

2019 Syllabus for Biology 221: Ecology

Monday/Wednesday 8:00am–9:40am

132 Integrated Science Center

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Office Hours: Mon/Wed 10:30-11:00 & T/Th 10:30-12:00

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

Covers the basic principles of energy and nutrient movement through the ecosystems, the forces that structure ecosystems, and the interactions between organisms and the environment and each other. This course emphasizes quantitative skills. Two lectures and four hours of laboratory per week.

Course Goals

The primary objective of this course is to provide a basis for your understanding of ecology, which includes the complex interactions between organisms and their environment. 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. Discuss classical and current ecological issues and methodology
2. Address natural diversity and how humans interact with the environment
3. Examine biodiversity and sustainability of natural systems
4. Explore the benefits and limitations of scientific efforts to understand ecological relationships
5. Critically evaluate environmental issues locally, regionally, and globally
6. Practice communicating your ecological and scientific knowledge in meaningful and effective ways

Learning Outcomes

1. Access, critically evaluate, and correctly use scientific literature
2. Classify organizational levels observed in ecology
3. Explain how populations are regulated and how data can be collected, analyzed, and interpreted using statistics, life tables, graphs, and survivorship curves
4. Describe the interactions between different species and how they impact one another
5. 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
6. Discuss patterns and measurements of biodiversity and predict the consequences of continued species loss
7. Communicate your interpretations, questions, and critiques of the readings with your colleagues during Moodle group discussions

Required Textbooks

- SimUText Ecology
- Carrol, S.B. 2016. *The Serengeti Rules*. Princeton University Press, Princeton. 263pp.
- McMillan, V.E. 2012. *Writing Papers in the Biological Sciences*. 5th ed. New York: Bedford/St. Martin's

Attendance Policy

Regular attendance and participation in class is critical to your success at Concordia College. Because any absence, excused or unexcused, detracts from the learning experience, you are expected to attend all classes. Dr. ArchMiller also values the educational experience afforded by student participation in co-curricular activities; however, you are responsible for notifying Dr. ArchMiller of scheduled absences (e.g., co-curricular activities) at the beginning of the semester, or as soon as that information is available (but no less than 24 hours in advance).

If absences become what Dr. ArchMiller determines to be excessive (from 10-15% of classes, without valid college-recognized excuses), points will be deducted from your final percentage. In extreme cases (> 20% of classes or 6 unexcused absences), Dr. ArchMiller will assign a failing grade. **I strongly recommend that you are present and participate in the class.**

PARTICIPATION in class and lab will not go towards your grade directly. However, a record throughout the semester of exemplary participation and attendance can help in the case of a borderline final grade. Active participation also nurtures learning, and will improve the quality of future recommendation letters from your instructors.

Accommodations for Students with Disabilities

In accordance with the Americans with Disabilities Act, Concordia College and your instructor are committed to making reasonable accommodations to assist individuals with documented disabilities to reach their academic potential. Such disabilities include, but are not limited to, learning or psychological disabilities, or impairments to health, hearing, sight, or mobility. If you believe you require accommodations for a disability that may impact your performance in this course, you must schedule an appointment with Disability Services to determine eligibility. Students are then responsible for giving instructors a letter from Disability Services indicating the type of accommodation to be provided; please note that accommodations will not be retroactive. The Disability Services office is in Old Main 109A, phone 218-299-3514; cobbernet.cord.edu/directories/offices-services/counseling-center-and-disability-services/disability/

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. Disrespectful, rude, or exclusive behavior will not be tolerated.

Grades

Category	Item	Details	%
SimUText Readings			
	Reading Completion	Based on % read	5
	Graded Questions	2 lowest scores dropped	5
Exams & Quizzes			
	Quizzes	2 lowest scores dropped*	10
	Exam 1	Oct. 9; Unit 1 material	10
	Exam 2	Nov. 13; Unit 2 material	10
	Final Exam	TBD; 66% Unit 3; 34% Units 1&2	15
Discussions & Paper			
	Group Discussions	Various dates	10
	Symposium Paper	Due Sept. 25	5
Laboratory			30
			Total 100

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 8:00am on the due date (see schedule).

Reading Completion will be evaluated with the feedback-focused, ungraded questions and will be assessed based on the percent of each SimUText assignment that you have completed by the due date.

Graded Questions will be worth another 5% of your final grade; however, the two lowest scores will be dropped before final grades are completed. You may work through the SimUText material with your peers; however, mastering the material is your individual responsibility.

Percentage	Grade
≥ 94	A
90-93.9	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

QUIZZES are designed to quickly check for reading and comprehension of that lecture date's SimUText material. Quizzes will be short (~3 questions) and given at the beginning of class time on most days. I will drop the two lowest quiz scores.

*In addition, I will make homework available for students that have excused absences. If you have an excused absence (thus a 0 for that quiz), you may—up to 3 times over the course of the semester—complete homework to replace a zero quiz score. The homework assignments will be designed to give you more hands-on practice with quantitative topics covered in lecture and in the SimUText readings; however, they will be more difficult than quizzes.

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 SimUText Unit material (see table above); in addition, the final exam will be one-third cumulative.

GROUP DISCUSSIONS allow you to work as a team of scientists with your colleagues to critically discuss readings related to class material. Group discussions will occur in person and through a forum format on Moodle. You will be graded based on the quantity, quality and timing of your comments (see specifics below). Each discussion is worth a total of 5 points.

On the discussion day, you will be expected to have read the assigned pages and submit one question to the Moodle forum (1.5 points, pass/fail). We will then discuss the material in that day's class. After reflecting on our in-class discussion, you will need to respond to *at least* one other student's question on the Moodle forum (1.5 points, pass/fail). The quality of your question and responses will be worth 2 points, as shown in grading rubric below.

Every student is responsible for engaging in a good discussion, through which we should all be able to come to a better understanding of ecology and evolution. You should take this opportunity to learn from and respectfully teach each other.

Grading Criteria	Exemplary	Adequate	Poor
Quality of Comments	Focused on ecological aspects and tackled central themes of reading	Indicated a superficial understanding of reading or focused on details w/o conveying importance to ecology or main themes of text	Conveyed little understanding of reading; not relevant to ecology or main themes of text
	(2pts)	(1.5pts)	(1pt)

THE SYMPOSIUM PAPER is a 3-page, 1.5-spaced, 12-pt font paper, that is due at 11:55pm on Wednesday, September 25 (upload on Moodle). The 2019 Symposium, Speech: Freedom vs. Responsibility, takes place on September 17–18, and you are required to attend. The Symposium Paper should name and summarize the session you attended, including questions/answers raised during the Q/A of the session, and your reaction. At least one page of your paper should explore how the symposia relate to ecology, the environment, campus life or the scientific process. You will be graded out of 100 points based on the following (detailed rubric is on Moodle):

- Spelling and grammar (20pts)
- Summary of session and Q/As (40pts)
- Relation of session topic to campus life and science (40pts)

Academic Integrity (from Student Handbook)

“The Concordia community expects all of our members to act with integrity—to act with honesty, uprightness and sincerity. Every member of our academic community is charged with the responsibility of encouraging and maintaining an environment of academic integrity.

“Academic misconduct is defined as any activity that comprises the academic integrity of the college or undermines the educational process. 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”

Concordia College has university-wide policies about academic integrity, and all students are responsible for being familiar with and adhering to them. These policies are in place to protect students, first and foremost. **My role as instructor is to teach each of my students how to become responsible scholars.** As a student at Concordia College 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!

Biology Department policy on use of electronic devices (phones, smart watches, laptops, tablets, etc.)

Faculty in the Biology Department work to make the classroom and laboratory a space conducive to student learning. We encourage writing notes by hand because it is an effective learning strategy for many students. However, the Biology Department also understands the valuable role of electronic devices in learning and scholarship. Thus, the Biology Department policy on the use of these devices in the classroom is as follows:

1. Electronic devices used during class time should be limited to appropriate class-related activities as outlined by the instructor. We reserve the right to check devices at any time and to ask you to put them away or leave if we see you using them inappropriately. Please reduce distractions to yourself and your fellow classmates.
2. All electronic devices must be set to silent during scheduled classroom and laboratory sessions. Tones and vibrations are distracting.
3. Only approved electronic devices (such as non-programmable calculators) may be available or used during examination periods. We expect that all non-approved electronic devices, including smart watches, will be turned off and stored away from the exam areas.
4. Sharing calculators during exams is not allowed without permission.
5. Cheating in any form, including through use of an electronic device, will not be tolerated. See the academic integrity policy for more information.

Inappropriate or distracting use of electronic devices in the classroom may adversely affect your course grade.

Course Schedule (version dated 8/6/2019)

- SimUText Sections: You are expected to come to class prepared by reading that lecture's associated SimUText Module. There will be quizzes on reading material at the beginning of lecture.
- Discussion: In-class discussion days. You will be graded based on your participation and are expected to post at least one question to Moodle by the start of class that day.
- Response: Responses to other students' questions are due on the Moodle forum by midnight on these days.

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Sep 2nd First day of class	3rd	4th SimUText Unit 1: Evolution for Ecology 1 Discussion: Beak of the Finch ch4	5th	6th Response: Beak of the Finch ch4
9th SimUText Unit 1: Evolution for Ecology 2-3	10th	11th SimUText Unit 1: Biogeography 3-4	12th <i>Dr. ArchMiller out of town, no office hours</i>	13th <i>Dr. ArchMiller out of town</i>
16th Library Materials Lecture in Library classroom Discussion: Sixth Extinction ch5	17th	18th Symposium No office hours	19th	20th Response: Sixth Extinction ch5 Library Materials assignment due on Lab Moodle page by 11:55pm
23rd SimUText Unit 1: Physiological Ecology 1-2	24th	25th SimUText Unit 1: Physiological Ecology 3-4 Symposium Paper due on Moodle by 11:55pm	26th	27th

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
30th SimUText Unit 1: Ecosystem Ecology 1-3 <i>Dr. ArchMiller out of town, no office hours</i>	<div>Oct 1st</div> <i>Dr. ArchMiller out of town, no office hours</i>	2nd SimUText Unit 1: Climate Change 1-2 Discussion: Sand County Almanac <i>Dr. ArchMiller out of town, no office hours</i>	3rd <i>Dr. ArchMiller out of town, no office hours</i>	4th Response: Sand County Almanac
7th SimUText Unit 1: Climate Change 3-5 Unit 1 SimUText Graded Questions Due at 8am	8th	9th EXAM 1	10th	11th
14th SimUText Unit 2: Nutrient Cycling 1-2 Discussion: Omnivore's Dilemma	15th	16th SimUText Unit 2: Nutrient Cycling 3-4 Response: Omnivore's Dilemma	17th	18th
21st <i>Mid Semester Break–No Class</i>	22nd <i>Mid Semester Break–No Class</i>	23rd <i>Mid Semester Break–No Class</i>	24th <i>Mid Semester Break–No Class</i>	25th <i>Mid Semester Break–No Class</i>
28th SimUText Unit 2: Life History 1-2	29th	30th SimUText Unit 2: Life History 3-4 Discussion: Serengeti Rules ch 1-2	31st	<div>Nov 1st</div> Response: Serengeti Rules ch 1-2

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
4th SimUText Unit 2: Population Growth 1-3 In Class: Understanding Population Growth Models	5th	6th SimUText Unit 2: Population Growth 4-5 Discussion: Serengeti Rules ch 3-5	7th	8th Response: Serengeti Rules ch 3-5
11th SimUText Unit 2: Biogeography 1-2 Unit 2 SimUText Graded Questions Due at 8am	12th	13th EXAM 2	14th	15th
18th SimUText Unit 3: Community Dynamics 1-2	19th	20th SimUText Unit 3: Community Dynamics 3-5 Discussion: Serengeti Rules ch 6-8	21st	22nd Response: Serengeti Rules ch 6-8
25th SimUText Unit 3: Competition 1-2	26th	27th <i>Thanksgiving</i>	28th <i>Thanksgiving</i>	29th <i>Thanksgiving</i>
<div>Dec 2nd</div> SimUText Unit 3: Competition 3-4	3rd	4th SimUText Unit 3: Predation, Herbivory and Parasitism 1-2 Discussion: Serengeti Rules ch 9-10	5th	6th Response: Serengeti Rules ch 9-10
9th SimUText Unit 3: Predation, Herbivory and Parasitism 3-4	10th	11th Unit 3 SimUText Graded Questions Due at 8am	12th	13th