Geography 418 and Biology 618 – BIOGEOGRAPHY

Autumn 2012

Lecture section (no lab) 3 credits

Instructor: Dr. Daniel Mann, Geography Program, School of Natural Resources, UAF
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Office: 370 O’Neill Building

Phone: 474-6929

Office Hours: to be determined depending on student schedules

Meeting Time and Location: 203 Reich 1:00pm-2:00pm MWF

Course Description
Biogeography is the Geography of Life. This is a large field with relevance to many other disciplines. This lecture course emphasizes the biogeography of the polar, and alpine regions. We pay special attention to the effects of climate change on biogeography. Geography 418 and Biology 618 are taught concurrently. Biology 618 requires extra readings and class presentations.

Course Prerequisites: BIOL 271 Ecology, GEOG 339 Mapping and Landscape Analysis, GEOS 401 Geomorphology, or instructor’s permission. Enthusiasm is also required.

Course Objectives: This is a ‘synthesis’ course for upper division Geography and Life Sciences undergraduates and graduate students. Students will gain a foundation in basic biogeography. Throughout, I emphasize the inevitable influences that human ecology has on the biogeography of other species.

Instructional / Teaching Methods: This is a lecture course that relies on students keeping up with assigned readings. There will be 3-5 guest lecturers over the course of the semester. For all students an important part of this class are the class discussions they lead in which they critically assess recent journal articles in the field. All students will write term papers after developing a proposal describing the topic they wish to explore. All students are required to attend an 8 hour field trip.

Learning Methods / Student Assignments: Lectures and directed readings will give students a sound background in biogeographic processes and patterns. All students will submit reports analyzing the data collected during the class field trip. All students will submit a term paper on a topic of their choice. In addition, graduate students will present a ½ hour-long lecture. Graduate students are required to read additional scientific papers.

Required Text: NONE. There is no upper division textbook of Biogeography that emphasizes high latitudes and climate change. Instead we read journal articles taken from the recent scientific literature. All readings are pdf’s that I post on Blackboard.
SCHEDULE OF LECTURES, EXAMINATIONS, AND TERM PAPER

(NOTE: check Blackboard for updated versions of this schedule)

Week 1: Friday August 31  Introduction: What is this class about? Requirements.

Week 2: Sept 5, 7  Solar radiation; Temperature, Moisture, and Their Gradients

Week 3: Sept 10, 12, 14  Microclimates; Soil Basics; Soil Development in the Arctic

Week 4: Sept 17, 19, 21  Soil Development in Southeast Alaska; Soil Development in the Boreal Forest; Species Ranges 1

Week 5: Sept 24, 26, 28  Disturbance 1; Species Ranges II; Primary Succession 1

Week 6: Oct 1, 3, 5  Treelines; Primary Succession in Boreal Forest; Primary Succession at Glacier Bay

Week 7: Oct 8, 10, 12  Fire Disturbance; Vegetation-Fire Interactions in Alaska; the geography of carbon

Week 8: Oct 15, 17, 19  Historical biogeography: continental drift, climate change, the ice ages

Week 9: Oct 22, 24, 26  Dispersal in general, human dispersal as a case study

Friday October 26  MIDTERM EXAM

Week 10: Guest Speakers
   Monday Oct 29: Guest Lecture: Martha Raynolds, UAF: Vegetation Zonation in the Arctic
   Wednesday Oct 31: Guest Lecture: Dave Klein, UAF, Biogeography of Bering Sea Islands

Week 10: Nov 2: Island biogeography

Week 11: Nov 5, 7, 9  Biogeography of evolution; extinction; megafauna extinctions in the Arctic

Week 12: Nov 12, 14, 16: New Zealand extinctions; ice age refugium; ice-age biogeography of Alaska

Week 13: Nov 19, 21: Biogeography of planets; conservation biogeography; graduate student presentations

Week 14: Nov 26, 28, 30: graduate student presentations
**** final exam on Friday, November 30th****

Week 15: Dec 3, 5, 7: term paper week

Week 16: Dec 10, Monday at 5 PM: electronic copy of term paper due.

Field Trip: This is an 8-hour trip in the Fairbanks area. We will collect data on soil, permafrost, microclimate, and vegetation patterns. Attendance is mandatory for everyone.

Class presentations: all students will present at least one, 15-minute review of an assigned journal article. The goal is to give you experience making critical evaluations of published research articles, making a Powerpoint presentation, and leading a group discussion. Most student presentations occur during the Friday class session. Graduate students will make at least two such presentations.

Term Paper: A 5-10 page term paper (including illustrations) is required. Topics vary according to individual students' interests. Graduate students will present a 30-minute lecture to the class based on their term papers. Detailed guidelines for the term paper will be given in lecture.

Assignments and Grading:
Quizes on readings: 20%
Midterm Exam: 25%
Final Exam: 25%
Class and Field Trip Participation (attendance + discussion + class presentation): 10%
Term Paper: 20%

Attendance: attendance of class sessions and field trip is mandatory.

Course grades will be assigned as indicated at the table below. Course %'s are for THIS course only and may vary with different instructors. Grade point values are indicated on the table as well. Please see “Academics and Regulations” section of UAF 2007-2008 Catalogue.

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D+ 69-67 1.3  
D 66-62 1.0  
D- 61-60 0.7  

**Course Grading Scale:** All grades are determined on an absolute score (with no curve) according to the following scale:  
A = 90-100 percent: outstanding work, mastery of topic  
B = 80-89 percent: above average work, all assignments completed well  
C = 70-79 percent: average, all or most assignments completed, most work satisfactory  
D = 60-69 percent: pass, unsatisfactory or missing work  
F = less than 60 percent: failure to meet requirements of course

**Support and Disabilities Services:** The UAF Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. The course instructors will work with the Office of Disabilities Services to provide reasonable accommodation to students with disabilities. Please notify the instructor of any special needs.

**Plagiarism/Academic Integrity:** University Standards and Policies apply (see UAF Catalog).

**Extra Credit:** Extra credit is not an option in this course except under unusual circumstances.

**Information on Exams and Assignments:** Examination format will include a mixture of multiple choice, short answer / diagram / map, and essay.