BIOL 373.3 – COMMUNITY ECOLOGY
2013-14 Term 2

I. Basic Course Information

Instructor: Dr. Jill Johnstone
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Office hours: by appointment

Lab instructors: Alix Conway and David Henkel-Johnson
Office Rm. 118 Biology

Schedule: Lectures: Mon/Wed/Fri 8:30 – 9:30 am, rm. 125 Biology
Labs: Thursday 1:30-4:30pm (plus 1 Saturday), rm. 212 Biology
Start date: 6 January, 2014

II. Course resources

Textbook: Morin, Peter J. 2011. **Community Ecology (Second Edition).** Wiley-Blackwell: West Sussex, UK.
This text is available from the UofS bookstore or as a FREE e-book through the U of S libarary. Note: you must be logged onto the UofS network to obtain the e-book.

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.

III. Course Catalogue Description

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.

IV. Course Aims and Learning Objectives

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.

Specific Learning Objectives:

By the end of the course, you will have:

- Built the knowledge needed to better understand and critically evaluate ecological issues

- Be able to identify and describe the key types of species interactions that shape the structure and function of 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
- Examine examples of how ecological knowledge is built through time from past theories and new data, and applied to address current issues in ecology
- Gain insights into the role of humans in ecological systems, and grapple with some of the complex issues of human management of ecological systems

- Developed skills as a practitioner of ecology
  - Gain practice in the design, implementation, and interpretation of ecological research through the iterative development of their own ecological studies and by studying published examples of research
  - Be able to compile, summarize, and interpret raw ecological data using tools of descriptive and quantitative analysis
  - Improve your abilities in written presentation of research results following the standard scientific style

V. 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 form 0 to 100%. A final grade of 50% of higher and completion of the final exam are required to officially pass the course. Your final grade will be determined based on the following course components:

Course Component	Weight
Participation	10%
Lab assignments	30%
Lab final report	10%
Mid-term exams	20%
Final Exam	30%
Total Grade	**100%**

VI. Evaluation Components

Participation (Weekly warm-up questions and participation)

You are responsible for completing weekly readings outside of class from the textbook and current literature. To help gauge your understanding of the reading material and direct some discussions in lectures, you will be asked weekly to complete a set of "warm-up" questions from the readings. Answers to these questions will be submitted online using the blackboard system on the PAWS course website and are due by 9am on the due date (usually Wednesday). The participation grade you will receive will be based on submitting responses to the pre-class "warm-up" exercises (10%).

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.

Please note that you will be required to attend one of two field labs scheduled on a Saturday in March. Two regular lab meetings have been cancelled during the term to compensated for the extra time required for a Saturday lab activity.

Lab assignments:

Lab activities for this course will be structured around three modules in which you will conduct individual and group research on different topics. The first module will focus on developing analysis and interpretation skills using an existing ecological dataset. The remaining two modules will involve working in groups to collect your own data for analysis. For each module you will be required to complete two assignments: one based on quantitative analyses, the second focused on written exercises in scientific interpretation. These initial exercises will form the skills and knowledge base for your final report, and will constitute 30% of your final mark.

Lab final report:

At the end of term, you will complete a final report your choice of Module 2 or 3. 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 7), and will determine 10% of your final mark.

Mid-term Exams:

There will be two midterm exams, which will emphasize concepts that we have worked with over the previous 4 weeks in lecture, labs, and assigned readings. 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 patters and processes in ecological communities.

If you are forced to miss a mid-term exam, we will reallocate points from that exam to the subsequent exam(s) for your final grade. You may petition the instructor for a non-graded replacement exam to provide feedback on your progress in the course.

Final Exam:

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. As in the mid-term exams, the final exam will include a mix of 1) problem-based questions and 2) short answer or essay questions. It will be a closed-book exam. Students are not required to take the final exam to pass the course. However, if you miss the final due to medical issues or other emergencies, you can apply for a deferred final exam by contacting the College of Arts and Science directly. The final exam represents 30% of your final mark.

VII. 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/university_secretary/honesty/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/university_secretary/honesty/StudentNon-AcademicMisconduct2012.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/university_secretary/pdf/dishonesty_info_sheet.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.

VIII. Accommodations for students with disabilities

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://www.students.usask.ca/disability/, 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.

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.

Failure <50 An unacceptable performance

Tentative Course Schedule for BIOL 373 (2013-14 Term 2)

Date	Lecture Topic	Lab Topic	Textbook
1. Jan. 6-10	Concepts of ecological communities	Introduction to Modules 1 and 2	Morin p.3-23
2. Jan. 13-17	Competition as a factor structuring communities	Module 1: Herbivore impacts on grasslands - Data analysis	Morin p.24-57
3. Jan. 20-24	Top-down biotic controls: Predation and parasitism	Module 1: Data analysis, part 2 *Assignment 1 due*	Morin p.90-120
4. Jan. 27-31	Food webs and complex interactions	Module 2: Competition experiment – Hypotheses *Assignment 2 due*	Morin p.136-165
5. Feb. 3-7	Mutualism and facilitation: Hidden ecological networks *Mid-term exam (Weeks 1-4)*	Introduction to Module 3: Winter field ecology – Research design	Morin p.166-204
6. Feb. 10-14	Indirect biotic interactions	*- no Thurs lab –* *Assignment 3 due*	Morin p.187-213
- Reading Week -			
7. Feb. 24-28	Spatial dynamics	Module 2: Harvest and data analysis *Assignment 4 due*	Morin p.251-281
8. Mar. 3-7	Habitat selection	Module 3: Winter field ecology – Prep. field labs *Assignment 5 due*	Morin p.238-250
Mar. 8 (Sat.)		*Sat. field lab option 1*	
9. Mar. 10-14	Disturbance and succession *Mid-term exam (Weeks 5-8)*	Module 2: Biomass and data analysis	Morin p.319-339
Mar. 15 (Sat.)		*Sat. field lab option 2*	
10. Mar. 17-21	Research applications: Boreal forest communities	Field data analysis & discussion	Morin p.366-375
11. Mar. 24-28	The functional role of biodiversity	Preparing your final lab report *Assignment 6 due*	Morin p.283-318
12. Mar. 31-Apr. 4	Applied community ecology	*- no Thurs lab -*	Morin p.340-348
13. Apr. 7	Final class meeting	*Final report due*	