

BIOL 4500: Cell Biology (Spring 2015)

1. Course Information

- Course number and section: BIOL 4500 A
- Course name: Cell Biology
- Hours of credit: 4
- Pre-requisites or co-requisites as listed in university catalogue: Prerequisite: BIOL 1107K, BIOL 1108K, BIOL 3200, CHEM 1211/1211L, CHEM 1212/1212L.
- Classroom location and room number: BC 2022 (for the lecture, MWF 8:00 am - 8:50 am), BC 2071 (for the lab, F 9:30 am - 12:20 am)
- Department, College, University: Department of Biology, College of Arts and Sciences, Valdosta State University

2. Instructor Information

- Instructor name: Dr. Jonghoon Kang
- Instructor contact: BC 2217, 229-333-7140, jkang@valdosta.edu
- Instructor office hours: M&T 9:30am - 11:00am

3. Course Description

- Course description as printed in university catalogue: The organization and function of cellular structures in animal, plant, and microbial systems. Emphasis on the molecular basis of metabolism, transport, mobility, nerve conduction, and the cell cycle.
- Required texts, resources, and materials: *Essential Cell Biology, 4th Edition* by Bruce Alberts et al. from Garland Science. (ISBN-13: 978-0815344544)
- Required out-of-class activities: In addition to attending the lectures you need to
 - ✓ Read your notebook (very important).
 - ✓ Read the textbook (3.5months/semester x 4weeks/month x 5days/week = 70 days and the textbook size is about 700 pages. That means reading 10 pages per day is necessary for one time reading of the entire textbook.)
 - ✓ Work on all the exercise questions in the textbook.
 - ✓ Complete assignments.

4. Standards, Goals, Objectives, or Outcomes

- outcomes:

The departmental educational outcomes (listed in the university catalogue).

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral formats used in peer-reviewed journals and at scientific meetings.
3. Demonstrate an understanding of the cellular basis of life.
4. Relate the structure and the function of DNA/RNA to the development of form and function of the organism and to heredity.

- Course objectives or outcomes:
 - Describe basic terminology in cell biology.
 - Describe the underlying physical and chemical principles in cell biology.
 - Demonstrate an understanding of basic experimental and computational techniques in cell biology.
 - Demonstrate competency for the cell biology part in standard tests such as GRE, MCAT, DAT, PCAT, and MFT.

5. Assignments (explicitly aligned with the goals, objectives, or outcomes)

- General description of the assignments: There will be three assignments associated with lab. The details will be announced when the assignment is given.
- Policies for missed assignments, make-up assignments, late assignments, and/or extra credit: There will be no credit for missed and/or late assignments.

6. Assessment or Evaluation Policy

- Explanation of how grades are assigned: Grading will be based on the scores you get from the tests.
 Your class score (CS) = $(\sum \text{Test } i \text{ score} + \text{Final Test score} + \text{Lab score})/9.5$, where i is I to IV.
 The maximum score of the Test i is 100, where i is I to IV. The maximum score of the final is 300. The maximum score of Lab score is 250 = 9 quizzes (10 points ea.) + 3 assignments (10 points ea.) + 6 research results (5 points ea.) + 2 Lab Exams (50 points ea.).
 If CS \geq 90% then A for the final grade, if CS \geq 80% then B, if CS \geq 70% then C, if CS \geq 60% then D and anything below will be F.
- Grading standards: You may get partial credit for answers that show logical developments but fail to derive the correct answers due to operational errors.

Record your scores in the table.

Exam	I	II	III	IV	Final	Sum 1
Score						

Lab	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	A1	A2
Score											
Lab	A3	R1	R2	R3	R4	R5	R6	Lab Exam 1	Lab Exam 2		Sum 2
Score											

Your score = (Sum 1 + Sum 2)/9.5

7. Schedule of Activities or Assignments, including university -scheduled final exam time (all schedule is tentative and may be subject to change)

Date	Class	Date	Lab
1/12	1. Cells	1/16	Basic Lab Mathematics
1/14, 16	2. Chemical Components of Cells	1/23	Concentration Calculation Q1
1/21, 23	3. Energy, Catalysis, and Biosynthesis	1/30	How to Read and Write Scientific Papers Q2
1/26, 28	4. Protein Structure and Function	2/6	Curve Fitting Using Excel: Enzyme and Chemical Kinetics (Computer Lab #3018) Q3 Assignment 1 (A1) on curve fitting
1/30	5. DNA and Chromosomes	2/13	DNA Bioinformatics & Organelle Genome (Computer Lab #3018) Preview of Thermal Degradation A1 due; A2 on organelle genome
2/2	Exam I (100 points)	2/20	Thermal Degradation of Chlorophyll (Data Collection) Q4; A2 due; A3 (Research report)
2/4	6. DNA Replication	2/27	Thermal Degradation of Chlorophyll (Data Analysis)
2/6, 9, 11	7. From DNA to Protein	3/6	Lab Exam I (50 points)
2/13, 16	8. Control of Gene Expression	3/13	Agarose Gel Electrophoresis (R1)
2/18	10. Modern Recombinant DNA Technology	3/20	DNA/RNA Microarrays (R2) Q5; A3 due
2/20	Exam II (100 points)	4/3	Restriction Enzyme Digestion of DNA (R3) Q6
2/23, 25	11. Membrane Structure	4/10	Gel Filtration Chromatography (R4) Q7
2/27, 3/2, 4	12. Membrane Transport	4/17	Ion Exchange Chromatography (R5) Q8
3/6, 9, 11	13. How Cells Obtain Energy	4/24	Introduction to ELISA Reactions (R6) Q9
3/13, 16, 18	14. Mitochondria and Chloroplasts	5/1	Lab Exam II (50 points)
3/20	Exam III (100 points)		
3/30, 4/1, 3	15. Intracellular Compartments		
4/6, 8	16. Cell Signaling		
4/10, 13, 15, 17	17. Cytoskeleton		
4/20	Exam IV (100 points)		
4/22, 24, 27	18. Cell Division Cycle		
4/29, 5/1	19. Sexual Reproduction		
5/4	Review		
5/6	Final Exam (8am-10am) (300 points)		

Drop-Add: by Jan 16 at 1:30PM

Mid-Term: March 5

8. Classroom Policies

- Attendance and tardiness: Any absence policy should conform to the university policy.
University Attendance Policy from the VSU catalogue:
"The University expects that all students shall regularly attend all scheduled class meetings held for instruction or examination. When students are to be absent from class, they should immediately contact the instructor. A student who misses more than 20% of the scheduled classes of a course will be subject to receive a failing grade in the course."
- Accommodations Statement:
From VSU's Access Office <http://www.valdosta.edu/access/facresources.shtml>:
"Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in the Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY)."
- Academic Integrity: You know that cheating is a bad thing to do. Students caught cheating will receive a grade of F for the test in question and will be reported to the Dean of Students. You are expected to follow VSU's Academic Integrity Code.
From VSU's Academic Integrity Code (the full code is available at <http://www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml> :
"Academic integrity is the responsibility of all VSU faculty and students. Faculty members should promote academic integrity by including clear instruction on the components of academic integrity and clearly defining the penalties for cheating and plagiarism in their course syllabi. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and the faculty members' syllabi. All students are expected to do their own work and to uphold a high standard of academic ethics. "
- Classroom demeanor or conduct: Every student should make the lecture a comfortable and enjoyable learning experience. Late entry to the class room or leaving early is bad behavior. Common sense should be practiced and expected.
- Communication: All VSU-related correspondence should be conducted via VSU email addresses for both student and instructor.

9. Additional Information (at instructor's discretion)

- Expectations for competencies such as writing, technology skills, or performance: Students should be able to describe biological phenomena at the cellular level in terms of physics and chemistry.
- Instructional philosophy: I believe reading one book ten times is better than reading ten books one time each. This is the case for this course. Students are encouraged to practice all the exercise and examples in the textbook ten times.
- Strategies used to support learning: Students should take advantage of my office hours. Studying as a group (study group) should be a good idea.
- Finally here are some study tips for cell biology: Title, Figure and legends, Questions.