Fall 2014

WFSC 605-643 – Community Ecology (3 credit hours)

Instructor– Dr. Kirk O. Winemiller  email– k-winemiller@tamu.edu
Office– 110-D Heep Labs Building (East Campus)  Phone– 862-4020

Meeting Time/Place:  Tu, Th 2:20–3:35 / Nagle 308

Course Format

Approximately half of the class sessions will consist of lectures by the instructor and instructor-led discussions. Other sessions will consist of student-led, instructor-facilitated group discussions of recent journal articles covering cutting-edge topics in community ecology.

Learning Outcomes

Through lectures, readings and discussions, students will obtain an overview and achieve in-depth knowledge of the field of community ecology, including historical development of the discipline, current issues and methodologies, and practical applications in areas such as natural resource management, biological conservation, agriculture, and human health. Students also will practice critical thinking, communication skills, and professionalism.

Topics

1. The Realm of Community Ecology:
   historical perspectives and key contributions, new perspectives and recent syntheses

2. Historical Biogeography and Macroecology:
   speciation, isolation, ecological opportunity, adaptation, extinction, energy, productivities, biomass, metabolism, environmental gradients, species distribution models, island biogeography, metacommunity concept, habitat fragmentation, reserve connectivity, biotic homogenization

3. Species Interactions
   competition, adaptive divergence, niche overlap, diffuse competition, niche complementarity, predation/parasitism, plant defenses, mutualism, commensalism, coevolution, coevolutionary mosaic, invasive species, epidemiology, biocontrol

4. Metacommunities and Assembly Rules
   neutral model, patch dynamics, species sorting, mass effects, intermediate disturbance, community structure (functional traits, life history strategies, trophic), between-region convergence, supply-side ecology, invasive species, extinction vortex, empty niches, regime shifts, biotic indices

5. Food Webs and Other Network Perspectives:
   overview of food web ecology, theories, empirical findings, food web dynamics, top-down and bottom-up controls, food web subsidies, stability-diversity-complexity-productivity relationships, network models, regime shifts, fisheries management,
biodiversity reduction and ecosystem processes, species invasion & “ecological meltdown”

6. The Challenge of Integrating Perspectives:
spatial scales, temporal scales, natural vs. anthropogenic disturbances, life history variation and population regulation, alternative modeling perspectives (equilibrium, non-equilibrium, chaos), ecological complexity, ecological restoration

No Required Textbook— The instructor will distribute reprinted articles for discussion. For additional information, students may consult the following textbooks that deal with community ecology: *Community Ecology* by Peter J. Morin; *Population Ecology* and *Community Ecology: Processes, Models, and Applications* edited by Herman A. Verhoef and Peter J. Morin; and *Community Ecology* by Gary G. Mittelbach.

Summary/Critique Papers

45% of the course grade will result from three papers that summarize and critique recently published journal articles dealing with community ecology. Each of these papers will be between 1.5 and 2 single-spaced typed pages. These papers will explore cutting-edge topics, and students’ writing will display knowledge, critical thinking and effective communication. The instructor will provide a list of candidate topics for the summary/critique papers. Students may go to any of the following journals to select a paper to summarize and critique: *Ecology, Ecological Monographs, Ecological Applications, Ecology Letters, Journal of Animal Ecology, The American Naturalist, Conservation Biology, Oikos, Oecologia, Science, Nature, PNAS*. Articles must be published no earlier than 2008.

Final Exam

30% of the course grade will result from a final exam. The exam format will be similar to a written doctoral prelim exam, consisting three short essay questions.

Class Participation

25% of the course grade will result from class participation. Students are expected to come to class having read assigned readings and prepared to discuss content and related concepts in a more than superficial manner.

GRADING

Three summary/critiques (15% each) = 45%
Final exam = 30%
Class participation = 25%

Total = 100%

Americans with Disabilities Act (ADA) Policy Statement
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 845-1637.
Academic Integrity Statements

AGGIE HONOR CODE

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: http://www.tamu.edu/aggiehonor/