Biology 302: Cellular & Molecular Biology Syllabus

Course Overview:

Spring Times: Lecture: CBB 101 MWF 1:00 p.m. – 1:50 p.m.

Exams: Exams will take place in the lecture hall on 10/28 @ 1pm (in class) & on 12/21 @ 8am (finals week).

***Instructor*:** Lindsay R. Dresang, Ph.D.
Office: CBB 313
Office hours: Mondays and Wednesdays @ 3:00 p.m. (or by appointment)
E-mail: LDresang@uwsp.edu (Note that I do not have an office phone.)

***Formal Course Description*:** (Prereq.: BIOL 210 and either CHEM 220, CHEM 221, or CHEM 325) Integrates molecular biology and biochemistry in a cellular context. Focuses on structure, function, metabolism, development, and reproduction of cells. Covers molecular genetics, including DNA replication, mutation, transcription, translation, and gene regulation in multiple systems. Introduces the fundamentals of biotechnology.

More Broadly…In this class you will build on the knowledge of cellular structure and function acquired from previous genetics and introductory biology courses. You will compare and contrast eukaryotic and prokaryotic cells. You must be able to explain the role of biomolecules and cellular structures in the functions of different types of cells. You will also learn how information flows from gene to protein, and further understand how the associated cellular processes are regulated in the context of the cell.

Course Objectives:

1) Relate processes of the central dogma of biology to cell structure and function
2) Describe the role of proteins and their role in regulating cell function, cell division, and cell death
3) Describe the structure of cell membranes, their role in regulating intracellular environments, and how they interact with the extracellular environment
4) Describe the function of the cytoskeleton and its role in cell shape and movement
5) Outline the processes of energy transformation and ATP production in cells
6) Explain how signaling events occur within a cell

***Required Materials*:**

Alberts *et al*., **Essential Cell Biology**, 4th Ed. W. W. Norton & Company, Inc., New York, New York.

***Class Recordings*:** For class recordings I will discuss materials from the textbook, documents / powerpoints / websites on Canvas, and review other course materials. Most recordings are delivered via Kaltura Capture with two screens using a picture-in-picture format. This format allows me to draw under the document camera or demonstrate digital items on the computer screen.

Course Requirements and Grading:

***Letter Grades (rounded at the hundredths)*:**

	A = 100-94%	A- = 93.9-90%
B+ = 89.9-86%	B = 85.9-82%	B- = 81.9-78%
C+ = 77.9-74%	C = 73.9-70%	C- = 69.9-66%
D+ = 65.9-62%	D = 61.9-60%	F ≤ 59.9%

***Point Distribution*:**

Graded Item	**Points**
Molecular Biology Exam	100 pts
Cellular Biology Exam	100 pts
Assignments *(~10-30pts, varied per type)*	100 pts
Final	**300 pts**

***Assignments*:** Assignments will vary over the course of the term. Some assignments will involve data interpretation (possibly from reading portions of research articles), appropriately identifying key enzymes, translating a message, filling in vocabulary terms on crossword puzzles, organizing a sequence of events, etceteras. Expect on 3-4 assignments per for each unit (molecular, then cellular biology). Not all assignment types will be directly matched to your exam question formats, but they will prepare you for the type of memory, organization, interpretation, and evaluation types of questions. You are allowed to work on assignments with others, but everything must be in your own words. Assignments must be hand written and turned in at the start of class or scanned and uploaded to canvas prior to class. **Late assignments incur a 20% deduction and are not accepted after the next lecture begins.**

***Exams*:** Each exam will assess your understanding and recall of the unit's content (typical vocabulary, matching, identification, multiple-choice, and similar types of questions for evaluation), in addition to your ability to use this information to evaluate experimental data, suggest experiments, interpret what might go awry in a particular pathway or biological process, compare and contrast different biological processes, and so on. Some of these types of questions may involve short answers and/or essays. There will be stratified levels of difficulty in the questions posed. Completing the assignments and reviewing course handouts should prepare you for exams, but it will also involve more than purely memorization if you are to attain an A. Since there is only a 50 minute period to complete an exam, you *may* be given a batch of possible essay questions ahead of time to contemplate…you cannot spill over this time!!!

Additional Course Information:

Requests for Accommodations / Altered Schedules / Altered Content:

In compliance with the Americans with Disabilities Act (ADA), I will make every effort to honor requests for reasonable accommodations made by individuals with disabilities. If you have a disability and require accommodations, please register with the Disability and Assistive Technology Center and *let me know as soon as possible*. Requests for accommodations, including university-sanctioned extra-curricular event conflicts, can be responded to most effectively if I receive the requests early. Examples of accommodations include alternate exam durations, assignment make-ups, etc. Such requests are confidential. More information about ADA at UWSP can be found on the human resources webpage https://www.uwsp.edu/hr/Pages/Affirmative%20Action/ADA.aspx.

UWSP Community Bill of Rights and Responsibilities:

UWSP values a safe, honest, respectful, and inviting learning environment. A set of expectations for students and instructors, known as Student Rights and Responsibilities, is intended to help establish a positive living and learning environment. For more information go to the webpage for the Dean of Students, which outlines expectations for a respectful learning environment, as well as the an overview on school policies regarding academic misconduct. The *minimum* penalty for violating this policy is a recorded zero for the assignment in question. The Dean of Students webpage is found at: https://www.uwsp.edu/dos/Pages/default.aspx.

VERY Tentative Course Schedule:

Unit	Week	Topic	Chapter
Molecular Biology	1	Cells: The Fundamental Units of Life	1
	2	Chemical Components of Cells	2
	2-to-3	Energy, Catalysis, and Biosynthesis	3
	3-to-4	Protein Structure and Function	4
	4	DNA and Chromosomes	5
	4-to-5	DNA Replication and Repair	6
	5	From DNA to Protein: How Cells Read the Genome	7
	5-to-6	Control of Gene Expression	8
	6	How Genes and Genomes Evolve	9
	6-to-7	Analyzing the Structure and Function of Genes	10
	End of Week 8 (10/28)	**Exam 1**	
Cellular Biology	8	Membrane Structure	11
	8-to-9	Transport Across Membranes	12
	9	How Cells Obtain Energy from Food	13
	10	Energy Generation in Mitochondria and Chloroplasts	14
	11	Intracellular Compartments and Protein Transport	15
	12	Cell Signaling	16
	12-to-13	Cytoskeleton	17
	13-to-14	The Cell Division Cycle	18
	14-to-15	Sexual Reproduction	19
	15	Cell Communities: Tissues, Stem Cells, and Cancer	20
	Finals Week (12/21)	**Exam 2**	