



The University of Texas at El Paso

Environmental Sequencing Laboratory BIOL 1107 (CRN 19415) Room# BIOL 108

Fall 2020

Tuesday and Thursday, 2:30 - 3:50 pm

Instructor: Maribel Baeza; mjbaeza2@miners.utep.edu
Faculty Director: Elizabeth Walsh; ewalsh@utep.edu

Required Materials

LAB COAT (if able to resume in-person labs)

This laboratory requires a lab coat. You will not be able to participate in lab activities without proper attire and safety equipment. Failure to come prepared may result in a grade reduction and you will be asked to leave the lab for that day. You may find lab coats at the university bookstore or at any uniform supply store in El Paso or online.

COURSE DESCRIPTION

OVERVIEW AND LABORATORY OBJECTIVES: In this laboratory we explore topics and activities such as

- Sample collection from aquatic habitats
- DNA extraction from water and sediment samples
- Gene amplification using Polymerase Chain Reaction (PCR)
- DNA barcoding, Next Generation Sequencing, and environmental DNA (eDNA)
- Sequence analyses using computer software and pipelines such as QIIME
- Applications of environmental sequencing and DNA barcoding in monitoring biodiversity and other biological studies

GRADING GUIDELINES

QUIZZES will be administered each class prior to carrying out the experiments. You should read the experiment before coming to the lab; the quiz will be on the experiment that you will do that week. **The quizzes will be given at the beginning of the lab**, if you are late and arrive after the quiz is over, you will receive a zero.

ALL LAB ASSIGNMENTS must be completed before leaving the lab. Details about assignments are explained in the lab manual. Further explanation will be provided by your TA.

GROUP PRESENTATION AND LAB REPORT will be based on sequence data analysis completed during the semester.

THREE EXAMS (2 MIDTERMS, 1 FINAL) will be given throughout the semester.

THE FINAL WILL BE COMPREHENSIVE covering all material from the entire semester.

COURSE POLICIES

POLICY ON DROP DEADLINE: We will follow the College of Science and UTEP with respect to the drop date of **October 30th**. No requests for a withdrawal will be approved after this date.

POLICY ON CLASS PARTICIPATION: You are expected to come to class prepared to lead a discussion on the assigned topic. You should have a good understanding of the reading and have several questions ready to discuss.

POLICY ON CAMPUS CARRY: Persons holding a Concealed Handgun License can lawfully carry their handgun into a UTEP classroom as long as the gun remains concealed. Open carry remains prohibited on campus. In other words, none of us should see (or be able to tell that there is) a gun at UTEP. Call the University Police at 747-5611 or dial 911 if you see any individual on campus with a handgun or other type of weapon. For more information on campus carry, see [<http://sa.utep.edu/campuscarry/>]; for more information on overall campus safety, see [<http://admin.utep.edu/emergency/>].

POLICY ON CIVILITY: Please come to class on time. It is disturbing and distracting everybody if people come in late. Please do not hold private conversations during lectures, but feel free to ask questions or start a discussion at any time. **Cell phones MUST be turned off during class. DO NOT answer phones while in class.**

DISABILITY STATEMENT: If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. *CASS' Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.*

MILITARY STATEMENT: If you are a military student with the potential of being called to military service and /or training during the course of the semester, you are encouraged to contact one of the Instructors no later than Sept 10.

POLICY ON HOMEWORK: All homework assignments are to be individual efforts unless specifically told otherwise. This policy will be strictly enforced.

POLICY ON MAKE-UP ASSIGNMENTS: NO make-up assignments will be given for reasons other than illness (doctor's note required), absence with the instructor's prior approval, or when a student is on official University business (documentation required BEFORE the absence).

POLICY ON ACADEMIC HONESTY: Academic Dishonesty will not be tolerated. All university guidelines will be strictly followed. Please read these guidelines carefully. If you have any questions regarding the university policy please contact the Dean of Students.

POLICY ON ELECTRONIC DEVICES: Use of **laptops** during class is not permitted, except for class assigned presentations. The necessity of classroom interaction in this course negates the usefulness of laptops as a note-taking device. The use of your laptop during class can also prove distracting to your classmates, so please refrain from using your laptop during class. Use of **cell phones or other wireless devices are not permitted.**

- Set your phone to mute or silent mode before coming to class.
- Do not answer incoming calls or make outgoing calls except in an emergency.
- Do not use text messaging or web browser features while in class.

If you choose not to comply with these policies you will be ask to leave the classroom.

Grades

Description	Points	Description
Exams	200	100 points each
QUIZZES	100	5 points each
LAB ASSIGNMENTS	150	10 points each
LAB REPORT	200	DNA Sequence analysis
PRESENTATION	100	DNA Sequence analysis
ATTENDANCE	100	
FINAL EXAM	150	Comprehensive
TOTAL	1000	

Laboratory Schedule Fall 2020

Date	Lab #	Topic	Quiz	Assignment(s)
25-Aug	L1	Introduction to Course; Introduction to DNA	Practice Quiz, EC	
27-Aug	L2	Introduction to environmental sequencing	Q1	L1A1, Study for Quiz
1-Sep	L3	Reading scientific literature and writing a summary on at least 4 relevant papers	Q2	L2A1, Study for Quiz
3-Sep	L4	Introduction to bioinformatics, tutorial videos	Q3	L3A1
8-Sep	L5	Virtual field trip to Ascarate Lake		L4A1
10-Sep	L6	Sample preparation/water chem		L5A1
15-Sep	L7	Virtual field trip to Keystone Wetlands		L6A1, Study for Quiz
17-Sep	L8	Tutorial on QIIME with practice questions	Q4	Study for Quiz
22-Sep	L9	DNA quantification, preparing samples for sequencing	Q5	L9A8, Study for Quiz
24-Sep	L10	Data Entry, making graphs, descriptive statistical tests using Excel	Q6	Study for Midterm1
29-Sep	L11	Midterm 1	M1 (L1-10)	Study for Quiz
1-Oct	L12	QIIME Analysis of samples		Study for Quiz
6-Oct	L13	QIIME Analysis of samples	Q7	L12A1, Study for Quiz
8-Oct	L14	Scientific writing, presentation; writing methods section of the lab report, practice QIIME	Q8	L13A1, Study for Quiz
13-Oct	L15	QIIME Analysis of samples	Q9	L14A1, Study for Quiz
15-Oct	L16	QIIME Analysis of samples	Q10	L15A1, Study for Quiz
20-Oct	L17	QIIME Analysis of samples	Q11	L16A1, Study for Quiz
22-Oct	L18	Writing the Methods of the lab report	Q12	Study for Quiz, Bring papers
27-Oct	L19	QIIME Analysis of samples	Q13	L17A1, Study for Quiz
30-Oct	L20	Writing the Results of the lab report	Q14	Study for Quiz
29-Oct	L21	Discussion of papers on metagenomics	Q15	Course Withdrawal Deadline
3-Nov	L22	Writing the Results of the lab report	Q16	Study for Midterm
5-Nov	L23	Midterm 2, Water Chemistry results	M2 (L11-22)	L22A1, Study for Quiz
10-Nov	L24	Downstream ecological analysis	Q17	Study for Quiz

12-Nov	L25	Downstream ecological analysis	Q18	L24A1, Study for Quiz
17-Nov	L26	Writing Introduction of the lab report	Q19	Study for Quiz
19-Nov	L27	Writing Discussion in the lab report	Q20	Finish Lab Report
24-Nov	L28	Working on group presentations		L29R1, Prepare presentations
26-Nov	L29	THANKSGIVING HOLIDAY	NO LAB	
1-Dec	L30	Group presentations; Evaluations	L31P1	Study for final exam
3-Dec	L32	Final exam (comprehensive)	L32F1 (L1-31)	

***Green bold labs indicate those that will be held in-person in small groups of 5 for part of the scheduled lab times.**