

Spring 2018 Syllabus
BIO 4500 Cell Biology (4 credits)

COURSE DESCRIPTION: Cell biology is 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.

COURSE GOALS AND OBJECTIVES: Cell biology is an important course for practically anyone who wants a career in biology, be it in medicine or research. At the end of this course you will have obtained a greater understanding (and appreciation) of cell biology. By the end of the course students will have learned:

- How organisms obtain energy
- The assembly, structure and function of proteins, DNA, RNA and membranes
- How proteins are sorted
- How cells communicate
- The structure and function of the cytoplasm
- How cells divide and how cell division is regulated
- The basics of the immune system
- Understanding common experimental tools used in cell biology

These goals support the Department of Biology Education Outcome #1, #3 and #4.

PREREQUISITES: BIOL1107, BIOL1108, BIOL3200, CHEM1211, CHEM1212

INSTRUCTOR: Dr. Theresa Grove

Office: BC 1099 Lab: BC 2080

Phone: 333-5336

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OFFICE HOURS: Monday – Thursday 4:00-5:00 p.m. or by appointment

TEXT BOOK: Molecular Biology of the Cell by Alberts *et al.* (20015) 6th ed. (ISBN978-0-8153)

LECTURE: Monday through Friday 8:00-10:50 a.m. (BC 1025)

LAB: Monday through Friday 1:00-3:50 p.m. (BC 2070)

ATTENDANCE POLICY: Attendance to both lecture and lab is required. If you miss a lecture or lab I reserve the right to determine what constitutes an excused or unexcused absence. To name a couple of examples of unexcused absences, scheduled appointments or leaving town, except for University related activities (e.g. you are on a sports team or are presenting at a conference), do not constitute excused absences. “Not feeling well” will only work one time as an excused absence; any additional “not feeling well” absences will be counted as unexcused.

Quizzes and in-class assignments will be given throughout the semester, which is why attendance is required. Generally, quizzes or in-class assignments in lecture cannot be made up if lecture is missed. If you miss the lecture and I approved your absence the total number of points possible to you will be reduced. If you miss quizzes and/or in-class lecture assignments and I did not approve the absence a zero will be given for that particular assignment, quiz, etc.

Labs cannot be made up; therefore do not miss a lab. I also reserve the right to determine what constitutes an excused absence from lab. If you miss 2 labs (excused or unexcused) you will not be able to earn higher than a C for your final grade. If you miss 3 labs, you cannot earn higher than a D. If you miss more than 3 labs you will earn an F for the course.

CONDUCT: Arrive on time to lecture and lab. Turn off cell phones during lecture and lab. Don't talk during lecture; if you don't understand something or didn't hear something ask. Unless it's an emergency (and texting does not constitute an emergency) do not get up in the middle of lecture, leave and come back. Do not ask to get up and leave the room during an exam, unless it is an emergency.

EXAMS: There will be 3 in-class exams (excluding the final). Types of questions that may be included in the exams are fill in the blank, essay, short answer, matching, multiple choice, and multiple-multiple choice. Do not miss any in class exams. You can use the cumulative final to replace the lowest regular exam grade, and the final will be multiple choice.

LAB: Lab exercises will be handed out in lab. Short quizzes will be given during the lab and will be based on the previous week's lab. The quizzes will be handed out immediately at the start of the lab and will be collected ~10 minutes later. If you arrive late you will have a shorter amount of time to finish the quiz, and if you arrive after the quiz is collected you will receive a zero (0) for that quiz. As mentioned previously, a student will not be able to make up a lab.

LAB RULES AND REGULATIONS: Use common sense when working in the lab, and if you have any questions, ask!

- Bring a notebook to lab to write down your data.
- Read the lab handouts ahead of time so that you have some idea of what will be going on in the lab.
- Be on time for lab. Instructions, clarifications and changes in protocols will be given at the beginning of lab, and I will not repeat myself just because you are late.
- No eating or drinking in the lab at any time. Some of the chemicals we will be using are toxic or mutagenic.
- Clean up after yourself. Remove all labels/tape from the glassware, rinse and place in the tub by the sink.
- If you break something or think you may have broken something, please tell me. Accidents happen. It's a bigger problem if you do not tell me because I won't be able to fix or replace whatever is non-functional. If you have any questions about using a piece of equipment, it's always better to ask.

GRADE SCALE: For all students, grades will be based on all exams and assignments. The grading scale is:

A	90-100%
B	80-89
C	70-79
D	60-69
F	<60

ASSESSMENTS: Grades will be based on:

Exams (3 at 100 points each)	300 points
Lab Assignments, Quizzes, & Exams	~200 points
Final Exam	100 points
Total:	~600 points

ACCESS OFFICE FOR STUDENTS WITH DISABILITIES: If you are registered with the Access Office and are eligible for special testing or some other learning process, please be sure to let me know. If you are a student with disabilities and have not registered with the Access Office, please do so and notify me if you intend to use their services. The Access Office is located in Farber Hall-South. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

Title IX Statement: Valdosta State University is committed to creating a diverse and inclusive work and learning environment free from discrimination and harassment and is dedicated to creating an environment where all campus community members feel valued, respected, and included. Valdosta State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including pregnancy status, sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, national origin, disability, genetic information, or veteran status, in the University's programs and activities as required by applicable laws and regulations such as Title IX. The individual designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University's Title IX Coordinator: Maggie Viverette, Director of the Office of Social Equity, titleix@valdosta.edu, 1208 N. Patterson St., Valdosta State University, Valdosta, Georgia 31608, 229-333-5463.

Concealed Guns on Campus: If you choose to carry a concealed weapon you are responsible for knowing and following the law. Licensed individuals may carry a handgun if it is mostly covered, does not actively draw the attention of people and is “not prominently, openly and intentionally displayed”. While concealed guns are allowed in lecture and lab classrooms, no guns are allowed in faculty, staff and administrative offices and in rooms where Move On When Ready (MOWR) high school students are enrolled (as well as other locations). It is the responsibility of you (the gun-carrier) to determine if there are high school students in the class by checking Banner or contacting the VSU’s registrar to determine. It is a misdemeanor to violate this law. If you have any questions concerning this new law, contact University Police (229-333-7861) or the University Attorney (229-333-5351; West Hall 125).

TENTATIVE LECTURE & LAB SCHEDULE Each lecture covers a week’s worth of a “regular” semester; I cannot stress enough that every day you should go over your notes to learn the information presented in lecture.

May

- 10 **Lecture:** Cells & Genomes (Ch 1) and Cell Chemistry and Bioenergetics (Ch 2)
Lab: Microscopy Re-Introduction
- 11 **Lecture:** Proteins (Ch 3)
Lab: Cell Size Determination
- 14 **Lecture:** DNA, Chromosomes, & Genomes (Ch 4) and DNA Replication, Repair, & Recombination (Ch5)
Lab: Membrane Permeability
- 15 **Lecture:** Chapter 5 (cont’d) and How Cells Read the Genome: From DNA to Protein (Ch 6)
Lab: Phagocytosis and Exocytosis
- 16 **Lecture:** Exam 1 (8:00-9:15a.m.) and Chapter 6 (cont’d)
Lab: Enzyme Kinetics
- 17 **Lecture:** Control of Gene Expression (Ch 7)
Lab: Green Fluorescent Protein Expression System
- 18 **Lecture:** Membrane Structure (Ch 10)
Lab: cancelled
- 21 **Lecture:** Membrane Transport of Small Molecules and the Electrical Properties of Membranes (Ch 11)
Lab: Lab exam and GFP Expression
- 22 **Lecture:** Intracellular Compartments and Protein Sorting (Ch 12)
Lab: GFP Purification and Protein Electrophoresis
- 23 **Lecture:** Exam 2 (8:00-9:15a.m.) and Intracellular Membrane Traffic (Ch 13)
Lab: Tissue Homogenization & Protein Assay
- 24 **Lecture:** Energy Conversion (Chapter 14) and Cell Signaling (Ch 15)
Lab: SDS-PAGE
- 25 **Lecture:** The Cytoskeleton (Chapter 16) and The Cell Cycle (Ch 17)
Lab: Western Blot and Polytene Chromosomes
- 28 **Memorial Day** (no lecture and no lab)
- 29 **Lecture:** Cell Death (Ch 18) and Cell Junctions and the Extracellular Matrix (Ch 19)
Lab: Cell Fractionation
- 30 **Lecture:** Chapter 19 (cont’d)
Lab: Lab Exam 2 and finish open labs
- 31 **Lecture:** Exam 3 (8:00-9:15a.m.)
Lab: Review for final

June

- 1 Final 8:00-10:00a.m.