

BIOL 5193 Graduate Seminar in Biology – Applications of eDNA

Fall 2024

Meeting time: Monday 11:15 A.M. – 12:05 P.M.

Meeting classroom: HPR Bldg, Room 00247

Instructor: Matthew Greenwold, Ph.D., Assistant Professor of Biology

Office: HPR 117

Office Hours: MWF 9:30 A.M. – 10:30 A.M., or by appointment.

Email: mgreenwold@uttyler.edu

Phone: 903.566.6303

Course Description: Discussion and presentations by faculty and students on various up-to-date topics in biology. May be repeated once for credit.

In this course, I want us to discuss how eDNA is currently being used, the methods involved in the use of eDNA, and explore the innovative ways in which eDNA is being used in science.

Course Learning Objectives: By the end of the course, students should be able to:

- List and describe the types of eDNA.
- Discuss current methods used in eDNA studies.
- Discuss different applications of eDNA.

Required Course Materials: No required textbook.

Grading: Your grade will be based on three presentations and class participation. The grade distribution is:

Presentation 1 =	25%
Presentation 2 =	25%
Presentation 3 =	25%
Participation =	25%
Total	100%

Grading	
Percentage	Grade
90-100%	A
80-90%	B
70-79%	C
60-69%	D
< 59%	F

Presentations: Each student will lead three presentations. Each presentation will be worth 25% of the final grade. For each presentation, the student will present a PowerPoint style presentation and lead the discussion on a topic and/or published paper by asking the class questions. These topics/papers will be chosen by both the student and instructor.

Class Participation: Class participation is worth 25% of your grade and includes attending class. You may miss **ONE** lecture without losing points. Attendance will be checked during each class meeting. I am required to provide attendance data for Financial Aid, midterm, and final grades submissions; therefore, it is critical that you attend our class meetings. If you cannot attend for reasons of illness or other acceptable situations, please contact me to determine the best course of action. For each presentation or class discussion, it is expected that you contribute to the discussion and/or ask the presenter questions.

Tentative Course Schedule

Day	Topic
Aug. 26 th	Introduction to course
Sept. 2 nd	<i>No Classes</i> – Labor Day
Sept. 9 th	What is eDNA?
Sept. 16 th	eDNA types – water, soil, feces, etc.
Sept. 23 rd	eDNA extraction methods
Sept. 30 th	eDNA metabarcoding
Oct. 7 th	eDNA PCR (qPCR)
Oct. 14 th	eDNA and LAMP assays
Oct. 21 st	eDNA for invasive species detection
Oct. 28 th	eDNA for endangered/threatened species detection
Nov. 4 th	eDNA for biodiversity monitoring
Nov. 11 th	eDNA for monitoring ecosystem health
Nov. 18 th	eDNA use in dietary studies
Nov. 25 th	<i>No Classes</i> – Thanksgiving break
Dec. 2 nd	eDNA use in agricultural studies

*September 9th – Census date

Late Work: No late work will be accepted! Part of learning to be a scientist is learning time management. When you are in a job or working on grants - deadlines are final! If you miss the deadline, you cannot submit; therefore, this will be good practice for your future career. If for some reason you cannot attend class or turn in an assignment, please reach out to Dr. Greenwold to determine if a deadline extension can be granted.

Make-Up Exams: No exams in this course.

Use of Artificial Intelligence in this course: During some class assignments, we may leverage AI tools to support your learning, allow you to explore how AI tools can be used, and/or better understand their benefits and limitations. Learning how to use AI is an emerging skill, and we will work through the limitations of these evolving systems together. However, AI will be limited to assignments where AI is a critical component of the learning activity. I will

always indicate when and where the use of AI tools for this course is appropriate.