

LECTURE SYLLABUS
BIOL 4301 Cell Biology Spring 2023

Instructor: Dr. Thornton R. Larson
Lectures: TR 11-1215 WSB 101

Office Hours: MWF 11-1230; or by appointment
Office Phone: (432)837-8084
Email: Thornton.Larson@sulross.edu
Office: WSB 221

Course Description:

The cell is the fundamental unit of life. This course will focus on the molecular aspects of cell structure and function. It will function as part review and expansion on topics that students traditionally go over in entry level biology courses and genetics. Key metabolic pathways (glycolysis, aerobic respiration, and photosynthesis) will be reviewed in greater detail than previously covered to master these important functions. Structure and function will also be heavily focused on, some aspects of which will be completely new to students.

Recommended Books/Checklists: NONE REQUIRED

1. *The Cell: A Molecular Approach, 8th edition,*

Exams and Grading:

4 lecture exams (100 pts ea)	400
5 lecture assignments (20 pts ea)	100
Total Credit	500 points
A 90 – 100% B 80 – 89% C 70 – 79% D 60 – 69% F <60%	

Attendance: Mandatory. No roll will be called, but this course is sized to where I will recognize when someone is not present. **I am allowed to drop you from my class** if you miss **more than six times** (that accounts for 2 full weeks of lecture). I do not wish to hear excuses for missing class, and do not want to hear about it every time you are gone. Absences are excused only if you have a documented, university approved excuse (hospitalization, funeral, etc.) **DO NOT MISS EXAMS** unless you have a documented, university-approved excuse. If you do not inform me of your approved absence before the exam it will be a **ZERO**.

Course Objectives: At the end of the semester, students will:

1. Understand the evolutionary origin of the cells, and eukaryotic organelles.
2. Develop mastery of the basic organic macromolecules.
3. Understand in detail cell self-replication: the flow of genetic information, replication, transcription, and translation.
4. Master the processes of cell metabolism: glycolysis, aerobic respiration, and photosynthesis.
5. Understand and recognize cell and organelle structure.

Student Learning Outcomes (SLOs) for Biology:

1. Demonstrate an understanding of evolution by natural selection.
2. Demonstrate an integration of environmental awareness into everyday modern life.
3. *Understanding how to incorporate molecular biology into the study of the whole organism.*
4. Demonstrate utilization of various field techniques toward addressing scientific questions in the discipline.
5. Conduct basic laboratory experiments utilizing standard observational strategies.

Marketable Skills:

1. Ability to organize, analyze, and interpret data.
2. Proficiency in using presentation software.
3. Experience in managing time and meeting deadlines.
4. Ability to speak effectively and write concisely about scientific topics.
5. Experience in the development of professional email correspondence.

SRSU Library Services

The Sul Ross Library offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires your LoboID and password. Check out materials using your photo ID. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

SRSU Disability Services:

ADA (Americans with Disabilities Act) Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email rebecca.wren@sulross.edu. Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas, 79832

ACADEMIC HONESTY: The University expects all students to engage in all academic pursuits in a manner that is beyond reproach and to maintain complete honesty and integrity in the academic experiences both in and out of their classroom. The University may initiate disciplinary proceeding against a student accused of any form of academic dishonesty, including but not limited to, cheating on an examination or other academic work, plagiarism, collusion, and the abuse of resource materials. "Cheating" includes 1. Copying from another student's test paper, laboratory report, other report, or computer files, data, listings, and/or programs, or

allowing another student to copy from same. 2. Using, during a test, materials not authorized by the person giving the test. 3. Collaborating, without authorization, using, buying, selling, stealing, transporting, soliciting, copying, or possessing, in whole or in part, the contents of a non-administered test. 5. Substituting for another student; permitting any other person, or otherwise assisting any other person to substitute for oneself or for another student in the taking of an examination or test or the preparation of academic work to be submitted for academic credit. 6. Bribing another person to obtain a non-administered test or information about a non-administered test. 7. Purchasing, or otherwise acquiring and submitting as one's own work any research paper or other writing assignment prepared by an individual or firm. This section does not apply to the typing of a rough and/or final version of an assignment by a professional typist. 8. "Plagiarism" means the appropriation and the unacknowledged incorporation of another's work or idea in one's own written work offered for credit. 9. "Collusion" means the unauthorized collaboration with another person in preparing written work offered for credit. 10. "Abuse of resource materials" means the mutilation, destruction, concealment, theft or alteration of materials provided to assist students in the mastery of course materials. 11. "Academic work" means the preparation of an essay dissertation, thesis, report, problem, assignment, or other project that the student submits as a course requirement or for a grade. 12. "Falsification of Data" means the representation, claim, or use of research, data, statistics, records, files, results, or information that is falsified, fabricated, fraudulently altered, or otherwise misappropriated or misrepresented. All academic dishonesty cases may be first considered and reviewed by the faculty member. If the faculty member believes that an academic penalty is necessary, he/she may assign a penalty but must notify the student of his/her right to appeal to the department chair, the dean and eventually, to the Provost and Vice President for Academic and Student Affairs before imposition of the penalty. At each step in the process, the student shall be entitled to written notice of the offence and/or of the administrative decision, an opportunity to respond, and an impartial disposition as to the merits of his/her case. The decision of the Provost and Vice President for Academic and Student Affairs shall be final.

Classroom Climate of Respect

Importantly, this class will foster free expression, critical investigation, and the open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

Diversity Statement

"I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact

the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you.”

For Remote/Online Courses Only - SRSU Distance Education Statement.

Students enrolled in distance education courses have equal access to the university's academic support services, such as library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires secure login. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website. Directions for filing a student complaint are located in the student handbook.

Tentative Lecture Schedule

Date	Topic
1/19	Syllabus; Origin of the Cell (ch. 1)
1/24	Cell composition (ch. 2)
1/26	Cell Metabolism (ch. 3)
1/31	Cell Metabolism part 2(ch. 3)
2/2	Fundamentals of Molecular Biology (ch. 4)
2/7	Fundamentals of Molecular Biology (ch. 4)
2/9	Genomics, Proteomics, and Systems Biology (ch. 5)
2/14	Genomics, Proteomics, and Systems Biology (ch. 5)
2/16	Exam 1
2/21	Genes and Genomes (ch. 6)
2/23	Replication, Maintenance and Rearrangement of Genomic DNA (ch. 7)
2/28	RNA Synthesis and Processing (ch. 8)
3/2	Transcriptional Regulation and Epigenetics(ch. 9)
3/7	Protein Synthesis, Processing, and Regulation (ch. 10)

3/9	Exam 2
3/14	SPRING BREAK
3/16	
3/21	The Nucleus (ch. 11)
3/23	Protein Sorting and Transport (ch. 12)
3/28	Mitochondria, Chloroplasts, and Peroxisomes (ch. 13)
3/30	The Cytoskeleton and Cell Movement (ch. 14)
4/4	The Plasma Membrane (ch. 15)
4/6	Cell Walls, Extracellular Matrix, and Cell Interactions (ch. 16)
4/11	Exam 3
4/13	Cell Signaling (ch. 17)
4/18	Cell Signaling (ch. 17)
4/20	The Cell Cycle (ch. 18)
4/25	The Cell Cycle (ch. 18)
4/27	Cell Death and Renewal (ch. 19)
5/2	Cancer (ch. 20)
5/4	Cancer (ch. 20)
5/9	Review
5/11	Dead Day
5/15	Exam 4 (10:15 AM – 12:15 PM)