

## BSC 4821 Biogeography, Fall 2022

**Where & When:** Mon & Wed 10:30 – 11:50  
**Instructor:** Dave Jenkins email: david.jenkins@ucf.edu  
**Web Page:** <https://webcourses.ucf.edu/courses/1360585>  
**Text:** Lomolino et al. 2017. Biogeography. 5th edition, Sinauer.  
ISBN 978-1605354729 In the UCF bookstore and at allbookstores.com  
**TurnItIn.com:** BSC 4821 Biogeography; Class ID = 35490679; pw = biogeography  
**Class recordings:** WebCourses/Announcements and **.ppt files** are in Webcourses/Files

Course Description: Biogeography is the study of geographic variation in biota. It builds on ecology and evolution: students are expected to be conversant in both fields for this course – thus the prerequisites. Objectives for students include: (a) master major concepts of biogeography, and (b) understand the intertwined geological, evolutionary, and ecological processes that determine biogeographic patterns.

### Performance Evaluation

Midterm & Final Exams	45.0 % each
Participation	10.0
Grade scale: A = 90-100, B = 80-89.9, C – 70-79.9, D = 60-69.9, F ≤ 59.9	

Midterms and Final Exam: Because this course aims for you to synthesize rather than memorize, your grade is largely based on two take-home (open-book) essay exams (see schedule below). You will submit the exams via TurnItIn.com. The final is comprehensive. Questions will require you to think, analyze information, apply what you have learned from the text + lectures & discussions, and write as a cogent scientist (see the text for a model of cogent scientific writing and citation style). *Allow time to edit your writing before submitting!*

### Suggestions:

- Budget your time to read the entire text this semester – it is comprehensive and scientific writing (not a light reading).
- Take notes while reading in advance. If while reading you learn you should know some background, stop and do some background reading to catch up. This course assumes you are well-versed in Ecology and Evolution and can go back to those resources if needed.
- ***In class: talk, ask questions, answer questions.*** Sometimes that helps you form ideas, but also gives me a chance to see if I confused you and others.
- Have the text available for class – you will use it in discussions as a reference.
- Take notes during class.
- The text is comprehensive and will be fully sufficient as a resource for exams. You can also cite journal articles and other peer-reviewed resources for exams if you wish, but it is not expected.
- Use the text as an example for your own scientific writing and citation styles.

Other Business:

- Attendance is important for your learning, but is not counted in your grade. Participation is.
- You are expected to abide by the UCF rules for student conduct <https://scai.sdes.ucf.edu/student-rules-of-conduct/>
- Plagiarism = a grade of zero for the course. It is easy avoid this penalty – just write your own words, and where needed at a placeholder (I use XXX) to add a citation. Then check the text to ensure that what you wrote is legit, and then cite it with a relevant page number.
- All UCF core syllabus statements are invoked: <https://fctl.ucf.edu/teaching-resources/course-design/syllabus-statements>.
- All reasonable accommodations will be made for disabilities documented through the Office of Student Disability Services (SRC 132; 407-823-2371). Please talk to Dr. Jenkins.
- The instructor reserves the option to adjust the rules, schedule, and grading system as outlined in this syllabus as needed to maintain the best possible educational integrity of the course. Any such changes will be announced and revised syllabi will be distributed.

**COURSE SCHEDULE (SUBJECT TO CHANGES)**

<b>Class Dates</b>	<b>Subjects</b>	<b>Chapters to Read <sup>1</sup></b>
Aug 22, 24	Syllabus (22nd) & Intro (24th) <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Describe biogeography and its relationship to other natural sciences</li> <li>• Explain how biogeography is related to conservation and climate change</li> </ul>	1 M
Aug 29, 31	History of Biogeography <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Depict evolving major ideas in biogeography through time</li> <li>• Explain how early biogeographers worked “vs.” now</li> <li>• Describe major shifts in biogeographical knowledge</li> </ul>	2 M
Sep 5, 7 no class 5th	LABOR DAY, Geographic Template <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Describe what is meant by the geographic template and why it is foundational</li> <li>• Explain how cartography influences understanding of global patterns</li> <li>• Explain how GIS and remote sensing revolutionize biogeography, ecology &amp; evolution</li> </ul>	3 M
Sep 12, 14	Distributions, Communities & Biomes <u>Objectives for You:</u>	4, 5 M

	<ul style="list-style-type: none"> <li>• Explain how spatial and temporal population dynamics are dynamically linked</li> <li>• Explain what limits species distributions</li> <li>• Explain how spatial and temporal diversity are dynamically linked</li> <li>• Explain what causes differences between ecosystems &amp; biomes</li> </ul>		
Sep 19, 21	<p style="text-align: center;"><b>Dispersal &amp; Immigration</b></p> <p><u>Objectives for You:</u></p> <ul style="list-style-type: none"> <li>• Explain differences between dispersal strategies and what they mean to species' success</li> <li>• Describe macroscale patterns in dispersal and why they occur</li> <li>• Explain how dispersal &amp; immigration relate to population biology and evolution</li> </ul>	6	M
Sep 26, 28	<p style="text-align: center;"><b>Speciation &amp; Extinction</b></p> <p><u>Objectives for You:</u></p> <ul style="list-style-type: none"> <li>• Explain differences between major species concepts, including most common &amp; complete</li> <li>• Explain speciation processes, which one is most common, and why</li> <li>• Explain how ecology &amp; evolution are related</li> <li>• Explain how species go extinct, and why</li> <li>• Explain differences between macro- and micro-evolution</li> </ul>	7	M
Oct 3, 5	<p style="text-align: center;"><b>Plate Tectonics</b></p> <p><u>Objectives for You:</u></p> <ul style="list-style-type: none"> <li>• Explain why Wegener's work led to a revolution</li> <li>• Explain Plate Tectonic Theory</li> <li>• Summarize the tectonic history of Earth</li> <li>• Explain evidence for plate tectonics</li> </ul>	8	M
Oct 10, 12	<p style="text-align: center;"><b>Pleistocene, Midterm to you</b></p> <p><u>Objectives for You:</u></p> <ul style="list-style-type: none"> <li>• Explain what drives glaciation "cycles"</li> <li>• Summarize changes in conditions during glaciations and how biota have responded</li> <li>• Explain refugia, megafaunal extinctions, and what those mean for modern diversity</li> </ul>	9	M
Oct 17, 19	<p style="text-align: center;"><b>Diversification, <u>Midterm Due OCT 17, 10:00 AM</u></b></p> <p><u>Objectives for You:</u></p> <ul style="list-style-type: none"> <li>• Explain why endemic and cosmopolitan distributions can occur</li> <li>• Explain why provinces and disjunctions can form</li> <li>• Summarize major biotic interchanges of the past and compare to current interchanges</li> </ul>	10	F
Oct 24,	<b>Evolutionary History</b>	11	F

26	<u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Explain prior approaches to systematics and how they led to modern approaches</li> <li>• Summarize molecular systematics approaches and how that compares to morphological systematics</li> <li>• Explain how systematics can and cannot inform biogeography</li> </ul>		
Oct 31, Nov 2	<p style="text-align: center;"><b>Geographic History</b></p> <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Explain how past ideas on historical biogeography failed but led to current approaches</li> <li>• Explain phylogeography and its limits</li> <li>• Explain how plate tectonics informs historical biogeography</li> </ul>	12	F
Nov 7, 9	<p style="text-align: center;"><b>Island Biogeography</b></p> <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Explain the ET of IB and how it led to a broader theory</li> </ul>	13	F
Nov 14, 16	<p style="text-align: center;"><b>Island Biogeography, Rules &amp; Macroecology</b></p> <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Explain how well ET of IB translates to continental diversity</li> <li>• Explain why island evolution is different from that on continents</li> <li>• Explain what macroecology is and how it works</li> <li>• Summarize major ecogeographic rules</li> <li>• Explain leading hypotheses on why latitudinal gradients of diversity form and its relationship with climate change</li> </ul>	13, 14	F
Nov 21 <b>no classes 23rd</b>	<p style="text-align: center;"><b>Human Biogeography, Thanksgiving</b></p> <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Summarize the biogeographical history of <i>Homo sapiens</i></li> <li>• Explain how population genetics patterns of <i>Homo sapiens</i> developed and project future patterns</li> <li>• Explain impacts of that history on ecosystems we have colonized</li> </ul>	15	F
Nov 28, <b>30</b>	<p style="text-align: center;"><b>Conservation Biogeography &amp; Our Footprint, <b>Final to you</b></b></p> <u>Objectives for You:</u> <ul style="list-style-type: none"> <li>• Project the effects of humans on natural diversity in your lifetime</li> <li>• Summarize steps that can be taken to mitigate those effects</li> <li>• Review Q&amp;A for final exam</li> </ul>	15	F
Dec 5, 7	<b>FINALS WEEK FINAL DUE DEC 7, NOON</b>	- -	

Footnotes:

1. M = on the midterm AND final
2. F = on the final