EEB 485 **FALL 2016**

Population and Community Ecology

Instructor:

Deborah Goldberg (2003 Kraus Natural Sciences Building, 763-1732, degold@umich.edu)
Office hours: Thursdays, 10:15-12 pm and by appointment

GSI: John Guittar (2010B Natural Sciences Building, guittarj@umich.edu)
Office hours: Tuesdays, 10-12am

Credit hours: 4

Prerequisites: Background in ecology (Biology 281 or equivalent)

Schedule:

Lectures: T Th 8:40-10 am in 4151 USB
Computer Labs and discussions:
Section 2: Thursday 10-12am, 2230 USB
Section 3: Friday 2-4pm, 3265 USB

General Course Objectives and Summary:

The course examines the principles governing the dynamics, abundance, and distribution of single populations and multiple interacting species in communities, from basic tenets to cutting-edge research questions. Population and community-level perspectives are integrated by drawing parallels between approaches and considering how to scale up from the phenomena of one or a few species to the structure and dynamics of whole communities. The laboratory/discussion sections include both computer exercises focused on deepening understanding of ecological theory and discussions of primary literature using the concepts presented in lecture.

Textbooks (required):

Vandermeer, J.H. and D.E. Goldberg. 2013. Population Ecology. Princeton University Press. 2nd Edition.

Mittelbach, G. G. 2012. Community Ecology. Sinauer Associates.

Course Organization and assignments:

1. A set of learning goals for the course is posted on the Canvas site and specific goals for each class session are at the beginning of the powerpoint. Please review these often to make sure you are achieving these goals.
2. Class meetings include two 1.5 hour lectures/discussion per week and one 2 hour discussion/computer lab per week. The latter will usually be a combination of discussion of

primary literature related to lecture material and computer exercises around theoretical models presented in lecture.

3. Background readings for lectures are mostly from Vandermeer and Goldberg (V&G) or Mittelbach. **The lecture content is based on the assumption that you have read the material in advance! We especially encourage you to do at least some of the exercises in V&G; particularly useful ones will be pointed out in advance and often reviewed in class.** Optional review papers or classical papers may also be assigned as background; these will be on Canvas.

4. Computer lab: The goal of the computer lab is to become comfortable with basic models in population and community ecology and explore their behavior. Most computer exercises will have a short assignment due no more than a week later; descriptions of the exercises and assignments will be available on the Canvas course site. All laboratory exercises are based on R and RStudio, which are free, multi-platform, open source software which can be downloaded from http://cran.mtu.edu/ and http://www.rstudio.org/, respectively.

5. Discussion: One or two papers from the primary literature will be assigned for each discussion section (and will be available on Canvas). Each student will be responsible for leading or co-leading one discussion section during the term. Each week, student discussion leaders will read the papers in advance and collaboratively write three questions designed to assess conceptual understanding and stimulate discussion of the paper. They will meet with the GSI (John Guittar) on Tuesday to discuss their plan for the following week's lab. They will submit a discussion handout in R Markdown format (and a rendering of it as a pdf) to the GSI by 8:30 AM Thursday, at which point the GSI will post it to Canvas as a new "discussion." All students except discussion leaders should reply to the prompt before discussion with answers to two of the three questions and one new question. For discussion, leaders will give a ~5 minute summary of the assigned readings, and then lead discussion of the questions. Discussion leaders should read the additional questions posted by the other students as we will also those as a class if time permits.

6. Two exams will be given over the course of the semester; these will be a selection of problems and short answers.

7. A final integrative essay will be assigned on the last day of class in lieu of a final comprehensive exam.

Grading:

Laboratory assignments:	25%
Discussion leader:	5%
Discussion paper questions/participation:	10%
Exam I	25%
Exam II	25%
Final essay:	10%