

Biology 270, Sec. 2, Evolution, Fall 2021

Course overview

Faculty	Peter Zani, Ph.D.
E-mail	pzani@uwsp.edu
Meetings (as needed; see shaded dates on schedule)	Tuesday's & Thursday's (lectures) 11:00-12:15; Friday's (lab) 10:00-11:50
Office Hrs	By appointment only
Zoom	Tuesday meetings: https://wisconsin-edu.zoom.us/j/91448082835?pwd=dFJnbEFXeIvQ0JMcVRTcDF0NUcxZz09
(passcode for ALL meetings is 270270)	Thursday meetings: https://wisconsin-edu.zoom.us/j/98177101634?pwd=Q09SRWJqSGJpZituaDd4cjAvZ3hQdz09
	Friday labs: https://wisconsin-edu.zoom.us/j/92341460074?pwd=UkF1WDJPaFQvMDlQb2NPNWkcyZnp2dz09

Course description

An integration of molecular, cellular, organismal, and evolutionary processes involved in generating and maintaining biodiversity. Scientific communication emphasized in lab via writing and presentation assignments.

Course goals

- Upon completion of this course you should be able to:
- Apply knowledge of evolutionary processes that operate at the level of the genotype, organism, population, or species to explain patterns of species distribution and abundance.
- Generalize how micro- and macro-evolutionary processes are responsible for historical and contemporary patterns of biological diversity within and among species.
- Demonstrate the ability to write and orally present biological information that is articulate and grammatically correct with properly organized and documented data and ideas.
- Critique your own and others' writing and oral communication skills by providing and applying useful feedback.

Course readings

Evolutionary Analysis 5th edition by Herron and Freeman (2014, Pearson, ISBN: 978-0-321-61667-8)

Writing in the Biological Sciences by Hofmann (2013, Oxford University Press, ISBN: 978-0-19-976528-7)

Course evaluation

Your grade in this course will be based on the following components totaling 320 pts:

Pre-Discussion Worksheets	In-Lecture Discussions	Lab Assignments	Research Paper & Poster	Lecture Exam 1	Lecture Exam 2
40	40	40	100	50	50
(8x5 pts. ea.)	(8x5 pts. ea.)	(8x5 pts. ea.)	(50 pts ea.)		

Discussions

We will occasionally discuss papers meant to integrate course topics. Assignments will be posted to Canvas. Participation during discussions will be assessed based on a 5-point pre-discussion exercise and a 5-point in-lecture **group exercise** for a total of 80 points (25%). To receive discussion points you **MUST** submit pre-discussion assignments to Canvas **BEFORE** discussions. Pre-discussions are individual exercises to prepare you for the in-person discussion. Discussions are **group exercises**. Discussions should be completed in groups of at least three students; individually-completed discussions will not be accepted (unless you are completing it as a make-up assignment). The goal is to understand the material by working with others. Discussions will occur synchronously on Zoom (check Zoom meeting addresses at the top of the syllabus or on course schedule). Other than a pair of labs, these are the only synchronous meetings this semester meaning these are the only times you will be expected to meet on Zoom. Otherwise, lectures and labs are virtual using Canvas.

Labs

During the first half of the semester, we will engage in stand-alone lab exercises. With the exception of two labs (weeks 3 & 5), labs consist of individual exercises you can complete on your own. The other two labs are **group exercises** completed synchronously using Zoom (check Zoom meeting addresses at the top of the syllabus or on the course schedule). Unless otherwise noted, any exercise assigned during a lab is due by the START of NEXT lab. In-lab exercises during the first half of the semester are 5 points each and are worth a total of 40 points (13%). The other component of lab grades relates to the semester-long research projects and includes posters, oral presentations, and final written scientific reports. Lab-related communication will make up 31% of your total grade (100 points).

Exams

There are two in-term lecture exams (50 points each; 16% of your grade *each*). Exams will test your mastery of the material as well as your ability to apply critical-thinking and communication skills. Exams are almost entirely questions that are meant to synthesize knowledge, meaning they lean **heavily** on short-answer/essay questions. Exams will also have questions from **each** in-class discussion that focus on data and interpretation. In-term exams are NOT cumulative, though the ideas definitely build in this course. Exams are take-home and will be assigned upon completion of discussions immediately preceding each exam (given out Thursday, due Tuesday). There is no stand-alone final exam.

Grades

Your final grade is based on the percentage of points that you earn.

≥93% = A, ≥90% = A-, ≥87% = B+, ≥83% = B, ≥80% = B-, ≥77% = C+, ≥73% = C, ≥70% = C-, ≥67% = D+, ≥60% = D, <60% = F

REQUESTS FOR EXTRA POINTS WILL NOT BE HONORED.

Make-Up Assignments

You must make every effort to complete assignments at the scheduled times. MAKE-UP ASSIGNMENTS, INCLUDING EXAMS, MAY BE ALLOWED IN CASES OF MEDICAL EMERGENCY, FOR WHICH YOU MUST PROVIDE WRITTEN DOCUMENTATION. You must make arrangements with your instructor within 24 hours of the exam to schedule a make-up exam within one week or you will forfeit the points.

- An emergency is a situation where your presence is required to alleviate extreme suffering (including but not limited to your own), such as contracting Covid-19 from the novel coronavirus.
- Student Health Services does not handle emergencies.
- Scheduled appointments aren't emergencies.
- A good rule of thumb: *If your situation wouldn't cause you to postpone your wedding, then it isn't a good reason to miss a scheduled exam.*

Academic Integrity

Any misrepresentation of your work, including plagiarism, or cheating of any kind will result in a zero (0) for that assignment. Students are encouraged to become familiar with the UWS/UWSP Student Academic Standards and Disciplinary Procedures governing student academic conduct. This is available for download at:

<https://www.uwsp.edu/dos/Documents/UWSP14-Final2019.pdf>

- Copying whole passages written by someone else is plagiarism. Even if you right-click in Word to use the thesaurus and replace some words.
- Cobbling together sentence from various sources and presenting them as your own is plagiarism.
- Quoting passages is not appropriate in this class. Use your own words.

Disabilities

Students with disabilities are welcome and encouraged in this class. Students with disabilities should contact the Disability and Assistive Technology Center during the first two weeks of the semester if they wish to request specific accommodations.

<http://www.uwsp.edu/disability/Pages/default.aspx>

Classroom Conduct

Student and instructor behavior should promote an environment favorable to both teaching and learning. For virtual meetings, such as on Zoom, this mainly pertains to creating an environment that will not be disruptive for yourself or others. Thus, I may ask you to turn off audible notifications from your phone or e-mail, and minimize background noise. Students **are not** required to engage their cameras during our virtual class meetings and if you're having connectivity issues try turning off your camera. However, it is contingent upon you to participate in the required group exercises. In our discussions you are not required to agree with every opinion expressed by your instructors or your peers. In fact, healthy skepticism is expected of any good scientist. However, you must respect the rights of others to hold opinions different from your own. You are expected and encouraged to ask questions and participate in discussions (if a group member is not actually participating, feel free to let me know). Students that disrespect their classmates and their instructor by disrupting lectures or labs may be removed from online learning environments at the discretion of the instructor. When you are ready to engage in respectful discourse pertaining to your education, you will be welcomed back.

Teaching and Learning in the Era of Coronavirus

These are unusual times in that we are trying to continue teaching-and-learning while a very serious viral epidemic continues globally. Yet, we will persevere to overcome this challenge. In this case, the challenge is going to be meeting regularly to discuss the topic at hand and actually participating in the process. The primary work you can do on your own, but the scheduled Zoom meetings will aid you greatly. Thus, while I expect you to attend online meetings, I understand that life sometimes gets in the way. The key is open and honest communication. If you cannot attend our meetings I can assign individual work, but this is much less ideal in that the group exercises are key to advance your understanding. If you become ill, I will make every attempt to pause the due dates on any assignments and allow for make-up work as needed. If something happens and you cannot meet, please try to let me know in advance so I can adjust as needed. So, am I flexible? Absolutely. Do I still have expectations for your education in this course? Absolutely. The key is, I am willing to work with you to ensure that you can master the learning outcomes of this course in a reasonable manner. Carry on and be safe.

Class Schedule (tentative)

Synchronous (in-person) meetings are shaded (use Zoom links below) Passcode for ALL meetings is 270270

Tuesday meetings: <https://wisconsin-edu.zoom.us/j/91448082835?pwd=dFlnbEFXelVhQ0JMcVRTcDF0NUcxZz09>

Thursday meetings: <https://wisconsin-edu.zoom.us/j/98177101634?pwd=Q09SRWJqSGJpZituaD44cjAvZ3hQdz09>

Friday labs: <https://wisconsin-edu.zoom.us/j/92341460074?pwd=UkFtWDJPaFQvMDIQb2NPWkcyZnp2dz09>

Wk	Dy	Date	Lecture Topic	Lecture Readings	Lab Topic/ Suggested Readings
1	R	Sept. 2	Course introduction and syllabus		Topic choice due noon 9/10
2	T	Sept. 7	Evolutionary biology: pattern, process	H&F 37-66	Getting started on the project
2	R	Sept. 9	Systematics and phylogenetics	H&F 109-26, 137-40	Project outlines (5pts) due noon 9/17
3	T	Sept. 14	DISCUSSION 1: Phylogenies		Phylogeography (5pts) due noon 9/24
3	R	Sept. 16	Phylogeography		
4	T	Sept. 21	Variation	H&F 147-61, 166-74	Lit. review & annotated bibl. (5pts)
4	R	Sept. 23	Hardy-Weinberg equilibrium	H&F 171-91	due noon 10/1
5	T	Sept. 28	DISCUSSION 2: Natural variation		H-W equilibrium results (5pts) due noon 10/8
5	R	Sept. 30	Mechanisms: selection, mutation	H&F 73-94, 191-201, 216-19, 356-60	Hof: 100-04, 24-40
6	T	Oct. 5	Mechanisms: migration, drift	H&F 234-39, 240-49, 257-59	Modeling selection, mutation, drift (5pts)
6	R	Oct. 7	DISCUSSION 3: Selection		due noon 10/15
7	T	Oct. 12	EXAM 1 due midnight 10/12		Modeling heritability (5pts) due noon 10/22
7	R	Oct. 14	Heritability, fitness, adaptation	H&F 343-356	Hof: 3-21, 24-57
8	T	Oct. 19	Quantitative genetics	H&F 369-97	Background research
8	R	Oct. 21	Life-history evolution	H&F 491-95, 513-29	Hof: 146-64
9	T	Oct. 26	DISCUSSION 4: Life-history evol.		Draft papers (5pts) due noon 10/29
9	R	Oct. 28	Evolution of behavior	H&F 455-86	Hof: 87-113
10	T	Nov. 2	DISCUSSION 5: Social evolution		Peer reviews (10pts) due noon 11/7
10	R	Nov. 4	Mechanisms of sexual selection	H&F 408-37	Hof: 119-22
11	T	Nov. 9	DISCUSSION 6: Sexual selection		Paper revisions
11	R	Nov. 11	Species concepts & definitions	H&F 609-15	Individual meetings as needed
12	T	Nov. 16	Modes & mechanisms of speciation	H&F 356-60, 616-37	Poster design
12	R	Nov. 18	DISCUSSION 7: Speciation		Hof: 114-120, 193-204
13	T	Nov. 23	EXAM 2 due midnight 11/23		No lab
13	R	Nov. 25	THANKSGIVING: NO CLASSES		
14	T	Nov. 30	Fossils & macroevolution	H&F 691-706, 719-30	Final papers (50pts) due noon 12/3
14	R	Dec. 2	Radiations	H&F 707-19	
15	T	Dec. 7	Extinctions		Poster presentations due noon 12/10
15	R	Dec. 9	DISCUSSION 8: Extinction		Presentations (25pts) / Poster (25pts)