# Biology 306: Ecological Methods

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Office: CBB 302A (inside Biology Dept main office on 3rd floor of CBB)
Office Hours: Wed 12:00-1:00, Thur 9:00-10:00, or by appt (if you'd rather meet via zoom let me know)

Meeting time: Section 1: Mon 9:00-11:50
Section 2: Wed 9:00-11:50

Meeting location: all meetings occur in TNR 461.

Textbook: *Field & Lab Methods for General Ecology,* Brower *et al.*, 4th edition (rental).
All other course materials will be made available to you on Canvas.

**Course Objectives:** To study and apply a variety of methods used to conduct and interpret ecological studies of populations, communities, and ecosystems, and to explore fundamental concepts in ecology via hands-on activities, theoretical approaches, and discussion and analysis of course-relevant literature.

**Course modality and covid-related policies:** This course is taught entirely in-person, and I expect you to be in class on time every time we meet. That said, I do understand the complex realities of the covid pandemic, and I'm willing to work with you if illness or a mandatory quarantine prevents you from attending class. If that's the case, timely communication is key. Please contact me right away and let me know what your situation is. I will then work with you to find a solution that works for both of us.

Given the current rate of covid spread, the UWSP Chancellor's Mask Mandate is still in effect. With that in mind, you must wear a tight-fitting mask at all times while inside UWSP buildings, and the mask must be worn properly (i.e., over your nose, etc.). Students in violation of this policy will be asked to conform or leave the building.

**Communication and course documents:** I will frequently use email as a means for sharing information. While taking this course I expect that you check your email on a regular basis. If you need to reach me, email is probably your best bet, though you are welcome to stop by or try calling my office as well (I will always be in my office during my regular office hours, but I am often there at other times as well).

**Course activities and assignments:** This course includes a variety of activities/assignments designed to help you become familiar with some of the concepts and methods used in the scientific field of ecology. In addition to the assignments themselves, three quizzes and an exam will help me assess your knowledge of the information we cover.

**Statistical software:** While taking this course you will need access to a statistical software application called *Jamovi.* The application is free and downloads/installs quickly on both Macs and PCs. If you are unable or unwilling to download and install the application on your own machine, you can use a web interface version of the app on a computer in the library, a computer lab, etc.

To download and install the application (recommended): https://www.jamovi.org/download.html
To use the web interface from any machine with a web browser: https://cloud.jamovi.org/

You will also need access to *MS Excel* and *MS Word.* All of you have access to those through UWSP.

And finally, you will need access to an application called *Populus.* Not unlike *Jamovi,* it's free and installs quickly on both Macs and PCs. If you are unable or unwilling to download and install the application on your

own machine, you will need to use a campus machine or access the software through remote access (unlike *Jamovi* there is no web interface for *Populus*).

To download and install the application (recommended): https://cbs.umn.edu/populus/download-populus
Note: you must have Java installed on your machine for Populus to run. I'm guessing most of you already have Java installed. If not, instructions for downloading and installing Java can be found on the Populus site.
To use remote access: https://www.uwsp.edu/infotech/Pages/ComputerLabs/Remote-Lab.aspx

**Attendance:** We only meet once/week, often for only an hour or two. On-time attendance is mandatory. You will drop one-third of an entire course grade (e.g. from a B+ to a B) for your first unexcused absence. You will drop an entire course grade (e.g., from a B+ to a C+) for your second unexcused absence. Three or more unexcused absences will result in an automatic failing grade for the course. Excused absences are restricted to documented, verifiable, extraordinary situations (e.g., university sanctioned events, illness or other emergent medical situations, deaths in the family, etc.). Timely communication with me about such absences is key. In addition, late arrivals will result in one point per minute being deducted from your participation score (see participation, below). Significantly late arrivals (i.e., > 15 minutes late) will be counted as unexcused absences. Note that if you miss a class it is your responsibility to obtain missed information/data from one of your classmates.

**Participation:** You are expected to be an active participant in all of our meetings and activities. I expect you to take notes, engage in discussions, ask questions, share thoughts and opinions, etc. Thirty points are allocated to participation (see grading, below). You must earn these points! Students who are always quiet and/or generally appear uninterested in our activities will not fare well in this regard.

**Late Policy:** Assignments lose 20% of their point-value for each day they are late.

**Grading:** You will earn points in this course via a combination of assignments (up to 150 points), three quizzes (up to 10 points each), an exam (up to 30 points) and participation (up to 30 points). Your final grade in this course will be based on the percentage of all possible points (240) that you earn throughout the semester. To determine your final grade, the following metric will be used:

| ≥ 94% | 90-93% | 87-89% | 84-86% | 80-83% | 77-79% | 74-76% | 70-73% | 67-69% | 60-66% | ≤ 59% |
|---|---|---|---|---|---|---|---|---|---|---|
| A | A- | B+ | B | B- | C+ | C | C- | D+ | D | F |

**Students with Disabilities:** I will be happy to help you if you need special accommodations to succeed in this course. Please contact the Disability and Assistive Technology Center to document your needs and then contact me so that appropriate arrangements can be made. More information can be found here: http://www.uwsp.edu/disability/Pages/default.aspx

**Academic Integrity:** It is your responsibility to be aware of your rights and responsibilities as a UWSP student. Please take the time to read and understand the information found here (and let me know of any questions): https://www.uwsp.edu/dos/Documents/UWS%2014-1.pdf

**Course Schedule:** A schedule of activities/topics follows. I reserve the right to change this schedule and/or these activities/topics/assignments with due notice as we progress through the semester. Weeks with an asterisk are meetings in which we will spend part of our time in Schmeeckle Reserve (we will always meet in TNR 461 first, but be prepared to walk over to Schmeeckle Reserve and hike around off trail on those days).

| Week # Meeting dates | Activity | To do |
|---|---|---|
| 1<br>1/24 & 1/26 | Course introduction. | |
| 2<br>1/31 & 2/2 | Estimating population sizes. | Estimating population sizes assignment due next week (10 pts.).<br>Read sections 1-2 of the statistics tutorial document before next week.<br>Descriptive statistics pre-lab due next week (5 pts.). |
| 3<br>2/7 & 2/9 | Recording and describing ecological data.<br>Descriptive statistics. | Read section 3 of the statistics tutorial document before next week.<br>Inferential statistics pre-lab due next week (5 pts.) |
| 4<br>2/14 & 2/16 | Inferential statistics. | Statistics assignment due next week (20 pts.). |
| 5<br>2/21 & 2/23 | Quiz I.<br>Discussion of Primack *et al.* 2004.<br>Tour of some of our teaching/research collections at UWSP. | |
| 6<br>2/28 & 3/2 | *Brassica* project – sow seeds. | *Brassica* assignment due before Week 14 (20 pts.). |
| 7<br>3/7 & 3/9 | Demography and survivorship curves. | Demography/survivorship curves assignment due next week (20 pts.). |
| 8<br>3/14 & 3/16 | No formal meeting.<br>Read Platt 1964.<br>Skim O'Donohue and Buchanan 2001; Davis 2006, and Fudge 2014 (and possibly others). | Strong Inference assignment due Week 10 (10 points). |
| 9<br>3/21 & 3/23 | Spring break. | |
| 10<br>3/28 & 3/30 | *Brassica* project – gather data. | |
| 11 *<br>4/4 & 4/6 | Spatial patterns in nature. | Spatial patterns assignment due next week (20 pts.). |
| 12 *<br>4/11 & 4/13 | Estimating species diversity. | Estimating species diversity assignment due next week (20 pts.). |
| 13<br>4/18 & 4/20 | Quiz II.<br>Discussion of Gausse 1932.<br>Introduction to Populus software. | Populus assignment due Week 15 (20 pts.). |
| 14<br>4/25 & 4/27 | Quiz III.<br>Discussion of Vellend 2013. | |
| 15<br>5/2 & 5/4 | No formal meeting. | |
| 16<br>5/9 & 5/11 | Exam | |