



GEOG442/642

Biogeography and Environmental Change

University of Maryland
Fall 2018

OVERVIEW

Biogeography is traditionally defined as the science that attempts to document and understand the spatial patterns of biodiversity. Environmental change refers to altered patterns and physical conditions that affect organisms including light, water, nutrients, weather, climate, soils, disturbance rates, habitat, and other factors including regional and global land-use and climate change. In this course, we will synthesize these topics and focus on three major contemporary issues: biodiversity, introduced species, and carbon. Basic principles and theory from biogeography and environmental change will be leveraged and combined with current information on threats and opportunities to provide scientific basis for actionable science on these issues. Format will be discussion, supplemented with lecture segments as needed.

INSTRUCTOR

Dr. George C. Hurtt Office: LeFrak 1149
 Phone: 301-405-8541
 Email: gchurtt@umd.edu
 Office Hours: Th 2:00-3 :00PM, and by Appt.

TIME AND ROOM

Class meets: T/Th 12:30-1:45PM, LEF 1158
 Class will meet in alternate locations when opportunities exist
 for improved learning.

PREREQUISITES

- GEOG201, GEOG211, GEOG301
- Or permission of BSOS-Geography Department

LEARNING OBJECTIVES

1. Understand key concepts, approaches, and techniques in biogeography and environmental change. (knowledge)
2. Apply knowledge of biogeography and environmental change to contemporary issues. (application)
3. Identify, read, discuss, and synthesize relevant papers from the scientific literature and current events literature. (synthesis)
4. Characterize and evaluate issues, what is known, how well its known, and what issues remain for effective decision making. (evaluation)
5. Develop question driven project/paper and the effective communication of scientific information. (skills)

READINGS

- Scientific literature and articles on current events will be compiled and will be made available in class and/or via the UMD Electronic Learning Management System ELMS.
- Supplemental:
 - o Biogeography 4th Edition, M.V. Lomolino et al. editors, Sinauer.
 - o Foundations of Biogeography, M.V. Lomolino et al. editors, Chicago.

SCHEDULE

1. Course introduction (What is biogeography? What is environmental change? How are these topics related? Why should we care?)
2. Biological diversity (How is biodiversity distributed? How is it changing? How does biological diversity influence environmental conditions and respond to environmental change?)
3. Biological invasions (What are the characteristics of invasive species? What are the consequences of invasions on ecosystems and ecosystem services? How do invasive species respond to environmental change?)
4. Carbon geography (Where are the sources, sinks, and stocks of carbon? What is the role of biodiversity for carbon? What are the opportunities and threats to carbon storage in the future?)
5. Synthesis (How are biological diversity, biological invasions, and carbon geography related and linked to environmental change? What are the joint threats and opportunities? How and how well are these issues understood, and what limits future decision making?)

GRADING

Your course grade will be determined as follows.

| | |
|-------------------|------|
| Participation: | 20% |
| Research Project: | 30% |
| Exam 1: | 25% |
| Exam 2: | 25% |
| ----- | |
| Total: | 100% |

PARTICIPATION

There is a shared responsibility for meeting the learning objectives of this course. Active participation by all participants is essential. Participation will be graded by attendance and active contribution to all discussions, assignments, class preparation leadership, and other activities. All participants will be expected to be the primary lead and secondary lead for one or more class discussions during the semester.

RESEARCH PROJECTS

Students and/or student teams will identify and conduct a research project that addresses one or more important topics of biogeography and environmental change. Projects will be presented in the form of oral, PowerPoint, and poster presentations following AGU meeting guidelines. A written report on each project is also required. Additional details for the project will be given in class.

EXAMS

Two exams will be given. Additional information on exams will be given in class.

GRADUATE STUDENTS (642)

Graduate students taking 642 will be expected to produce additional material and efforts in several areas on which they will be graded accordingly. This includes leadership of class discussions, additional essay question(s) on the two exams, and increased expectations for research projects. Writing for research projects will be considered relevant for inclusion in GEOG graduate student portfolios.

DISABILITY

Students with disabilities are encouraged to contact the instructor and register with Disability Support Service in Shoemaker Hall. Arrangements will be made to accommodate students with disabilities.

HONOR CODE

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://shc.umd.edu/SHC/Default.aspx>

STUDENT CONDUCT

Students are expected to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility with one another, the teaching assistants, or the instructor will be subject to being referred to the Office of Student Conduct or to Campus Police. You are expected to adhere to the Code of Student Conduct.

ATTENANCE

Attendance in class is expected. While class attendance is not mandatory, failure to attend will impact your grade due to missed course content and participation points. The instructor understands that sometimes issues come up that are out of your control that will cause you to miss class. If you are aware of such an issue, talk with the instructor *in advance* to obtain an excused absence. Sometimes it is not possible to plan potentially excusable absences in advance (e.g., medical emergency). If this happens to you, inform the instructor as soon as reasonably possible.

MEDICAL ABSENCES

Campus policy requires students who are absent due to illness/injury to furnish documentary support to the instructor. For this course, I require students to contact me by email or by phone *prior to* class time in which you indicate that you have an illness or an injury, or as soon as possible if the treatment by medical personnel conflicts with this requirement. You must provide written documentation verifying your illness/injury immediately upon your return to class.

ADDITIONAL INFORMATION

Additional course information, assignment details, supplementary material, and updates to this syllabus will be conveyed in class and posted on the UMD Electronic Learning Management System (ELMS).

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