

Field Botany

Renewable Natural Resources 230R

- Syllabus -

Instructor

Steve Smith (azalfalf@ag.arizona.edu), Biological Sciences East 211, 621 5325 (voice only)

Office hours are by appointment. E-mail me with suggested days and times. *Do this at least 48 hours in advance of when you would like to meet.*

Units: 2

Prerequisite: None

Grading: Regular grades are awarded for this course: A B C D E.

Course description

In this course we address fundamental knowledge that supports the study and appreciation of plants in their natural environments. Emphasis is placed on species found in the southwestern United States. The course begins with the fundamental elements of plant growth, development, physiology, and reproduction. Using this foundation, we then cover plant identification and taxonomy, and how environmental factors affect plant growth, distribution, and assemblage into communities. We conclude with a consideration of roles played by plants in ecological processes and how human-driven processes affect these processes. RNR 230R is open to students in all majors and is a core course in the Natural Resources undergraduate curriculum in the School of Natural Resources.

Expected outcomes

Students completing RNR 230R will:

1. Understand the basic structures and processes involved in plant growth, development, physiology, reproduction, and evolution.
2. Understand how plants interact with biotic and abiotic components of their environment, the roles that plants play in communities and ecosystems, and how human activities may affect these.

3. Understand the hierarchical nature of taxonomic systems and the principles used in applying scientific nomenclature.
4. Understand the significance of botanical knowledge in the activities of natural resource managers and other natural historians.

Student evaluation and grading

Graded activity	Point values
Midterm exams	2 @ 100 points
Research essays	3 @ 25 points
Final exam (comprehensive)	1 @ 150 points
	$\Sigma = 425$ points

If you have a question about any grade you must consult with Dr. Smith within seven days of the grade being posted. No grade changes are possible after this.

Frequently asked questions

Be sure to read the Frequently Asked Questions page that can be downloaded from the D2L Content section. (See below for D2L access information.)

Final grades are not assigned based on any predetermined thresholds. However, they will roughly follow this scale: 90-100% = A; 80-89.9 = B; 70-79.9 = C; 60-69.9 = D; < 60 = E.

Topics covered

1. Course overview and naming Plants
2. Describing plants and their growth forms
3. Plant cells
4. Tissues
5. Organs
6. Photosynthesis
7. Transpiration and photosynthetic variation
8. Biophysics of water use
9. Primary growth
10. Secondary growth—lateral meristems and wood
11. Secondary growth in cacti
12. Reproduction basics and some asexual methods
13. Alternation of generations and flowers
14. Fruit diversity and deviant reproduction
15. Naked-seeded plants
16. Systematics: Taxonomy and phylogenetics
17. Diversity and evolutionary change
18. Adaptation and speciation
19. Soils and plant growth
20. Geomorphology
21. Weather
22. Climate
23. Methods for describing vegetation
24. Plants as players in ecosystems
25. Succession
26. Fire and invasive plants
27. Herbivory
28. Paleoecology, plants and people

Research essays

Research essays define, describe, and delineate a topic. In this course your essays are to be based on your investigation of a particular subject as described in a research paper provided in the Content section. (This [site](#) provides some information on how research essays are constructed.) The essays will deal with 1) Photosynthesis and carbon cycling, 2) Climate change and plant evolution, and 3) Invasive plant management.