Biology 208 Lecture Syllabus – Spring 2010

Assigned reading: Smith & Smith 7th (S&S), Freeman 3rd (F), Carroll (C)

Course Introduction (1 lecture)

Unit I. Evolution and Behavioral Ecology
11 Lectures
A. Genetic Variation
B. Natural Selection
C. Individual Selection and Group Selection
D. Outbreeding vs. Inbreeding
E. Genetic Drift – Minimum Viable Populations
F. Mating Systems and Sexual Selection
G. Reproductive Isolation and Speciation
H. Adaptive Radiation, Macro-evolution, and Phylogeny
I. Coevolution, Mutualism versus Antagonism
J. Extinction and the Extinction Crisis

Unit II. Systematic Biology
3 Lectures
A. Biodiversity
B. Taxonomic Method
C. Phenetics
D. Cladistics

FIRST-HOUR EXAMINATION – Wednesday, February 24, 2010

Unit III. Adaptations to the Physical Environment
5 Lectures
A. Solar Radiation, Temperatures, and Climates
B. Water and Nutrients
C. Plant and Animal Adaptations to Environment
D. Biogeography

Unit IV. Population Growth and Regulation
5 Lectures
A. Life Tables
B. Population Structure and Growth
C. Life History Patterns – r- & K-selection, Bet-hedging
D. Intraspecific Competition
E. Population Regulation: Density-dependent vs. Density-independent Regulation

Unit V. Population Interactions
5 Lectures
A. Interspecific Competition
B. Niche Theory
C. Predator-Prey Relations
D. Controls on Population Size – Bottom-up Versus Top-down

SECOND-HOUR EXAMINATION – Friday, April 9, 2010
Unit VI. Community Ecology

5 Lectures
A. Community Structure
B. Community Dynamics
C. Significance of Species Diversity
D. Stability and Diversity
E. Succession
F. Landscape Ecology

Unit VII. Ecosystem Structure and Function

5 Lectures
A. Ecosystem Productivity
B. Trophic Structure and Energy Flow
C. Biogeochemical Cycles
D. Global Cycles and Human Impacts
E. Global Environmental Change
F. Ecological Footprint