

BIOL 2996-501: Undergraduate Research

Class Meets: Monday, 1:30-2:55 PM (Beginning: **1-18-21** – Ending: **5-3-21**). In HS 110.

Instructor: Victor French

My Office: LRC 125

My Phone: 925-8568

Office Hours: Monday, 3:00-4:00 PM; Thursday, 8:00-10:00 AM; or by appointment. Online office hours available upon request.

COURSE DESCRIPTION:

Undergraduate Research is a mostly hands-on lab course that is designed to provide undergraduate students insight into the nature of research in STEM disciplines. Additionally, for those who intend to continue in a STEM discipline, soft and hard research skills will be emphasized. It is further anticipated that students may choose to concurrently or subsequently enroll in the UNM-Valencia undergraduate research program.

COURSE LEARNING OBJECTIVES:

1. Develop an increased familiarity with laboratory work in STEM and will be able to more quickly become independent in that environment.
2. Demonstrate an ability to safely and accurately operate lab equipment and conduct basic lab operations.
3. Identify and consistently utilize five necessary components of a laboratory notebook.
4. Participate in basic research, summarize and present scientific findings.

REQUIRED MATERIALS:

1. Lab Coat & Chemical Goggles
2. UNM email account

COURSE POLICIES

GRADING:

1. **Lab Reports (75%)**- Given sufficient class time and unless otherwise indicated, assignments will be worked on during class, finished at home and turned in the following week. Assignments will be graded and returned to you as soon as possible. A PowerPoint slide presentation will be uploaded to Blackboard Learn each week. It is strongly suggested that students refer to the slides, videos and notes contained in the power point presentations when answering lab report questions. Please write in detailed, concise sentences where appropriate.

During some classes during the semester, we will focus on practicing lab protocols and techniques. During these sessions there will be minimal or no lecture component. It is essential that during these weeks, students will have read and familiarized themselves with the protocol prior to class. In these cases, protocols will be provided on the course website (Blackboard Learn) during the previous week.

2. **Participation (5%)**- Class participation is critical to the success of individual students and to the class in general. The more you put into something the more you will get out of it. Sharing ideas and asking relevant questions are important skills in science which can best be acquired through practice. Students generally have much to share with the class. We will all learn from each other if we are open minded, appreciative and understanding of our classmates. Participation includes being actively engaged in class activities, consideration for others and being prepared for class.

3. **Attendance (5%)**- Attendance is necessary for you to participate in class as well as to fully understand and benefit from the material covered. Attendance will be taken at the beginning of class to document your attendance. Attendance means getting to class on time, remaining for the entire class period or until dismissed and participating in all class learning activities. After two absences, you will be dropped from the course unless otherwise notified.

4. **Electron Microscope (15%)**- We are very fortunate to have a new scanning electron microscope at UNM-Valencia. You will be required to pick a suitable specimen of your choice and generate a photographic image and narrative description of the specimen. Since there are many students and only one electron microscope, you will be required to schedule time with your instructor during the semester to accomplish this task.

☐ **Note- It is imperative that you attend all classes during DNA Barcoding activities (Highlighted in “Proposed Plan of Study” Below). Failure to do so will have a detrimental impact on your grade for subsequent DNA barcoding activities and will result in your not having any DNA to sequence.**

A final letter grade will be assigned at the end of the course based upon the percentile score earned by the student.

<u>Percentile Score</u>	<u>Letter Grade</u>
98-100	A+
93-97.99	A
90-92.99	A-
87-89.99	B+
83-86.99	B
80-82.99	B-
77-79.99	C+
73-76.99	C
70-72.99	C-
67-69.99	D+
63-66.99	D

60-62.99	D-
Below 60	F

LAB ATTENDANCE:

1. Failure to attend class will result in the forfeiture of the lab report, attendance and participation points for that week resulting in a zero grade. It is therefore extremely important that you attend class regularly.
2. Labs will not be repeated at a later time for any reason.
3. In the event of illness or dire emergency, please notify me by email at least six hours in advance and I will try to accommodate you.

ASSIGNMENTS:

1. Lab topics will not be repeated to accommodate individual students.
2. Late assignments will be accepted for one week after the due date and will result in a 50% reduction in grade.

ELECTRONIC DEVICE USAGE:

As a courtesy to the class, please turn off your cell phones or other electronic devices.

ACADEMIC INTEGRITY:

Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that assignment. Here is the link to the UNM Academic Dishonesty Policy:

<https://policy.unm.edu/regents-policies/section-4/4-8.html>. The policy states:

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or who otherwise fails to meet the expected standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic Dishonesty is defined as:

"Academic dishonesty" includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

DISRUPTIVE BEHAVIOR:

Disruptive behavior will not be tolerated and can lead to being dropped from the course at the instructor's discretion. No "guests" will be allowed unless they are explicitly invited to attend the class by the instructor.

STUDENTS WITH DISABILITIES:

If you have a documented disability, the Equal Access Services office will provide me with a letter outlining your accommodations. I will then discuss the accommodations with you to determine the best learning environment. If you feel that you need accommodations, but have not documented your disability, please contact Yolanda Pino, the coordinator for Equal Access Services at 925-8910 or pinoy@unm.edu.

EQUAL OPPORTUNITY AND NON-DISCRIMINATION:

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered “responsible employees” by the Department of Education (see page 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf>). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>.

PROPOSED PLAN OF STUDY:

<u>Course Week*</u>	<u>Lab Exercise</u>
1) 1-18-21	Martin Luther King Holiday (No Class Meeting)
2) 1-25-21	Orientation
3) 2-1-21	Lab Notebook
4) 2-8-21	Pipetting
5) 2-15-21	DNA Barcoding Overview
6) 2-22-21	Organism Selection for DNA Barcoding (Part I)
7) 3-1-21	DNA Extraction (Barcoding, Part II)
8) 3-8-21	PCR (Barcoding, Part III)
9) 3-15-21	Spring Break (No Class Meeting)
10) 3-22-21	DNA Quantification (Barcoding, Part IV)
11) 3-29-21	Solder/Desolder Printed Circuit Board
12) 4-5-21	Soil Sediment Analysis
13) 4-12-21	Scientific Method / Experimental Design
14) 4-19-21	Microscopy and Cell Count
15) 4-26-21	Submit Electron Microscopy Poster and DNA Sequence Analysis (Barcoding, Part V)
16) 5-3-21	Attend Undergraduate Research Day

- **DATES AND TOPICS ARE SUBJECT TO REVISION AT THE DISCRETION OF THE INSTRUCTOR.**
- **STUDENTS WILL BE HELD RESPONSIBLE FOR THE MOST CURRENT VERSION OF THIS DOCUMENT WHICH WILL ALWAYS BE POSTED IN BLACKBOARD LEARN.**