Faculty of Environmental and Urban Change
York University

UNDERGRADUATE COURSE SYLLABUS

Course: EU/SC/GEOG3500 3.0 M Biogeography (cross-listed as SC/BIOL3500 3.0)

Term: Winter 2024

Calendar Description
An analysis of the geography of plants and animals emphasizing processes that operate at the population level, the origin and diversity of plants and animals, geographic patterns of diversity, and dynamics of species populations from local to continental scales.

Prerequisite(s)
AP/GEOG 2500 3.00 or SC/GEOG 2500 3.00 or SC/BIOL 2050 4.00 or SC/BIOL 2050 3.00

Course Credit Exclusions
None

Course Director
Professor Joshua Thienpont
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https://yorku.zoom.us/j/96350846885?pwd=a2lTMWs4d2psNFJwSHkyem0zZW0rdz09
Course consultation hours: Thursdays 11:00-12:00 via Zoom
All other times by appointment or chance

Teaching Assistants
LAB 01 – Rebecca Gasman
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LAB 02 – Amanda Little
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LAB 03 – Philip Lynch
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TA Office hours information will be available on eClass

Course Management
This course depends on in person learning. Lectures will occur synchronously, on campus. Quizzes will occur on eClass, available over a specified window. Labs will also occur in person,

on campus, approximately weekly throughout the term.

Time and Location

Lectures:	Tuesday, 12:30-14:30	ACW306
Lab 01:	Tuesday, 14:30 – 16:30	Ross N302
Lab 02:	Tuesday, 14:30 – 16:30	HNE253
Lab 04:	Tuesday, 16:30 – 18:30	HNE253

Please check your course timetables to confirm which lab section you are assigned to and stick to your assigned lab section. Your TAs will only admit students enrolled in their lab section and will only mark assignments for enrolled students.

Note: TAs have been directed **not** to accept students into a tutorial unless they have formally registered in that section. In exceptional circumstances, the Course Director will consider recommending to the Undergraduate Program Director that a student be permitted to change tutorial group enrolment; a written request detailing the reasons why a change is being requested and the choice of alternative tutorials must be submitted **by the student** to the Course Director prior to the first tutorial session.

Purpose and Objectives of the Course

Biogeography brings together fundamental concepts in biology and geography to explain the distribution of species and biodiversity, and the historical and ecological factors that are responsible for that distribution. Ecological biogeography emphasizes processes occurring over short timescales, while historical biogeography is concerned with processes taking place over thousands to millions of years on a global scale. The aim of this course is to provide you with an understanding of the factors that control the distribution of organisms in the modern landscape and over geologic time. You will learn about hypothesis testing in biogeography through lab exercises, culminating in an independent project on biogeographic patterns where you will develop critical skills in research design, data analysis, and communication.

Upon completion of this course, students should be able to:

- Explain patterns in the modern distribution of species in relation to physical, ecological, and historical factors.
- Describe how processes that operate at geological and evolutionary time scales (e.g., plate tectonics, speciation, extinction) shape the distribution of organisms at a global scale, and over geologic timescales.
- Place the basic principles of biogeography in the context of the rapidly changing environment we find ourselves in.
- Design and conduct research studies to answer biogeographical questions.
- Perform basic data analysis and interpretation within the context of the scholarly literature, including graphical representation of data and scientific report writing.

Organization of the Course

Several platforms will be used in this course (e.g., eClass, iClicker, Zoom, etc.) through which

students will interact with the course materials, the Course Director/TA, as well as with one another. This course involves formal lectures that will be given synchronously on campus. The required readings are central to the course and are considered required. Lab sessions will be synchronous (live) on campus. Tutorial sessions will be run by a teaching assistant.

Evaluation
The grade for the course will be based on the following items weighted as indicated:

eClass Quizzes 25% (5 x 5%)

- Quiz 1 - Available from 09:00 Jan. 29 to 23:59 Feb 2
- Quiz 2 - Available from 09:00 Feb. 12 to 23:59 Feb 16
- Quiz 3 - Available from 09:00 Mar. 4 to 23:59 Mar 8
- Quiz 4 - Available from 09:00 Mar. 18 to 23:59 Mar 22
- Quiz 5 - Available from 09:00 Apr. 1 to 23:59 Apr 5

Final Exam	25%	TBD (April exam period)

Lab Deliverables

• Attendance	5%	DUE – Ongoing, see schedule below
• Winter Tree Identification Lab	15%	DUE – February 6 by 23:59
• iNaturalist Lab Presentation	15%	DUE – (during lab, March 5, 12, or 19)
• iNaturalist Lab Report	15%	DUE – April 2 at 23:59

The assessment of your submissions will consider three broad areas for assigning an appropriate grade (conformance to the task specifications, organization, and technical proficiency with writing). Note that 'doing the bare minimum' does not constitute 'Excellent' or 'Exceptional' work as per the York University grading scheme provided below, and available at the following link: https://calendars.students.yorku.ca/2022-2023/grades-and-grading-schemes

Final course grades may be adjusted to conform to Program or Faculty grades distribution profiles.

Brief descriptions of each assignment:

Quizzes – There are five quizzes you will need to complete during the term. Quizzes are not cumulative; you will be told which lectures are on each quiz (generally two lectures per quiz). Quizzes are open book, and questions are multiple choice or true/false. The quiz will be available for 5 days, and you are able to take the quiz at any time within the window that it is available. The quiz is designed to take twenty minutes, but you will be given one hour (60 minutes) to complete it, to account for any potential issues with internet connectivity. You will be able to go back and review your answers at any point during the quiz. Quiz questions are selected at random from a larger exam question bank – you will not write the exact same quiz as your classmates. Each quiz is worth 5%, for a total of 25% of your grade.

Final Exam – The final exam will take place via eClass during the University April exam period. The final exam is cumulative of all lecture content and readings for the entire term. You'll have 3 hours to write the final exam, within a specified window. It is your responsibility to be able to sit the final exam when it is scheduled. Do not book spring travel until the exam date has been announced by the registrar's office. The final exam is worth 25% of your grade.

Lab Attendance – Attendance in lab sessions is mandatory, except under unforeseen circumstances. Lab attendance accounts for 5% of your grade in the course. Lab sessions include mandatory lab activities (e.g., the winter tree identification exercises), as well as essential skills demonstration (e.g., using iNaturalist and analyzing data). Students not in attendance of labs for approved reasons may not be able to receive the same level of support from teaching assistants due to time constraints. Three lab sessions are also dedicated to peer presentations, in which peer support / attendance is highly advantageous.

Winter Tree Identification Lab – This lab project will describe and teach the basics of tree identification based on features common in winter (independent of deciduous leaves). There will be an outdoor component on campus (come dressed for any weather), as well as an indoor component using samples collected elsewhere. These labs will run January 23. Targeted questions associated with the lab and identification will be due 2 weeks after the lab, by **23:59 on February 6**.

iNaturalist Research Project – As part of a multi-part mini-project, you will conduct, analyse, and write up a biogeographic study using iNaturalist.. This project is sub-divided into three training sessions and two deliverables: (1) Oral presentation: You will present your research study and main findings in lab at the latter half of the term. (3) Research Report: You will write up your research study and findings in the form of a scientific report. The paper is **DUE by April 2 at 23:59**.

Required Readings
The following book is required reading for the course:
Lomolino, M. V., Riddle, B. R., Whittaker, R. J. (2017). *Biogeography, fifth edition*, 730. Sunderland, MA: Oxford University Press

GEOG3500 will make use of the Day1Digital program to access the Lomolino et al. textbook, giving students the opportunity to **opt-in** to the required textbook resources. More information is available on the eClass page.

Supplementary Readings
There are also many textbooks that you may find helpful as supplemental resources. These three are available electronically through the York University library system, free for York students.

- Eichhorn, M. 2016. *Natural Systems: The Organisation of Life*. John Wiley & Sons.
- Freedman, B. 2018. *Environmental science: A Canadian perspective*. Toronto, Ontario, Canada: Prentice Hall.
- Panchuk, K. 2020. *Physical Geology*, First University of Saskatchewan Edition.

Schedule of Lecture Topics and Readings by week

The following list of lecture topics and readings is subject to change.

Date (Tuesdays)	Lecture Topic	Readings (Lomolino et al. Chapter)
January 9	Course Introduction ; Ecological and Historical Biogeography	Chapters 1 & 2
January 16	The Geographic Template	Chapter 3
January 23	Ecological Foundations	Chapter 4
January 30	Dispersal and Immigration	Chapter 6
Feburary 6	Speciation and Evolution	Chapter 7
February 13	Extinction	Chapter 7
February 20	-----No classes due to winter study break-----	
February 27	The Changing Earth	Chapter 8
March 5	Biogeographic Dynamics of the Pleistocene	Chapter 9
March 12	Geography of Diversification and Regionalization	Chapter 10
March 19	Island Biogeography	Chapter 13
March 26	Areography, Ecogeography, and Macroecology	Chapter 14
April 2	The Geography of Biodiversity / Conservation	Chapter 15

Schedule of Lab Sessions and Deadlines

Dates (Tues)	Lab Activity	Deadlines
January 9	No Lab in Week 1	
January 16	Introduction to GEOG3500 Labs	
January 23	Winter Tree Identification Lab	
Jan 30	Introduction to iNaturalist	
February 6	Hypotheses and data analysis	Winter Tree Identification Lab Report Due February 6 by 23:59
February 13	No Lab This Week – work period	
February 27	Science Writing	
March 5	Presentations (1)	Presentation dates will be assigned by Jan 30 randomly
March 12	Presentations (2)	
March 19	Presentations (3)	
March 26	Work and question period	
April 2	No Lab	Research Papers DUE April 2 by 23:59

For details on Grading Schemes, Assignment submissions, Lateness Penalties, Missed Tests, Group Work, Inclusivity in EUC, Religious Observance Days, Academic Honesty, Intellectual Property Notice, Student Conduct, Student Support and Student Accessibility Services. See https://euc.yorku.ca/academic-policies-procedures-petitions/ and go to “Undergraduate Courses Common Instructions”.