WILD 6770: Plant community ecology (T/Tr 10:30-11:45)

Instructor:
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BNR 287
(435) 797-1021 Office hours: Wed. 1:30-3 and by appointment
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Course web page: Assignments, readings, and datasets will be distributed on the course web site on Canvas. Log-in at: https://usu.instructure.com/login

Course description: This advanced graduate course focuses on the quantitative methods used to address current research questions in community ecology. Essentially, it is a “how to” course. Each research question or topic will be introduced with readings from the primary literature. After a short discussion of the reading, students will work in groups to perform similar analyses themselves. My philosophy is that you will learn much more by doing than by just listening and discussing.

Objectives:

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<th>Course objective</th>
<th>Learning objectives (IDEA evaluation)</th>
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<tr>
<td>Understand the classic questions in plant community ecology, as well as the current “hot” topics</td>
<td>2. Learning fundamental principles, generalizations, or theories. (Essential)</td>
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<td>Use the computing application R to analyze data, run simulations, and visualize data; appreciate how quantitative approaches can help you learn more from your field data.</td>
<td>4. Developing specific skills, competencies and points of view needed by professionals in the field most closely related to this course. (Important)</td>
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<td>Practice doing science as a member of a collaborative team.</td>
<td>5. Acquiring skills in working with others as a member of a team. (Important)</td>
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<td>Improve oral communication skills.</td>
<td>8. Developing skills in expressing oneself orally or in writing. (Important)</td>
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Grades: Grades will typically be assigned at the end of the course as A (90-100% of available points), B (80-89%), C (70-79%), etc. Points will be earned in three categories:
  i. Participation in discussions, usually of journal articles (10%)
  ii. Weekly group projects (60%). Members of each group receive the same grade on a given assignment, but I will also ask you to rate (anonymously) each other's contributions at the end of the semester. If you are a lousy team member, it won't affect your grade, but we will make sure you feel very, very guilty.
  iii. Final individual project and presentation (30%). I would like this project to involve quantitative analysis of your own data. I want you to start thinking about this right away, so a proposal outline will be due by mid-September. If you do not have a suitable topic, I will help suggest one.
Schedule:

Aug. 30 & Sept. 1: What is community ecology? R basics (tutorials, logistic growth example)

Sept 6: Why care about coexistence? R basics (tutorials, logistic growth example)

Sept. 8, 13 & 15: Coexistence: Lotka-Volterra competition (deterministic and stochastic)

Sept. 20 & 22: Coexistence: Resource-ratio hypothesis

Sept. 27, 29 & Oct. 4: Stability, resilience, and compensation

Oct. 6 & 11: Composition—Similarity

Oct. 13, 18, 25 & 27: Composition—Multivariate statistics (No class Oct. 20)

Nov. 1 & 3: Biodiversity—Rarefaction and species time and area relationships

Nov. 8 & 10: Community assembly and null models

Nov. 15 & 17: Trait and phylogenetic community assembly

Nov. 22: Plant soil feedbacks

Nov. 29 & Dec. 1: Biodiversity and ecosystem function

Dec. 6 & 8: Final project presentations