

– SYLLABUS –

**CES 451/BioSci 451, Field Methods in Conservation**  
FALL SEMESTER, 2022

**Instructor:** Dr. Gretchen Meyer, UWM Field Station (gmeyer@uwm.edu, 262-675-6844)

**Meeting time:** Fridays, 9:00 am – 2:00 pm, at the UWM Field Station

**Location:** UWM Field Station (45 minute drive from campus)  
3095 Blue Goose Rd., Saukville, WI

**Course overview:** Introduction to field survey methods for a wide range of plants and animals, methods for vegetation and habitat description, hands-on natural area management, and the use of tools and equipment to conduct this field work.

**Class meetings:** This is an **off-campus class** that meets on **Fridays, 9:00 am – 2:00 pm**, at the **Field Station**. You must have, or arrange, transportation to the Field Station to take this class. Class meetings will include **2 hours of lecture and 3 hours of lab** each week. Labs will focus on field work, so you must come to class each week prepared to work outside. Dress for the weather each week and wear sturdy shoes that are appropriate for hiking in natural areas. We will go outside rain or shine. For information concerning cancellation of classes due to severe weather, please call (414) 229-4444.

**Course Objectives.** Students in this class will gain a solid foundation for the description, study and management of natural areas. Conservation of biodiversity requires knowledge of the biology and survey methods for a wide range of organisms, in addition to habitat description and management, and the use of tools and equipment to conduct that work. This course will cover field techniques to work with a range of organisms commonly encountered or studied in natural areas, including insects, vertebrates, and plants. Students will also learn skills useful for working in natural areas, including mapping and orienteering, chemical use and safety, and use of tools. This will be a hands-on course that combines class lectures with time spent practicing field techniques.

**Prerequisites.** BioSci 310 (General Ecology) or equivalent, or consent of the instructor.

**Readings.** There is no textbook for this class. Readings for each week will be posted to the course website. Readings should be completed before class each week.

**Class Requirements.** This is a **3 credit**, combined Undergraduate / Graduate course. This course meets for 5 hours on Friday each week over the semester. Each meeting will have 2 hours devoted to a lecture and 3 hours to field work. Grades will be based on the following components.

*Attendance and class participation.* All students are expected to attend class every week. Since much of the instruction will take place in the field, missed class sessions cannot be made up. Participation includes contributing comments, asking questions, and being actively engaged in the field sessions. You may be excused from class if you contact me and tell me that you will not be able to attend. Contact me as soon as possible when you know that you will need to miss a class, or as soon as possible after you have missed a class. Acceptable reasons for missing a class include illness, family emergency, and car trouble. Do not attend class if you are ill, or if you have other health concerns related to COVID-19. Any **unexcused** absence from class will result in a complete loss of participation points.

*Assignments based on applying field methods.* There will be 4 short written assignments (2-4 pages). Further instructions on completing these assignments will be given in class.

- a. Observe and record data in field notebook.
- b. Develop a plan for sampling vegetation.
- c. Use data on aquatic invertebrates to calculate and interpret a biotic index.
- d. Forest description. Use data collected in class to calculate tree density, dominance, frequency, and importance value.

*Exams.* There will be two one-hour exams: a mid-term and a final. The final exam will take place during the final class period.

Graduate students only.

*Independent project.* In addition to the above requirements, graduate students will be asked to design a management plan for a natural area of their choice. You will need to identify an appropriate natural area in the Milwaukee area, develop goals for the management plan, and describe methods to be used. The management plan should be presented in enough detail that it could be implemented by staff at the natural area. The management plan will be written up as a 10 page paper to be turned in at the end of the semester. More details on this assignment will be provided on a separate handout.

**Grade breakdown.** Undergraduate Student grades

- Attendance & class participation 10%
- Assignments based on applying field methods (4) 40%
- Midterm exam 25%
- Final exam 25%

Graduate Student grades will be based on

- Attendance & class participation 8%
- Assignments based on applying field methods (4) 28%
- Midterm exam 17%
- Final exam 17%
- Independent project 30%

Letter grades will be based on the following percentages:

<b>A</b>	93-100%	<b>B</b>	83-86%	<b>C</b>	73-76%	<b>D</b>	63-66%
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%
<b>B+</b>	87-89%	<b>C+</b>	77-79%	<b>D+</b>	67-69%	<b>F</b>	0-59%

**Time Commitment.**

The expected time commitment for undergraduate students is shown below.

	Hours per week	Hours per semester
Time in class	5	65
Reading out of class	3	39
Assignments (4)	8 each	32
Exams – studying (2)	8 each	16
<b>Total</b>		<b>152</b>

Graduate students are expected to spend an additional **25 hours** over the semester working on the independent project, for a total time commitment of **177 hours**.

**Late assignments and make-up exams.**

Assignments that are handed in late will receive a late penalty unless arrangements for an extension are made in advance.

Exams must be taken at the scheduled time unless there is a legitimate excuse (e.g. serious illness, family emergency, or religious holiday). Except for extreme emergencies, you must notify me that you will need a make-up exam at least ONE WEEK PRIOR TO THE TIME OF THE EXAM. You must provide documentation for any circumstances that require you to miss an exam.

**Special needs.** If you need special accommodations to meet the requirements of this course, please contact me within the first week of classes.

**Incompletes.** You may request an incomplete for this class if you have completed the course requirements successfully until near the end of the semester but you are unable to complete the final requirements because of circumstances beyond your control. You must provide me with written and verifiable proof of a medical or family emergency.

**University policy.** Please see the following web address for important guidelines for all UWM courses:

<https://uwm.edu/secu/wp-content/uploads/sites/122/2016/12/Syllabus-Links.pdf>

**Class schedule.** (The class schedule may be changed as needed).

			Assignment due
Sept. 9	Lecture	Introduction. Field notebooks, field safety, plant ID.	
	Lab	Plant observation and ID in the field.	
Sept. 16	Lecture	Insect collection and census.	Field notebook
	Lab	Insect collection and identification; insect survey techniques.	
Sept. 23	Lecture	Bird identification, census and monitoring techniques.	
	Lab	Finding and identifying birds, point counts.	
Sept. 30	Lecture	Plant sampling 1: herbaceous plants and shrubs.	Grad student outline
	Lab	Methods for herbaceous and shrub plant community sampling.	
Oct. 7	Lecture	Aquatic invertebrate sampling and use as bio-monitors.	Plant sampling
	Lab	Aquatic invertebrate identification and sampling methods.	
Oct. 14	Lecture	<b>(Exam I)</b> Reptile and amphibian census and monitoring.	
	Lab	Methods for census & monitoring of reptiles & amphibians.	
Oct 21	Lecture	Mammal census & monitoring, mark-recapture methods.	Aquatic invertebrates
	Lab	Small mammal trapping and other techniques for mammal censuses.	
Oct. 28	Lecture	Guest lecturer Paul Engevoold - Algae	
	Lab	How to study and work with algae	
Nov. 4	Lecture	Plant sampling 2: Forests 1.	
	Lab	Comparison of different forest sites, tree identification	
Nov. 11	Lecture	Plant sampling 3: Forests 2.	
	Lab	Collection and analysis of data to describe forests	
Nov. 18	Lecture	GPS, mapping and orienteering.	Forests
	Lab	Pacing, use of compass and GPS in the field, map interpretation	
Nov. 25	No class - Thanksgiving break		
Dec. 2	Lecture	Control of invasive plants	
	Lab	Invasive plant control techniques/	
Dec. 9	Lecture	<b>(Exam II)</b> Winter woody plant ID	Grad student assignment
	Lab	Use of keys for winter tree ID	