2020 Syllabus for Biology 312: General Ecology

Lecture: Monday/Wednesday/Friday 10:00am–10:50am

Lab: Thursday 8-10:50am

Instructor: Dr. Althea A. Archer
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Link: https://minnstate.zoom.us/j/99287589339
Meeting ID: 992 8758 9339
Passcode: Archer

The schedules and policies associated with this course may be subject to revision or change as a consequence of changing circumstances or events. Reasonable notification will be provided to students prior to any major changes in course policies or procedures.

Course Description

Interactions between organisms and their organic and inorganic environment. Biomes, climate, populations, communities, biotic interactions, energy and nutrients, landscape and spatial ecology, biodiversity patterns.

Learning Outcomes

You will learn to draw together elements from biology, chemistry, physics, geology, and mathematics to gain a greater understanding of ecological relationships in the natural world. The goals of the course are to:

1. Classify organizational levels observed in ecology
2. Explain how populations are regulated and how data can be collected, analyzed, and interpreted using statistics, life tables, graphs, and survivorship curves
3. Describe the interactions between different species and how they impact one another
4. Illustrate the major forces responsible for community structure, how community structure can be represented by food webs, and how communities change in both space and time
5. Discuss patterns and measurements of biodiversity and predict the consequences of continued species loss
6. Accurately and effectively document field observations with field notes and data collection
7. Link field observations with key ecological concepts and relevant scientific literature
8. Execute the scientific method using reproducible research methods
9. Effectively communicate scientific research results through oral and written presentations

Required Textbooks

- SimUText Ecology
- At least one person from each research group must sign up for an account with the free Open Science Framework at https://osf.io/
- Recommended: McMillan, V.E. 2012. *Writing Papers in the Biological Sciences*. Bedford/St. Martin's
- Recommended: Molles, Jr., M.C. *Ecology: Concepts and Applications*.

Attendance Policy

Regular attendance and participation in class is critical to your success. This course will be offered in a hybrid format. Lectures will be convened online via synchronous Zoom meetings, and the textbook assignments will be conducted through an interactive online textbook. Lectures slides will be posted to D2L. The first five labs will require in-person activities in an outdoor setting. You will be working with small groups during each lab, and you will be required to wear a mask.

Every person coming to campus must complete the online self-assessment, including students and faculty. If your self-assessment states that you must stay home, please inform me of your absence as soon as possible so that we can make alternate arrangements.

Accommodations for Students with Disabilities

SCSU is an affirmative action, equal opportunity employer and educator. We are committed to a policy of nondiscrimination in employment and education opportunity and work to provide reasonable accommodations for all persons with disabilities. Accommodations are provided on an individualized, as-needed basis, determined through appropriate documentation of need. Please contact Student Accessibility Services (SAS), sas@stcloudstate.edu or 320-308-4080, Centennial Hall 202, to meet and discuss reasonable and appropriate accommodations.

Respect for Diversity

It is my intent that students from diverse backgrounds and perspectives be well-served by this course, and that the diversity that students bring to this class be viewed as a resource. Please let me know ways to improve the effectiveness of the course for you, personally, or for other students or student groups. As a student in this class, you are required to treat other members of the class with respect and kindness. Diverse perspectives are welcome and disagreeing is fine. However, disrespectful, rude, or exclusive behavior will not be tolerated.

GRADES

Category	Item	Details	%
Assignments & Participation		various dates	5
SimUText Readings		various dates	5
Lecture Exams			
	Exam 1	Sept. 30; Unit 1 material	15
	Exam 2	Nov. 4; Unit 2 material	15
	Final Exam	Dec. 16; 66% Unit 3; 34% Units 1&2	20
Laboratory			
	Data Sheets	end of lab	5
	Data Appendix	Oct. 8	5
	Lightning Talk	Nov. 5	10
	Research Poster Draft	Dec. 3	5
	Research Poster Final	Dec. 10	10
	Peer Feedback	various dates	5
			Total 100

ASSIGNMENTS & PARTICIPATION will be a series of Zoom polls, surveys, and homework assignments that will pop up during the semester. Each of these activities will be graded on a pass/fail basis, and you automatically will get two free missed assignments or participation scores.

SIMUTEXT READINGS are from the interactive textbook for this class, and each module has integrated, feedback-focused questions followed by a series of graded questions. **You are expected to have read that day's SimUText material prior to coming to class.** SimUText graded questions are due by 10:00pm on the due date, which is usually Friday (see schedule). You may work through the SimUText material with your peers; however, mastering the material is your individual responsibility.

Percentage	Grade
≥ 93	A
90-92.9	A-
87-89.9	B+
83-86.9	B
80-82.9	B-
77-79.9	C+
73-76.9	C
70-72.9	C-
67-69.9	D+
60-66.9	D
< 60	F

LECTURE EXAMS will be of variable format, including—but not limited to—multiple choice, true/false, matching, short answer, and brief essays. All exams will be somewhat cumulative but will primarily focus on the associated lecture and SimUText Unit material (see table above); in addition, the final exam will be ∼25% cumulative.

LABORATORY grades will be based around a semester-long group research project that will begin with collecting data in the field, continue with data entry, organization, and analysis, and culminate in oral and written presentations.

- Guided data sheets will be completed in the field during the first 5 labs due by end of lab each day.
- Data appendix will be an html document that includes summary statistics about each of the variables relevant to your research project and dataset. A template and further explanation will be provided later in the semester.
- Lightning talks will be given during lab. Your group will be allowed 3 slides and 5 minutes to present the main goal, result, and conclusion of your research project. You will be providing feedback to other groups, which will go toward your "Peer Feedback" grade, and you will be expected to incorporate feedback into your final poster presentation. I will provide a grading rubric later this semester.
- Research poster must include title, introduction, methods, results, discussion, conclusions, and literature cited. A rubric for posters will be provided later this semester. Every group will present their poster draft in the penultimate lab session. You will be providing feedback to other groups, which will go towards your "Peer Feedback" grade, and you will be expected to incorporate feedback into your final poster.
- The final (virtual) research poster presentation will be open to friends and family outside of the class.
- Your peer assessment grade will include the quality of your formal feedback during the lightning talks and the draft poster presentation (33% each, 66% total) combined with the grade that your group mates give you at the culmination of the semester (34%).

Academic Integrity

As a student at St. Cloud State University and as a student in this class, you are expected to fully and properly acknowledge the work of others. Every instance of plagiarism will be reported, as per the policies of the college, but please do not hesitate to ask me in advance if you think something might be questionable or if you are unsure about what is considered to be plagiarism. I am happy to help, as long as you inquire in advance!

Academic misconduct includes but is not limited to:

- cheating: using a resource other than one's own work to answer questions;
- plagiarism: misrepresenting another's ideas as one's own or not giving credit to the creator of a work;
- falsification: submitting falsified or fabricated information;
- facilitating others' violations: knowingly permitting or facilitating the dishonesty of others;
- impeding: placing barriers in the way of others' academic pursuits'

Course Schedule (version dated 8/20/2020)

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Aug 24th First day of class	25th	26th **Topic:** Introduction to Ecology	27th **Lab:** Campus Tour & Intro to Experimental Methods	28th **Topic:** Experimental Design *SimUText Unit 1: Understanding Experimental Design Due 10pm*
31st **Topic:** Evolution for Ecology 1	Sep 1st	2nd **Topic:** Evolution for Ecology 2	3rd **Lab:** TBD	4th **Topic:** Evolution for Ecology 3 *SimUText Unit 1: Evolution for Ecology 1-3 due 10pm*
7th *No class*	8th	9th **Topic:** Biogeography 3	10th **Lab:** TBD	11th **Topic:** t-test, ANOVA, regression *SimUText Unit 1: Biogeography 3 due 10pm*

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
14th **Topic:** Behavioral Ecology 1	15th	16th **Topic:** Behavioral Ecology 2	17th **Lab:** TBD	18th **Topic:** Biogeography 4 *SimUText Unit 1: Behavioral Ecology 1-2, Biogeography 4 due 10pm*
21st **Topic:** Physiological Ecology 1	22nd	23rd **Topic:** Physiological Ecology 2	24th **Lab:** TBD	25th **Topic:** Physiological Ecology 3 *SimUText Unit 1: Physiological Ecology 1-3 due 10pm*
28th **Topic:** Wrap-up and review	29th	30th **Exam 1**	Oct 1st **Lab:** Introduction to R & How Diseases Spread	2nd **Topic:** Physiological Ecology 4 *SimUText Unit 2: Physiological Ecology 4 due 10pm*
5th **Topic:** Ecosystem Ecology 1-2	6th	7th **Topic:** Ecosystem Ecology 3-4	8th **Lab:** Data Appendix due 10pm (OSF) *SimUText Lab: How Diseases Spread due 10pm*	9th *No class* *SimUText Unit 2: Ecosystem Ecology 1-4 due 10pm*
12th **Topic:** Nutrient Cycling 1-2	13th	14th **Topic:** Nutrient Cycling 3	15th **Lab:** Data analysis	16th **Topic:** Nutrient Cycling 4 *SimUText Unit 2: Nutrient Cycling 1-4 due 10pm*

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
19th **Topic:** Life History 1-2	20th	21st **Topic:** Life History 3	22nd **Lab:** Understanding Population Growth	23rd **Topic:** Life History 4 *SimUText Unit 2: Life History 1-4 due 10pm*
26th **Topic:** Population Growth 1	27th	28th **Topic:** Population Growth 2	29th **Lab:** Data analysis *SimUText Lab: Understanding Population Growth due 10pm*	30th **Topic:** Population Growth 3 *SimUText Unit 2: Population Growth 1-3 due 10pm*
Nov 2nd **Topic:** Wrap-up and review	3rd	4th **Exam 2**	5th **Lab:** Lightning Talks	6th **Topic:** Metapopulations (Pop'n Growth 4, Biogeography 1-2) *SimUText Unit 3: Metapopulations (Pop'n Growth 4, Biogeography 1-2) due 10pm*
9th **Topic:** Community Dynamics 1-2	10th	11th *No class*	12th **Lab:** Keystone Species	13th **Topic:** Community Dynamics 3-4 *SimUText Unit 3: Community Dynamics 1-4 due 10pm*
16th **Topic:** Competition 1-2	17th	18th **Topic:** Competition 3	19th **Lab:** Work on posters *SimUText Lab: Keystone Species due 10pm*	20th **Topic: Topic:** Competition 4 *SimUText Unit 3: Competition 1-4 due 10pm*

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
23rd **Topic:** Competition 4 (cont.)	24th	25th *No class*	26th *No class*	27th *No class*
30th **Topic:** Exploitation 1-2	Dec 1st **Topic:** Exploitation 3	2nd	3rd **Lab:** Draft Poster Presentations	4th **Topic: Topic:** Exploitation 4 *SimUText Unit 3: Exploitation 1-4 due 10pm*
7th **Topic:** Climate Change video	8th	9th **Topic:** Climate Change (cont.)	10th **Lab:** Poster Presentations	11th **Topic:** Wrap-up and review
14th	15th	16th **FINAL EXAM 9:55am - 12:10am**	17th	18th