

General Biology (BIOL 111) 3 credits
Spring 2020 M,W,F 11:00 – 11:50 am

Instructor: Kaarin Goncz, Ph.D (Dr. Goncz or Dr. G) **Office:** 221 Jones Annex
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Course Description: This course is an introduction to the biological sciences. We will cover 5 core concepts of biology over the semester; 1) Basic building blocks of biology which includes some chemistry, 2) Cell structure and division, 3) Energy and metabolism, 4) Genes (DNA) and inheritance and, 5) Biotechnology. Much of what we cover in this course deals with the microscopic, or very small, aspects of biology – the macroscopic, or more visible aspects of biology such as physiology, development, evolution and ecology are covered in BIOL 112.

Pre-requisites/Co-requisites: CHEM 109 or CHEM 121

Place in Curriculum: This course is required for successful completion of a B.S. in Biology or BMS, a minor in Biology or as a science elective

Course Objectives: Students should have an appreciation for & understanding of :

1. The chemistry of life: proteins, polysaccharides, nucleic acids, and lipids
2. The structure and function of cells including cell division
3. Energy and metabolism in living systems
4. The structure and function of DNA including heredity
5. Technological applications that use biological systems

Textbook. The required text is *Life, The Science of Biology*, 11th Edition, by Sadava et al. The 9th or 10th editions of Sadava et al. are acceptable (the full text or Volume 1) but you're responsible for figuring out which chapters to read and, if you discover a discrepancy between what you are reading and what I am saying in class, please let me know!

Online resources: Some course materials will be made available via Canvas

Course Expectations:

- Please try to attend all classes. There is a direct correlation between attendance and achievement.
- Come to class prepared. You will find that your understanding of the material will be greatly enhanced if a) you read the material we will cover ahead of time, b) that you review the previous class material and c) if you are curious
- If you need help, please come and see me during office hours or email me. Or, talk to your fellow students. Just getting together to talk about the course material will greatly improve your understanding

Exams and grading: Exams will cover material from the text and the lectures. Some required material in the text will not be covered in lectures. Each exam will cover mostly material since the last exam but some parts may be comprehensive. There will be six exams including the final. Your lowest exam grade will be dropped. No make-up exams will be given. If a student misses one exam due to a bona fide illness or family emergency (must be documented via the Dean of Students), then the student's grade for the class will be computed using the remaining exams.

Weekly homework assignments will be posted on Canvas. Please submit your response to the homework on Canvas by 11pm on the Saturday of the week. We will go over it in class; you will receive full credit for submitting a substantive response. Your final grade will be the average of your five remaining exam scores and the homework grade – all equally weighted.

No extra-credit or alternative assignments will be given. Course grades will be based on the following scale: 100-93% A, 92-90% A-, 89-87% B+, 86-83% B, 82-80% B-, 79-77% C+, 76-73% C, 72-70% C-, 69-67% D+, 66-60% D, ≤ 59% F. If necessary, the scale will be curved.

Wk	Date	Topic – Chapter Title	Test	Reading
1	1/13	Studying Life		Ch 1.1
	1/15	Studying Life		Ch 1.2 – 1.3
	1/17	Small Molecules and the Chemistry of Life		Ch 2.1 – 2.2
2	1/20	<i>MLK Birthday Holiday – No class</i>		History
	1/22	Small Molecules and the Chemistry of Life		Ch 2.3 – 2.4
	1/24	Proteins, Carbohydrates and Lipids		Ch 3.1
3	1/27	Proteins, Carbohydrates and Lipids		Ch 3.2
	1/29	Proteins, Carbohydrates and Lipids		Ch 3.3 – 3.4
	1/31	Review		Review
4	2/3	Test #1	2/3	Relax
	2/5	Nucleic Acids and the Origin of Life		Ch 4.1 – 4.3
	2/7	Cells; The Working Units of Life		Ch 4.4, 5.1-5.3
5	2/10	Cells; The Working Units of Life		Ch 5.4 – 5.5
	2/12	Cell Membranes		Ch 6
	2/14	Cell Communication & Multicellularity		Ch 7
6	2/17	Review	2/19	Review
	2/19	Test #2		Relax
	2/21	Energy, Enzymes and Metabolism		Ch 8.1 – 8.2
7	2/24	Energy, Enzymes and Metabolism		Ch 8.3 – 8.5
	2/26	Pathways that Harvest Chemical Energy		Ch 9.1 – 9.3
	2/28	Pathways that Harvest Chemical Energy		Ch 9.4 – 9.5
8	3/2	Photosynthesis: Energy from Sunlight		Ch 10.1 – 10.3
	3/4	Photosynthesis: Energy from Sunlight		Ch 10.4 – 10.5
	3/6	Review		Review
9	3/9	Test #3	3/9	Relax
	3/11	The Cell Cycle and Cell Division		Ch 11.1 – 11.4a
	3/13	The Cell Cycle and Cell Division		Ch 11.4b – 11.7
10	3/16	SPRING BREAK		
11	3/23	Inheritance, Genes and Chromosomes		Ch 12.1 – 12.3
	3/25	Inheritance, Genes and Chromosomes		Ch 12.4 – 12.6
	3/27	DNA & its Role in Heredity		Ch 13.1 – 13.2
12	3/30	DNA & its Role in Heredity	4/3	Ch 13.3 – 13.5
	4/1	Review		Review
	4/3	Test #4		Relax
13	4/6	From DNA to Protein: Gene Expression		Ch 14.1 – 14.3
	4/8	From DNA to Protein: Gene Expression		Ch 14.4 – 14.6
	4/10	Spring Holiday		
14	4/13	Gene Mutation and Molecular Medicine		Ch 15.1 – 15.3
	4/15	Gene Mutation and Molecular Medicine		Ch 15.4 – 15.5
	4/17	Regulation of Gene Expression		Ch 16.1 – 16.2
15	4/20	Regulation of Gene Expression	4/24	Ch 16.3 – 16.5
	4/22	Review		Review
	4/24	Test #5		Relax
16	4/27	Genomes/Recombinant DNA and Biotechnology		Ch 17& 18
	4/29	Review		Review
17		FINAL (Test #6)	TBD	

Counseling and Disability Services:

Reasonable Accommodations New Mexico Tech is committed to protecting the rights of individuals with disabilities. Qualified individuals who require reasonable accommodations are invited to make their needs known to the Office of Counseling and Disability Services (OCDS) as soon as possible. To schedule an appointment, please call 835-6619.

Counseling Services New Mexico Tech offers mental health and substance abuse counseling through the Office of Counseling and Disability Services. The confidential services are provided free of charge by licensed professionals. To schedule an appointment, please call 835-6619.

Academic Honesty: New Mexico Tech's Academic Honesty Policy for undergraduate and graduate students is found in the student handbook, which can be found at: <http://www.nmt.edu/student-handbook>. You are responsible for knowing, understanding, and following this policy.

Respect Statement: New Mexico Tech supports freedom of expression within the parameters of a respectful learning environment. As stated in the New Mexico Tech Guide to Conduct and Citizenship: "New Mexico Tech's primary purpose is education, which includes teaching, research, discussion, learning, and service. An atmosphere of free and open inquiry is essential to the pursuit of education. Tech seeks to protect academic freedom and build on individual responsibility to create and maintain an academic atmosphere that is a purposeful, just, open, disciplined, and caring community."