BIOL 311L Genetics Lab (1 credit)

New Mexico Institute of Mining and Technology

FALL 2017

T or W 2 PM-4:30 PM Jones Annex 230

INSTRUCTOR:
Dr. Linda C. DeVeaux
Office: 209 Jones Annex
Office Hours: T R 11-12 AM, or by appointment
Office Phone: 575-835-5504
Email: linda.deveaux@nmt.edu

TEACHING ASSISTANT:
Angie Cave
Office: 207 Jones Annex
Office Hours: TBA
Email: Angelica.cave@student.nmt.edu

COURSE DESCRIPTION:

Catalog description: An overview of the storage, transmission and expression of biological information. The lab emphasizes Mendelian analysis in model organisms and fluorescent analysis of human DNA.

This course is a laboratory experience to accompany BIOL 371, Genetics. There will be emphasis on learning laboratory approaches to both classical and molecular genetics problems.

CO- OR PRE-REQUISITE COURSEWORK: BIOL 311

DESCRIPTION OF INSTRUCTIONAL METHODS:

The class is a laboratory class requiring hands-on bench-work, as well as computer laboratory investigations.

PLACE IN CURRICULUM: This is a sophomore/junior level required course for majors in Biology.

COURSE GOALS:

- To engage students in the practical application of genetic principles
- To teach basic genetic and molecular biology laboratory techniques
- To teach a scientific process through experimental design and data analysis
- To provide a forum for students to learn how to give a scientific presentation

STUDENT LEARNING OUTCOMES:

After completion of this course, students are expected to be able to

- Demonstrate proper laboratory technique for propagation of model genetic organisms
- Understand interpretation of data from genetic crosses and molecular biology experiments
- Present data in an organized manner specific to the discipline
- Design a genetic experiment with appropriate controls.

PROGRAM EDUCATIONAL OBJECTIVES:

Our graduates will be able to use basic principles of science to analyze, to explain, and to apply biological information and concepts. Our graduates will be able to design and implement biological research and report findings orally and in writing.

COURSE REQUIREMENTS:

Required textbook: Laboratory manual will be supplied online through Canvas.

Supplementary reading material provided online should be considered required reading unless designated otherwise. All students should read the material provided online prior to each class meeting.

Students are expected to:

- read the associated laboratory materials prior to class
- check Canvas and NMT email for class announcements at least daily
- attend and participate in each lab session, and work together on exercises
- complete and turn in homework
- participate in class discussions and problems
- Keep a laboratory notebook according to accepted standards
- ASK QUESTIONS IN CLASS OR COME TO OFFICE HOURS

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USE OF ELECTRONIC DEVICES:

Cell phones must be set to "vibrate" during lab. No recording will be permitted, except through the ACT. Laptops may be required for some class sessions. Please ensure that they are charged prior to class. No electronic devices will be allowed during exams, unless otherwise instructed.

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 MISCONDUCT:

Academic Honesty:

New Mexico Tech's Academic Honesty Policy for undergraduate students is found in the student handbook:
http://www.nmt.edu/images/stories/student_univ_relations/NMT%20Student%20Handbook%202016-17.pdf

You are responsible for knowing, understanding, and following this policy.
Acts of dishonesty in class activities include cheating on exams and quizzes, and copying text from ANY source, including the internet, and passing it off as your own work. Copying of homework answers from the internet, for example, is considered cheating (and plagiarism). Instructors are obligated to report dishonesty, and I will follow University policy. Violators will be given an appropriate penalty, such as reduction of grade or expulsion from the class.

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."

EVALUATION PROCEDURES:

Grading:	Quizzes	10%
	Notebooks/QTBAs	10%
	Practical/participation	10%
	Presentations	20%
	Lab reports/writing assignments	50%
	Total	100%

Grading Scale: 100-90%, A; 89-80%, B; 79-70%, C; 69-60%, D; <60%, F.
I reserve the right to utilize the +/- grades for borderline situations.

Quizzes will be given at the beginning of lab period. Questions will be derived from the previous lab (introductory lecture, the information presented in your lab manual or any thought questions) as well as the lab to be performed that day.

Presentations will be a group assignment on Experiment 3 and a final individual presentation on a current topic in Genetics (TBA).

Practicals: There will be one practical exam to be given during your lab period. More information about this exam will be given by your instructor.

Lab reports and writing assignments: Two experiments will be written up concisely with introduction (purpose), materials and methods, results and discussion. To help with these assignments, small writing assignments pertaining to the parts of a scientific paper will be due during the semester. More details to be provided during lab, as well as on Canvas.

Lab Notebooks and QTBAs: Each person must have a three-ring binder (1" is sufficient) into which the laboratory manual and other important printouts can be inserted. It is mandatory that you also have dividers for the individual experiments (i.e. you will need 9). You should also have a hard-bound notebook for recording experiments. You are responsible for recording your own data, even if the experiment involves teams. Both binder and notebooks will be evaluated throughout the semester. "Questions to be answered" (QTBAs) will be due the week after they are assigned.

Attendance in the lab is mandatory and missing a lab will affect your grade (except for extraordinary circumstances—see below). You will miss the quiz (no makeup quizzes will be given). There may be instances of sudden emergency or illness that prevent you from attending a lab. In these cases, you must **speak with Dr. DeVeaux within one week** of the missed lab. There are no make-ups. However, with advance planning, it may be possible to attend the other laboratory section that week.

The lab is scheduled for 2.5 hours and will frequently last the entire time period. Do not schedule any other commitments for this time period.

TENTATIVE COURSE SCHEDULE:

Week	Date	Experiments			Notes
1	August 23/24	Expt 1			
2	August 30/31	Expt 1	Expt 2	Expt 3	notebook check
3	September 6/7	Expt 2	Expt 3	Expt 4	
4	September 13/14	Expt 3	Expt 4	Expt 5	notebook check
5	September 20/21	Expt 3	Expt 4	Expt 5	
6	September 27/28	Expt 4	Expt 5		
7	October 4/5	Expt 4	Expt 5		notebook check
8	October 11/12	Experiment 3 presentations			
9	October 18/19	Expt 6			Lab practical
10	October 25/26	Expt 6	Expt 7		Lab report for Expt 4 due
11	November 1/2	Expt 6	Expt 7	Expt 8	notebook check
12	November 8/9	Expt 6	Expt 8	Expt 9	
13	November 15/16	Expt 6	Expt 8	Expt 9	
14	November 22/23	No lab			
15	November 29/30	Expt 6	Expt 9		Final notebook check
16	December 6/7	Presentations/Lab report for Expt 6 due			