

## BIO3440a: Ecology of Populations - Course Outline

### 1. Course Information

#### Lecture hours and location

Tuesday and Thursday, 12:30-1:30pm, WIRB 117

#### Lab hours

Section 002, MON 2:30-5:30

Section 003, TUES 9:30-12:30

Section 004, TUES 2:30-5:30

#### Mandatory Lab Days

There are four data collection days that requires **MANDATORY** attendance. If you do not attend, you will not be collecting the data necessary to complete the lab. These days include:

September 12/13, BGS 2077

September 19/20, Gibbon's Park – Baldwin Flats

October 3/4, BGS 2077

November 14/15, BGS 2077

#### Lab Locations:

Labs will occur either in BGS 2077 (data collection days) or SSC 1000 (computer labs for statistical analyses days). One data collection lab will occur at Gibbon's Park. You must dress appropriately for working in meadows outside under any weather condition.

**List of Prerequisites,** Biology 2483A/B, One of Biology 2244A/B, Psychology 2810, Statistical Sciences 2244A/B, or the former Statistical Sciences 2122A/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 & TA Information

Instructor	Email	Office	Phone	Office Hours
Dr. Liana Zanette	<a href="mailto:lzanette@uwo.ca">lzanette@uwo.ca</a>	Collip 207	519-661-2111 x88317	By appointment only

Tas	Email	Section	Time	Office	Office Hours
Khuslen Luvsan	<a href="mailto:kluvsan@uwo.ca">kluvsan@uwo.ca</a>	004	Mondays, 9:30-12:30	Collip 208	In Lab Only
Lauren Witterick	<a href="mailto:lwitter@uwo.ca">lwitter@uwo.ca</a>	002	Mondays, 2:30-5:30	Collip 208	In Lab Only
Khuslen Luvsan	<a href="mailto:kluvsan@uwo.ca">kluvsan@uwo.ca</a>	003	Tuesdays, 9:30-12:30	Collip 208	In Lab Only

Students must use their Western (@uwo.ca) email addresses when contacting their Instructor and TAs.

### 3. Course Syllabus, Schedule, Delivery Mode

#### Goals of the Course

Population ecology is the scientific study of the mechanisms that influence the abundance of organisms. In an era where populations are declining at precipitous rates leading to an “extinction crisis”, the role of population ecology has never been so critical and the need for population ecologists so urgent. This course uses concrete examples to explain the central tenets of population ecology with a strong emphasis on its practical application. You will learn about what population ecologists do and will learn many of the techniques needed in order to **DO** population ecology.

More specifically, our goals are:

1. *To teach you the basic principles of population ecology.* These include theoretical principles as well as field techniques. We will discuss how to measure a population’s abundance, describe a population’s dynamics, and investigate the mechanisms that cause population dynamics.
2. *To improve your data collection and analysis skills.* During the course of completing the experimental labs you will collect and analyse data. You will learn and be expected to apply several methods of analyses. A previous course in statistics is strongly recommended.
3. *To improve your critical thinking skills.* This will be achieved by developing hypotheses and making comparisons between experimental methods.

#### Learning outcomes

By the end of this course, you should be able to:

1. Recognize the importance of population ecology as a discipline and how it is used
2. Learn and apply your knowledge of population abundance and dynamics to data sets
3. Implement sampling regimes that will ensure experimental rigour
4. Collect, manage, and analyze your own data using spreadsheets
5. Interpret results in written form
6. Recognize factors that limit populations and the importance of experimental manipulations in identifying those factors

#### Key Sessional Dates

Classes begin: September 8, 2022; January 9, 2023

Fall Reading Week: October 31 – November 6, 2022; February 18 – 26, 2023

Classes end: December 8, 2022; April 10, 2023

Exam period: December 10 – 22, 2022; April 13 – 30, 2023

## Topics and Tentative Schedule

TENTATIVE SCHEDULE (see Lecture and Lab Pages for detailed and the most up to date information)		
WEEK	LECTURE TOPIC	TUTORIAL
0	Course Overview	<i>No Tutorial</i>
1	L0: Introduction to Population Ecology	<i>Sep 12-13 - Lab 1 - <b>Mandatory</b> - Data Preparation - BGS 2077</i>
2	L1: Abundance I: Quadrats and Statistics	<i>Sep 19-20 - Lab 1 - <b>Mandatory</b> - Data Collection at Gibbons Park</i>
3	L2: Abundance II: Mark-Recapture Techniques	<i>Sep 26-27 - Lab 1 - Statistical Analysis - Computer Lab</i>
4	L3: Parameters and Basic Models of Population Growth	<i>Oct 3-4 - Lab 1 <b>DUE</b>; Lab 2 - <b>Mandatory</b> - Data Collection - BGS 2077</i>
5	L3: Parameters and Basic Models of Population Growth	<i>Oct 10-11 -No Labs (Thanksgiving)</i>
6	L3: Parameters and Basic Models of Population Growth	<i>Oct 17-18 - Lab 2 - Statistical Analysis - Computer Lab</i>
7	L3: Parameters and Basic Models of Population Growth	<i>Oct 24-25 - Lab 2 <b>DUE</b>; Lab 3 - Statistical Analysis - Computer Lab</i>
8	Reading Week	<i>Oct 31 - Nov 1 - No Labs, Reading Week</i>
9	L4: Age-Structured Population Models	<i>Nov 7-8 - Lab 3 - Statistical Analysis - Computer Lab</i>
10	L5: Survival Analysis	<i>Nov 14-15 - Lab 3 <b>DUE</b>; Lab 4 - <b>Mandatory</b> - Data Collection - BGS 2077</i>
11	L6: Limiting Factors and Interactions	<i>Nov 21-22 - Lab 4 - Statistical Analysis - Computer Lab</i>
12	L7: Community Interactions and Populations	<i>Nov 28 - 29: Lab 4 <b>DUE</b></i>
13	L7: Community Interactions and Populations	<i>Dec 5 - 6: NO LABS</i>

### Contingency plans in-person class

This is an in-person course. If circumstances require it, we may pivot to online. In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online. The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

## 4. Course Materials

### Readings

Readings are Required. You will not be able to do the labs without them, and they will help you better understand the lecture material. It is to your benefit to do the readings in advance of the associated lecture/lab. In many lectures, I provide information from the primary literature which I cite on the lecture slides/notes. Please use these to further help you understand course content. They would be considered Supplemental rather than Required. Readings may be added as we move along in the course. I will make them available and will tell you whether they are required or supplemental. Please see Readings tab on the course webpage for further details.

### Lecture, Lab and other materials:

All course material will be posted to OWL: <http://owl.uwo.ca>.

Students are responsible for checking the course OWL 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 students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

### Use of Lecture, Lab and other materials

All materials that are posted for and/or presented to you are for your individual use only. DO NOT re-post, share, or sell any of this content with any other person(s), including crowd sharing sources. To do so is a breach of intellectual property. Audio and/or visual recording is not allowed (unless permission is given by the instructor, following Section 6).

## 5. Methods of Evaluation

The overall course grade will be calculated as listed below:

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Test x 1	in class, 50 min, mixed format, on L0,L1,L2	15%
Labs x 4	each worth 12.5%, on L1, L2, L3, L4&5	50%
Final exam x 1	cumulative, mixed format, to be scheduled by the Registrar's Office	35%

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### Course-specific conditions required

- all labs must be completed to ensure that students demonstrate sufficient mastery of those technical skills to progress
- completion of labs includes MANDATORY attendance on data collection days (September 12/13, BGS 2077, September 19/20, Gibbon's Park – Baldwin Flats, October 3/4, BGS 2077, November 14/15, BGS 2077)
- lab assignments are due no later than 10 min at the beginning of lab on their given due dates
- there is no make up for the in class test. If it is missed and formal accommodation granted, the percent value will be added to the final exam. Otherwise, a mark of 0% will be given.
- the final exam must be completed. If it is missed and formal accommodation granted, a make up exam will be arranged.
- queries on marked materials will be accepted for 7 days once the grade is released (for example, if you receive a grade on Monday at 9am, you may query up until the following Monday at 9am). No further consideration will be given beyond this timeline.
- it is the student's responsibility to ensure that all graded materials are submitted properly and to the correct individuals.
- all materials posted for and/or presented to you are for your individual use only. DO NOT re-post, share, or sell any of this content with any other person(s), including crowd sharing sources. To do so is a breach of intellectual property. Audio and/or visual recording is not allowed (unless permission is given by the instructor, following Section 6.).

## 6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

**Assessments worth 10% or more of the overall course grade:**

By policy, academic considerations for work totalling 10% or more of the final course grade can be granted only by the student's Faculty of Registration (typically by their academic counsellors). In such cases, students should be directed as follows.

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf).

The Student Medical Certificate is available at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

### **Absences from Final Examinations**

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

**Note:** missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

## **6. Accommodation and Accessibility**

### **Religious Accommodation**

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### **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](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

## 7. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](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.

A calculator that is non-programmable is permitted for the test and exam. The calculator must be non-programmable. It will not have access to apps, your phone's data, or the internet. Your phone is not an adequate calculator.

**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:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://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>).

Remote Proctoring Software may be used in this course for test/exam, but only in the event of health lock-down. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at:

<https://remoteproctoring.uwo.ca>.

## 8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling 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](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](mailto: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](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<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/>.

## **9. Land Acknowledgement**

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Attawandaron peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. This land continues to be home to diverse Indigenous peoples (e.g. First Nations, Métis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society.

More information about Indigenous Services (<https://indigenous.uwo.ca/>) and this Land Acknowledgement (<https://communications.uwo.ca/comms/land-acknowledgement/>) are available.