

# ECOLOGY & EVOLUTION

## Bio 270 SEM II 2017-2018

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**Office Hours: Mon & Wed 1-2, Thu 10-11, or by appointment**

### Required Supplies

#### Rental Textbooks:

Herron, J. C., and S. Freeman. *Evolutionary Analysis*. Fifth Edition  
Cain, M. L., W. D. Bowman, and S. D. Hacker. *Ecology*. Third Edition

#### Purchase Books:

Hofmann, A. H. *Writing in the Biological Sciences: A Comprehensive Resource for Scientific Communication*, Second Edition

This course introduces students to the fundamental principles of ecology and evolutionary biology. As a Communication in the Major course, oral and written communication skills will be emphasized in both lecture and lab.

#### Catalogue Course Description:

Ecological processes from populations to biomes; evolution and its processes involved in generating biodiversity and integration of molecular, cellular, organismal, ecological and evolutionary processes. Scientific method writing emphasized in lab.

#### Ecology and Evolution Learning Outcomes:

By the end of Biol 270, you should be able to:

1. Describe and apply knowledge of evolutionary processes to investigate patterns in nature, including levels of diversity within and among species.
2. Describe and apply knowledge of ecological processes that operate at the level of organisms, populations, communities, and ecosystems.
3. Demonstrate the ability to write and orally present biological information that is articulate and grammatically correct with properly organized and documented data and ideas.
4. Critique your own and others' writing and oral communication skills by providing and applying useful feedback.

#### Exams and Assignments, Points, Dates (tentative<sup>a</sup>) (Projected Minimum Points = 670 +/-)

Lecture Exams	300 (+/-)	3 exams X 100+/- points each
Final Lecture Exam	100 (+/-)	
Lab Participation	50	10 labs X 5 points each (any more than 10 are extra credit)
Peer-reviewed summary drafts (2), & group summary (2)	60	4 summaries X 15 points each
Individual Final Summary	50	2 final summaries X 25 points each
PowerPoint Presentations	50	2 PowerPoints X 25 ea. (1 presented, both hard copy)
Paper Discussions	60	4 discuss. X 15 points each (5 pts. Prep., 10 pts. participation)

- Quizzes and Assignments can be added at any time at my discretion.

**Grades:** A=93-100%, A-=90- 92%, B+=87-89%, B=83-86%, B-=80-82%, C+=77-79%, C=73-76%, C-=70-72%, D+=67-69%, D=60-66%, F=< 60%

**Class Conduct:** I expect good conduct and a high level of respect in the classroom, between you and your peers and between you and me.

**Please turn off your cell phones, refrain from texting and casual talking during lectures, lab introductions and discussion, and exams and quizzes.** These distractions take away from the positive learning experience I would like to have in class. Furthermore, having this respectful experience and attitude in class prepares you for the expectations of your future employers. Good conduct does make a difference in determining your final grade.

**Attendance:**

- Attendance for lecture and lab is mandatory, and there is a strong positive correlation between the amount of time a student spends in class and his or her final grade.
- If a quiz, exam, or other assignment is missed and you are not involved in a university-sponsored event, *I will evaluate whether or not to excuse the absence* and how to administer the assignment on a one-on-one basis. Daily quizzes, pop quizzes, and any extra credit assignments cannot be made up unless you have an official university excuse and/or I am notified ahead of time of your absence and we work out a plan, based on the reason for absence from the work. If you are truly sick and need to stay home, that is fine, but please let me know as soon as possible about your absence.
- If you are late to class, daily lecture and lab quizzes and exams must be turned in at the same time as all other students. No extra time will be given to complete the quiz or exam.
- See UWSP 22.03 in the university handbook regarding absences due to religious beliefs (and no, hunting is not considered a religious belief.)

***I do not give extra credit assignments on an individual basis, so please do not ask:*** I would rather you use any extra time you have toward your best effort on the assigned material. I will work with you in any way I can to help you get a better grade *on future course work assigned to the entire class.*

**Students with Disabilities:** Students with disabilities are welcome and encouraged in this class. You should contact the Office of Disability Services during the first two weeks of the semester if you wish to request specific accommodations. Also, if you have a medical problem (for example, serious migraine headaches that require medical attention, or depression) that may cause you to miss class or exams often, please contact the Disability and Assistive Technology Center, (609 ALB) so your professors can be notified appropriately of accommodations that should be made for you.

**Student Academic Standards and Disciplinary Procedures:** You can find out about the academic standards and your responsibilities as a UWSP community member at <https://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf>. Any form of cheating, plagiarism, or any misrepresentation of your work, or if you are knowingly assisting someone in cheating, this will result in a grade of zero (0) points for that test, quiz, or other assignment.

## Help & Resources

If you are feeling lost or overwhelmed...

- 1. Make an appointment with me**  
Come see me during my office hours or make an appointment. **I'm always happy to see my students and always willing to help in any way that I can!**
- 2. Go to the TLC**  
Head over to the Tutoring and Learning Center (TLC) in room 018 Albertson Hall (ALB) for drop-in tutoring or to sign up for one-o-one tutoring.
- 3. Head to the writing lab**  
All UWSP students can receive FREE writing, reading, and study strategies consultations at the Tutoring-Learning Center. To sign up for a tutorial, just stop in at the TLC in the basement of the University Library, ALB 018, or call 715-346-3568. Regular hours are: Monday - Thursday: 9:00 am - 8:00 pm, Friday: 9:00 am - 1:00 pm
- 4. See a counselor**  
The counseling center is located on the 3<sup>rd</sup> floor of Delzell hall, and they can assist you will test anxiety, time management, and struggles with social issues.
- 5. Talk to Disability Services**  
If you have, or think you may have, a disability that is preventing you from making it to class, studying, or being successful on exams, contact the Disability and Assistive Technology Center in 609 ALB.

**TENTATIVE Overview of Lecture and Lab Topics. Subject to change at my discretion.**

wk	day	Date	Lect	Lecture topic	Reading	Tuesday Lab topic
1	M	1/22	0	Introduction, student introduction & survey		<ul style="list-style-type: none"> <li>• What types of papers are there &amp; What is in a research paper? (READ HOFMANN CH. 1 &amp; 7)</li> <li>• Searching for a research paper</li> <li>• <b>Begin to read the two prairie chicken papers due for discussion and summary week 5</b></li> </ul>
	W	1/24	1	Why study Ecology and Evolution?	Herron 1	
	F	1/26	2	Patterns of Evolution	Herron 2	
2	M	1/29	2	Patterns of Evolution	Herron 2	<ul style="list-style-type: none"> <li>• Hoffmann Ch. 2 Homework Peer Discussion, typed hard copy</li> <li>• Follow-up on: What types of papers are there? What is in a research paper?</li> <li>• Process of summarizing a Research Paper into a short Popular Article (target: non-biologist) &amp; <b>Why do this?</b></li> </ul>
	W	1/31	3	Evolution by Natural Selection	Herron 3	
	F	2/2	3	Evolution by Natural Selection	Herron 3	
3	M	2/5	4	Reading and Estimating Evolutionary Trees	Herron 4	<ul style="list-style-type: none"> <li>• Hoffmann Ch. 3 Homework Peer Discussion, typed hard copy</li> <li>• Follow-up on Evolutionary Trees and Variation among Individuals</li> <li>• <b>Exam Review</b></li> <li>• Begin search for evolution paper for independent summary article &amp; poster</li> </ul>
	W	2/7	5	Variation Among Individuals	Herron 5	
	F	2/9	6	Mendelian Genetics in Populations I: Selection, Mutation, and Hardy-Weinberg Equilibrium	Herron 6	
4	M	2/12	6	Mendelian Genetics in Populations I: Selection, Mutation, and Hardy-Weinberg Equilibrium	Herron 6	<ul style="list-style-type: none"> <li>• Lecture Exam I</li> <li>• Open Lab After exam: help w/ Hardy-Weinberg Equation Problems, article search and/or approval</li> </ul>
	W	2/14	7	Mendelian Genetics in Populations II: Migration, <b>Drift (prepare for bottleneck papers)</b> , Non-random Mating	Herron 7	
	F	2/16	7	Mendelian Genetics in Populations II: Migration, <b>Drift (prepare for bottleneck papers)</b> , Non-random Mating	Herron 7	
5	M	2/19		<b>Paper Discussion:</b> <i>Genetic Evaluation of a Demographic Bottleneck in the Greater Prairie Chicken, AND Loss of Genetic Variation in Greater Prairie Chickens Following a Population Bottleneck in Wisconsin, U.S.A.</i>		<ul style="list-style-type: none"> <li>• Group Summary of <i>Loss of Genetic Variation in Greater Prairie Chickens Following a Population Bottleneck in Wisconsin, U.S.A.</i></li> <li>• Evolution article approval</li> </ul>
	W	2/21	8	Evolution and Multiple Loci: Quantitative Genetics	Herron 9	
	F	2/23	9	Hypothesis testing	Herron 10	
6	M	2/26	10	Why Sex? And Sexual Selection	Herron 11, 8.3	<ul style="list-style-type: none"> <li>• Making posters</li> <li>• Evolution article summary and poster assistance</li> </ul>
	W	2/28	11	Aging and Life History Characters	Herron 13	
	F	3/2	12	Mechanisms of Speciation	Herron 16	
7	M	3/5	12	Mechanisms of Speciation	Herron 16	<ul style="list-style-type: none"> <li>• Peer review of evolution summary article &amp; poster, bring 4 hard copies</li> <li>• Exam Review</li> </ul>
	W	3/7	13	Evolution and Human Health	Herron 14	
	F	3/9	14	Introduction to Ecology & The Physical Environment (Abiotic Environment)	Cain 2	

8	M	3/12	15	The Physical Environment, Abiotic influences on Biomes of the World	Cain 2, 3	<ul style="list-style-type: none"> <li>• Exam II</li> <li>• Assistance with Ecology paper summary &amp; poster</li> <li>• Approval of Ecology Paper</li> </ul>
	W	3/14	16	Species Tolerance to Environmental Extremes & Phenotypic Plasticity in Changing Environments	Cain 4-7	
	F	3/16	16	Species Tolerance to Environmental Extremes & Phenotypic Plasticity in Changing Environments	Cain 4-7	
9	M	3/19		Dr. Hubbard away at Meeting: Independent Study of Chapter 17		<ul style="list-style-type: none"> <li>• Evolution article summary due to Dr. Hubbard on D2L</li> <li>• Work outside of class: work on posters, Begin search for ecology paper for summary &amp; poster</li> </ul>
	W	3/21		Dr. Hubbard away at Meeting: Independent Study of Chapter 17		
	F	3/23	16	Species Tolerance to Environmental Extremes & Phenotypic Plasticity in Changing Environments	Cain 4-7	
10	M	3/26		Spring Break		
	W	3/28		Spring Break		
	F	3/30		Spring Break		
11	M	4/3		Paper Discussion: <i>Reinforcement Drives Rapid Allopatric Speciation</i>		<ul style="list-style-type: none"> <li>• Evolution Poster Presentation</li> <li>• Continue searching for ecology paper, to be approved by next week</li> </ul>
	W	4/5	17	How Age Structure, Survivorship, & Fecundity Impact Population Growth	Cain 9	
	F	4/7	18	Population Growth Models, Population Regulation	Cain 9	
12	M	4/10	19	Community Interactions, Competition, Predation, & Parasitism	Cain 11-14	<ul style="list-style-type: none"> <li>• Exam III</li> <li>• Open lab: work on ecology paper summary</li> </ul>
	W	4/12	19	Community Interactions, Competition, Predation, & Parasitism	Cain 11-14	
	F	4/14		Poster Presentations continued (if needed) and/or exam review		
13	M	4/17		Paper Discussion: <i>The Evolution of Human Skin Coloration</i> (both an evolution & ecology focus)		<ul style="list-style-type: none"> <li>• Group Summary CHALLENGE: <i>The Evolution of Human Skin Coloration</i></li> </ul>
	W	4/19	19	Community Interactions, Competition, Predation, & Parasitism	Cain 11-14	
	F	4/21	20	Community Structure & Succession	Cain 15-16	
14	M	4/24	20	Community Structure & Succession	Cain 15-16	Open lab: work on ecology paper and poster
	W	4/26	21	Energy Fixation & Energy & Nutrient flow and Balance Within & Between Ecosystems	Cain 19-20	
	F	4/28	21	Energy Fixation, flow, & Balance Within & Between Ecosystems	Cain 19-20	
15	M	5/1	22	Habitat Loss & Introduced Species	Cain 22	<ul style="list-style-type: none"> <li>• Peer review of ecology paper summary &amp; poster, bring 4 hard copies</li> </ul>
	W	5/3	23	Habitat Loss & Introduced Species, Climate Change & Anthropological Impacts	Cain 22, 24	
	F	5/5	23	Climate Change & Anthropological Impacts	Cain 24	
16	M	5/8		TBA (possibly Observation of Community Ecology & Energy & Nutrient Flow)		<ul style="list-style-type: none"> <li>• Ecology Poster Presentations</li> <li>• Ecology paper summary &amp; poster due to Dr. Hubbard on D2L</li> </ul>
	W	5/10		Ecology Poster Presentations (if time needed) or Exam Review or catch-up and wrap up		
	F	5/12		Paper Discussion: <i>The Impact of Climate Change on the World's Marine Ecosystems</i>		
	T	5/15		<b>FINAL EXAM, 12:30-2:30, TNR 461</b>		