

BIOL 4500: Cell Biology (summer, 2016)

1. Course Information

- Course number and section: BIOL 4500 (A) (CRN #: 50253)
- 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:
Lecture: MTWR 12:45 pm - 2:10 pm, BC 2202
Lab: MW 2:30 pm - 5:20 pm, BC 3018
- 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: T&R 2:30 pm - 3:00 pm

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: ***Thrive in Cell Biology*** by Qiuyu Wang, Chris Smith, and Emma Davis from Oxford University Press (ISBN: 9780199697328)
Online Resources for Lab: ***An Elementary Introduction to the Wolfram Language*** by Stephen Wolfram. <http://www.wolfram.com/language/elementary-introduction/>
- Required out-of-class activities: In addition to attending the lectures you need to
 - ✓ Read your notebook (very important).
 - ✓ Read the 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 proficiency in basic mathematical programming (*Mathematica*).
 - Demonstrate an understanding of basic computational techniques in cell biology.
 - Demonstrate competency for the cell biology part in standard tests such as GRE, MCAT, DAT, PCAT, and MFT.

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

| Date | Class | Lab |
|-------------|---|---|
| 6/8 | Introduction | No Lab |
| 6/9 | 1: Introduction to cell biology 2: Methods of studying cells | |
| 6/13 | 3: Biological membranes | Current trend in cell biology research Assignment 1 (10 pts) |
| 6/14 | 3: Biological membranes | |
| 6/15 | 3: Biological membranes | Mathematica basics; Assignment 1 due |
| 6/16 | 3: Biological membranes | |
| 6/20 | 4: Structure and activities of prokaryotic cells | 1-7, Cell Size Calculation (ID: 100508) |
| 6/21 | 5: Molecular biology of the prokaryotes | |
| 6/22 | 5: Molecular biology of the prokaryotes | 8-14, Enzyme Kinetics Data Analysis |
| 6/23 | EXAM I (100 pts) | |
| 6/27 | 6: The Nucleus | 15-21, Kinetics of Protein Degradation by the Proteasome (ID: 109949) |
| 6/28 | 6: The Nucleus | |
| 6/29 | 7: The cytosol and cytoskeleton | 22-28, Kinetics of Actin Polymerization and Depolymerization (ID: 107898) |
| 6/30 | 7: The cytosol and cytoskeleton | |
| 7/4 | Holiday | Holiday |
| 7/5 | 8: The endoplasmic reticulum; 9: Golgi apparatus | |
| 7/6 | 10: Chloroplasts and photosynthesis | Lab Practical I (45 pts) |
| 7/7 | 11: Mitochondria | |
| 7/11 | EXAM II (100 pts) | 29-35, pH of Cellular Organelles (ID: 108101) |
| 7/12 | 12: Microbodies 13: Eukaryotic cell walls | |
| 7/13 | 14: Extracellular matrix | 36-42, Volumes of the Major Organelles (Kang's paper) |
| 7/14 | 15: Cell signalling | |
| 7/18 | 16: Eukaryotic cell cycle, mitosis and meiosis | 43-47, What We Haven't Discussed |
| 7/19 | 16: Eukaryotic cell cycle, mitosis and meiosis | |
| 7/20 | 17: Cell death | Scientific Data Analysis (Biophysics & Bioinformatics); Data Fit |
| 7/21 | 18: Viruses | |
| 7/25 | 18: Viruses | Lab Practical II (45 pts) |
| 7/26 | Review | |
| 7/27 | Final Exam (12:45 - 2:45pm) (200 pts) | |

Mid-Term: July 5th

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.**”
- Lab Conduct: Arrive on time. Students who miss two labs without an excuse or three labs total cannot receive a lab grade above a “D” (60%). So, do not be late to lab. In the event that a student misses a lab with an excuse, s/he should email the instructor within 24 hours of the missed lab. It is the instructor’s prerogative to accept the excuse or not. Absolutely no laboratories can be made up, and no work will be accepted late.
- 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 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 and via the Blazeview.

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 molecular or cellular level in terms of mathematics, 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.
- Strategies used to support learning: Students should take advantage of my office hours. Studying as a group (study group) should be a good idea.
- ***I will teach and you will learn in this course. Therefore, your intellectual enhancement from this course will depend on both of us. Would you have any other ideas?***