Ecological gaming HCOL 185

Scott C. Merrill
Term: Fall 2013
Classroom: Allen House 102 on Tuesday & Thursday 11:30-12:45

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Office: 217 Jeffords Hall
Office Hours: Wednesday 1:00-2:00 & by appointment

Textbook: No textbook required for this course. All readings will be electronic files distributed on Blackboard

Computer access: Students will need to have easy access to a computer with access to R (i.e., ideally a personal computer, or a public computer with R availability). R is a free, open source language (http://www.r-project.org/).

Course description: Ecological gaming will examine key ecological concepts through the lens of computer simulation games / challenges written in the R programming language (No experience in R programming is required and simulation code will be provided by the instructor). Many ecological concepts are intuitively obvious but when an ecosystem is observed as a whole entity, the vast complexity created by the numerous components creates confusion. The overarching goal of this course is to instill a foundation of ecological concepts by breaking down ecological complexity into simple, digestible pieces. Many classical ecological principles will be examined including niche theory and evolution.

Course objectives: Learn key components of ecology starting with simple interactions and moving towards biocomplexity. Topics will include the concept of an ecosystem, niche dynamics, fitness (and other life history concepts), inter and intra-species competition, predator-prey interactions, trophic levels, food webs and evolution. This class will use a simulation game platform to examine these concepts, which will allow questions and provide answers to questions such as "What will happen to my ecosystem if I make my plants disperse seed using animal-vectored dispersal (e.g., squirrel seed caches) versus wind dispersal?" To augment learning about these ecological concepts, there will be weekly discussions of many of the foundational papers in ecology. Students will get a glimpse of the R programming language, which will hopefully diminish the fear of tackling this computer language in future courses.

Grading and assignments: 60% of your grade will be based on activity write-ups, each worth 50 points / week required to complete. 10% of your grade will be will be based on participation (including attendance, discussion participation, and blogging). A midterm,

consisting of short answer, concept driven questions will comprise 15% or your grade. The remaining 15% of your grade will be a final project.

Activity write-ups:
The grading of activity write-ups will be based on the following (See "My grading rubric" on Blackboard for a more precise grading rubric):

- Quality of approach to problem: Did you use a logical, thoughtful process for solving the problem and answering the questions?
- Quality of presentation: Did you present your findings in a literate document with an introduction, methods, results and discussion? Did you clearly communicate how you solved the problem and answered the assignment-specific questions? Was your document attractive and well organized?
- Quality of technique: Did you demonstrate mastery of the appropriate concepts? Your activity write-ups should describe simulation game results and discuss them as appropriate. Include figures and/or tables, embedded in the text, not appended at the end. All figures must have captions. All tables must have headings.
- Supporting references: Did you cite examples of the subject from the literature. Were the references relevant and cited using a recognized journal format.

Activity write-up style:

- Unless otherwise noted, write-ups have a maximum word count of 750 words, excluding references, table headings and figure captions. Table headings and figure captions should be no more than 150 words in total.
- Unless otherwise noted, documents should have an introduction section, a methods section, a results section, a discussion section (results and discussion can be combined if desired), and a references section.
- Documents are to be submitted to Blackboard as Word documents.

Blogging:
Blogging about our course on the course Blackboard site is highly encouraged and will count towards the participation portion of your grade.

Tentative final project:
The goal of this project is to conceptually create (programming will not be required) your own ecological simulation challenge using concepts learned in class as well as at least one advanced ecological concept. Grading, similar to the activity assignments, will be based on the following criteria:

- Quality of approach to problem: Did the student use a logical, thoughtful process for solving the problem and answering the questions?
- Did the student clearly communicate how they solved the problem, showing the steps or a logic map?
- Was their document attractive and well organized? Were the figures understandable?
- Did the student demonstrate mastery of the appropriate concepts?