

Teaching Experience

DePauw University

Bio 102: Evolution, Organisms, and Ecology** (Spring 2025, Fall 2025)

Bio 344: Ecological and Evolutionary Genetics (Spring 2025)

Bio 450: Senior Seminar (Spring 2025)

Bio 290: Insect Biology** (Fall 2025)

Upcoming courses: Bio 184: Society, Culture, and Science (Winter 2026)

**These courses also have a lab component.

Purdue University

ENTM 207: General Entomology Laboratory (Spring 2020, Fall 2020, Spring 2021, Spring 2023)

Teaching Strategy

My teaching strategy is always informed by course learning objectives and the level of the course. In an introductory biology course, for example, the course objectives focus on (1) understanding the scientific method, (2) experimental design and interpreting results, and (3) foundational knowledge in the field biology. This course would be highly structured, with multiple learning modalities for each of the topics. In my Biology 102 course, for example, class sessions usually consist of a lecture to introduce material (with assigned textbook readings) followed by an activity which applies what they learned. Many of these activities also incorporated scientific reasoning, data interpretation, and experimental design which helps to both reinforce the topics from Outcome 3 but also meet Outcomes 1 and 2. A common activity I use is the case study. Students will be presented with the background, hypotheses, methods, and results of a real life study and will work in groups to answer questions related to the study. These questions will focus on applying the concepts they learned in class and interpret the results of the study to determine if the hypothesis was supported. I find students have a much stronger understanding of the concepts they learned in class after doing these activities. In many cases, these studies also highlight how the concepts we are learning in class have real life applications. For example, one case study I used looked at the success of reintroduction of the black footed ferret. Students were able to connect how life history impacts population growth, what that might mean for the success of reintroduction programs, and how life history can inform management practices of endangered populations.

Overall I have found this structure is very effective. Most students do really well in the class, including on the in person exams. In the opinion surveys, students have indicated that they learned a lot, they liked the activities and lectures, and appreciated the feedback on homework, lab reports, and exams.

For an advanced class, I have different expectations for the students and I try to challenge them more. These classes tend to be more lecture heavy, although I still incorporate a variety of in-class activities. In Biology 344, students were assigned a set of homework questions at the end of each class. Many of these problems required analytical reasoning and problem solving skills. During the next class, I would go over the problems and students were required to grade their own work. This placed more responsibility on the students to determine which problems they got wrong and why. Students were encouraged to ask questions if they were confused and to come to office hours if they wanted more one-on-one help with the problems. I also regularly assign

journal articles for students to read and discuss in class. This is a level up from the case studies in the intro classes which summarize the main points for the students. In this case, the students need to take time to interpret the paper and determine the hypotheses, how the methods tested those hypotheses, and what the results tell us.

Assessment

I assign my students a variety of homework assignments (where students can practice individually) and small group activities (where students can learn from their classmates), so that students get a lot of opportunities to practice the course concepts. These also serve as formative assessments, so I can gauge how well students understand the material and review material they are still struggling with. I find that by the time we get to the exam, the students generally do quite well on the types of questions and problems they practiced a lot. Questions on homework and exams range from testing their basic understanding of the material to more challenging questions that require them to think critically and apply what they learned. I allow the students to bring a notesheet to the exam, so they could focus on understanding rather than memorization. Exams have both an in-class and take-home portion, which increases the number and types of questions I can ask and can help students who struggle with test anxiety or need more time to think through questions. In intro level classes, I also allow students to correct test questions on up to two exams to earn back half the points they missed. I find this strategy helps students better meet the learning objectives by reviewing and learning the things they didn't understand for the exam.

For upper level courses, I also assign a major project halfway through the semester. This is typically in the form of a written paper and a presentation. Depending on the class, the project will either be a group project or an individual project. In my evolution class, for example, the students were assigned a group project which required them to write and present a research proposal to test a hypothesis related to contemporary evolution.

Diversity, Equity, and Inclusion

One of my priorities in my teaching is fostering a classroom environment which supports and promotes diversity, equity, and inclusion. At the beginning of the semester, I start with a land acknowledgement to recognize the indigenous peoples on whose land we are learning and I hand out an introductions form for students to fill out where they can let me know their pronouns, preferred name, and any needs I should be aware of for the class. These are two simple things that I hope set the tone for the rest of the semester.

I try to incorporate diversity of thought into my curriculum. For example, in my introductory biology course, I start by reviewing the history of evolutionary thought and I incorporate viewpoints and beliefs from a variety of cultures and civilizations outside of Europe. During the ecology section, we read a chapter from *Braiding Sweetgrass* which introduces the students to the concept of "Indigenous Knowledge" and encourages them to think differently about the interactions that occur in an ecosystem and how humans fit into those interactions.

I also strive to make my courses accessible to all students. To that end, I always upload lecture slides to the content manager before class so that materials are available to students to revisit and for those who miss class. If students request additional accommodations, even if they haven't officially received them through accessibility services, I always do my best to work with the students to accommodate them. While I believe deadlines help students stay on task, I do allow them to turn in late work for partial credit. I have had students who had serious personal crises or medical issues during the semester. In those cases, I have worked with them to set up a plan for getting through the semester. In some cases, this has involved adjusting deadlines and exam dates and exempting smaller assignments so they can focus on the major ones.

I think one question that has often been neglected in DEI but is highly relevant to certain lab courses in biology is how can we avoid moral injury to students. For example, many biology labs require students to perform dissections or euthanize animals, which some students find morally objectionable. As professors, we usually feel (rightfully so) that these activities are pedagogically important, and so are reluctant to exempt students from the activities. However, if we truly want to promote inclusion in the classroom, we need to think deeply about how we can balance pedagogy with avoiding moral injury – especially when these experiences can lead to students avoiding specific classes entirely or participating in the activity but experiencing (potentially permanent) psychological and spiritual harm.

In my Insect Biology class this semester, I had a student approach me with concerns about the insect collection, which is required for the course. Her concern was that she did not want to cause suffering (although she was okay with killing the insects). I provided her with some information to do her own research and reached out to a professor who studies humane insect euthanasia. Together, the student and I decided on euthanasia methods that we determined were the most humane and practical options: 1) anesthetize with isoflurane and freeze the insects in the -80 freezer or 2) when that option is not available, acclimate the insects in the fridge and then freeze them. She is now one of my most enthusiastic students, and has been eagerly collecting insects throughout the semester. Had I ignored her concerns, she likely would have had a much more negative experience in the course or even dropped out. Additionally, I gave the whole class the option to either use traditional methods (ethanol and ethyl acetate) or the new methods and most students chose the new methods, as they believed them to be more humane. Thus, this new approach had the added benefit of fostering compassion and care among the students towards life forms that are typically left out of ethics conversations.

While I intend to continue to require insect collections in entomology courses I teach in the future, as I feel they have a lot of pedagogical value, I will also encourage students to talk to me about moral concerns and provide alternatives depending on what those concerns are.

Professional Development

I am always on the look out for methods to improve my pedagogical skills and adapt my teaching strategies to support student success. I regularly attend and participate in workshops focused on pedagogy and curriculum design, which have been instrumental in shaping my teaching approach. I intend to continue seeking out diverse professional development opportunities, including workshops and seminars, to stay abreast of innovative teaching techniques and assess their impact on achieving learning objectives. In addition, I try to keep up with advances in science and will regularly update my curriculum to incorporate the latest scientific discoveries, ensuring that my teaching reflects the most current knowledge in the field.