

BIO 4420: Biogeography

Fall Semester 2020

Instructor: Glen Hood, Ph.D.
3109 Biological Sciences Building
Office phone: (313) 577-1753

LECTURE MEETING LOCATION/TIME

When/Where: Meetings in Zoom accessed online via Canvas on Tuesday/Thursday 4:00 – 5:15pm

Instructor office hours: Tuesday 5:15am – 6:15pm via Zoom (after classes) or by appointment

Email: Please email directly at glenrayhood@wayne.edu, not through Canvas

Syllabus Note: You are responsible for the information herein. Students are expected to read and understand the contents of the syllabus in its entirety. I will refer to this document often during the semester.

Pandemic Note: I realize that we are all facing an unprecedented global pandemic. Our lives have changed in unexpected and challenging ways and may continue to do so over the course of the semester. If anything comes up during the semester, please contact me as soon as possible to discuss these issues. I am here to help and want everyone to do well in this course.

COURSE DESCRIPTION

Biogeography is broadly defined as the study of the distribution of species and communities in geographic space across geological time. The study of biogeography is essential to synthesizing large- and small-scale patterns of species' responses to global environmental change and provides a window to assess both the Earth's history and the evolutionary history of populations. The course will utilize theoretical and empirical studies to build your understanding of biogeographical concepts. In lecture and discussion, you will also be exposed to the basic process of scientific inference (hypothesis formation and testing, and data interpretation) and experimental design.

GENERAL LEARNING OBJECTIVES

By the end of this course, you should be able to describe and/or understand:

- The history of the field and the methodologies and philosophies used to investigate the modern state of the science
- Historical foundation of “pattern” and “process” as ways of looking at biology. You should be able to answer the following question: “Is biogeography a science, and if so, why”?
- Determinants of the distributions and ranges of species and communities at local, regional, continental and world-wide scales
- Quaternary biology and the Earth's history
- Dispersal endemism and island biogeography
- Reconstructing biogeographic histories, vicariance and dispersalist approaches to explaining pattern, partitioning between geographic, ecological and historical factors
- Applied biogeography

COURSE PREREQUISITES

BIO 3500 with grades of C-minus or above, or consent of instructor; consent of departmental adviser for Environmental Sciences majors.

FORMAT OF CLASS

This class will meet synchronously, on Tuesdays and Thursdays at 4:00-5:15 PM, online via the **Zoom app through Canvas**. The lecture will consist of PowerPoint presentations and discussion of primary peer-reviewed literature (once a week). For specific information regarding the structure of the class, how to access Zoom on Canvas, and online etiquette/ground rules while using Zoom, please see the document titled “**Important Zoom Information**” under the Home tab on the course’s Canvas webpage (<http://canvas.wayne.edu>).

REQUIRED MATERIALS

Computer: You will need a computer or similar electronic device (tablet, notebook, smartphone) to attend class, submit assignments, and access Canvas/class material. A device with a microphone and a webcam is highly recommended. If you do not have access to these materials, they may be rented from the library (<https://library.wayne.edu/equipmentcheckout>).

Internet Access: This is a synchronous, online, discussion-based course. Therefore, it relies heavily on meeting and interacting through Canvas and Zoom meetings on a weekly basis. The WSU campus is offering free internet access. Plan accordingly if you need to use space for internet access during class times (<https://tech.wayne.edu/coronavirus/student>).

Canvas: The use of Canvas is critical for several reasons. First, the online Zoom meetings will be accessed through Canvas. Second, additional materials including assigned readings for discussion will be posted on Canvas (see below). Third, discussion questions, which are a component of your overall grade, will be submitted through Canvas. Please check Canvas regularly to access materials and check for announcements, emails and updates. If you have not done so, change your settings in Canvas to allow for email notifications when new material is posted, or announcements are made.

Regular Discussion Readings: Approximately every other class period, we will break from typical lectures to discuss primary literature of peer-reviewed journal articles. These papers will be posted on Canvas in advance and should be downloaded.

Lecture Slides: Lectures will be given via PowerPoint presentations. I will post the slides no later than one hour before lecture. I strongly suggest students download the presentations and take notes directly on the slides.

Textbook: No textbook is required, as we will regularly read and discuss primary literature. However, for those interested in obtaining text that will serve as a good reference to the field of Biogeography, the following book is a must have (cheap versions of older editions are available at <http://www.amazon.com>): ***Biogeography (5th edition)*** by Lomolino MV, Riddle BR, Brown JH.

ADD/DROP POLICY

Add forms will not be signed after the second week of class.

- Tuesday, Sept. 15, 2020 is the last day to drop the class with a tuition refund.
- Sunday, Nov. 15, 2020 is the last day to withdraw.

Students who withdraw from the course before Nov. 15 will be assigned one of the following three marks: WP (withdrew but was passing at the time), WF (withdrew but was failing at the time), or WN (withdrew and never attended class or no graded work). Withdrawals after Mar. 24 will not be approved, and a grade will be assigned. (<https://bulletins.wayne.edu/graduate/general-information/records-and-registration/>)

COURSE STRUCTURE

Exams: Two exams (***October 22nd and December 8th***) will be given during the lecture period. All students are expected to take the exams at these times. Reasonable exceptions will be granted in cases of illness which will require notification prior to the exam (via email or phone) and must be followed up with an original signed note from a physician on official letterhead. Exams will be closed book and held online during the class meeting time.

Exam Format: The format of each exam will be essay/short answer. The exams will be taken during the class period online through Canvas, and student will have 1.5 hours to complete the exam. Each exam will be closed note/book/internet, and you are not allowed to talk to anyone else while taking the exam. Those students who fail to log into Canvas to take the exam will receive a score of zero. Those students who log into Canvas and begin the exam late will not be given extra time to finish the exam. More information about each exam including the study material, types of questions, and details about how to take the exam online will be discussed in detail at a later date.

Note about Academic Dishonesty when taking Exams: During difficult times, it is absolutely critical that people trust each other in multiple facets of life. I want to remind everyone that cheating is unacceptable, and would be particularly egregious and offensive during a time where trust is paramount. For each exam, there are built-in ways for me to determine if students are cheating on Canvas. Anyone caught cheating will automatically receive a grade of 0, and be reported to the office of Academic Misconduct.

Leading a Discussion/Paper Presentation: Approximately once every other class meeting, we will discuss a peer-reviewed scientific paper on topics covered in lecture. These papers will be posted to Canvas at least 5 days in advance of discussion date, which will be announced in class and via a Canvas announcement under the Home tab in a folder titled "Discussion Papers". Please note that in the title of each paper will be the date we are scheduled to have the discussion. Students will be randomly divided into teams of two or three and each team will be assigned a discussion topic and peer-reviewed paper to lead. It is important that the discussion is not simply a descriptive summary of the paper, but instead should represent a creative way for the class to connect to the broader biogeographical concepts, theories, ideas, and controversies which lead to insightful conversation. I will lead the discussion of the first paper which will serve as an example of how to lead a fun and exciting discussion. I will assign teams and papers the second week of class via the "Discussion" heading under the People tab on Canvas.

Each team of two or three will also be required to co-write and submit a brief two-page, single-spaced report which address the each of the five following aspects: (1) briefly summarizes the paper including what general and important biogeographical questions is being asked, (2) describes the methods used in the study, (3) answers the question "what novel has the field of biogeography learned from this study", (4) constructively critiques the study and points out weaknesses and ways to improve, and (5) outlines future "follow-up" questions/studies that can be conducted. This paper will be due one week AFTER the students lead the discussion (to incorporate discussion feedback). Each team of two students should dual-write submit one copy of the report with both team member names designated on the document.

Each team is responsible for meeting outside of class to prepare to dual-lead the discussion. I encourage students to use all tools available to them (e.g., WhatsApp, email, Zoom) to prepare, including using the "Groups" function (found under the People tab in Canvas) which allows for students to share documents and provides a space for text-based discussion. One overall discussion

grade will be assigned to both students based on an evaluation of the team to lead a thoughtful discussion that gets students engaged and thinking critically, and their report which addresses the five important aspects outlined above. ***I will provide grading rubrics for successfully leading a discussion and for the 2-page report at a later date.*** **Note:** I realize that students do not like team work. However, collaboration is essential in Biology and Environmental Science, and learning to work with others will serve you well in the future. Please do not put an unfair burden on your teammate(s) by not pulling your weight in the assignments. In the event that the work load for is not equitably shared, please let me know immediately, and I will handle the issue.

Discussion Questions: Each student is required to submit 3 questions/comments covering the reading for each peer-reviewed paper discussion. The questions/comments should be crafted only after reading the paper in detail, thinking critical about the information within the paper, and placing the ideas within the paper in context of class lectures. I have been critically reading scientific papers for almost two decades-it is easy for me to tell, given the depth of your questions, if you have read the paper carefully. I will assign your grade independently for each set of questions submitted based on the depth of your questions/comments/concerns and connect to lecture material. For example, if we are discussion a paper about the distribution of genetic diversity in zooplankton in freshwater lakes, an appropriate question is not “what is a zooplankton”. Instead, an appropriate question may be “how did the degree of connectivity of lakes in the last 10,000 years affect shared genetic diversity between present-day zooplankton populations”. These questions should be posted no later to Canvas (under the assignments Tab) no later than 24 hours before the start of each discussion. For example, if we are set to discuss a reading on Thursday at 4:00, your questions should be posted no later than Wednesday at 4:00. If you submit questions, but are not present at the following discussion, you will not receive credit for those submitted questions. Members of the student team leading the discussion are not required to submit questions for that particular paper.

Term Paper: Students will be required to write a term paper. The topics will be discussed in more detail at a later date but may include (1) reflections about the importance of the class and how the material covered can translate to use in the workplace, (2) a “deep dive” into concepts covered in class (e.g., What is Expanding Earth Theory), and (3) describing the biogeographical forces in the past that may have given rise to your favorite organisms’ current distribution. We can also discuss other options.

GRADING BREAKDOWN

| Lecture | Point Breakdown | Grade Distribution |
|------------------------------------|---------------------|--------------------|
| Exam 1 | 100 (20%) | A: 94 and above |
| Exam 2 | 100 (20%) | A-: 90-93 |
| Discussion Questions/Participation | 10 x 10 = 100 (20%) | B+: 87-89 |
| Leading Discussion/Report | 50 x 2 = 100 (20%) | B: 84-86 |
| Term Paper | 100 (20%) | B-: 80- 83 |
| Total Points Possible | 500 | C+: 77-79 |
| | | C: 74-76 |
| | | C-: 70-73 |
| | | D+: 67-69 |
| | | D: 64-66 |
| | | D-: 60-63 |
| | | F: below 60 |

Note: Final grades with a decimal point of 0.5 or above will be rounded up (e.g., 89.5 will be rounded up to a 90). Any final grades with a decimal point below 0.5 will be rounded down. This policy is non-negotiable. Students given an "I" will automatically receive an F if the work is not completed within 1 calendar year. The failure notation at Wayne State has been changed from an E to an F. There can be no exceptions to this grading policy. Further information on the grading policy can be found at: <https://wayne.edu/registrar/records/grades/course-policy/>.

LATE ASSIGNMENT POLICY

With the exception of the term paper, all late assignments will be given a grade of 0. The final draft of the term paper will not be accepted more than 3 days past the due date.

ATTENDANCE

Attendance is mandatory. However, I will not explicitly take attendance. Remember, a component of your overall grade is participation. It is difficult to participate if you do not attend the lectures and discussions. Any unexcused absence during a lecture where you are assigned to be a discussion leader will result in a grade of zero (for both the discussion report and the discussion itself). Also, you cannot receive credit for submitting discussion questions/comments if you do not attend the following discussion.

POSTING OF GRADES

All grades will be posted on Canvas as soon as possible after the exam/assignment has been administered.

GRADE DISPUTES / CHALLENGE OPTION

Students will have 2 weeks after the return of an exam or a written assignment to challenge a grade. Failure to challenge the grade within this period indicates a willingness to accept the assigned grade. The challenge should consist of a written description of why the answer is correct and a complete copy of the exam or written assignment. All questions on exams and written assignments are subject to review when a grade is challenged, and thus, it is possible to receive a lower grade if the instructor discovers any previous grading errors.

CHEATING/ACADEMIC MISCONDUCT

A strict zero-tolerance policy for cheating will be enforced. Anyone caught cheating on the in-class quizzes or exam, or plagiarizing assignments in the lab, will receive a score of zero for that portion of the grade with no opportunity to drop or replace that score. A second episode of cheating will result in a grade of "F" for the course and the initiation of university disciplinary action. Be aware that I take cheating very personally as disrespectful and an insult to myself, your TA, and your classmates. I will not be lenient in how the incidences of cheating and/or academic misconduct are handled. Further information about the university's academic misconduct policy can be found at: <https://doso.wayne.edu/conduct/academic-misconduct>.

RELIGIOUS HOLIDAY CONFLICTS

If you have a conflict with any of the scheduled exam times due to religious reasons, you must notify me (Dr. Hood) in writing by class time on or before Tuesday, September 22, 2020. No make-up exams will be given unless I am notified in writing by this date.

WHAT I EXPECT FROM STUDENTS

Biogeography is an integrative science that draws on principles of biology, ecology, natural history, paleontology, and evolution as well as physical sciences such as climatology, geology, chemistry, and physics. Most importantly, like most sub-disciplines in biology, biogeography cannot be studied or understood in modular form – that is, the principles that we will cover build upon each other, and principles taught early in the course must therefore be mastered because they are a foundation for further learning later in the course. The course is designed to provide you with every opportunity to succeed, but I also expect you to participate in your own potential for success. Here is a general (not exhaustive) list of what I expect from you:

- 1) Except for extenuating circumstances, attend all scheduled course meetings. Because of the integrative nature of the science, getting behind in the course is a sure path to failure.
- 2) You are expected to read, in detail, the assigned discussion papers. The lectures may (or may not) include or expand upon information covered in these readings.
- 3) Be actively engaged in all parts of this course. You should be at ease to ask questions or lend comments at any time over the course of the semester. Active learning in the course requires that you attend lectures and lab, interact with your classmates and instructors, and think critically about the material being presented. Remember, part of your grade is dedicated to participation in lecture and discussion. Think critically, take notes, ask questions, and participate in discussions!
- 4) Work to complete assignments on time and with your best effort. As in most places in your academic life, the instructors in this course will return hard work and perseverance by any student in kind. I am very willing to help out a struggling student who is obviously working hard.
- 5) Be respectful of your instructors and fellow classmates. This includes arriving to class on time, minimizing talking during lectures, and allowing others to participate without interrupting them.

WHAT YOU CAN EXPECT FROM ME

Just as professors have certain expectations of students, it makes sense that students have certain expectations of their instructors. You can expect the following in this course:

- 1) I will be prepared and equipped to develop your understanding of the field of biogeography in an informal setting that encourages your input and questions, and makes it easy to fully participate.
- 2) I will provide whatever access and assistance is appropriate and necessary to help you succeed in this course. If you need help in succeeding despite your best efforts, we will do our best to get you on the right track.
- 3) At all times in evaluating your performance in this class, I will be fair and open about examinations, the material I expect you to know, and your overall evaluation in the course. This does *NOT* mean I will provide you with an “easy A,” but it does mean you will get the grade you deserve based on a combination of performance and effort.

SPECIAL CONSIDERATIONS FOR INDIVIDUALS WITH DISABILITIES

If you have a physical or mental impairment that may interfere with your ability to complete the requirements for this course successfully, you are invited to contact Educational Accessibility Services (583 Student Center Building; 577-1851) to discuss appropriate accommodations on a confidential basis.

UNEXPECTED UNIVERSITY CLOSURES.

If the University is officially closed on an exam day, the exam will be held on the next regularly scheduled class day. Closure of the University is announced by the following mechanisms:

1. the University Newsline (313) 577-5345 *
2. WSU Homepage (www.wayne.edu) *
3. WSU Pipeline (www.pipeline.wayne.edu) *
4. WDET-FM (Public Radio 101.9)
5. by other local radio and television stations

*Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcast by local radio and television stations.

ADDITIONAL STUDENT SERVICES

Warrior Life and Wellness provides an overview of the health and wellbeing services that are available to students. Although I list a few here in the syllabus, please know that many more services exist. Visit <https://warriorlife.wayne.edu> to learn more and access links to wellbeing resources.

The Academic Success Center (Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit www.success.wayne.edu for schedules and information on study skills workshops, tutoring, and supplemental instruction (primarily in 1000 and 2000 level courses).

The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit <https://www.clas.wayne.edu/writing/> to obtain information on tutors, appointments, and the type of help they can provide.

Library Research Assistance. Working on a research assignment, paper or project? Trying to figure out how to collect, organize, and cite your sources? Wayne State librarians provide personalized help. Contact them at https://library.wayne.edu/forms/consultation_request.php.

The W Food Pantry provides students with free resources such as non-perishable food, toiletries, and feminine hygiene items, to enhance student success. Bring your OneCard and a copy or photo of your class schedule for the current semester to use their services. For more information, visit <https://thew.wayne.edu/>.

Counseling and Psychological Services (CAPS) provides free counseling and psychological services. They have licensed professional counselors, psychologists, and social workers ready to help and talk about anything. For more information, visit <https://caps.wayne.edu/>.

Computing and Information Technology (C&IT) offers students computing and technological support, including issues with Canvas, Wayne email, or any other WSU system. For more information, visit their website: <https://tech.wayne.edu/helpdesk>.

Emergency Preparedness: In the event an emergency arises, please familiarize yourself with the University's emergency procedures. For details, please refer to WSU's Emergency and Safety Procedures at <https://risk.wayne.edu/procedures>.

Covid-19 Compliance: All students are expected to familiarize themselves with mandatory campus health and safety guidelines—including practicing social distancing and wearing a face covering—by completing the Warrior Safe Training modules in Canvas. University policy requires students to complete a campus daily health screener beginning 48 hours before first coming to campus. For more information about the pandemic and safety guidelines visit <https://wayne.edu/coronavirus>.

OTHER

The instructor reserves the right to modify the syllabus, including the class schedule and exam dates, as necessary. Students will be informed of any changes to the schedule during class and via Canvas. Any specific issue not covered by this syllabus will be resolved using University policies. Disputes which cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University "Student Due Process."