

## **Biology 5455 - - Desert Field Ecology**

Fall Semester 2023

Each Monday [(3:00-4:20) & all of Fall Semester break],  
Monday classes in person in JTB 120

**Instructor:** Dale Clayton (he, his, him)

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**Office Hours:** By appointment

**Office Location:** ASB 570a

**Office Hours:** By appointment

**Teaching assistants** (office hours by appointment)

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### **Required Materials**

- Sowell, John B. 2001. Desert Ecology. University of Utah Press. 208 pp.
- You will also receive a course manual containing details of the field portion of the course and some additional readings.

### **Course Description**

Introduction to desert ecology with emphasis on the four major desert ecosystems of North America (Great Basin, Mojave, Sonoran, and Chihuahuan). Includes a 9-day desert field trip during the semester break. Subtopics include meteorology, hydrology, geology, geography, botany, and zoology/entomology, with emphasis on birds and plants. Students will generate testable hypotheses under field conditions, perform data analysis, and present their findings. Individual journal and field notebooks are required, as well as a group project with oral and written presentations.

**Credits** 3 (counts as an L1 lab course)

### **Prerequisites & course fee**

Instructor consent, fee: \$350.00

### **Course Outcomes**

By the end of this course, you will be able to:

- Generate and test ecological hypotheses.
- Collect and analyze field ecological data.
- Understand the influence of abiotic factors and habitat on species diversity.
- Identify birds, plants, and other organisms.
- Prepare and deliver a clear oral conference presentation.
- Understand the function of the major sections of a scientific paper.
- Write a mock scientific journal article.

## Teaching and Learning Methods

The purpose of this course is to provide you with nine days of complete immersion in desert field ecology, preceded by lectures and discussions introducing Desert Ecology. You will be introduced to concepts and methods used by ecologists to understand the diversity of species found in deserts, which are among the most diverse habitats in the world (which many people find surprising). Following the field portion of the course, you will learn how to collate and analyze field data. You will also learn how to prepare a journal article and give an oral research presentation.

The focal study groups are birds and plants. We will estimate the diversity of birds and plants and explore the relationships between diversity and biotic factors, such as species community composition and abiotic factors, such as elevation. Although birds and plants are relatively easy groups to study during a course of this kind, the general concepts and approaches we use can be applied to virtually any group of organisms. No previous background in ornithology or botany is required to take this course. Weekly lectures and exercises prior to the field portion of the course will provide introductions to bird and plant identification.

Students will collect data in the field using a small field notebook (this notebook is for your use and will not be graded). Data recorded in the field will be transcribed each day into what is known as the “Grinnell system”. We will adopt two components of the Grinnell system, which will be kept together in a single 8.5"x11" 3-ring binder:

- 1) Daily journal: *Chronological sequence* of field excursions with general information on locality, habitats, weather, lists of species seen, etc. A journal entry will be prepared each afternoon or evening using the notes you made that day in your small field notebook.
- 2) Species accounts: Students will create accounts for many of the species seen, especially those observed repeatedly or for some length of time. Species accounts get organized *in taxonomic sequence* after the daily journal section of the binder.

**This binder is due on the final day of the field trip during fall break.**

We will assemble a large class data set, which will form the basis for oral presentations that pairs of students will give near the end of the course in a mini-conference. The class data set will also be used to produce a mock journal article that each student will prepare individually. Articles will be submitted to a mock journal, where it will be reviewed, and students will have a chance to revise and resubmit their articles to improve their grades.

**Grading will be based on the following 5 activities (% of final grade):**

- 1) Five quizzes during first half of semester - worth 2% each (10%).
- 2) Field binder (Grinnell System), Part 1: Daily journal entries during field trip (20%).
- 3) Field binder (Grinnell System), Part 2: Bird species accounts during field trip (20%).
- 4) Oral presentation with partner on field trip research project (25%).

5) Mock journal article on field trip research project (25%).

The course has no midterm or final exams.

Grading is based on the following scale (grading is not on a curve):

A	93 - 100%
A-	90 - 92.99%
B+	87 - 89.99%
B	83 - 86.99%
B-	80 - 82.99%
C+	77 - 79.99%
C	73 - 76.99%
C-	70 - 72.99%
D+	67 - 69.99%
D	63 - 66.99%
D-	60 - 62.99%
E	< 60%

**Weekly schedule** (One meeting per week, and 9 full days over fall break)

1. (Aug 21) Introduction to course and participants
2. (Aug 28) The desert environment (Quiz 1 - on Sowell Ch. 1)
3. (Sep 4) **NO CLASS** (Labor Day)
4. (Sep 11) Plants (Quiz 2 - on Sowell Ch. 2, 3)
5. (Sep 18) Animals (Quiz 3 - on Sowell Ch. 4, 5)
6. (Sep 25) Animal life histories/ecosystems (Quiz 4 - on Sowell Ch. 6, 7)
7. (Oct 2) Islands in the sky/humans in the desert (Quiz 5 - on Sowell Ch. 8, 9)
8. **(Oct 7 – 15 = fall break) Field trip**
9. (Oct 16) **NO CLASS**
10. (Oct 23) Discuss the compiled class data, introduction to data analysis.
11. (Oct 30) How to write a mock journal article, troubleshooting your data analysis
12. (Nov 6) Work on journal articles in class
13. (Nov 13) First drafts of journal articles due; discussion on how to give a talk
14. (Nov 20) First drafts of journal articles handed back; work on talks
15. (Nov 27) Mini-conference with talks (1 of 2) (and submission of journal articles)
16. (Dec 4) Mini-conference with talks (2 of 2)

## University Policies

1. **COVID-19 Campus Guidelines.** The COVID-19 guidelines for the University of Utah are adapted often due to the ever-changing status of the pandemic. For the most up-to-date information regarding the campus guidelines, visit <https://coronavirus.utah.edu>.
2. **The Americans with Disabilities Act.** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.
3. **University Safety Statement.** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu).
4. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
5. **Undocumented Student Support Statement.** Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit [dream.utah.edu](http://dream.utah.edu).
6. **Drop/Withdrawal.** Students may drop a course within the first two weeks of a given semester without any penalties. Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A “W” grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade “W” is not used in calculating the student's GPA. For deadlines to withdraw from full-term, first, and second session classes, see the U's Academic Calendar.

7. **Academic Misconduct.** In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty. Acts of academic misconduct include cheating, plagiarizing, research misconduct, misrepresenting one's work, and inappropriately collaborating. Suspected cases of academic misconduct will be dealt with according to the procedures found in the Student Code, University Policy 6-400(V) (<http://regulations.utah.edu/academics/6-400.php>.) Instances of academic misconduct will be recorded in a database that may be made available to other University of Utah Departments and Colleges.
8. **Wellness Statement.** Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at [www.wellness.utah.edu](http://www.wellness.utah.edu) or 801-581-7776.
9. **Veterans Center.** If you are a student veteran, the U of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu/>. Please also let us know if you need additional support in this class for any reason.
10. **Diversity / Inclusivity Statement.** It is the intent of the instructors that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is our intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let us know ways to improve the effectiveness of the course for you personally or other students or groups.
11. **Learners of English as an Additional/Second Language.** If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (<http://writingcenter.utah.edu/>); the Writing Program (<http://writing---program.utah.edu/>); the English Language Institute (<http://continue.utah.edu/eli/>). Please let me know if there is any additional support you would like to discuss for this class.