**BIOL 363**
**Population & Community Ecology**
Spring 2008-09

Instructors:
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**I. Population Dynamics**
1. Principles of population growth
2. Life tables and their use in ecology
3. Fitness and fitness correlates
4. Life history and reproductive strategies

**II. Competition and Coexistence**
1. Historical overview
2. Competition and community structure
3. Empirical evidence and current views (phytophagous and parasitoid systems)

**III. Predator-Prey Theory**
1. The Nicholson-Bailey system
2. Modifications for behaviour
3. Modern theories

**IV. Organization of Animal (Mainly Insect) Communities**
1. Definitions and concepts
2. Mechanisms of community organization
3. Major determinants of diversity of animal communities on plants
4. Factors limiting the number of species
5. Communities to ecosystems

**V. Co-evolutionary Arms Race**
1. Models and theories
2. Plant defense and animal response
3. Evolution of host specificity

**VI. Ecological Interactions**
1. Insect-plant interactions
2. Plant-pollinator interactions*
3. Biological control

**VII. Metapopulations and Metacommunities***
1. Metapopulation dynamics
2. Simple metapopulation model: assumptions and predictions
3. Evolution and speciation in metapopulations
4. Case study: Butterfly metapopulations and their response to habitat and climate change
5. From metapopulations to metacommunities
6. Fundamentals of metacommunity ecology
7. Case study: Metacommunities of butterflies, their hosts and their parasitoids

**VIII. Community Genetics: Integrating Population Genetics and Community Ecology***