

WFSC & ENTO 624- DYNAMICS OF POPULATIONS

Fall 2009

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WEEK	TOPIC
Aug. 31	Introduction, distribution of syllabus
Sept 7	Ecology, population, environment, evolution, adaptation, species, communities, models, dispersion patterns & indices
Sept. 14	Demography, life tables, reproductive value, models of single-species populations, exponential growth, logistic equation (1 st Critique topic given)
Sept. 21	Fluctuations, age-specific functions, Leslie Matrix, population regulation, stock-recruitment, density effects, catastrophic mortality, density-independence
Sept. 28	***First critique due (Sept. 28)*** Spatial models, dispersal
Oct. 5	Metapopulations, bioenergetics, individual-based models
Oct. 12	Life-history strategies, reproductive tactics, senescence, r/k selection, bet hedging, habitat templates, adaptive surfaces
Oct. 19	Interactions between populations, interspecific competition, (2 nd Critique topic given)
Oct. 26	***First Exam -- Oct. 26*** ; Lotka-Volterra models, niche
Nov. 2	predation/parasitism, Lotka-Volterra models
Nov. 9	Community structure, patterns, processes; ***Second critique due (Nov. 9)***
Nov. 23	Food web ecology, spatial heterogeneity, succession
Nov. 30	Species diversity, island biogeography
Nov. 17	Population biology in management, conservation
Nov. 23	Population biology in management [No class Fri., Nov. 27, Thanksgiving]
Nov. 30	Review & discussion
Finals Week	***Dec. 15 (8-10 AM)*** ***Second Exam***

No Required Textbook– The instructor will distribute reprints for discussion. For additional information, students may consult the following textbooks that deal with population biology: *Evolutionary Ecology*, 5th edition by E.R. Pianka; *Population Ecology*, 3rd edition by M. Begon, M. Mortimer & D.J. Thompson; *A Primer of Ecology* by N.J. Gotelli; & *Population Biology: Concepts and Models* by A. Hastings.

Population simulation/analysis paper

Forty (40)% of the course grade will result from an independent mini-project in which students will search the literature, compile information and data, explore modeling options, simulate population or food web dynamics on a computer, analyze results, and interpret findings based on ecological knowledge backed up by reference to relevant literature. Software will be available on computers in the Nagle Hall Computer Teaching Lab, including RAMAS-Metapop (metapopulation model), and EcoSim (food web dynamics). RAMAS-metapop simulates a landscape of subpopulation units and the demographic and migration rates associated with each. EcoSim is free software developed for simulation of food web dynamics. The course may explore other share-ware programs for analysis/simulation of ecological patterns and processes. During lecture, we will arrange a time period (typically a Monday right after lecture from 11-12) for a brief instructional session for computer programs. A handout will explain expectations content of the paper.

WFSC & ENTO 624- Summary/Critique Papers

Twenty (20)% of the course grade will result from two papers that summarize and critique recently published journal articles dealing with subjects discussed in the course. Each of these papers will be between 1.5 and 2 single-spaced typed pages. Papers should explore timely, challenging topics and display original thinking and effective communication. Three weeks prior to the due date of the paper, a list of candidate topics for the summary/critique papers will be presented. Students may go to any of the following journals to select a paper to summarize and critique: *Ecology*, *Ecological Monographs*, *Ecological Applications*, *Ecology Letters*, *The American Naturalist*, *Conservation Biology*, *Oikos*, *Oecologia*, *Science*, *Nature*, *PNAS*. Approval can be sought to use papers from other journals as well. The article you choose must be published no earlier than 2005.

GRADING

Two 1-hour exams (20% each) = 40%

Simulation/analysis paper = 40%

Two summary/critiques (10% each) = 20%

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/>