2018 Syllabus for Biology 221: Ecology

Monday/Wednesday 8:00am–9:40am

101 Integrated Science Center

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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.
- Pollan, M. 2006 *The Omnivore's Dilemma*. Penguin Press, New York. 451pp.
- Leopold, A. 1987. *A Sand County Almanac and Sketches Here and There*. Oxford University Press, New York. 228pp.
- 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 Academy 106, phone 218-299-3514; https://www.concordiacollege.edu/directories/offices-services/counseling-center-and-disabilityservices/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	Pass/Fail for each assignment	5
	Graded Questions	2 lowest scores dropped	5
Exams & Quizzes			
	Quizzes	2 lowest scores dropped*	10
	Exam 1	Oct. 10; Unit 1 material	10
	Exam 2	Nov. 14; Unit 2 material	10
	Final Exam	Dec. 17; 66% Unit 3; 34% Units 1&2	15
Discussions & Paper			
	Group Discussions	Participate through Moodle	10
	Symposium Paper	Due Sept. 26	5
Laboratory		*see laboratory syllabus*	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. **SimUText readings 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 with a pass-fail grade (completed or not) for each SimUText assignment.

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 absenses. If you have an excused absense (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 three separate books, *The Serengeti Rules*, *The Omnivore's Dilemma*, and *A Sand County Almanac*. Group discussions will occur in forum format on Moodle. Groups will be assigned at random and will be reassigned for each new book (i.e., by October 19 and November 9). You will be graded based on the quantity, quality and timing of your comments (see grading rubric below). Each discussion is worth a total of 5 points.

The group as a whole is responsible for completing the assignment; in this case providing a good discussion and coming to a better understanding of ecology and evolution. Everyone should contribute to the discussion, and you are expected to provide at least two comments; ideally one will be an original question or discussion point, and one will be a reply to another group member's comment. You should take this opportunity to learn from and respectfully teach each other.

Grading Criteria	**Exemplary**	**Adequate**	**Poor**
Quantity of Comments	>2 Comments (2pts)	2 Comments (1.5pts)	1 Comment (1pt)
Quality of Comments	Focused on ecological aspects and tackled central themes of reading (2pts)	Indicated a superficial understanding of reading or focused on details w/o conveying importance to ecology or main themes of text (1.5pts)	Conveyed little understanding of reading; not relevant to ecology or main themes of text (1pt)
Timing of 1st Comment	>48 hrs before noon (1pt)	24–48 hrs before noon (0.5pt)	<24 hrs before noon (0pts)

THE SYMPOSIUM PAPER is a 3-page, 1.5-spaced, 12-pt font paper, that is due at 11:55pm on Wednesday, September 26 (upload on Moodle). The 2018 Symposium, Power Plays: Why Gender Matters, takes place on September 18–19, 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 and campus life. 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)

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 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.

Academic Integrity (from Student Handbook)

"Students are responsible for maintaining and encouraging academic integrity at the college. We expect all students to act with integrity in the classroom and in completing and submitting assignments. Ultimately, students bear the responsibility of ensuring the integrity of their own work. Students are expected to meet at least the minimal requirements of each course with work of appropriate quality.

"At no time is cheating on examinations, quizzes, or assignments acceptable at Concordia. Students are also expected to exercise appropriate caution to avoid plagiarism on written assignments."

I will not tolerate any instance of academic dishonesty, including cheating, plagiarism, falsification, facilitating others' violations, or impeding (see student handbook for definitions).

Instances of academic dishonesty will result in either a failing grade for that activity or for the course, according to the perceived intent and extent of the instance(s) of academic dishonesty. All academic integrity violations will be reported to the Office of Academic Affairs.

Course Schedule (version dated 7/24/2018)

- SimUText Sections: You are expected to come to class prepared by reading that lecture's associated SimUText Module. SimUText assignments are due at 8am unless otherwise noted. There will be quizzes on reading material at the beginning of lecture.
- GD: Group discussions on Moodle. You will be graded based on your participation and are expected to post to each discussion section at least twice by 5pm the day each discussion unit is due.

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Sep 3rd **SimUText:** Evolution for Ecology 1-3, Biogeography 3	4th	5th	6th	7th **GD:** The Serengeti Rules p1–46 (by 5pm)
10th Library Materials Lecture *(upload assignment on Lab Moodle page)*	11th	12th **SimUText:** Biogeography 4, Physiological Ecology 1	13th	14th **GD:** The Serengeti Rules p47–105 (by 5pm) **Library Materials assignment due** on Lab Moodle page by 11:59pm
17th **SimUText:** Physiological Ecology 2-4	18th	19th **Symposium** No office hours	20th	21st
24th **SimUText:** Ecosystem Ecology 1-3	25th	26th **Symposium Paper due** on Moodle by 11:55pm	27th	28th **GD:** The Serengeti Rules p107–168 (by 5pm)
Oct 1st **SimUText:** Climate Change 1-5	2nd	3rd	4th	5th **GD:** The Serengeti Rules p169–214 (by 5pm)
8th	9th	10th **EXAM 1**	11th	12th

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
15th **SimUText:** Nutrient Cycling 1-4	16th	17th	18th	19th **GD:** Omnivore's Dilemma p1-56 (by 5pm)
22nd *Mid Semester Break–No Class*	23rd *Mid Semester Break–No Class*	24th *Mid Semester Break–No Class*	25th *Mid Semester Break–No Class*	26th *Mid Semester Break–No Class*
29th **SimUText:** Life History 1-4	30th	31st	Nov 1st	2nd **GD:** Omnivore's Dilemma p65-99, p410-411 (5pm)
5th **SimUText:** Population Growth 1-3 **In Class:** Understanding Population Growth Models	6th	7th **SimUText:** Population Growth 4-5	8th	9th **GD:** Sand County Almanac pp vii–52 (by 5pm)
12th	13th	14th **EXAM 2**	15th	16th
19th **SimUText:** Biogeography 1-2	20th **GD:** Sand County Almanac p53–92 (by 5pm)	21st *Thanksgiving–No Class*	22nd *Thanksgiving–No Class*	23rd *Thanksgiving–No Class*
26th **SimUText:** Community Dynamics 1-2	27th	28th **SimUText:** Community Dynamics 3-5	29th	30th **GD:** Sand County Almanac p95-112; 129–137; 165–176 (by 5pm)
Dec 3rd **SimUText:** Competition 1-2	4th	5th **SimUText:** Competition 3-4	6th	7th **GD:** Sand County Almanac p188–226 (by 5pm)

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
10th **SimUText:** Predation, Herbivory and Parasitism 1-2	11th	12th **SimUText:** Predation, Herbivory and Parasitism 3-4	13th	14th Special review 8:00-9:20am
17th **FINAL EXAM 8:30-10:30am**	18th	19th	20th	21st

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Syllabus Acknowledgement

I, _____, have received a copy of the syllabus for BIOL 221, Ecology, and understand all of the policies and procedures outlined herein.

SIGNATURE _____ DATE _____

Use of Photographic Likeness Release

For good and valuable consideration, I authorize Dr. ArchMiller to record photographs of me and use, reproduce, modify, distribute, and exhibit such photographs, in whole or in part, without restrictions or limitation for marketing and instructional purposes.

I release Dr. ArchMiller, Concordia College, its successors and assigns, agents, and all persons for whom it is acting from any liability by virtue of any blurring, distortion, alteration, optical illusion, or use in composite form, whether intentional or otherwise, that may occur or be produced in the photographic process and waive any right that I may have to inspect or approve the finished recordings.

PRINTED NAME _____

SIGNATURE _____ DATE _____

Optional Information

PREFERRED NAME OR NICKNAME _____

MAJOR _____

CONTACT PHONE NUMBER _____

WHERE'S "HOME?" _____

WAYS YOU ARE SIMILAR TO OTHER COBBERS _____

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WAYS YOU ARE UNIQUE COMPARED TO OTHER COBBERS _____

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