Description and objectives  Evolutionary ecology is the scientific discipline that uses evolutionary theories to understand the ecology and behavior of plants and animals (including people). As these theories are often quantitative, budding evolutionary ecologists need training in the relevant quantitative methods. This course fills that need. It will cover optimization models, game theory, kin selection, and life history. Satisfies the Quantitative Intensive Requirement.

Prerequisites  Junior, Senior or Graduate standing; one semester Calculus (Math 1100, 1170, 1210, or equivalent); one semester Ecology.

Grading  3 exams (60 pts total), weekly labs (40 pts total), and occasional quizzes. The exam on which you get the lowest score will count half as much as the other two. The low half of your lab scores will count half as much as the high half. Each assignment is curved, and grades are based on the higher of the raw and curved scores.

Teaching and learning methods  Two lectures per week and one lab. Course makes extensive use of Maple, a computer program that simplifies equations, solves them, and plots the results.

Reading material


Contact  After class & by appt. Office: room 206a Stewart Bldg. Phone: 581-5529. Email: rogers at anthro dot utah dot edu.

Plagiarism  Any cheating or plagiarism will result in a failing grade for the course. See sections II and V of the Student Code (http://www.admin.utah.edu/ppmanual/8/8-10.html).

ADA statement  The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581–5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. (www.hr.utah.edu/oeo/ada/guide/faculty)

Date Lecture Reading
Jan 11 M Intro: Command line R:1 & A or B
     13 W Maple R:2
     15 F Lab: Command line quiz; Maple exercise R:4
     18 M *** NO CLASS
     20 W Derivatives
Maxima & minima
22 F Lab: Optimization
25 M 2nd-order conditions
27 W Selection
29 F Lab: Selection

Feb
01 M Maple 2
03 W Clutch size: Smith-Fretwell
05 F Lab: More Maple (proc and for)
08 M Clutch size: sibling competition
10 W Foraging: Diet choice
12 F Lab: Clutch size
15 M *** NO CLASS
17 W Foraging: Patch model
19 F Exam 1
22 M Review exam
24 W Game theory 1: Graphical approach
26 F No Lab: Game theory 2: Hawks, doves and sex ratio

Mar
01 M Game theory 3: ESS algebra
03 W Game theory 4: Asymmetric games
05 F Lab: Foraging
08 M Evolution of culture
10 W Variance and covariance
12 F Lab: Game theory
15 M Covariance selection 1
17 W Cooperation and conflict
19 F Exam 2
22–26 *** NO CLASS
29 M Kin selection
31 W Parent-offspring conflict

Apr
02 F Lab: Covariance selection
05 M Costly signalling
07 W Renewal equation
09 F Lab: Kin selection
12 M Leslie matrix
14 W Stable age distribution
16 F Lab: Age structure
19 M Life history I
   Homework due: Ch. 15
21 W Life history II
23 F Lab: Life history
26 M Menopause
28 W Review
   Homework due: Ch. 16

Apr
30 F Final exam 8:00–10:00AM