BIOL 4500/6500
Spring Semester 2024

Instructor: **Dr. Ansul Lokdarshi**
Office: BS 2212
Email: alokdarshi@valdosta.edu

Office (Student) hours: **Monday 11:00 PM – 12:00 PM** **Tuesday 10:15 AM – 12:00 PM**
Or by appointment (please send me an email to my valdosta.edu account with "appointment" in the subject line and I will accommodate as time permits).

Schedule **Monday, Wednesday, Friday** **10:00 PM - 10:50 AM** **Lecture BS 2022**

Section A	**Wednesday**	**11:00 AM – 1:50 PM**	**Laboratory**	**BS 2071**
Section B	**Thursday**	**9:30 AM – 12:20 PM**	**Laboratory**	**BS 2071**

Before reading any more information, please jump to the last page and complete the task.

Important points in the syllabus are in bold or highlighted in yellow or marked with red. Please pay special attention and make a note of these points.

Course Description (as stated in the Undergraduate 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.

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.

Pre-Requisites: BIOL 1107, 1107L, BIOL 1108, 1108 L, BIOL 3200, CHEM 1211, 1211L, CHEM 1212, 1212L with a grade of C or better or permission of instructor.

Textbook
Molecular Biology of the Cell, sixth edition (2015). Alberts B., Johnson A., Lewis J., Morgan D., Raff M., Roberts K., Walter P. Published by: Garland Science, Taylor & Francis Group.
Handouts will be provided by the Instructor for the laboratory component of the course.

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.

Mask mandates: This course is offered ONLY face-to-face. We will continue to practice social distancing, and everyone is encouraged to wear a face covering while in lecture. The physical size of the classroom is large enough to accommodate all students registered for the class at the same time for lecture.
For the laboratory, students MUST wear mask. This is to prepare you for lab exercises related to RNA work, which requires extremely clean working environments.

Assessment

Lecture

- **If you do not attend class on a regular basis you will be at a significant disadvantage.**
- **No picture or video recording of the lectures/labs are allowed. Student caught doing so will be penalized with 50 point deduction for the first mistake. Second mistake will result in automatic F in the course.**
- The lecture assessments will consist of four exams and a comprehensive final exam (optional).
- All exams, including the final, will be taken in class during class time and must be turned in by the scheduled end of class.

Exam grades will be posted on Blazeview.

- All exams are based on lecture material and assigned readings.
- Exams questions are multiple choice, true/false, matching and short written answers.
- If you fail to attend one of the exams for any reason, you **must provide documented evidence** (e.g., from doctor, police, etc.) that circumstances beyond your control prevented you from taking the exam. **Failure to provide reasonable evidence for absence within one week of the exam will result in a grade of 0 for the exam**.
- Only one time makeup exam is allowed and will be administered at any time during the semester at the discretion of the instructor. Under extraordinary circumstances only the students may be allowed for another make up exam. This will require strong evidence of excuse as mentioned above and will solely depend on the discretion of the instructor.
- If you arrive late for an exam you will be allowed to take the exam. However, you must turn in the exam paper at the regular scheduled end of the class. You will not be allowed extra time unless a documentable emergency has occurred.
- The final exam is optional and it can replace the lowest grade of exams 1, 2, 3 or 4. This applies only to the final exam; no other exam can replace the lowest grade. If the final exam is used to replace the lowest grade for tests 1, 2, 3, or 4, the final exam grade will count only once in the course grade calculation. The final exam cannot be used to replace a missed test.

- After each exam, students are strongly encouraged to review it. You can review an exam during office hours. Exam papers will not be returned to students.
- **Any student found attempting to COPY, take PICTURES or STEAL a hard-copy of a test, at any time during the semester, will receive an automatic F for the entire course and face disciplinary action for student.**
- During the test, all smart devices must be stowed away. It is your responsibility to take care of your items.

Laboratory

- 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 or the missed quizzes as the experiments cannot be repeated due to time and limitation of material.**
- The laboratory assessments consist of one practical exam and tasks related to the QPCR Labs. Students are required to maintain a laboratory notebook. The practical exam will be taken in the laboratory during the scheduled time. The practical exam questions may include microscope slides, organisms and instrumentation used in the laboratory and a written component.

Why maintain a good lab report?
https://research.columbia.edu/sites/default/files/content/RCT%20content/ReaDI%20Program/tutorial_LabNotebook_V9.pdf

- For QPCR Lab (a part of an Experiential Learning opportunity) – See Rubrics for more detail.

Lab rules and regulations:

- Bring a notebook to lab to write down your data. You will need this to complete your weekly lab report and submit that file in BV for grading. A final lab report will be built on these weekly lab reports.
- 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.

Extra-credit up to a maximum of 20 points will be offered. These points will be added to the student total points for the course before calculating the percentage grade. Extra-credit points can be earned with in-class activities during the lecture or the laboratory, or take-home assignments.

Cheating or Plagiarism

- Incidents of cheating or plagiarism will result in an automatic "**F" grade for the course and referral to the Office of Student Conduct for disciplinary action.**
- For the VSU's Academic Integrity Code please see http://www.valdosta.edu/administration/student-affairs/student-conduct-office/

- For the VSU's Academic Honesty policies and procedure please see http://www.valdosta.edu/academics/academic-affairs/vp-office/academic-honesty-policies-and-procedures.php

Learning Support

- **Access Office**: Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access Office is located in Farbar Hall. The phone numbers are 229-245-2498 (V), 229-375-5871 (VP) and 229-219-1348 (TTY). For more information, please visit VSU's Access Office or email: access@valdosta.edu.
- **The Academic Support Center**: The Academic Support Center provides free peer tutoring for most core courses and some upper-division courses. It also offers time management and study skills workshops as well as other learning support services. Call 333-7570 to make an appointment, or visit the website: https://www.valdosta.edu/asc/
- **Odum Library** provides a variety of services to assist classroom instruction, including library instruction, course reserves, and interlibrary loan. Please see https://www.valdosta.edu/academics/library/ for further information.
- **Title IX Statement:** Valdosta State University (VSU) is committed to creating a diverse and inclusive work and learning environment free from discrimination and harassment. VSU 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 Office of Student Affairs.

Grade calculation*		
Assessment		**Max Points**
Lecture	**Exam 1**	**100**
	Exam 2	**100**
	Exam 3	**100**
	Exam 4	**100**
	Comprehensive Exam (Optional)	(100)
	Quizzes	**20**
Laboratory	**Lab Exam 1**	**100**
	Lab Exam 2	**100**
	Lab Participation points	**10**
Total max points		**630**
Extra credit max points		**20**

Grade distribution	
Letter	**Percentage**
A	**90-100%**
B	**80-89%**
C	**70-79%**
D	**60-69%**
F	**⩽60%**

***Final grade calculation: (Lecture exam + Laboratory + Extra credit)/650**

NOTE: *Graduate students enrolled in BIOL 6500 will have additional assignments and adjusted grading scale in a supplementary syllabus.*

Tentative Lecture Schedule: **Monday, Wednesday and Friday – BS 2022**

Date	Topic
8-Jan	Introduction to the course/Syllabus Quiz/Learning Contract submission
10-Jan	Cells and Genomes
12-Jan	Cell and Genomes
15-Jan	**MLK Holiday**
17-Jan	Cell Chemistry and Bioenergetics
19-Jan	Cell Chemistry and Bioenergetics
22-Jan	Visualizing Cells
24-Jan	Visualizing Cells
26-Jan	Remaining lecture material
29-Jan	Membrane Structure
31-Jan	Membrane Structure
2-Feb	**Review Session**
5-Feb	**EXAM 1**
7-Feb	Energy Conversion: Mitochondria and Chloroplasts
9-Feb	Energy Conversion: Mitochondria and Chloroplasts
12-Feb	Membrane Transport of Small Molecules and Electrical Properties of Membranes
14-Feb	Membrane Transport of Small Molecules and Electrical Properties of Membranes
16-Feb	Intracellular Compartments and Protein Sorting
19-Feb	Intracellular Compartments and Protein Sorting
21-Feb	Cell Signaling
23-Feb	Cell Signaling
26-Feb	**Review Session**
28-Feb	**EXAM 2 ***Mid-term grades reported****
Mar-1	DNA, Chromosomes, and Genomes
Mar-4	DNA, Chromosomes, and Genomes
Mar-6	How Cells Read Genome: From DNA to Protein
Mar-8	How Cells Read Genome: From DNA to Protein
Mar 11-15	**NO CLASS. SPRING BREAK**
Mar-18	Control of Gene Expression
Mar-20	Control of Gene Expression
Mar-22	**Review Session**
Mar-25	**EXAM 3**
Mar-27	Intracellular Membrane Traffic
Mar-29	Intracellular Membrane Traffic
April-1	The Cytoskeleton
April-3	The Cytoskeleton
April-5	Cell Cycle
April-8	Cell Cycle
April-10	Cell Death
April-12	Cell Death
April-15	Cancer
April-17	Cancer
April-19	**Review Session**
April-22	**EXAM 4**
April-26	**Comprehensive Exam (OPTIONAL)**

Tentative Lab Schedule: **Wednesday and Thursday. BS - 2071**

Date	Topic
Jan 8 week	**NO LAB**
Jan 15 week	Basic lab techniques- Using pipettes, making solutions/buffers, lab notes, Use CEBOT device to grow Arabidopsis.
Jan 22 week	Re-introduction to microscopy - Cell cycle
Jan 29 week	Re-introduction to microscopy- Visualizing plant cells (Stomatal density)
Feb 5 week	Plant genomic DNA extraction, Spectrophotometry and Data analysis
Feb 12 week	Plant RNA extraction, Spectrophotometry and Data analysis
Feb 19 week	Agarose gel electrophoresis – RNA and Data analysis
Feb 26 week	**Review Lab**
March 4 week	**Lab Exam 1**
March 11 week	**NO LAB - Spring Break**
March 18 week	Osmosis Lab: Measurement of Betacyanin Released from Beet Root Segments and Data analysis
March 25 week	Plant protein extraction
April 1 week	SDS-PAGE gel electrophoresis and Data analysis
April 8 week	**Review Lab**
April 15 week	Study for Lab Exam 2
April 22	**Lab Exam 2**

Learning contract – Dr. Ansul Lokdarshi

1) ***I care*** – I teach because I want to contribute to your successful career. You must also promise to make the effort to rise to expectations worthy of your own future goals.
2) ***Knowledge ownership*** – "You can lead a horse to water, but you can't make him drink". I try really hard do three things to lead students to knowledge. A) I select only the most important topics. B) I organize the topics so each lecture builds on previous ones. C) I include current and personal details to make the class relevant, interesting, and cutting edge. This effort is lost on students who expect proficiency to come from little more than simply listening to lectures and last-minute cramming. Your success is proportional to your amount of effort and review.
3) ***Self-motivation*** – College is not an extension of a kid's legally-required high-school education. It is an adult's entry into the job market. The distinction is important because your future career job application will hinge on your college transcript. Your peer competition understands this and is doing all he or she can to out-perform you. I try hard to motivate you, but ultimately, good grades only go to students with high internal drive.
4) ***Synthetic thinking*** – A fancy way of saying "make connections". I will give you new conceptual "tools", so become a tool user. Own your newfound knowledge and use it to understand your world. If you come across something that's peripherally related to class material, ask questions about it. You can't help but become motivated when you're mentally engaged.
5) ***Honesty and integrity*** – Do not cheat. People who care about you, including me, expect more from you than that. I punish cheaters to the fullest extent allowed by the Student Code and in the future, it is tough explaining why you should be given the job or admitted to grad school when your transcript has an F because you got caught plagiarizing or palming a crib note.
6) ***Participate!*** – Have a question? Ask it! Here is a universal truth: if you have a question, chances are good that someone else is wondering the same thing. You're not alone and I will never, ever belittle you for trying to learn. It makes for engaged learning and who knows, maybe your question unlocks a fundamental concept that half of the final exam questions are about. My deal for shy people: I won't pick on you if you promise not to keep questions bottled up.
7) ***Email etiquette*** – Emails lack non-verbal cues and often lead to unintended consequences. As such, I require you to email me using standard formal etiquette: A) Include a salutation, (e.g. Dear Dr. X or Hello Prof. X, not Hey), B) follow this by a complete description of your question/message and your course/section information, and C) always sign off using a complementary closing and your name/ID number. **I do not respond to emails that do not have all these components. Use your VSU email address; others are often blocked by our inbox system.**
8) ***Start early*** – This class is fast moving, and builds on itself; there is no time later to catch up. **If you miss a class, it is up to you contact me to see what can be done within a week. Otherwise, you will get a zero for that grade.**
9) ***Priorities*** – In signing this, you have made the commitment to learn. It is a priority that is similar to that of a paying job. To teach you effectively, I require you to show up on time, to be mindful of the above points and be respectful to me and your fellow students.

I have read and understand these crucial tips for success: _____
Name Date

_____
Class and Section

After signing, scan and upload a copy to the assignment folder in BV.