UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

Department of Biological Sciences
BI 186
403 220-3140
biosci@ucalgary.ca

COURSE OUTLINE

1. **Course:** ECOL 429, Ecology of Individuals - Fall 2020

   Lecture 01: MWF 13:00 - 13:50 - Online

Instructor	Email	Phone	Office	Hours
Dr. Kathreen Ruckstuhl	kruckstu@ucalgary.ca	403 829-2063	BI 258	will arrange these with students via email and appointments via Zoom
Dr Robert Barclay	barclay@ucalgary.ca	403 220-3564	BI 330	TBA

Online Delivery Details:

Some aspects of this course are being offered in real-time via scheduled meeting times. For those aspects you are required to be online at the same time.

This course will be delivered completely online, in a hybrid mode. Lectures will be delivered live at the regularly scheduled time (MWF 1300-1350). We will use Zoom for lectures and the link is posted on the course D2L site. Lectures will be recorded so that students who are unable to attend a lecture, can view the recorded session. Recorded lectures can also be used for review.

There will be four in-class quizzes, each assessing students' understanding of the material in the previous set of lectures. The quizzes will take place during the regular lecture time and are designed to take 30 minutes. Students will have until the end of the class (i.e. 50 minutes) to complete and submit their answers. There will be an out-of-class midterm (6:30 - 8:00pm, 27 October), and a registrar-scheduled final exam.

The lab material will be delivered using a hybrid of synchronous and asynchronous methods. The once-per-week, normally-scheduled three hour lab periods, will be held synchronously online (using Zoom). The TA will give a short presentation on the purpose, content, and assessments for the lab each week, and be available to answer questions/help students with assignments. While these synchronous lab periods are not mandatory, **we strongly encourage students to attend them** as the TA and classmates will be present to help. **The lab presentations will be recorded and posted on D2L**, for students who could not attend the synchronous lab session. The TA, lab technician, and professors will be available by email or Zoom, to answer questions at other times as well.

All lab assessments will be completed online, as weekly D2L quizzes and discussion boards, and digitally submitted worksheets and project final assignments (to D2L dropboxes). Students can complete quizzes and discussion boards on their own time **by a specified deadline**. Assessment instructions, rubrics, preparatory materials, etc. will be made available online to students well before assessments are due. Synchronous lab sessions provide an excellent opportunity for students to work on their project worksheets and final assignments while their TA and other classmates are present to answer questions.

Course Site:

D2L: ECOL 429 L01-(Fall 2020)-Ecology of Individuals

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

2. **Requisites:**

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

   Prerequisite(s):

   Biology 313 and 315.

3. **Grading:**

   The University policy on grading and related matters is described in F.1 and F.2 of the online University Calendar.

   In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Quiz 1	10	23 September (in class)
Quiz 2	10	7 October (in class)
Midterm	10	27 October; 6:30 to 8 pm
Quiz 3	10	6 November (in class)
Quiz 4	10	27 November (in class)
Final Exam	15	Registrar scheduled
Lab assignments	35	see schedule at end of this document

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component 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.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	90 %	86 %	82 %	79%	76%	73 %	70 %	66%	62%	57 %	50 %

This course has a registrar scheduled final exam.

Passing grades in both the laboratory and lecture components are required for a student to pass the course as a whole.

4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator 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.

5. **Scheduled Out-of-Class Activities:**

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Mid Term Exam	Online	Tuesday, October 27, 2020 at 6:30 pm	1.5 Hours

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. **Course Materials:**

The lab manual is posted on the course D2L site.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC ELearning online website.

7. **Examination Policy:**

   Other than lecture notes, no other aids are allowed on quizzes, tests or examinations, including accessing internet resources such as search engines (Google, etc.), other websites, shared documents (Google docs etc.) or chat servers (Discord, WhatsApp, etc.), etc., and students are specifically prohibited from working with or contacting any other individuals while completing the exam. Violation of these rules is considered academic misconduct with penalties as described in the University Calendar section K.

   The quizzes, midterm and registrar-scheduled final exam will be synchronous.

   The midterm (6:30 to 8 pm 27 October) will be designed to take one hour, with an additional 30 minutes "technical time", for a total of one hour 30 minutes.

   The final exam will be designed to take 80 minutes, plus an additional 40 minutes "technical time", for a total time of two hours.

   For students with SAS accommodation, please contact the course coordinator (Robert Barclay) to arrange details for the midterm and final exam on a case-by-case basis.

   IMPORTANT: It is the student's responsibility to ensure that they have adequate computer and internet access to write the exams. Students will be required to begin their exams promptly at the start of the scheduled exam. If a student encounters any technical issues starting an exam, they MUST document the issue by taking a photo, screenshot, or video, and they must contact the instructor immediately so that either additional time can be provided to access the exam or alternative arrangements made. Students claiming to experience such difficulties who do not contact their instructor providing evidence of technical difficulties within 15 minutes of the scheduled start of the exam will not be allowed to write the exam and will receive a grade of zero (0) on the exam. If a student's exam is suspended during the exam (lost internet connection, internet browser crashes etc.), they MUST provide evidence (photo/ screenshot/video) and contact the instructor immediately. Students will then be granted re-entry to suspended exams if they began the exam on time and provided evidence of the suspension, and they still have time remaining to complete their exam.

   Students should also read the Calendar, Section G, on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

   There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across The Curriculum Statement:**

   For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section E.2 of the University Calendar.

10. **Human & Living Organism Studies Statements:**

    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.

    Students are expected to be familiar with Section SC.4.1 of the University Calendar.

11. **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.

12. **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 or call 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) 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. **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 or phone 403 220-6979. 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.

f. **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.

g. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: ombuds@ucalgary.ca.

h. **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.

i. **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.

Overall course learning objectives

At the end of this course you should be able to :

1. Distinguish ecological and genetic (evolutionary) aspects of individuality and describe the **associated implications for unitary and modular organisms**

2. Characterize the influences of morphology, physiology and behaviour on the life histories of individual organisms and their implications for population growth and adaptation

3. Use an understanding of how limited resources, time, and opportunity constrain options, to generate hypotheses and predictions concerning individual performance

4. Recognize the pervasive influence of body size on all aspects of individual capacity and performance, and its consequences for morphology, physiology, behaviour and life histories

5. Explain the roles of physiology and behaviour as mechanisms for contending with variation and uncertainty in abiotic and biotic conditions

6. Critique evolutionary explanations for individual performance with reference to the consequences of the timing of events that affect survival and reproduction for individual fitness

7. Design an effective experiment to test predictions based on a hypothesis

8. Prepare and present an effective oral report with increased confidence

9. Write a coherent, informative report of scientific findings in manuscript style

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Ecology 429 – Fall 2020 Tentative Lecture Schedule

Date		**Topic**
September	9	Introduction to the course – **Barclay**
Section I		**Physiological/Morphological Ecology – Ruckstuhl**
	11	Introduction to physiological & morphological ecology
	14	Size & shape
	16	Self thinning
	18	Photosynthesis
	21	Thermal sensitivity
	23	Quiz
	25	Body temperature
	28	Thermoregulation
	30	Metabolic rate
October	2	Metabolism & body size
	5	Metabolic scaling
	7	Quiz
Section II		**Behavioural Ecology** – **Ruckstuhl/Barclay**
October	9	Introduction to Behavioural Ecology **- Ruckstuhl**
	12	**THANKSGIVING – NO LECTURE**

	14	Foraging I
	16	Foraging II
	19	Fleeing I
	21	Fleeing II
	23	Fighting
	26	Social behaviour - **Barclay**
	28	Cooperation and altruism
	30	Cooperation and altruism
November	2	Reproductive behaviours
	4	Reproductive behaviours
	6	Quiz
	9	**READING DAYS – NO LECTURES**
	11	**READING DAYS – NO LECTURES**
	13	**READING DAYS – NO LECTURES**
Section III		**Life History Ecology – Barclay**
November	16	Life history ecology - What is a life history and how does it vary?
	18	Demography and life tables
	20	Net reproductive rate and reproductive value
	23	Is there a cost of reproduction?
	25	Why does reproductive effort vary?
	27	Quiz
	30	Trade-offs: age and size at maturity
December	2	Trade-offs: size and number of offspring
	4	Aging and senescence
	7	Aging and senescence
	9	Sex ratio of offspring and its adjustment

Ecology 429 – Tentative Lab Schedule – Fall 2020

Week	Dates	Project 1: Animal behaviour	Project 2: Ecological Allometry	Project 3: Bateman's Principle	Project 4: Life history traits in flour beetles
2	Sept 15, 17	*Introduce project timeline, structure, assignment *Groups choose general aspects of project (P1 Worksheet 1) *Find references *Discussion board			
3	Sept 22, 24	*Lab quiz *Research proposal *Data collection, start (P1 Worksheet 2) *Discussion board			
4	Sept 29, Oct 1	*Data collection *Discussion board	*Lab quiz *Outline intro and discussion, find refs, data prep., create figs (P2 Worksheets 1-3) *Discussion board		
5	Oct 6, 8	*Data collection *Discussion board	*Lab quiz *Complete analysis *Complete assignment *Discussion board		

6	Oct 13, 15	*Data collection *Discussion board	**Ecological Allometry Assignment due**	*Lab quiz *Decide which of Bateman's Principles to test, find references, outline assignment, create figs, plan analysis (P3 Worksheets 1-3) *Discussion board	
7	Oct 20, 22	*Data collection finished *Discussion board	**Ecological Allometry *assignment returned***	*Lab quiz *Data analysis *Complete poster *Discussion board	
8	Oct 27, 29	*Organize data, create figures, data analyses, presentation structure and content (P1 Worksheets 3+4) *Discussion board		**Bateman's Poster due**	
9	Nov 3, 5	*Work on project with group and TA *Discussion board		***Bateman's Poster returned***	
10	Nov 10, 12	**Reading week: no scheduled labs**			
11	Nov 17, 19	**Animal Behaviour Oral presentations due**			
12	Nov 24, 26	***Animal Behaviour oral presentation grades returned***			*Lab quiz *Choose two LHTs, develop predictions, find references, propose analyses, outline figures (P4 Worksheets 1-2) *Discussion board
13	Dec 1, 3				*Complete analyses *Complete assignment *Discussion board
14	Dec. 9 last day (Weds)				**Beetle LHT paper due last day of class**

Electronically Approved - Sep 03 2020 15:55

Department Approval

Electronically Approved - Sep 03 2020 19:12

Associate Dean's Approval