Biology 270, Evolution, Fall 2020

Course overview

Faculty	Peter Zani, B.A. (1991, Miami Univ.), M.Sc. (1995, Univ. of Oklahoma), Ph.D. (1999, Univ. of Oregon)
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Meetings	Tuesday's and Thursday's (lectures) 11:00-12:15; Friday's (lab) 10:00-12:00
Office Hrs	Tuesday's and Thursday's 3:00-4:00 via Zoom; additional meeting times available upon request
Zoom	Meeting ID: 922 631 4652; Passcode: 932932; https://uwsp.zoom.us/j/9226314652?pwd=T2tsWmVaNllEYnVqOEZhTkp3YkdZdz09

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 500 pts:

Daily Quizzes	Pre-Discussions	In-Lecture Discussions	Lab Assignments	In-Lab Communication	Lecture Exam 1	Lecture Exam 2	Final Exam
50 (25x2 pts. ea.)	50 (10x5 pts. ea.)	50 (10x5 pts. ea.)	30 (6x5 pts. ea.)	120	50	50	100

Exams, Assignments, & Grading

Daily quizzes occur at the beginning of each lecture. Quiz topics will be from preceding sessions *as well as that day's scheduled reading*. Quizzes constitute 10% of your grade. We will occasionally discuss papers that supplement the course topics. Readings and assignments will be posted to your UWSP e-mail account. Your 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 100 points (20%). In order to receive discussion points you *MUST* send me (via e-mail) pre-discussion assignments *BEFORE* the discussion.

During the first half of the semester we will engage in stand-alone lab exercises. Unless otherwise noted, any exercise assigned during a lab is due at START of NEXT lab. In-lab exercises during the first half of the semester are 5 points each and are worth a total of 30 points (6%). Labs for the second half of the semester fall into the category of "communication". The science communication is primarily related to this semester's class projects and includes posters, oral presentations, peer reviews, and final written scientific reports. In-lab communication will make up 24% of your total grade (120 points).

There are two in-term lecture exams (50 points each; 20% of your grade). Exams are almost entirely questions that are meant to synthesize knowledge, meaning they lean ***heavily*** on short-answer/essay questions. Exams will have questions from **each** discussion that focus on data and interpretation. In-term exams are NOT cumulative, unlike the final exam. The cumulative final exam is worth 100 points (20%) and will cover material from the entire course. Exams will test your mastery of the material as well as your ability to apply critical-thinking and communication skills.

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.

Attendance

YOUR COMMITMENT TO YOUR CLASSES SHOULD BE AMONG THE MOST IMPORTANT THINGS IN YOUR LIFE RIGHT NOW. You are expected to attend lecture, lab, and exam sessions and participate in course activities.

If you will miss a class to participate in a college-sanctioned event, you must notify us in advance and complete the work, including exams, before the scheduled class or due-date. Absences relating to religious beliefs will be accommodated according to UWS 22.03 (https://docs.legis.wisconsin.gov/code/admin_code/uws/2). In either case, your instructor should be notified within the first three weeks of the beginning of class regarding the specific dates that you will be absent.

Make-Up Exams

You must make every effort to take exams at the scheduled times. MAKE-UP 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, though I ask that you keep your name accurate.

We will engage in periodic discussions issues relevant to evolution. 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.

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 rages globally. Yet, we seek to persevere and overcome this (and any other) 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 work itself you can do on your own, but the meetings will aid you greatly. Thus, while I expect you to attend online meetings, I understand that life (including illness) 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 less ideal in that the group discussions are key to advance your understanding in this class. If you contract Covid-19, the disease caused by the novel coronavirus, 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)

Wk	Dy	Date	Lecture Topic	Lecture Readings	Lab Topic/Readings
1	R	Sept. 3	Evolutionary biology: pattern, process	H&F 37-66	Phylogenies (5pts)
2	T	Sept. 8	**DISCUSSION 1**: Voyage of the Beagle		Phylogeography (5pts)
2	R	Sept. 10	Phylogeny & phylogeography	H&F 109-26, 137-40	
3	T	Sept. 15	**DISCUSSION 2**: Phylogenies		H-W Equilibrium Results (5pts)
3	R	Sept. 17	Variation	H&F 147-61, 166-74	Hof: 100-04, 24-40
4	T	Sept. 22	Hardy-Weinberg equilibrium	H&F 171-91	Modeling Selection & Mutation (5pts)
4	R	Sept. 24	**DISCUSSION 3**: Natural Variation		
5	T	Sept. 29	Mechanisms: selection, mutation	H&F 73-94, 191-201, 216-19, 356-60	Modeling Selection & Drift (5pts)
5	R	Oct. 1	Mechanisms: migration, drift	H&F 234-39, 240-49, 257-59	
6	T	Oct. 6	**DISCUSSION 4**: Selection		Modeling Heritability (5pts)
6	R	Oct. 8	**EXAM 1** (50pts)		
7	T	Oct. 13	Heritability, fitness, adaptation	H&F 343-356	Project Topic Choice
7	R	Oct. 15	Quantitative genetics	H&F 369-97	
8	T	Oct. 20	Life-history evolution	H&F 491-95, 513-29	Lit. Review & Annotated Biblio. (5pts)
8	R	Oct. 22	**DISCUSSION 5**: Life-History Evol.		due midnight 10/23
9	T	Oct. 27	Evolution of behavior	H&F 455-86	Project Outlines due 10 am 10/30 (5pts)
9	R	Oct. 29	**DISCUSSION 6**: Social Evolution		Hof: 3-21, 24-57
10	T	Nov. 3	Mechanisms of sexual selection	H&F 408-37	Background Research
10	R	Nov. 5	**DISCUSSION 7**: Sexual selection		Hof: 146-64
11	T	Nov. 10	Species concepts & definitions	H&F 609-15	Poster Design
11	R	Nov. 12	Modes & mechanisms of speciation	H&F 356-60, 616-37	Hof: 114-120, 193-204
12	T	Nov. 17	**DISCUSSION 8**: Speciation		Draft Papers (5pts) due midnight 11/22
12	R	Nov. 19	**EXAM 2** (50pts)		Hof: 87-113
13	T	Nov. 24	Fossils & macroevolution	H&F 691-706, 719-30	Peer Reviews (5pts) due midnight 12/1
13	R	Nov. 26	**THANKSGIVING, NO CLASSES**		Hof: 119-22
14	T	Dec. 1	Radiations & extinctions	H&F 707-19	Individual Poster Presentations Pt.A
14	R	Dec. 3	**DISCUSSION 9**: Extinctions		Hof: 177-192
15	T	Dec. 8	The origins of life	H&F 645-83	Individual Poster Presentations Pt.B
15	R	Dec. 10	**DISCUSSION 10**: Origins of Life		Presentations (25pts) / Poster (25pts)
16	F	Dec. 18	**TAKE-HOME FINAL** (100pts)	**DUE 11:59 pm**	Final Papers (5opts) due midnight 12/23