

FIELD TECHNIQUES IN ECOLOGY & CONSERVATION

Pymatuning Laboratory of Ecology

Session 3 – July 7-25, 2025

Syllabus

INSTRUCTORS: [Dr. Joseph Duchamp](#) and [Dr. David Janetski, IUP](#)

EMAIL: jduchamp@iup.edu; janetski@iup.edu

COURSE OVERVIEW

This project-driven course introduces students to a variety of field and research techniques used in ecology and conservation professions, including sampling and experimental design; sampling methods for plants and animals in terrestrial and aquatic habitats; application of quantitative analysis to field-based studies.

OUTCOMES

Students who complete this course should be able to:

- 1) Design and execute an appropriate research project for sampling populations, communities, and/or habitats in the field to answer specific research questions.
- 2) Select and implement the most appropriate sampling methods to meet the objectives of the sampling and study design.
- 3) Understand the implementation of a variety of field sampling methods used in ecology and conservation, including application of computational approaches to field-based questions.

COURSE CONTENT

- 1) Making and recording observations in the field
- 2) Sampling design & experimental design
- 3) Development and presentation of proposals
- 4) Analysis and interpretation of data
- 5) Characterizing vegetation
- 6) Aquatic macroinvertebrate sampling
- 7) Fish surveys (lake and stream)
- 8) Reptile and Amphibian surveys
- 9) Bird point counts
- 10) Small mammal trapping
- 11) Camera trapping
- 12) Environmental sampling (water quality, soil chemistry)
- 13) Regular fieldwork in Pymatuning State Park, Tryon-Weber Woods Preserve, Jeanette Rose Tryon Preserve, and Wallace Woods
- 14) Day-long field trips (sites may include Erie National Wildlife Refuge, Union City Aquatic Conservation Center, Presque Isle State Park, and/or Tom Ridge Environmental Center)

COURSE REQUIREMENTS

- 1) Required texts and other readings
There will be a variety of scientific articles and technical reports.
- 2) Field Journal
You will write **2-3 nightly journal entries per week** (due at midnight as shown in the schedule below) that reflects your personal experiences during the class that day. Each entry should be 1-3 paragraphs in length, and is meant to provide you with a detailed, first-hand record of your experiences in PLE Field Techniques. You should include details such as the names and descriptions of sites visited, any notable events that occurred, new knowledge you may have gained, thoughts or feedback about how your group project is progressing, or research or career-related ideas you may have generated during the day.
- 3) Papers/projects (number, type, length and deadlines)
A final project will be presented based on a field study designed, conducted, and analyzed by your group. You will give an oral presentation and submit a written project report 8-10 pages in length (including references). Details will be provided during Week 2 of class. Reports are due on the last class day.
- 4) Approximate time spent outside of class:
While in-class time will be allotted for work on assignments and research projects, you should plan to spend an additional **1-2 hours each day** (on average) outside of class for project work.
- 5) Grading Policy:
Late work will not be accepted and there will be no make-ups. In case of a bona-fide medical excuse, an assignment will be dropped or a reasonable alternate assigned.
- 6) Dropbox will be used for submitting assignments. Each of you will receive an individualized link to a Dropbox folder, which your instructors will access to grade your assignments.

COURSE CONDUCT

You are expected to attend all class meetings and participate in all class field trips. Participation in discussions, field activities, field trips, and related assignments will only be possible during scheduled class times. If you must miss class, please let the instructor know in advance. In working with your classmates on independent research projects, you are expected to communicate openly and honestly. Disagreements during group work are normal, and your project is an opportunity to practice addressing disagreements respectfully and finding compromise. All group members are expected to contribute in a significant way to the independent project. If you feel a member of your group is insufficiently involved, please talk to them, and if the issue persists, talk to the instructor.

To maximize your learning and benefit from the course, you are expected to stay focused and on task during class time. This means electronic devices, such as cell phones and laptops, should be used for course-related work only during class hours. You are also expected to be respectful of classmates and your instructor by speaking in turn and remaining seated until excused from class. Other distracting activities during class time, such as vaping and headphone use, are not permitted.

One of the most important aspects of this course is conducting independent data collection and scientific writing. As such, you are expected to generate original data and reports. In the professional world, manufacturing data, plagiarizing material, and using AI writing tools are considered scientific fraud. Scientific fraud not only harms the scientific community, but it also will destroy your reputation and likely end your career. Therefore, encouraging a mindset of relentless honesty and integrity is a key component of this course. Instances of student cheating and/or fraud-like behavior will result in consequences ranging from a zero for the assignment to failure of the course. Cheating includes, but is not limited to, copying another student's work or obtaining answers to an assignment, manufacturing data or copying data from another source (i.e., making up data), and using AI or other sources to produce written content. Please do not engage in this behavior. The consequences of cheating are far worse than missing a few points on an assignment!

GRADING (SUBJECT TO CHANGE)

Assignment	Description	Points possible
Field Observations Exercises (x3)	Assignments practicing data collection and analysis during in-class activities	5 pts each
Guest lecture/field trip summaries and questions (x2)	2-page double-spaced (500 words) description of key points you learned from guest lectures; include <u>two questions</u> you had during each guest lecture	10 pts each
Journal responses (x8)	Summarize project activities that day; include field notes, concerns, questions, thoughts, opinions, etc. (one page max.)	10 pts each
Blank data sheet	Create a data sheet for recording environmental and biological data at each sample site of your research project	15 pts
Research Proposal	1-2 pages describing your group research project plan; includes question(s), hypothesis, goals, study design, data collection, and statistical analysis	50 pts
Proposal Presentation	10-15 minute PowerPoint presentation describing your project proposal	40 pts
Progress report 1	10-minute: Each group will discuss challenges and successes with starting their project and any changes needed to the original proposal. Class will discuss each project.	10 pts
Progress report 2	10-minute PowerPoint presentation updating the class about your progress, including preliminary data and goals for the final week	25 pts
Final Project Paper	8-10 page report of your group project in scientific format	100 pts
Final Presentation	20-25 minute PowerPoint presentation of your research findings	100 pts
Peer Evaluations	Evaluate the contributions of each member of your group	5 pts each
TOTAL		-450 points

TENTATIVE ACTIVITY AND ASSIGNMENT SCHEDULE
(subject to change; schedule will be adapted to weather conditions)

Date	Day	Topic	Assignments (submit to Dropbox)
WEEK 1			
7-Jul-25	Monday	AM – PLE and Course Introduction; Student Intro Session; Lecture on research approaches and study areas PM – Visit study sites; set small mammal traps	-Journal #1 (DUE midnight) -Field Observation Exercise (DUE at end of class)
8-Jul-25	Tuesday	AM – Check small mammal traps + Woody Vegetation Surveys PM – Lecture on experimental design; Form Research Project Teams; Small mammal data analysis	Journal #2 (DUE midnight) -Field Observation Exercise (DUE at end of class)
9-Jul-25	Wednesday	AM – Pollinator Surveys and Herbaceous Vegetation Surveys PM – Pollinator data analysis; Group project planning Late - PM – Late Bat Mist netting/Frog Call Surveys**	Journal #3 (DUE midnight*) -Field Observation Exercise (DUE at end of class)
10-Jul-25	Thursday	AM – Herpetofauna sampling and Soil Surveys PM – Group project planning/Analyze Data Late - PM – Late Bat Mist netting/Frog Call Surveys**	Journal #4 (DUE midnight*)
11-Jul-25	Friday	AM – Bird Point Count Surveys** PM – Work on group project proposals	None
WEEK 2			
14-Jul-25	Monday	AM – Project proposal presentations, revisions; prepare for sampling, gather equipment PM – Begin data collection Late - PM – Late Bat Mist netting/Frog Call Surveys**	-Proposal Presentation (PowerPoint DUE at start of class) -Written Research Proposal and Blank Data Sheet (Word file of each DUE midnight)
15-Jul-25	Tuesday	AM –Continue project work and data collection PM – Preliminary Project updates	None
16-Jul-25	Wednesday	AM/PM – Field Trip #1 – Tom Ridge Environmental Center (Dr. Jeanette Schnars, Regional Science Consortium) and Presque Isle State Park	Field Trip Summary #1 (500 words; DUE midnight)
17-Jul-25	Thursday	AM – Review final paper and presentation requirements; Continue project work and data collection PM – Project work; Fish sampling in lakes using trap nets	Journal #5 (DUE midnight)
18-Jul-25	Friday	AM – Collect trap nets; fish data collection PM – Project work and progress report preparation	Journal #6 (DUE midnight)
WEEK 3			
21-Jul-25	Monday	AM –All groups present progress reports to class; overview of work plan for week; Fish sampling in streams by electrofishing PM – Stream sampling continued; Project work	Progress Report Presentations (PowerPoint DUE at start of class)
22-Jul-25	Tuesday	AM – Final Project work PM – Begin/complete project breakdown and data analysis	Journal #7 (DUE midnight)
23-Jul-25	Wednesday	AM/PM – Field Trip #2 - Union City Aquatic Conservation Center (freshwater mussels with Josh Arnold, Species Recovery Biologist, PA Fish and Boat Commission)	Field Trip Summary #2 (500 words; DUE midnight)
24-Jul-25	Thursday	AM/PM – Final Project write-up and data analysis	Journal #8 (DUE midnight)
25-Jul-25	Friday	AM – Final presentations PM – Final report edits; wrap-up activity; peer evaluations	-Final Presentation (PowerPoint DUE at start of class) -Written Report (Word file DUE midnight) -Peer evaluations

** Will choose 1-2 optimal nights based on the weather conditions.