

Course Syllabus: BIOL 4500/6500: Spring 2015

Cell Biology

Lecture: MWF 12:00 – 12:50 p.m. (BC 1202),

Lab: Section A (CRN 21590): Wednesday 2:00 – 4:50 p.m. (BC 2070)

Section B (CRN 22895): Tuesday 2:00 – 4:50 p.m. (BC 2070)

Instructor: Dr. Russ Goddard, BC 2090, 249-2642

email: rgoddard@valdosta.edu

Office Hours: MWF: 10:30 – 11:30 a.m.

Note: All official correspondence must be sent to the above VSU email address. Dr. Goddard does not use BlazeView email and any email sent to that location will not be read so don't waste your time!

Course Catalog Description: BIOL 4500 Cell Biology (3-3-4). Prerequisites: BIOL 1107K, BIOL 1108K, BIOL 3200, CHEM 1211/1211L, CHEM 1212/1212L. **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.**

BIOL 6500 Cell Biology (3-3-4). Prerequisite: Admission into the graduate program or instructor permission.

Text: Molecular Biology of the Cell, 6e. 2015. Alberts, B., A. Johnson, J. Lewis, D. Morgan, M. Raff, K. Roberts, P. Walter. Garland Science Publishers. ISBN: 978-0-8153-4432-2 (hardcover); 978-0-8153-4464-3 (paperback). Available in the bookstore.

Publisher Web Page: <http://www.garlandscience.com/>; Click on Students tab.

Laboratory: Handouts sometimes provided.

Grading:

Lecture Exams There will be four lecture exams each worth 100 points. The tentative schedule for these exams are:

Friday, 5 Feb. 2016

Monday, 4 Apr. 2016

Wednesday, 2 Mar. 2016

Monday, 2 May 2016

The final exam period for this course is scheduled for Friday 6 May from 10:15 – 12:15 a.m.

Currently there are no plans to use this time period or to provide a comprehensive final exam for the course. Depending on student input, this may change so leave this time period for completing any added course assignment during the semester.

Lab. Labs grading will be based on attendance, punctuality, performance contribution in group activities, lab assignments, lab homework, and weekly lab quizzes.

Attendance: Students who miss class (lecture or laboratory) will lose points toward their final grade. Don't miss class.

Grading: The final grades will be based on a percentage of your cumulative points relative to the total points possible: Guaranteed grade distribution is as follows (Max. pts = 600 for BIOL 4500; 750 for BIOL 6450):

Guaranteed Distribution:

A = 90-100%

B = 80-89%

C = 70-79%

D = 60-69%

F = ≤ 59%

Points available: BIOL 4500:

Lecture Exams: 400 pts

Lab 200

Total: 600 pts

Points available: BIOL 6500:

Lecture Exams: 300 pts

Lab 200

Research paper 50

Research Presentation: 50 pts

Total: 600 pts

Currently no grad students registered.

FERPA: The Family Educational Rights and Privacy Act (FERPA) prohibits the posting of grades by social security number or in any manner personally identifiable to the individual student. Grades will not be posted by social security number or by name. No grades can be given over the telephone or by email, as legal sources cite problems with positive identification by this manner, or with using a relatively public forum (email).

Students with Disabilities: Students requesting classroom accommodations or modifications because of a documented disability should contact the Access Office for Students with Disabilities. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

It is expected that both the students and instructor will abide by the University policy on academic integrity found in the Student Code of Conduct on Page 60 of the student handbook: (<http://www.valdosta.edu/academics/academic-affairs/vp-office/academic-honesty-policies-and-procedures.php>).

The required book, Molecular Biology of the cell, is organized as follows:

INTRODUCTION TO THE CELL

1. Cells and Genomes
2. Cell Chemistry and Bioenergetics
3. Proteins

BASIC GENETIC MECHANISMS

4. DNA, Chromosomes, and Genomes
5. DNA Replication, Repair, and Recombination
6. How Cells Read the Genome: From DNA to Protein
7. Control of Gene Expression

WAYS OF WORKING WITH CELLS

8. Analyzing Cells, Molecules, and Systems
9. Visualizing Cells

INTERNAL ORGANIZATION OF THE CELL

10. Membrane Structure
11. Membrane Transport of Small Molecules and the Electrical Properties of Membranes
12. Intracellular Compartments and Protein Sorting
13. Intracellular Membrane Traffic
14. Energy Conversion: Mitochondria and Chloroplasts
15. Cell Signaling
16. The Cytoskeleton
17. The Cell Cycle
18. Cell Death

CELLS IN THEIR SOCIAL CONTEXT

19. Cell Junctions and the Extracellular Matrix
20. Cancer
21. Development of Multicellular Organisms
22. Stem Cells and Tissue Renewal
23. Pathogens and Infection
24. The Innate and Adaptive Immune Systems

Since this is the first time Dr. Goddard is teaching this course, the following lecture schedule should be considered very tentative. I'm assuming much of the information in the "Basic Genetic Mechanisms" section is covered in our required genetics course. Additionally, some of the content in the section "Cells in their social context" is covered in other biology courses. The outline next focusses more on the other sections of the book but we may add information back into the lecture schedule if needed. Your requests (i.e. students) may also change the organization in a fluid manner.

Tentative Lecture and Laboratory Schedule:

Lecture:				Laboratory:	
Week	Beginning Date:	Topic :	Chapter Reading(s) - pages	Day(s)	Exercise
1	11 Jan	Cells and Genomes	1 - 42	12, 13 Jan	No Lab
2	18 Jan	MLK Day Holiday	43 - 108	19, 20 Jan	Microscopy Review and Cell Size Determination
		Cell Chemistry and Bioenergetics			
3	25 Jan	Proteins	109 - 173	26, 27 Jan	Cell Fractionation
4	1 Feb	Analyzing Cells, Molecules, and Systems Visualizing Cells Exam 1 on Fri., 5 Feb.	439 – 528 529 - 564	2, 3 Feb	Membrane Permeability
5	8 Feb	Membrane Structure	565 - 596	9, 10 Feb	Mitochondrial Isolation and Analysis
6	15 Feb	Membrane Transport of Small Molecules and the Electrical Properties of Membranes	597 – 640	16, 17 Feb	Staining of polytene chromosomes from <i>Drosophila</i>
7	22 Feb	Intracellular Compartments and Protein Sorting Intracellular Membrane Traffic	641 – 694 695 - 752	23, 24 Feb	Chemotaxis and Movement of the slime mold <i>Physarum polycephalum</i> Myofibrillar
8	29 Feb	Exam 2 on Wed. 2 Mar. Cell Signaling	813 - 888	1, 2 Mar	Motility in the Green Alga, <i>Ernodesmis</i>
9	7 Mar	The Cytoskeleton (Actin)	889 - 962	8, 9 Mar	Protein Purification
10	14 Mar	Spring Break; No Classes		15, 16 Mar	Spring Break; No Classes
11	21 Mar	The Cytoskeleton Microtubules and IFs	889 - 962	22, 23 Mar	SDS-PAGE
12	28 Mar	Energy Conversion: Mitochondria and Chloroplasts	753 - 812	29, 30 Mar	Immunolocalization of Proteins
13	4 Apr	Exam 3 on Mon. 4 April		5, 6 Apr	DNA Labs: TBA
14	11 Apr	The Cell Cycle	963 – 1020	12, 13 Apr	Part II of DNA Lab Part I of DNA Lab run gels
15	18 Apr	Cell Death	1021 - 1034	19, 20 Apr	
16	24 Apr	Cell Junctions and the Extracellular Matrix	1035 - 1090	27, 28 Apr	Lab Clean-Up; Required
17	2 May	Exam 4			