

BIOL 4500: Cell Biology (Fall 2011)

1. Course Information

- Course number and section: BIOL 4500 A or B
- Course name: Cell Biology
- Hours of credit: 4
- Pre-requisites or co-requisites as listed in university catalogue: Prerequisite: CHEM 3601
Minimum Grade: C and (BIOL 2230 Minimum Grade: C or BIO 223 Minimum Grade: C) and (BIOL 2270 Minimum Grade: C or BIO 227 Minimum Grade: C) or consent of the instructor
- Classroom location and room number: BC 2022 (for the lecture, MWF 8:00 am - 8:50 am), BC 2071 (for the lab, R 8:30 am - 11:20 am (section A), 12:30 pm - 3:20 pm (section B))
- 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 2084, 229-333-7140, jkang@valdosta.edu
- Instructor office hours: Mon, Tue 10:00am - 11:00am

3. Course Description

- Course description as printed in university catalogue: Prerequisite: BIOL 2230; BIOL 2270; CHEM 3601. 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, 3rd Edition* by Bruce Alberts et al. from Garland Science. (ISBN-13: 978-0815341291)
- Required out-of-class activities: In addition to attending the lectures you need to
 - ✓ Read your notebook (very important).
 - ✓ Read the textbook (3.5m x 4w/m x 5d/w = 70 days and the textbook size is about 700 pages. That means 10 pages per day reading is necessary for one time reading of the textbook.)
 - ✓ Work on all the exercise questions in the textbook and in the DVD.

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 techniques in cell biology.
 - Demonstrate competency for the cell biology part in standard tests such as GRE, MCAT.

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

- General description of the assignments: You need to read the textbook before and after the lecture. Also doing the exercise questions should enhance your understanding of the subject.
- Policies for missed assignments, make-up assignments, late assignments, and/or extra credit: There will be no extra credit in this course.

6. Assessment or Evaluation Policy

- Explanation of how grades are assigned: Grading will be based on the scores you get from the tests.
 Class points (CP) = $(\sum \text{Test } i \text{ score} + \text{Final Test score} + \text{Lab Test})/8$, 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 200. The maximum score of Lab Test is 200 (= 12 quizzes of 10 points each and 80 points of the lab final).
 If CP \geq 90% then A for the final grade, if CP \geq 80% then B, if CP \geq 70% then C, if CP \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
Score							
Lab	Q8	Q9	Q10	Q11	Q12	Final	Sum 2
Score							

Your score = (Sum 1 + Sum 2)/8

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
8/15	Introduction to Cells	8/18	Basic Lab Mathematics (log, exponential)
8/17-19	Chemical Components of Cells	8/25	Basic Lab Tech (pipeting, solution) Q1
8/22-24	Energy, Catalysis, and Biosynthesis	9/1	Enzyme Microarrays Q2
8/26-29	Protein Structure and Function	9/8	Introduction to ELISA Reactions Q3
8/31	DNA and Chromosomes	9/15	DNA Structure, Transcription, Translation Modeling Q4
9/2	Exam I (100 points)	9/22	Principles of DNA Sequencing Q5
9/7	DNA Replication	9/29	Agarose Gel Electrophoresis Q6
9/9-14	From DNA to Protein	10/6	Restriction Enzyme Digestion of DNA Q7
9/16-19	Control of Gene Expression	10/13	What is Osmosis? Q8
9/21	Analyzing Genes and Genomes	10/20	Spectroscopy Q9
9/23	Exam II (100 points)	10/27	Gel Filtration Chromatography Q10
9/26-28	Membrane Structure	11/3	DNA Bioinformatics Q11
9/30-10/5	Membrane Transport (wtd due 10/6)	11/10	Human Genome Sequencing
10/7-12	How Cells Obtain Energy	11/17	Microscopy – Adipocyte Differentiation Q12
10/14-19	Mitochondria and Chloroplasts	12/1	Lab Final Test (80 points)
10/21	Exam III (100 points)		
10/26-31	Intracellular Compartments		
11/2-4	Cell Communication		
11/7-14	Cytoskeleton		
11/16	Exam IV (100 points)		
11/18-21	Cell Division cycle		
11/28-30	Sex and Genetics		
12/2	Cellular Communities		
12/5	Review		
12/7	Final Exam (8am-10am) (200 points)		

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.