



The University of Texas at El Paso
DNA Barcoding Laboratory
BIOL 1108 (CRN 28987)
Room: BIOL 108

Spring 2020

Tuesday and Thursday, 12:00-1:20 pm

Teaching Instructor: Maribel Baeza

Required Materials

LAB COAT

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 and making a library of aquatic invertebrate barcodes from local wetlands
- Sequence analyses using computer software and pipelines
- Applications of DNA barcoding in monitoring biodiversity and other biological studies

GRADING GUIDELINES

PRE-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 handouts. Further explanation will be provided by your TA.

TWO EXAMS will be given throughout the semester.

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

THERE WILL BE A COMPREHENSIVE FINAL EXAM on all material covered during the semester.

COURSE POLICIES

POLICY ON DROP DEADLINE: We will follow the College of Science and UTEP with respect to the drop date of Mar 27^h. 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
MIDTERMS	200	
PRE-QUIZZES	100	
LAB ASSIGNMENTS	150	
LAB REPORT	200	DNA Barcoding
PRESENTATION	100	DNA Barcoding
ATTENDANCE & NOTEBOOK	100	
FINAL EXAM	150	Comprehensive
TOTAL	1000	

Laboratory Schedule Spring 2020

Date	Lab #	Topic	Quiz	Pre-Lab Assignment(s)
01.28	1	Evaluation; Introduction to PCR	-	Study for Pre-quiz
01.30	2	Practicing PCR reactions, Intro Gene Cleaning	Pre-Quiz Lab #1	Study for Pre-quiz
02.04	3	Introduction to barcoding and Reading #1	Pre-Quiz Lab #3	Study for Pre-quiz, tutorial videos
02.06	4	Preparing for Field trip	Pre-Quiz Lab #4	Study for Pre-quiz
02.11	5	Field trip, Ascarate Lake, El Paso, TX	-	
02.13	6	Filtering water for DNA extraction, water chemistry, preparing for field trip	Pre-Quiz Lab #6	Study for Pre-quiz
02.18	7	Water chemistry		
02.20	8	DNA Extraction from water	Pre-Quiz Lab #8	Study for Pre-quiz
02.25	9	DNA extraction from plankton organisms	Pre-Quiz Lab #9	Study for Pre-quiz
02.27	10	DNA extraction from benthic organisms	Pre-Quiz Lab #10	Study for Pre-quiz
03.03	11	DNA extraction from sediments	Quiz Labs #1-10	Study for Quiz, review tutorial videos from lab 3
03.05	12	DNA quantification	Pre-Quiz Lab #12	Study for Pre-quiz
03.10	13	Readings 2-6, and writing a summary on of them	Pre-Quiz Lab #13	Study for Pre-quiz
03.12	14	Tutorial on Barcoding	Pre-Quiz Lab #14	Study for Pre-quiz
03.17	15	Spring break – no lab		
03.19	16	Spring break – no lab		
03.24	17	Scientific writing, presentation		Prepare presentations
03.26	18	PCR reactions	Pre-Quiz Lab #18	Study for Pre-quiz, Bring papers
03.31	19	Gel electrophoresis	Pre-Quiz Lab #19	Study for Pre-quiz
04.02	20	Gene Cleaning	Pre-Quiz Lab #20	Study for Pre-quiz
04.07	21	Preparing samples for sequencing	Quiz Labs #11-20	Study for Pre-quiz
04.09	22	Discussion of papers on barcoding	Pre-Quiz Lab #22	Study for Quiz
04.14	23	Methods and Results the lab report		
04.16	24	Analyzing sequences	Pre-Quiz Lab #24	Study for Pre-quiz
04.21	25	Discussion of papers on barcoding	Pre-Quiz Lab #25	Study for Pre-quiz
04.23	26	Introduction and Discussion in the lab report	Pre-Quiz Lab #26	Study for Pre-quiz

04.28	27	Working on group presentations	Pre-Quiz Lab #27	Study for Pre-quiz
04.30	28	Working on group presentations, lab report due date		
05.05	29	Group presentations; Evaluations		
05.07	30	Final exam (comprehensive)		Study for final exam