

BIO 373.3 Community Ecology - 201701Biology Department

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Start Date	January 4 th , 2017	
Course Times:	Mon/Wed/Fri, 8:30-9:30, BIO 124	
Lab times:	Wed, 1:30-4:30, BIO 212	
Officer hours:	Flexible (by appointment)	
Course notes:	See course website: https://bblearn.usask.ca	
Assessment:	1. Participation	10%
	2. Lab Assignments	30%
	3. Lab final report	15%
	4. Mid-term Exam	20%
	5. Final Exam	25%

A. Instructor Profile

My name is Emily Cavaliere. I'm currently in the 4th year of my PhD, working on assessing how lakes will respond to climate change. I am a biogeochemist, and ecologist, and have taught several soils, water quality lab courses and I have been a teaching assistant for everything from ethics to biostatistics. I am a 4th year PhD student in Dr. Baulch's lab. I obtained my undergraduate degree from Oregon State University, and my M.Sc. from Western Washington University. After my master's degree I became a health inspector. In 2013 I moved to Saskatoon to start my PhD. My research is on nutrient dynamics under ice covered lakes of Saskatchewan. My teaching philosophy is to teach the material in a way that resonates, can be applied, and is interesting. We will spend time understanding ecological principles, developing skills as ecologists, and learning how to apply our skills and knowledge. As such, our class will not be the traditional lecture but we will emphasize application; we will learn material through a variety of methods, particularly focusing on case studies.

B. Course summary

Examines physical and biotic factors shaping species assemblages over space and time, especially processes controlling plant communities (e.g. environmental factors, disturbance, and biotic interactions). Explores current issues in community ecology, such as impacts of diversity loss, invasive species, and environmental change. Laboratories focus on experimental design, data collection and analysis.

Prerequisites

BIOL 228 or PLSC 213; AND one of STAT 245, STAT 246, or PLSC 214.

C. Course Aims and Learning Outcomes

Aims

This course aims to train students in the process of designing, implementing, and analyzing research in community ecology, and in the interpretation and presentation of results. At the same time, the course will help students develop the theoretical background in community ecology that is needed to frame useful questions in research and interpret new and existing knowledge. An emphasis will be placed on examining ecological questions within the context of current issues in ecology that have the potential to inform and influence how we manage our impacts on diverse ecosystems.

Learning outcomes

By the completion of this course, students will be able to:

- Explain the different factors that impact communities, for biotic interactions this includes competition, predation, mutualisms and food web structure; for abiotic controls this includes temporal and spatial patterns that influence ecological communities and hypothesize how those processes may act in specific ecosystems
 - Develop familiarity with key ecological theories and examine how these are being tested and evaluated in the current scientific literature
- Apply what they know about community ecology and critically evaluate and develop, at a professional level, strategies for conservation, restoration and management of ecological communities
- Differentiate between community and human impacts on populations including human impacts due to habitat and diversity loss, and similar chemical, physical and biological impacts.
- Design, implement, and interpret ecological research through the iterative development of their own ecological studies and by studying published examples of research
- Have developed skills as a practitioner of ecology by:
 - Compiling, summarizing, and interpreting raw ecological data using tools of descriptive and quantitative analysis
 - Evaluating science writing and writing science at an advanced level

D. Required Resources

Readings/Textbooks

Morin, Peter J. 2011. **Community Ecology (Second Edition)**. Wiley-Blackwell: West Sussex, UK.

This text is available as a **FREE** e-book through the U of S library. Note: you must be logged onto the UofS network to obtain the e-book.

Textbooks are also available from the University of Saskatchewan Bookstore:
www.usask.ca/consumer_services/bookstore/textbooks

Other Required Materials

Supplementary readings: The information needed for you to locate published journal articles will be provided on the course website on PAWS. We will be discussing these readings in lectures and labs, and some may provide the basis for additional written exercises.

Electronic Resources

Course materials (Powerpoint slides) will be posted on BlackBoard (bblearn.usask.ca).

E. Grading Scheme

A range of different tools will be used to evaluate your progress in this course, with the aim being to assess your level of understanding and to provide you with opportunities to challenge yourself, practice your skills, and obtain feedback. Your final mark will be a number grade from 0 to 100%. A final grade of 50% is required to officially pass the course. Your final grade will be determined based on the following course components:

Assessment	Weight
1. Participation	10%
2. Lab Assignments	30%
3. Lab final report	15%
4. Mid-term Exam	20%
5. Final Exam	25%

F. Evaluation Components

Class Participation

You will be expected to read assigned chapters before class, participate in class discussions, in groups and partners and attend lab classes. I respect you as individual learners and recognize that we all have different comfort levels with different group activities. So, while it is not my goal to make anyone uncomfortable the whole term, there will be times where we may do an activity that might not be within your comfort zone. However, participation in class, whether in class or group discussions and work in pairs are part of the class, and as such will be part of the participation component. Please review the participation rubric for further elaboration on class expectations (attached at the end of the syllabus).

Lab Participation

You are expected to attend all laboratory classes. There will be a penalty of 1% of your final mark (up to a maximum of 5%) for each unexcused absence from lab. Please contact the laboratory instructor ahead of time with appropriate documentation if you must miss a lab.

Lab assignments

Lab activities for this course will be structured around developing a final lab report (see below). There will be 6 components on which you will receive feedback and then combine into the final lab report. There will also be an outside class on Jan 18, 2017 where we will collect and enter data. The first assignment will be on data entry, then sequentially: hypothesis development, literature review, introduction, data analysis and figure making, results, discussion and conclusion. Each of these assignments will be based on one of three data sets introduced in lab. These initial exercises will form the skills and knowledge base for your final report, and will constitute 30% of your final mark.

Final lab report

At the end of term, you will complete a final report that consists of the assignments above after editing. This report will include all of the main sections of a scientific paper: a) abstract, b) introduction to the topic and research questions or hypotheses, c) summary of materials and methods, d) description of the results, including presentation of actual data, e) discussion in which the results are interpreted, and f) list of cited references. The report will be due on the last day of class (April 6), and will determine 10% of your final mark.

Submitting Assignments and Late Assignments

All lab assignments have to be printed and handed to the TAs at the start of the laboratory session on the due date (see schedule). The final lab report has to be printed and handed to the instructor at the start of the last class on April 7th, 2017.

We have a strict policy regarding late assignments. Late assignments will be penalized by 10% for each late day for up to five days. We will **not** accept assignments past that deadline.

Mid-term Exam & Final Exam

There will be one midterm exam, which will emphasize concepts that we have worked with over the previous 7 weeks in lecture, labs, and assigned readings. The final exam will be held during the assigned exam period and will provide a comprehensive exam of material covered in lectures, labs, and course readings. The final exam will cover all concepts covered during the semester.

Exams will focus on two types of questions: 1) problem-based questions that assess skills in research design and interpretation, and 2) short answer or essay questions that test a student's ability to describe, synthesize, and apply key concepts about patterns and processes in ecological communities.

If you are forced to miss a mid-term exam, we will defer marks from the mid-term exam to the subsequent final exam for your final grade. You may petition the instructor for a non-graded replacement exam to provide feedback on your progress in the course. Students have 3 business days to contact you regarding a missed midterm or exam, otherwise a grade of 0 will be assigned. Final examinations may be scheduled at any time during the examination period April 7th, 2016 and April 29th, 2017; students should therefore avoid making prior travel, employment, or other commitments for this period. If a student is unable to write an exam through no fault of his or her own for medical or other valid reasons, documentation must be provided and an opportunity to write the missed exam may be given. Students are encouraged to review all examination policies and procedures:

<http://students.usask.ca/academics/exams.php>

G. Formative Assessment

Throughout the term, we will discuss how the class is going – how different activities work and how they do not. I will occasionally ask for written feedback at the end of class so I can adjust our class time as needed. I will use this for adjusting activities, group discussions and clarify any muddy points.

H. Class Schedule

Class Days	week #	Chapter	The Questions:	Lab Due Dates	Lab Topics
4-Jan-17	1	Chapter 1: pg 3-14	Who are we?	Pre-assessment	
6-Jan-17	1	Chapter 1: 18-23	What is a community?		
9-Jan-17	2	Articles posted on Blackboard about reading scientific papers	How do we read scientific papers?		
11-Jan-17	2	Chapter 2: 24-27;	What is competition?		Exploration of Data
13-Jan-17	2	Chapter 2: 35-36; figures 2.4, 2.5 and 2.6 (refer to text as needed)	What is a model of competition?		
16-Jan-17	3	Chapter 3	How do we do experimental work to understand competition?		
18-Jan-17	3	Chapter 4	What is predation?		Outside activity & generation of hypotheses
20-Jan-17	3	Chapter 5: 120-128; focus on- Functional response, equilibrium, locally stable and the Lotka-Volterra model	Why is predation by parasites and pathogens over looked? What does that sort of predation look like?		
23-Jan-17	4	Chapter 5: 132-135; read for concepts, not models	What is a model of predation?		
25-Jan-17	4		How do competition and predation interact?		Data entry and analysis from field work
27-Jan-17	4	Chapter 7: 166-167; 171-179	What is Mutualism?		
30-Jan-17	5	Chapter 7: 179-186	What is Commensalism?		
1-Feb-17	5	Chapter 6: 136-153	What is a food web?	Data entry due	Hypotheses/Questions
03-Feb-17	5	Chapter 6: 153-165	What are the models and experimental methods for understanding food webs?		

06-Feb-17	6		How do food webs become more complex? How does the strength of species interactions impact food webs?		
08-Feb-17	6	Chapter 8: 187-196	What are indirect effects?	Hypotheses Due	Lit Review
10-Feb-17	6	Chapter 8: 196-212	What is a trophic cascade?		
13-Feb-17	7	Study guide	What should I know for the exam?		
15-Feb-17	7	Exam	Exam	Literature Review Due	Introduction
17-Feb-17	7	TBA	Why is it important to use statistics properly?		
break	8				
27-Feb-17	9	Articles posted on Blackboard about writing science	What is competition, predation? How do we communicate in science?		
01-Mar-17	9	Chapter 9	How does season or history change community structure or resiliency?	Introduction Due	Results: Data Analysis and Figure making
03-Mar-17	9		What are community assembly rules?		Reading Week
06-Mar-17	10	Chapter 10	What are the consequences and features of habitat selection?		
08-Mar-17	10		What are the tradeoffs for habitat selection, for avoidance/maximizing interest?	Results with figures and analysis due	Abstract
10-Mar-17	10	Chapter 11	What spatial considerations do we need to consider for community health?		
13-Mar-17	11		What are the main characteristics and causes of habitat loss?		
15-Mar-17	11	Chapter 12	What is diversity?	Abstract due	Discussion and Conclusion
17-Mar-15	11		What makes a population stable/unstable?		
20-Mar-17	12		How are habitat and diversity losses related?		
22-Mar-17	12	Chapter 13	What makes a species invasive?	Discussion & Conclusion due	Go over final report requirements
24-Mar-17	12		What is succession? What is the history of succession?		
27-Mar-17	13		How does community succession impact plants and animals differently?		

29-Mar-17	13	Chapter 14	What are the management problems that community ecology could be part of the solution?		Return discussion & conclusion – look at big ideas
31-Mar-17	13		What are the current limits of community ecology?		
03-Apr-17	14	Mix of chapters	What do these case studies tell us about communities?		
05-Apr-17	14	Mix of chapters	What do these case studies tell us about communities?		No lab
07-Apr-17	14			Final Report due	

* Only the textbook readings are included in this schedule. Additional readings required will be communicated to you during class and on Blackboard.

I. Academic Honesty

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>)

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at: <http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf>

The College of Arts and Science has a zero-tolerance policy regarding plagiarism and other forms of academic dishonesty. Professors are required by College policy to report all forms of academic dishonesty to the Dean's office. Should copying occur in this course, both the student who copied work from another student and the student who gave the material to be copied will be referred to the Dean's office. Formal penalties for academic dishonesty range from receiving zero marks on the assignment, to failure of the course, to University-level disciplinary action that may include expulsion.

Please pay careful attention that all your work is honest and does not present work of others without clearly crediting their contribution. Any written work submitted by a student in this course for academic credit must be the student's own work. Collaboration is allowed on group lab projects, but submitted reports must be written by you individually, and no part of the report may be copied from another person or published work. You are encouraged to study together and to discuss information and concepts covered in the course with other students. However, student cooperation or collaboration should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an email, electronic file, or a hard copy.

J. Examinations with Disability Services for Students (DSS)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check <http://students.usask.ca/health/centres/disability-services-for-students.php>, or contact DSS at 966-7273 or dss@usask.ca.

Students registered with DSS may request alternative arrangements for mid-term and final examinations.

Students must arrange such accommodations through DSS by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by DSS.

K. Student Supports**Student Learning Services**

Student Learning Services (SLS) offers assistance to U of S undergrad and graduate students. For information on specific services, please see the SLS web site <https://www.usask.ca/ulc/>.

Student and Enrolment Services Division

The Student and Enrolment Services Division (SESD) focuses on providing developmental and support services and programs to students and the university community. For more information, see the SESD web site <http://www.usask.ca/sesd/>.

L. Acknowledgements

As we gather here today, we acknowledge we are on Treaty Six Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another.”

This syllabus is based on the work of previous instructors, including Dr. Jill Johnstone and Mélanie Jean, and my faculty mentor Dr. Helen Baulch.

M. University of Saskatchewan Grading System (for undergraduate courses)**Exceptional (90-100)** A superior performance with consistent evidence of

- a comprehensive, incisive grasp of the subject matter;
- an ability to make insightful critical evaluation of the material given;
- an exceptional capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

Excellent (80-90) An excellent performance with strong evidence of

- a comprehensive grasp of the subject matter;
- an ability to make sound critical evaluation of the material given;
- a very good capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

Good (70-79) A good performance with evidence of

- a substantial knowledge of the subject matter;
- a good understanding of the relevant issues and a good familiarity with the relevant literature and techniques;
- some capacity for original, creative and/or logical thinking;
- a good ability to organize, to analyze and to examine the subject material in a critical and constructive manner.

Satisfactory (60-69) A generally satisfactory and intellectually adequate performance with evidence of

- an acceptable basic grasp of the subject material;
- a fair understanding of the relevant issues;
- a general familiarity with the relevant literature and techniques;
- an ability to develop solutions to moderately difficult problems related to the subject material;
- a moderate ability to examine the material in a critical and analytical manner.

Minimal Pass (50-59) A barely acceptable performance with evidence of

- a familiarity with the subject material;
- some evidence that analytical skills have been developed;
- some understanding of relevant issues;
- some familiarity with the relevant literature and techniques;
- attempts to solve moderately difficult problems related to the subject material and to examine the material in a critical and analytical manner which are only partially successful.

N. Participation Rubric

Criteria	Exemplary	Proficient	Developing	Unacceptable
Preparedness	Shows careful reading/ preparation of materials Always attends class and is prompt to class meetings Assignments are submitted on time, demonstrating an insightful understanding of materials	Moderately prepared before class If likely to be absent or late, informs others ahead of class time Assignments are submitted on time, showing a good understanding of materials	Level of preparation is unclear Usually attends class; occasional tardiness or unexcused absences Assignments are mostly completed on time, minimal requirements are met	Little to no advance preparation Attendance is inconsistent; often absent or late without notice (fails to meet attendance expectations) Assignments are not completed on time, and are haphazardly put together
Speaking	Quality of class comments are insightful/constructive	Actively participates in discussion and asks questions	Participates in discussions, often letting others provide the direction	Rarely contributes or monopolizes class discussions
Listening	Draws out ideas or concerns of others, especially those who have said little Offers instructive feedback	Actively listens/responds to classmates through nonverbal cues such as: body position; immediacy cues; facial expression; eye contact; identifying/reading emotions; paraphrasing or asking questions Provides satisfactory feedback	Attentive listening, but could provide more nonverbal cues Provides some feedback	Observes passively Inappropriate or lack of feedback given to others
Collaboration (Group Work; Class Activities)	Completed assigned work ahead of time. Arrives to class on time.	Completed assigned work and arrives to class on time.	Needed some reminding to complete work; work was late but it didn't impact group	Needed much reminding to complete work; work was late and it did impact quality of group's

<p>Did a full share of the work—or more; knows what needs to be done and does it; volunteers to help others.</p>	<p>Did an equal share of the work; does work when asked; works hard most of the time</p>	<p>Did almost as much work as others; seldom asks for help</p>	<p>work. Regularly attends class late.</p> <p>Did less work than others; doesn't get caught up after absence; doesn't ask for help</p>
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Adapted by Dr. Kim West from University of Hawaii Mānoa

(http://manoa.hawaii.edu/assessment/howto/rubric_participation.doc and “Making the Grade: The Role of Assessment in Authentic Learning” by Marilyn M. Lombardi

(<http://www.educause.edu/ir/library/pdf/ELI3019.pdf>)