Code. Such behavior is defined and guided by complete protection for the rights of all students and faculty to a courteous, respectful classroom environment. That environment is free from distractions such as late arrivals, early departures, inappropriate conversations and any other behaviors that might disrupt instruction and/or compromise students' access to their Cedar Crest College education."

Students with Disabilities:

Students with documented disabilities who may need academic accommodations should discuss these needs with their professors during the first two weeks of class. Students with disabilities who wish to request accommodations should contact the Advising Center.

Lecture Evaluation

Assignments and Evaluation

Quizzes (75 pts):

There will be in-class clicker quiz questions posed at the beginning of each class totaling 85 questions for the semester. Quizzes will cover material from the previous lecture. Students may miss up to ten questions with no grade penalty.

Exams (400 pts):

Each of the four 100 pt, in-class exams during the semester will cover reading and lecture material since the previous exam.

Final Exam (150 pts):

The comprehensive final exam will include course material from throughout the semester.

Participation (+/- 5%):

Class participation, attendance, and adherence to the classroom protocol may raise or lower your course grade by up to 5%. The participation grade will be determined solely at the discretion of the instructor.

Total Points: 625

<u>There are no planned extra credit assignments, so make your points count.</u>

Make-up policy for quizzes and exams:

Due to the built in 10 point buffer, there will be no makeup quizzes. If a student misses multiple quizzes because of documented, legitimate reasons, make-up quizzes will be given at the discretion of the instructor

If you miss an exam due to illness or emergency that has been documented through the Dean of Student Affairs' office, you must contact the instructor as soon as possible to arrange a make-up exam. Make-up exams will not be given for any other reason. Please note that make-up exams may be of a different format than the main exam given in class.

Your obligations for this course include attendance at the final exam, on the day and time scheduled by the Registrar's Office. You should not make travel arrangements until the final exam schedule is published; if you must make plans early, you should schedule your travel after the last final exam day.

Course Grading:

The course grade will be calculated to the nearest 0.1%, and the letter grade determined by the table below. Late assignments will be deducted 10% per calendar day, including weekend days.

%:	93.0 - 100%	90.0 - 92.9%	87.0- 89.9%	83.0 - 86.9%	80.0 - 82.9%	77.0 - 79.9%	73.0 - 76.9%	70.0 - 72.9%	67.0 - 69.9%	60.0 - 66.9%	<60.0%
Grade:	A	A-	B+	B	B-	C+	C	C-	D+	D	F

Lecture Slides:

Figures for each class will be available for download from eCollege prior to class. I will do my best to have them available at least the night prior to class, but may not always be able to do so. The lecture slides found on eCollege will NOT contain all of the lecture notes and the lecture notes will not be provided to students, so come to class. Students are responsible for knowing and understanding all figures presented in the lecture slides.

Grading Disputes:

If a student has an issue about the grading of specific questions, I will be more than willing to hear them out, however this should be done in writing and should include specific evidence supporting the awarding additional points.

Your Keys to Success:

There is a large body of material to learn in this course. To learn successfully, you will need to attend the lectures, read the text and other assigned readings, and study effectively. You need to put in the effort, but help is available. Always feel free to ask questions!

Schedule (Subject to change)

Lecture	Date	Topic	Readings
1	Mon 1-19	Syllabus/Clicker 101	
2	Wed 1-21	Microscopy	Chapter 18.1-18.3
3	Fri 1-23	What is a cell?/ Chemistry of the Cell	Chapter 1.1-1.2, 2.1-2.2
4	Mon 1-26	Sugars, Nucleic Acids, and Lipids	Chapter 2.5
5	Wed 1-28	Protein Structure and Folding	Chapter 2.5
6	Fri 1-30	Flow of Energy in the Cell	Chapter 3.1
7	Mon 2-2	Enzymes	Chapter 3.2
8	Wed 2-4	The Prokaryotic Cell	Chapter 1.3
9	Fri 2-6	The Eukaryotic Cell	Chapter 1.3
10	Mon 2-9	Left Overs	
	Wed 2-11	**EXAM I (1-10)**	
11	Fri 2-13	Membrane Structure and Function	Chapter 4
12	Mon 2-16	Transport Across the Membrane	Chapter 4

	Date	**Topic**	Readings
13	Wed 2-18	Nerve Cells	Chapter 4.8
14	Fri 2-20	Nerve Cells	Chapter 4.8
15	Mon 2-23	Glycolysis and Fermentation	Chapter 3.3
16	Wed 2-25	Aerobic Respiration	Chapter 5
17	Fri 2-27	Photosynthesis	Chapter 6
18	Mon 3-2	Photosynthesis	Chapter 6
19	Wed 3-4	Left Overs	
	Fri 3-6	**EXAM II (11-19)**	
NO CLASS	3-9 to 3-13	Spring Break Yipee!	
20	Mon 3-16	Nucleus and DNA	Chapter 10
21	Wed 3-18	DNA Replication	Chapter 13
22	Fri 3-20	Recombination and DNA repair	Chapter 13
23	Mon 3-23	Genetic Code and Transcription	Chapter 11
24	Wed 3-25	Protein Synthesis	Chapter 11
25	Fri 3-27	Intracellular Membrane Organelles	Chapter 9
26	Mon 3-30	Recombinant DNA technology	Chapter 18.9-18.16
27	Wed 4-1	Cytoskeleton Structure and Function	Chapter 9
28	Fri 4-3	Left Overs	
	Mon 4-6	**EXAM III (20-27)**	
29	Wed 4-8	Regulation of Gene Expression	Chapter 12
NO CLASS	4-10 to 4-13	Easter Break	
30	Wed 4-15	The Cell Cycle/Mitosis	Chapter 14
31	Fri 4-17	Sex and the Single cell/Meiosis	Chapter 14
32	Mon 4-20	Tissues/Beyond the cell	Chapter 7
33	Wed 4-22	Signal Transduction: Receptors	Chapter 15
34	Fri 4-24	Cancer	Chapter 16
35	Mon 4-27	Stem Cells and Cloning	Chapter 18.17
36	Wed 4-29	Immune Cells	Chapter 17
37	Fri 5-1	Immune Cells	Chapter 17
	Mon 5-4	**EXAM IV (28-37)**	
	TBA	**Comprehensive Final Exam**	