Biology 3230F Course Outline
Fall 2024

1. Course Information

Course Information
Biology 3230F, Field Research in Biology, Fall 2024

This course will include several field trips during the lab and lecture timeslots on Thursdays and will require students to spend time in the field conducting individual research projects.

List of Prerequisites
A minimum mark of 60% in Biology 1001A or Biology 1201A, and Biology 1002B or Biology 1202B or Integrated Science 1001X, and Biology 2244A/B or Statistical Science 2244A/B.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course, and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Instructor: Dr. Ben Rubin, brubin2@uwo.ca
Teaching Assistant: Natalie Tateishi, ntateish@uwo.ca
Students must use their Western (@uwo.ca) email addresses when contacting the instructor or TA.
Office hours by appointment

3. Course Syllabus, Schedule, Delivery Mode

Description: This experiential learning course provides a theoretical and hands-on introduction to the planning and execution of field studies in biology. Course topics include planning, common field methods, data recording, and common methods of data analysis used by field biologists. Each of these will be presented during lectures and performed by students for credit. A breadth of study organisms and systems will be covered (e.g. trees, herbaceous plants, animals, aquatic ecosystems, terrestrial ecosystems). 2 lecture hours, 3 laboratory hours, 0.5 FCE

Course Learning Outcomes

At the end of this course, successful students will be able to:

1. Describe and perform the steps of preparing for field studies in biology, including
    a. planning the logistics and travel arrangements,
    b. researching and obtaining required permits,
    c. considering ethical and safety concerns,
    d. and taking appropriate steps to mitigate environmental damage and acquire requisite safety training.
2. Plan and execute an independent field research project, including
    a. development of the experimental question or hypothesis,
    b. design and implementation of the sampling and data acquisition,
    c. choosing the appropriate analytical methods for the data,
    d. presenting the results graphically and in writing,
    e. placing findings in the context of related studies in the scientific literature,
    f. and stating the significance of their work to conservation planning and management.
3. Identify some of the locally common taxa from a broad range of organisms.
4. Properly record biological observations and data in the field under favourable or inclement conditions.

Tentative Schedule

In this class, we will use the Tuesday lecture and lab times together for outdoor field trips or indoor activities (reporting workshops or individual progress meetings). Some of the outdoor activities require favourable weather. Therefore, the exact ordering of these activities is subject to change based on weather forecasts and the final decision will be announced on Wednesdays by 5 pm. **It is your responsibility to check for the announcement and report to the corresponding location with appropriate clothing and equipment at 1:30 PM on Thursday.**

Tuesday (Date & location)	**Lecture topic & due dates**	**Thursday (Date & location)**	**Activity, equipment, and due dates**
		Sep 5	Lecture – Introduction to course
Sep 10	Reading: Krebs (2017) Chapter 1 Study design	Sep 12	Pollinator abundance: Field trip 1 – marking pollinators **Dress for the weather, including long pants. Bring water.** **DUE: Two potential research questions**
Sep 17	Reading: Demery and Pipkin (2021) Field safety	Sep 19	Reading: Briggs et al. (2022) Pollinator abundance: Field trip 2 – recapturing pollinators **Dress for the weather, including long pants. Bring water.**

Sep 24	Designing datasheets	Sep 26	Reading: Reed et al. (2022) Forest structure group project: Field trip **DUE: Research proposal** **Dress for the weather. Bring water.**
Oct 1	Individual meetings: Proposals **No lecture**	Oct 3	Individual meetings: Proposals **No lecture or lab**
Oct 8	Data analysis field trips 1 & 2 **DUE: Field data collection plan**	Oct 10	Reading: Stein (1975) Crayfish allometry: Field trip **Dress for the weather. Bring water.**
Reading week			
Oct 22	Reading: Sheffield (2011) Introduction & Lessons 1, 2 & 3 Scientific writing	Oct 24	Reading: Turbek et al. (2016) Writing workshop 1 **Bring a laptop**
Oct 29	Office hours **No lecture**	Oct 31	Reading: Orrock et al. (2004) Seed predators: Lab session 1 & field trip – creating and setting out feeding stations **Dress for the weather. Bring water.**
Nov 5	Office hours **No lecture** **DUE: iNaturalist collection**	Nov 7	Seed predators: Lab session 2 & reporting workshop – measuring giving up density **Bring a laptop**
Nov 12	Reading: Hector (2021) Chapters 3 and 5 Data analysis	Nov 14	Reading: Hector (2021) Chapters 6 and 7 Data analysis workshop **Bring a laptop**
Nov 19	Office hours **No lecture**	Nov 21	Writing workshop 2 **Bring a laptop** **DUE: Draft data analysis**
Nov 26	Individual meetings: Data analysis **No lecture**	Nov 28	Individual meetings: Data analysis **No lecture or lab**
Dec 3	Office hours **No lecture**	Dec 5	Lecture: Careers in field biology **No lab** **DUE: Final research report (Dec 6)**

4. Course Materials

Software (free):

- R version 4.4.1 (June 2024) (https://cran.r-project.org/)
- RStudio Desktop v2022.07.01 (https://posit.co/download/rstudio-desktop/)

If you have an earlier version of R and RStudio on your laptop, I recommend that you uninstall R, RStudio, and all libraries, and then install the most recent versions. You may also use R Studio Cloud, which is hosted online.

iNaturalist account (free)

Students are responsible for checking the course Brightspace site (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all studentsin the class.

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Course element
Class attendance, participation, leadership, and Professionalism[1]: 15%
Reading reports (Top 8 of 10)[2]: 5%
iNaturalist collection 10%
Individual research projects • Potential research questions 10% • Project Proposal: 15% • Field Data Collection Plan 5% • Draft Data Analysis: 10% • Final Research Report[13]: 30%

Unless otherwise specified, assignments are due at 11:55 p.m. on the dates indicated.

[1]You must pass this element to pass the course. Students who do not pass one or both of these elements but who would otherwise have a calculated grade above 45% will be assigned a grade of 45%. Students will not be penalized for failing to meet a requirement due to circumstances beyond their control. For example, if illness causes you to miss too many classes or field trips due to receive course credit, you will have the opportunity to complete those activities with the next offering of the course. In such a case, you will receive a grade of Incomplete (INC), and your maximum course load may be reduced during the term in which you complete the course requirements.

[2] For each reading assignment you will be asked to state the three to five main points and to rate your own understanding of each point on a scale from 1 to 10. These are due in the morning before class at 8:30 AM. Grading scheme: full credit if submitted, no credit if not submitted

[3] This assignment is designated by the instructor as exempt from requests for academic accommodation

without documentation (see General information about missed coursework, below).

General information about missed coursework
Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult Accessible Education.

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:
https://registrar.uwo.ca/academics/academic_considerations/
All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the Final Research Report is designated by the instructor as excluded from this policy. Some other course elements will be handled through flexible completion requirements rather than through academic accommodation. If you are experiencing longer-term impacts on your academic responsibilities which cause you to miss more than the allowed number of such assessments, please consult Accessible Education.

Evaluation Scheme for Missed Assessments

If the **Final Research Report** is missed, you must submit an Academic Consideration request with supporting documentation within 48 hours of the due date. If the request is granted, accommodation will be an extension of up to one week.

If **Reading Reports** are missed all requests for Academic Consideration will be denied. Denials may be appealed to your Faculty's Dean's Office:

https://uwo.ca/univsec/pdf/academic_policies/appeals/appealsundergrad.pdf Accommodation of longer-term impacts is available through Accessible Education. If accommodation is granted based on appeal or by Accessible Education, it will be by re-weighting a portion of the grade to the summary and critique of statistical analysis and reporting in a scientific paper.
If other assessments are missed, academic consideration will be by extension. Students are expected to submit all assignments by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to 72 hours past the deadline without a late penalty. Should students submit their assessment more than past the deadline, a late penalty of 25% per day will be applied. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (72 hours).

6. Supports available & other course policies

Religious Accommodation
When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

https://www.edi.uwo.ca.

Accommodation Policies
Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf.

Academic Policies
The website for Registrar Services is https://www.registrar.uwo.ca/.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Support Services
Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic-related matters: https://www.uwo.ca/sci/counselling/.

Students who are in emotional/mental distress should refer to Mental Health@Western (https://uwo.ca/health/) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing

compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at http://academicsupport.uwo.ca/accessible_education/index.html if you have any questions regarding accommodations.

Learning-skills counsellors at Learning Development and Success (https://learning.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC, https://westernusc.ca/services/.

This course is supported by the Science Student Donation Fund. If you are a student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Advising site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the Chair of the Department or email the Science Students' Council at ssc@uwo.ca.