

## **BIO 7428 Principles of Population Biology II Spring 2008**

### Primary Instructors

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**Course Description and Objectives:** This course is designed to provide graduate students with a solid foundation in the principles of population biology. We will emphasize the basic theoretical and mathematical framework of population biology with some consideration of the application of these ideas to conservation problems. The format of the course includes lecture material as well as reading and discussion of relevant literature. Students will also participate in the construction of the course. This includes designing lecture outlines and homework assignments, and building the course archive (see below).

### **General Overview of Course Structure:**

**Monday and Wed Class Meetings:** Monday and Wednesday afternoon meetings will be devoted to lecture material and the assignment of student tasks and readings along with some discussions. Lectures will introduce the various topical modules, define the questions and terms, and briefly outline the history of the ideas. Students will be assigned tasks related to the module, which may include explorations/expansions of particular topics or study problems and questions.

**Wed. Evening Discussions:** The evening discussions will focus on the literature. This constitutes a major component of the course. Students will be expected to lead and participate in these discussions. See handout “Thursday Night Rules”.

**Course Archive:** One very important area of involvement for students this semester will be in the establishment and compilation of a course archive, which will include bibliographies for each module, lecture outlines, results of student projects, an Endnote bibliography, and a PDF library. You will contribute to this extensively and will receive a CD copy of the course archive at the end of the semester. We envision this to be a major resource for you throughout your career – wherever your career takes you.

**Grading:** Student will contribute to the development of class projects and lectures. Grades will be assigned on the basis of the quality of these contributions and the each student’s contribution to course discussion.

**Philosophical Issues:** This is the core course for the PCB Master’s program and we are asking that you become engaged and participate. This means that we expect you to contribute to and guide the course. Sometimes we will be making things up as we go

along. However, the opportunity to involve students in the process creates an excellent environment for student participation and learning. We believe that this will be an productive and enjoyable semester.

**Topical Outline:**

- Module 1: Theory and empirical analysis of natural selection
- Module 2: The ecological and evolutionary aspects of dispersal
- Module 3: Population estimation
- Module 4: Population Growth and Population viability analysis
- Module 5: Population Dynamics
- Module 5: Ecological and evolutionary modeling
- Module 6: Life History Evolution
- Module 7: Linking genetic and ecological processes
- Module 8: Metapopulation analysis
- Module 9: Meta analysis