

## GEOG 3224B Spatial Ecology & GIS

Winter 2020-21

### 1. Course Information

Lectures posted on OWL weekly, Asynchronous

Labs: Tuesdays, 14:30 – 16:30, via ZOOM

#### 1.1. Contact Information:

Instructor: Jed Long

Office Hours via ZOOM: Tuesday, 15:00 – 16:00

Email: [jed.long@uwo.ca](mailto:jed.long@uwo.ca)

### 2. Calendar Description

#### 2.1. Course Description

GIS methods for analyzing environmental and ecological data are presented. Emphasis is placed on quantifying and interpreting spatial patterns in data collected on plants and wildlife. The course will explore issues associated with scale, networks, disturbance, and feedback. Topics covered include habitat fragmentation, wildlife tracking, home ranges, and species distributions.

2 lecture hours, 2 lab hours, 0.5 course

**Antirequisite(s)**: None

**Prerequisite(s)**: GEOG2210 OR equivalent (e.g., BIOL2244 OR STAT2244); AND GEOG2220 OR GEOG2230.

Prerequisite checking is the student's responsibility.

#### 2.2. Senate Regulations

Senate Regulations state, "unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will 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."

### 3. Textbook

(Optional)

Gergel, SE and Turner, MG eds. (2017) Learning Landscape Ecology: A practical guide to concepts and techniques. 2<sup>nd</sup> Edition. Springer-Verlag, New York, NY.

Plus selected readings.

## **4. Course Objectives and Format**

### **Course Objectives:**

- I. Learn core concepts associated with spatial ecology, such as scale, networks, and disturbance
- II. Develop skills for implementing different spatial analyses in GIS
- III. Apply techniques using real-world data examples
- IV. Interpret spatial patterns observable in maps

This course will rely heavily on the development of technical skills and will use GIS software (e.g., ArcGIS) and statistical software, thus students should have some experience working with geographical data in GIS or related software environments.

### **Course Format:**

**Lectures:** Lecture material will be provided weekly according to the course timetable. All lecture material will be posted to OWL.

**Labs:** Labs will be conducted according to the class schedule. All labs will be run synchronously so that students can speak with the instructor and TA to get direct help on material.

**Readings:** Readings will be posted regularly on zoom, each student will be required to write a discussion post about one of the readings, which will serve as the focal point for an online class discussion board.

It is the student's responsibility to cover any material missed by failure to attend lectures, please also see all material on the course website.

## **5. Learning Outcomes**

- Understand key concepts in spatial ecology and GIS
- Assess datasets for quality and efficacy for different analyses
- Map and model species occurrence data
- Visualize and quantify animal movement and home range
- Quantify and interpret landscape patterns
- Evaluate habitat connectivity
- Perform spatial analysis in GIS software

## 6. Course Timetable

### Lecture Timetable

Week Of	WEEK	Topic (Asynchronous)
J11	1	Course Introduction and GIS background
J18	2	Species Mapping
J25	3	Habitat mapping
F1	4	Citizen science in ecology
F8	5	Species Distribution Models
F15	6	SPRING BREAK NO CLASS
F22	7	Landscape Patterns
M1	8	Connectivity
M8	9	Wildlife Monitoring
M15	10	Animal tracking data
M22	11	Measuring wildlife space use
M29	12	Beyond ArcGIS
A5	13	Spatial Ecology

### Lab Timetable (Tuesday 14:30 – 16:30 via Zoom)

Week Of	WEEK	Topic
J11	1	No Lab
J18	2	Lab 1 – Species Range Maps
J25	3	Lab 2 – Habitat Maps
F1	4	A1 – Help Session
F8	5	Class Project Introduction Session
F15	6	SPRING BREAK NO LAB
F22	7	Lab 3 – Landscape Pattern Indices
M1	8	Lab 4 – Connectivity
M8	9	A2 – Help Session
M15	10	Lab 5 – Animal Tracking Data
M22	11	Lab 6 – Home Ranges
M29	12	A3 – Help Session
A5	13	Class Project Help Session

## 7. Evaluation

Evaluation Components	Weight (%)	Assessment Due Date
1. Assignment 1	25%	Friday February 5
2. Assignment 2	25%	Friday March 12
3. Assignment 3	25%	Friday April 2
4. Class Project	15%	-
5. Discussion Forum	10%	-

All assignments will be submitted electronically (via OWL).

Students are responsible for material covered in the lectures as well as the assigned readings.

Late assignments will face deductions at the rate of 10% per day late.

**Grades will not be adjusted on the basis of need. It is important to monitor your performance in the course. Remember: *You* are responsible for your grades in this course.**

## 8. Accommodation Policy

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

### Academic Consideration for Student Absence

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the term, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to

contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For Western University policy on Consideration for Student Absence, see

[Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs](#)

and for the Student Medical Certificate (SMC), see:

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

### **Religious Accommodation**

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar](#).

## **9. Make-up Examinations**

Makeups will be granted with approved documentation only. All documentation for missed exams must be provided the Academic Counselling Office and Instructor within 48 hours of the scheduled exam. For missed exams, you must take your documentation to Academic Counselling within 48 hours of the exam. Otherwise, the instructor will assign a grade of zero. The format and content of make-ups may differ substantially from the scheduled test or examination.

For missed assignments where students have used a self-reported absence. Students will be given a 5-day extension. For example if an assignment due Friday was missed due to a Self Reported absence, the assignment would then be automatically due on the following Wednesday.

## **10. Use of Electronic Devices**

This course relies heavily on the use of computer software and systems.

## **11. Statements concerning Online Etiquette**

Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- Please “arrive” to class on time
- Please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)

- Ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- To minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- If you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question
- Remember to unmute your microphone and turn on your video camera before speaking
- Self-identify when speaking
- Remember to mute your mic and turn off your video camera after speaking (unless directed otherwise)

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

## **12. Academic Offences**

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

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> ).

## **13. Western’s Commitment to Accessibility**

The Department of Geography strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2147 for any specific question regarding an accommodation. Information regarding accommodation of exams is available on the Registrar's website.

More information about "Accessibility at Western" is available.

## **14. Mental Health**

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit Western's Health and Wellness website for more information on mental health resources.

## **15. Support Services**

Western's Support Services  
Student Development Centre

## **16. Important Dates**

January 11: Classes resume

January 19: Last day to add a second term half course

February 15: Family Day – Department Office Closed

February 13 to February 21: Spring Reading Week (No classes; Department Office open)

March 15: Last day to drop a first term half course without penalty

April 2: Good Friday

April 12: Classes end

April 13: Study day

April 14 to April 30: Examination Period