

Biology 270, Evolution, Fall 2019

Course overview

Faculty	Peter Zani, Ph.D. Office: 444 TNR; Phone: 715-346-2237; E-mail: pzani@uwsp.edu Office hours: Tuesday 1:30-3:30, if the door is open, or by appointment
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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).

AND

Writing in the Biological Sciences by Hofmann (2013, Oxford University Press, ISBN: 978-0-19-976528-7). Note, either edition of this text is acceptable.

A dedicated notebook for the course is recommended.

Course evaluation

Your grade in this course will be based on the following components totaling 500 pts:

Lecture Exam 1	Lecture Exam 2	Daily Quizzes	Lecture Discussions	Lab Assignments	Communication	Final Exam	Professionalism
50	50	50 (25x2 pts. ea.)	45 (9x5 pts. ea.)	50 (10x5 pts. ea.)	130	100	25

Exams, Assignments, & Grading

There are two lecture exams (50 points each) that constitute 20% of your grade. Lecture exams may include matching or multiple-choice questions. However, they are almost entirely questions that are meant to synthesize knowledge, meaning my exams lean *heavily* on short-answer or essay questions. These exams will NOT be cumulative and will only include material since the previous 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.

Daily quizzes will 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 group exercise for a total of 45 points (9%). In order to receive discussion points you ***MUST*** send me (via e-mail) the pre-discussion assignment ***BEFORE*** the discussion. Lab exercises are worth 5 points each and are worth a total of 50 points (10%).

Communication related to class projects, including posters, oral presentations, PowerPoint slides, and written scientific reports, will make up 26% of your total grade (130 points).

The remaining 5% (25 points) of your grade will be determined by your professionalism. These points are awarded at the end of the term that will reflect your participation in class and adherence to course policies & practices (see below).

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.

Exam and Quiz Rules

The following rules apply to exam periods as well as quizzes.

- If you arrive so late for an exam that anyone else has finished and left, you will not be allowed to take the exam at that time. You may be able to take a make-up exam (see attendance policy below). There are no make-up quizzes.
- If you arrive late for a quiz or exam, you will not be given extra time. When the rest of the class is finished, you will need to be done.
- Work to be handed in must be completed in black or blue ink or pencil.
- MP3 players, cell phones, etc. will not be allowed in the testing area.
- There may be multiple forms of exams and quizzes.

Laboratory

YOU MUST DRESS APPROPRIATELY FOR LAB.

- In the laboratory, you **MUST** wear shoes — not sandals, flip-flops, or similar options that do not protect your feet.
- When we are scheduled to be outside, we will be outside. Dress appropriately!
- **FAILURE TO COMPLY LABORATORY RULES WILL RESULT IN YOUR REMOVAL FROM LAB UNTIL YOU ARE PROPERLY ATTIRED.**

Equipment Return Policy

At times, you will check out equipment for this class, such as binoculars, clipboards, etc. You should treat equipment as if it were your own. You are expected to return the equipment in the same condition as it was checked out to you. If you fail to return equipment by the end of the project or return it broken, you will be charged a replacement fee.

Attendance

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

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 otherwise scheduled class or due-date. Absences relating to religious beliefs will be accommodated according to UWS 22.03 (URL below). 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.

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap22.pdf>

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).
- 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:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.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.

Classroom Conduct

Student and instructor behavior should promote an environment favorable to both teaching and learning. It is disruptive to come late to class, read extra-curricular media in class, or use cell phones (and other electronic devices) during class time. Unless you have a documented learning disability that requires a laptop to take notes, there are to be no computers during lectures.

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 will be asked to leave. When you are ready to engage in respectful discourse pertaining to your education, you will be welcomed back.

Finally, a note on cell-phone etiquette in class. Although cell phones can be useful tools in lab for taking photos of a board full of notes, there is rarely a valid use for this technology in lecture. Thus, the expected cell-phone etiquette is that at the start of lecture cell phones will be put away and on silent (buzzing while on vibrate is not considered silent). Failure to comply with my cell-phone-etiquette policy will undoubtedly cost you points even if I don't say anything at the time.

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>

Class Schedule (tentative)

Wk	Dy	Date	Lecture Topic	Lecture Readings	Lab Topic/Readings
1	T	Sep. 3	Evolutionary biology: pattern, process	H&F 37-66	Phylogenies (5pts)
1	R	Sep. 5	Phylogeny & classification	H&F 109-26	
2	T	Sep. 10	DISCUSSION 1: Phylogenies		H-W Equilibrium Results (5pts)
2	R	Sep. 12	Genetic variation, Hardy-Weinberg eq.	H&F 147-61, 166-74	Hof: 100-04, 24-40
3	T	Sep. 17	Hardy-Weinberg equilibrium	H&F 171-191	Natural Selection Model Figures (5pts)
3	R	Sep. 19	Violations of Hardy-Weinberg	H&F 181-91	Hof: 24-40, 61-73
4	T	Sep. 24	DISCUSSION 2: Natural Variation		Lit. Review & Annotated Biblio. (5pts)
4	R	Sep. 26	Mechanisms: selection, mutation	H&F 73-94, 191-201, 216-19, 356-60	Hof: 3-21, 146-152
5	T	Oct. 1	Mechanisms: migration, drift	H&F 234-39, 240-49, 257-59	Project Topic Choice
5	R	Oct. 3	DISCUSSION 3: Selection		Hof: 24-57
6	T	Oct. 8	EXAM 1		Project Outlines due 11 am 10/11 (5pts)
6	R	Oct. 10	Heritability, fitness, & adaptation	H&F 343-356, 369-97	Hof: 153-64
7	T	Oct. 15	Life-history evolution	H&F 491-95, 513-29	Draft Projects (5pts) due midnight 10/20
7	R	Oct. 17	DISCUSSION 4: Life-History Evol.		Hof: 87-113
8	T	Oct. 22	Evolution of behavior	H&F 455-86	Poster Design
8	R	Oct. 24	DISCUSSION 5: Social Behavior		Hof: 114-120, 193-204
9	T	Oct. 29	Mechanisms of sexual selection	H&F 408-37	Individual Poster Presentations Pt.A
9	R	Oct. 31	DISCUSSION 6: Sexual Selection		Hof: 177-192
10	T	Nov. 5	Species concepts & definitions	H&F 609-15	Individual Poster Presentations Pt.B
10	R	Nov. 7	Modes & mechanisms of speciation	H&F 356-60, 616-29	Presentations (10pts) / Poster (10pts)
11	T	Nov. 12	Hybridization & gene flow	H&F 629-37	Foraging Project Worksheet (5pts)
11	R	Nov. 14	DISCUSSION 7: Speciation	Papers (25pts) due midnight 11/15	Hof: 61-75
12	T	Nov. 19	EXAM 2		Draft Intros & Methods due 12/2 (5pts)
12	R	Nov. 21	Fossils & macroevolution	H&F 691-706, 719-30	Hof: 120-22
13	T	Nov. 26	Fossils & macroevolution	H&F 691-706, 719-30	Thanksgiving: No lab
13	R	Nov. 28	THANKSGIVING BREAK	(NO CLASSES)	
14	T	Dec. 3	Radiations & extinctions	H&F 707-19	Data, Analyses, and Results (5pts)
14	R	Dec. 5	DISCUSSION 8: Extinctions		Hof: 61-83
15	T	Dec. 10	The origins of life	H&F 645-83	Lab Group Foraging Presentations
15	R	Dec. 12	DISCUSSION 9: Origins of life		Presentations (20pts) / Slides (15pts)
16	R	Dec. 19	TAKE-HOME FINAL	DUE 12:15 pm	Peer Reviews (5pts) due midnight 12/9 Final Papers (50pts) due midnight 12/22