

Biology 270, Ecology and Evolution, Fall 2018

Course overview

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Course description

Ecological processes from populations to biomes; evolution and its processes involved in generating biodiversity. An integration of molecular, cellular, organismal, ecological and evolutionary processes. Scientific method writing emphasized in lab. This course is required for Biology majors, and it fulfills 4 credits of Communication in the Major under the GEP.

Course goals

Upon completion of this course you should be able to:

Apply knowledge of ecological processes that operate at the level of the individual organisms, populations, communities, and ecosystems 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

Ecology, 3rd edition by Cain, Bowman, and Hacker. (2014, Sinauer Associates, ISBN: 978-0-87893-908-4)
AND

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	Lecture Exam 3	Daily Quizzes	Lecture Discussions	Lab Assignments	Communication	Final Exam	Professionalism
40	40	40	50 (2 pts. ea.)	35 (5 pts. ea.)	55 (5 pts. ea.)	130	100	15

Exams, Assignments, & Grading

There are three lecture exams (40 points each) that constitute 24% of your grade. Lecture exams may include matching, multiple choice, 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 the course D2L site. Your participation during discussions will be assessed based on a 5-point group exercise for a total of 35 points (7%). In order to receive discussion points you MUST upload the pre-discussion assignment to D2L 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 3% (15 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 ecology and 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.

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. 4	Evolutionary biology: pattern, process	H&F 37-66	Intro to Lab Phylogenies (5pts)
1	R	Sep. 6	Phylogeny & classification	H&F 109-26	
2	T	Sep. 11	Genetic variation, Hardy-Weinberg eq.	H&F 147-61, 166-74	H-W Equilibrium Results (5pts) Hof: 100-04, 24-40
2	R	Sep. 13	Hardy-Weinberg equilibrium	H&F 171-191	
3	T	Sep. 18	Violations of Hardy-Weinberg	H&F 181-91	Lit. Review & Annotated Biblio. (5pts) Hof: 3-21, 146-152
3	R	Sep. 20	DISCUSSION 1: Natural Variation		
4	T	Sep. 25	EXAM 1		Natural Selection Model Figures (5pts) Hof: 24-40, 61-73
4	R	Sep. 27	Mechanisms: selection, mutation	H&F 73-94, 191-201, 216-219	
5	T	Oct. 2	Mechanisms: migration, drift	H&F 234-39, 240-49, 257-59	Foraging Project Worksheet (5pts)
5	R	Oct. 4	Fitness and population growth	CBH 236-39, 251-54, 240-45	
6	T	Oct. 9	Adaptation	H&F 369-97	Draft Project Intros & Methods (5pts) Hof: 120-22
6	R	Oct. 11	Life-history evolution	H&F 491-95, 513-25	
7	T	Oct. 16	DISCUSSION 2: Life-History Evol.		Summary of Data Table (5pts) Hof: 44-55
7	R	Oct. 18	EXAM 2		
8	T	Oct. 23	Mechanisms of sexual selection	H&F 417-37	Statistical Analysis and Results (5pts) Hof: 44-55, 61-81, 193-204
8	R	Oct. 25	Results of sexual selection	H&F 408-17	
9	T	Oct. 30	DISCUSSION 3: Sexual Selection		Foraging Presentations Presentations (10pts) / Slides (10pts)
9	R	Nov. 1	Species	H&F 609-15	
10	T	Nov. 6	Mechanisms of speciation	H&F 616-29	Project Topic Choice Foraging Papers (25pts) due 10 pm 11/11
10	R	Nov. 8	Hybridization and gene flow	H&F 629-37	
11	T	Nov. 13	DISCUSSION 4: Speciation		Project Outlines due 10 am 11/16 (5pts) Hof: 120-22
11	R	Nov. 15	EXAM 3		
12	T	Nov. 20	Macroevolution	H&F 719-27	Draft Projects (5pts) due noon 11/20 Hof: 61-81, 114-20
12	R	Nov. 22	THANKSGIVING BREAK:		
13	T	Nov. 27	Radiations & extinctions	H&F 692-727	Peer Reviews (5pts) due 10 pm 11/29
13	R	Nov. 29	DISCUSSION 5: Extinctions		
14	T	Dec. 4	Evolved tolerances and biomes	CBH 51-70, 85-105	Project Presentations Session 1
14	R	Dec. 6	DISCUSSION 6: Eco-physiology		
15	T	Dec. 11	Adaptation and anthropogenic change	CBH 23-44, 571-85	Project Presentations Session 2 Presentations (20pts) / Poster (15pts) Project Papers (50pts) due 10 pm 12/23
15	R	Dec. 13	DISCUSSION 7: Climate change		
	R	Dec. 20	TAKE-HOME FINAL	DUE TO D2L 12:15 pm	