BIOD60: Spatial Ecology
Fall 2021

Course information

Lecture times:
Tuesday 9-12am.
Location:
MW160
Textbook:
None, readings will be provided.
Exams:
Final: TBA
Project:
Assignments
Professor:
Marc Cadotte
Office: SY362
Office hours: TBA
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Teaching Assistants:
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Course description

An introduction to the main principles and concepts of spatial ecology, the science of the spatial interactions, dynamics and patterns of organisms, communities and ecosystems. The course covers community and population spatial ecology, and explicitly theoretical underpinnings of patterns as well as analysis tools to understand the role of space. This course will link conceptual understanding to contemporary human and environmental issues.

The lectures will consist of lecture and tutorial. The tutorial portion will introduce specific analyses and how to program these in the R programming language.

Course Resources

Course Website and Online Lectures: Lecture recordings and PDF copies of slides will be made available weekly. You should familiarize yourself with intranet and its contents, as check it regularly.

How to Get Help with the Course. First, check this syllabus; you will find the answer to almost all procedural questions here. If you have a question that cannot be

answered by this syllabus, check the course website, which will be consistently updated with answers to many conceptual and procedural questions. If this does not answer your question, then feel free to email either TA or the professor. The professor will return your email in a reasonably timely fashion Monday through Friday.

Course Requirements/Marking

R assignments (30): All students will be responsible for three assignments based on analyses or plotting data in the R programming language.
Participation (10): Students are expected to participate in in-class discussion.
Midterm (25): Short and long answer midterm.
Final exam (35): Short and long answer final exam.

Accessibility

Everyone is a welcomed member of this class, and we strive to provide an equal playing field for students with diverse learning styles and needs. Please contact the AccessAbility office as soon as possible if you need any form of accommodation. They will provide confidential services that include flexible, personalized solutions for test-taking, note-taking, and the like. The AccessAbility office is located in SW302 and can be emailed at: ability@utsc.utoronto.ca

Academic Integrity

The learning environment is built on mutual trust, and we will assume that all students operate with honesty and integrity. However, in the rare cases of substantial evidence that the University of Toronto's Code of Behaviour on Academic Matters (Section B; http://www.governingcouncil.utoronto.ca/policies/behaveac.htm) has been compromised, then I will enact the procedures outlined in the Code of Behaviour on Academic Matters. First, I will invite you to discuss the possible offence through an email invitation. If our discussion leads me to believe that you have not compromised the code, then the matter will be dropped. If either you fail to respond to two requests for this discussion or new evidence comes to light, then a formal investigation will be initiated.

Date	Lecture	R session	Topic	Assignment
Sep. 7	Lecture 1		Introduction	
Sep.14		Session 1	Intro to R	
Sep. 21		Session 2	Intro to R/stats	
Sep. 28	Lecture 2	Session 3	Spatial autocorrelation	#1 given
Oct. 5	Lecture 3	R help	Metapopulations	
Oct. 12	Reading week			#1 due oct17
Oct. 19	Lecture 4	Midterm	Metacommunities	
Oct. 26	Lecture 5	Session 4	Spatial analysis/mantel	
Nov. 2	Lecture 6	Session 5	Species-area relationships	#2 given
Nov. 9	Lecture 7 & 8	Session 6	Spatial spread and Beta diversity	#2 due Nov. 12
Nov. 16	Lecture 9	Session 7	Networks	#3 given
Nov. 23	Lecture 10	R help	Spatial conservation	
Nov. 30	Grad school/careers	exam review		#3 due

R Tutorial schedule

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2020

Session 1: The basics
1.1 working within R (using commands, load/saving workspace, set working directory)
1.2 using packages and getting help
1.3 objects –vectors, matrices, data frames, lists; loading data and manipulating objects
1.4 simple visualization and analysis

Session 2: Good programming
2.1 writing scripts
2.2 creating functions
2.3 *for* loops (optional)
2.4 *apply* functions (optional)
2.5 Linear models

Session 3: Visualizing and analyzing spatial autocorrelation

Session 4: Mapping and analyzing the effects of spatial distance versus environmental differences

Session 5: Species-area relationships

Session 6: Calculating and analyzing beta diversity

Session 7: Network analyses