



**UNIVERSITY OF  
CALGARY**

DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE

**Course:** ECOLOGY 413 – FIELD COURSE IN ECOLOGY  
**Lab Section(s)** B01 AUGUST 17 – SEPT 25, 2020

Fall 2020

**Instructor(s):**  
Dr. K. Ruckstuhl (course coordinator) [kruckstu@ucalgary.ca](mailto:kruckstu@ucalgary.ca)  
Dr. M. Musiani [mmusiani@ucalgary.ca](mailto:mmusiani@ucalgary.ca)

**Teaching assistant:** Danielle Clake [danielle.clake@ucalgary.ca](mailto:danielle.clake@ucalgary.ca)

**Remote Learning Supplemental Information:**

Most aspects of this course will be offered on-line, either in an asynchronous format, which will not require you to be online at the same time, or a real-time (synchronous) format at scheduled meeting times. A few aspects of this course (example, lab tutorials) will be offered in person. Please refer to the details below for more complete information.

**Remote Learning Details:**

The majority of teaching for this course will be offered online but in real-time. Students should plan to be present during the times detailed in the schedule provided below, which includes time allotted to work on projects. The course will be delivered with a tentative schedule as follows. On the first class of each module, the instructors will discuss with students any potential changes, due to the logistics of delivering a course with complex concepts and large datasets mostly remotely.

**Module I**

Monday	Aug	17	08:00 - Meet and greet in virtual classroom using Zoom – Introduction, remarks on note-taking, grading, etc.  10:00-13:00 - Quiz (No Marks, duration 10 min and 10 min if technical problems) on animal behaviour, Videos for analyses.  13:00 - Meet in virtual classroom, complete the days note-taking, identifying a potential research question/s, reading background literature.  14:00-17:00 - Break-out into different discussion rooms
Tuesday	Aug	18	08:00-10:00 - Meet in Zoom classroom, learn different tools to study animal behavior, trouble shooting, brainstorming, practice collecting data.  10:00-12:00 - Work in pairs and identify projects, research question/s, formulate hypotheses and predictions for independent study.  12:00-13:00 - Lunch break  13:00-Evening- Individual field book reviewing and further work on group project, sketching a brief research proposal
Wednesday	Aug	19	08:00 – (Zoom classroom) Scientific approach; how to formulate questions, hypotheses and prediction. How to write a research proposal. Begin data collection  12:00-13:00 - Lunch break  13:00 - Afternoon will be spent collecting data  Evening - Work on individual projects and submit a copy of a rough research proposal
Thursday	Aug	20	08:00 - Meet in Zoom classroom  Full day of data collection  Evening - Data entry and work on projects

Friday	Aug	21	08:00 - Recap of R, discussions in breakout rooms. Short presentations (via Zoom) of study concepts. Full day of data collection Evening - Data entry and work on projects
Saturday	Aug	22	08:00 - Meet in Zoom classroom. Troubleshooting stats. How to create a poster. Data analyses. Full day of data collection Evening - Data entry and work on projects
Sunday	Aug	23	Morning - Work on individual project, further data analyses, and preparing the oral presentation Afternoon – Presentations via Zoom

## Module II

Class1*	Aug	24	10:00-11:30 (hours) - Intro/Organization of Module II. Resource Selection Functions, RSFs; wolf depredation example (Zoom). 13:00-14:30 - RSF Tutorial 1: web-based, with TA presenting from and available in lab*** until 15:30. Note: more information about safety protocols and other relevant info for in-person meetings will be provided to students prior to this section of the course. Opportunity will be offered for a student to make up any missed in-person meetings. 15:30-16:30 - Explanation of Individual Presentations on research paper: assignment and expectations.
Class2*	Aug	25	10:00-11:30 - RSFs predictions (2a*). Killsite detection example (2b*). 13:00-14:30 - RSF Tutorial 2: web-based, with TA available in lab*** until 15:30. Start group projects and hands-on analyses.
Class3*	Aug	26	10:00-11:00 - RSF applications, example: Functional Response by Wolves. 13:00-14:30 - RSF Tutorial 3: web-based, with TA available in lab*** until 15:30. 15:30-17:00** - Individual Presentations.
Class4*	Aug	27	10:00-11:30 - Broader RSF applications. Wolves, Elk, Humans and Ecosystem Effects. 13:00-14:30 - RSF Tutorial 4: web-based, with TA available in lab*** until 15:30. 15:30-17:00** - Individual Presentations.
Class5*	Aug	28	10:00-11:30 - Analysis of Motion-Activated Wildlife Camera Data. 13:00-15:30 - TA available in lab*** (or via web) to address analyses matters. 15:30-17:00** - Individual Presentations.
	Sep	4	Module II Group Assignment due (RSF).
	Sep	14	Final Module II assignment due: Final Report (Individual).

\*As cross-referenced in D2L

\*\*End-of-class could be extended, if technical issues present –i.e. logistics of multiple presentations

\*\*\*Lab classrooms BI182 and BI190. A web based poll will be used to determine number of students attending at any given time, to use one or two labs while always allowing 2m distance.

Course Site: **ECOL 413 B01 - (Fall 2020) - Field Course In Ecology**

**Note:** Students must use their U of C account for all course correspondence.

**1. Prerequisites: BIOLOGY 313 and 315**

See section 3.5.C in the Faculty of Science section of the online Calendar.

**2. Grading:** The University policy on grading and related matters is described sections [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

<b>Module I</b>	<b>50%</b>
<i>Composed of:</i>	
Proposal	5%
Taking notes and developing ideas	15%
Presentation	15%
Poster	15%
<b>Module II</b>	<b>50%</b>
<i>Composed of:</i>	
Group Assignment (Resource Selection Function)	20%
Individual Presentations on research paper	5%
Final Report (Individual)	25%

**There will NOT be a Final Examination.**

**Passing grades in each module are required if the student is to pass the course as a whole.**

Each piece of work (oral presentation, written report) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade, bearing in mind that an F grade will result if the student does not pass (i.e., obtain 50% or higher) both modules.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min % required	95	90	85	80	75	70	65	60	55	53	50

**3. Missed Components of Term Work:**

The University has suspended requirements for students to provide evidence for reasons for absences so please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations. Please let your instructor know immediately if you are ill and cannot meet the deadlines specified.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the instructor to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

**4. Scheduled out-of-class activities:** N/A

**5. Course Materials:** Course materials will be made available online. Documents will include tutorials, research papers, online videos, and instructors' presentations. In addition, large datasets of wildlife location, biophysical features and motion-activated camera photos will be made available on the web or through use of external HDs.

**6. Examination Policy:** N/A

**7. Approved Mandatory and Optional Course Supplemental Fees:** There are no supplemental fees for this course in 2020.

**8. Writing across the curriculum statement:** In this course, the quality of the student's writing in reports will be a factor in the evaluation of those reports. See also [Section E.2](#) of the University Calendar.

9. **Human & Living Organism Studies Statement:** students will not participate as subjects or researchers in human studies. See also [Section E.5](#) of the University Calendar.

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

## 10. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course Coordinator/ Instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections I.1 and I.2 of the University Calendar.
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar. Requests for grade reappraisal must be submitted in writing with an explanation of the reason for the regrade request. Regrades are not limited to a single exam question and the entire examination/assignment may be regraded.

## 11. Other Important Information For Students:

- a. **Mental Health:** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).
- b. **SU Wellness Center:** For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at 403-220-2208. The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>)
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero-tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**

- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).  
  
Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy, by email [addy@ucalgary.ca](mailto:addy@ucalgary.ca). Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than 14 days prior to the date in question. See Section E.4 of the University Calendar.
- g. **Safewalk:** Campus Security will escort individuals day or night (See the Campus Safewalk website). Call 403-220-5333 for assistance.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see Legal Services website.
- i. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca)  
SU Faculty Rep., Phone: 403-220-3913 Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). Student Ombudsman, Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction (USRI) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

Department Approval: \_\_\_[Original Signed] \_\_\_\_\_ Date 10 August 2020

Department Approval  
for NO FINAL EXAM: \_\_\_[Original Signed] \_\_\_\_\_ Date 10 August 2020

E413 F20; 7/24/2020 11:43 AM

DEPARTMENT OF BIOLOGICAL SCIENCES  
COURSE OUTLINE  
ECOL 413 FALL 2020

**COURSE OBJECTIVE**

To examine ecological principles and techniques through field exercises in terrestrial and/or aquatic ecosystems. Understanding of introductory ecology, study design and data analysis is assumed.

**MODULES**

**Please note the deadlines mentioned in the schedule (above). In addition, no report will be accepted after midnight MDT on Monday September 14, 2020.**

Module I: August 17-23, 2020: Dr. Kathreen Ruckstuhl

The goals of this section of the course are to learn about the ‘How and Why’ of animal behavior, why it is an important topic to study, and to gain practical skills involved in doing this type of research. Below there is a list of topics we will study and the various skills you will learn in this Module:

1) Academic learning goals

- Understanding life history trade-offs and how they affect behavior
- Creating optimality models for specific behaviors (optimal foraging, time and cost constraints, testing ideal free distribution)
- Understanding the when, what, how, who and why of behavior
- Experimental design
- The behavior of a species of your choice

2) Practical skills goals

- Ask the right questions, formulate hypotheses, and test predictions
- Gain experience using different behavioral sampling protocols (see Altmann 1974) and testing hypotheses
- Use different tools to study behavior
- Learn about observer biases and ways to avoid them
- Human impact on animals
- Develop your own research proposal
- Manage data effectively to answer your questions
- Present your research to your peers
- Improve critical thinking
- Analyze data using R

A rough schedule is provided on page 1 of this outline, but can change due to logistics or other circumstances. Although students will work from home, I expect some individual-based learning in your backyard, in a park close by your home or using online tools.

All components (except field book and talk) must be submitted to the D2L Dropbox by midnight MDT, September 14, 2020. Late assignments will be deducted 5% per day.

When submitting your final paper, please provide informative file names:

- write the appropriate names listed above, plus your name (minimally your last name)

Please submit your notes, PowerPoint presentation (as PDF), and data files on the day of your presentation, and the Poster in PowerPoint (PDF per PPT) format at midnight MDT on the agreed date (September 14).

Module II: August 24-28, 2020: Dr. Marco Musiani

Students will:

- Use existing camera data to learn how to observe and code animal behaviour.
- Evaluate the landscape -e.g. through regression exercises with large environmental datasets (maps) and real GPS locations of animals and plants. This real-world research will be mentored by the instructors, and performed by the students hands-on.
- Be exposed to the theoretical background of relating animals and plants to resources using Resource Selection Functions

Refer to the schedule on p. 1 for delivery details.