**Sonoran Desert Discovery**

**ECE 464/564 (3 credits)**

**Meeting Times**
Monday 10:30-12:50am in Searle 247 (http://sirono.arizona.edu/west/ece/teaching/464.html)

**Assignments & Grading etc.**

- **Course Work**
  - **Total Semester Points:** 500
  - **Attendance:** 100
  - **Participation (including 50 pts for your assessment of peers):** 200
  - **Exams (-2 pages, five at 50 points each):** 200
  - **Outreach Workshop (details below):** 500

  **M cáoes (200 additional points; total of 1200)**
  - This course is available for honors credit by contract. Please discuss with your instructors and get approval for the enhancements you propose to warrant honors credit. All work will be due by the regularly scheduled final exam.

  **564 (200 additional points; total of 1200)**
  - Students enrolled for graduate credit (564) have two options:
    1. **Propose a project appropriate for graduate credit in this course.** If we agree that your proposed project is outstanding, then you will be free to pursue it. Otherwise...
    2. **Outreach Packet (modified from Tiffany Alvarez proposal):** Choose an age group such as early elementary, middle, or high school level. Take an outreach packet that would be submitted to teachers before a prospective outreach visit. The packet could allow teachers to build students on the topics before the visit. Include the teacher with supplemental material for use during the presentation and after, and include an evaluation form to assess the effectiveness of the outreach endeavor.

  **Books**
  - **Course Materials:** The first required text available at the UA bookstore.
  - **Other readings:** All materials available electronically on course website. Please check ECE 564 course website regularly for updates, changes, and/or additions.

  **Website**
  - The ECE 564 website (http://sirono.arizona.edu/ece/teaching/564.html) with readings, assignments, schedule, announcements, etc., is ECE 564 (website for updates). We may also use a DIL website (http://sirono.arizona.edu) for posting grades.

  **Office Hours**

  **Grade Expectations**

  **Keep in mind the following statement from J. M. Williams, 1993. Clarifying grade expectations, The Teaching Professor 7(7), 11:**

  The "A" student is an outstanding student.
    - This student has shown consistent excellence. They have a commitment to the class and the course that is evidenced by hard work, dedication, and respect for teachers and other students. They are far above average and very skilled and knowledgeable in their field.
    - A student with this grade should have a strong background in biology and should be able to handle the rigor of this course.

  The "B" student is a good student.
    - This student has shown consistent effort and has a strong understanding of the subject matter. They have a good understanding of the basic concepts and are able to apply them to solve problems.
    - A student with this grade should be able to handle the rigorous pace of this course with some effort.

  The "C" student is a competent student.
    - This student has shown an understanding of the subject matter and has the ability to apply it to solve problems. They are able to work independently and complete assignments on time.
    - A student with this grade should be able to handle the course with minimal effort.

  The "D" student is a marginal student.
    - This student has shown a lack of understanding of the subject matter and has difficulty applying it to solve problems. They have a difficult time completing assignments on time.
    - A student with this grade should be able to handle the course with a great deal of effort.
Grade Inflation

Grade Inflation at the University of Arizona

by Jonathan Samuels

Grade inflation at the University of Arizona has been a concern of recent years. This trend is concerning as it may undermine the value of academic achievement. The average GPA of incoming freshmen has increased over the years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Average GPA</th>
</tr>
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<tbody>
<tr>
<td>2000</td>
<td>3.05</td>
</tr>
<tr>
<td>2005</td>
<td>3.10</td>
</tr>
<tr>
<td>2010</td>
<td>3.15</td>
</tr>
<tr>
<td>2015</td>
<td>3.20</td>
</tr>
</tbody>
</table>

What Grade Inflation Means:

Grade inflation refers to the phenomenon where grades are assigned more generously over time, leading to an increase in the average GPA. This can occur due to several factors, such as grade inflation policies, teaching methods, or changes in grading standards. The impact of grade inflation can be significant, affecting not only students' academic outcomes but also their career prospects.

Attendance

You are expected to attend each class session prepared and ready to contribute. Ask questions if you have any concerns about your progress or if you need clarification on any topic.

Class meeting suggestions:

In addition to paying attention and taking notes, try the following strategies to enhance your learning experience:

1. Show up and Contribute!
2. Workshops: Join in with classmates and instructors to learn new skills.
3. Workshop Progress: Track your progress and set goals for improvement.

Grades and Learning:

Grades should reflect your learning and understanding of the course material. High grades should be earned through diligent study, effective study habits, and active participation in class discussions.

Workshop Progress

You will turn in several items (often electronically) for instructor feedback and grades:

1. Workshop Topics: Presented in concert with classmates and instructors.
2. Introduction and Background: In template, 70 points.
3. Outcomes Goals: In template, 35 points.
4. Tools and Techniques: Achieve educational goals (what will your workplace be?) In template, 50 points.
5. Workshop Evaluation: In template, 50 points.
6. Assessment: In template, 25 points. (Turn in all workshop submissions, or you will receive a grade of 0.)
7. Final Report: You will be graded on the final product, which will be assessed for content, presentation, and overall quality.

Workshop Lesson Plan Template

You will use the following lesson-plan template (slightly modified from one found on the UA Marine Discovery Website) as you develop your workshop:

- Project title or topic of activity
- Author(s) & date
- Summary of activity (approx. 200 words)
- Target audience (or grade levels)
- Key words or phrases related to the activity
- Estimated time to do the activity
- Goals of activity
- National Science Education Standards (NSES)
- Materiales needed
- Procedure for presentation(s)
- Step-by-step procedure for the activity
- Assessment of students' understanding of the activity
- Materials list
- Notes for discussion or questions
- Observations and reflections
- Evaluation questions and activities
- Evaluation rubric
- Final participant feedback
- Reflections
- Acknowledgments

Show up and Contribute!

Workshops on educational enrichment:

Hands-on educational enrichment with the public at Biosphere 2 is at the heart of this Outreach course. You and your peers will develop topics and workshops that convey important biological, ecological, and ecosystem principles to the public through the lens of the Sonoran Desert. You will present to the public, once with "families" and once with "scientifically literate adults" as your target audience. Therefore, you may be engaging with anyone from pre-kindergarten to retirees. Your workshop should include hands-on activities, discussions, visual aids, etc. We will work as a group to come up with excellent outreach tools. You will also consult with UA faculty and other local experts to focus the goals of your workshop. Reflect the facts you will present based on the latest scientific research, and inform the listeners how you would improve them. You will need to spend considerable time outside of scheduled class time to develop your workshop. An acceptable draft of your workshop must be approved before you present it to the public.
Consultation & Observation

Engagement with Experts
As described above, you will interact with UA faculty and/or experts of similar caliber else here in the Tucson community. You and your peers and instructors will work together to identify appropriate experts to meet with twice during the semester.
You will also be visiting a K-12 classroom in Tucson to facilitate your thinking and discussion about the realities of teaching and learning. Possible options include, but are not limited to:
- Arizona Office, AP Biology, Environmental Biology, Arizona College Preparatory Academy
- Mandell with Biology and Science, Biotechnology, Tucson High School
- B2E collaborations between UA science graduate students and local K-12 classrooms
You will need to get approval for your specific classroom visit from the instructors and make final arrangements on your own.
All of these experts are invited to join us for our Monday meeting/celebration 97 December, Location TSU.

Field Trip
You will need to spend time outside of scheduled class activities to develop and refine your B2 Workshop

The Sonoran Desert

1. Where is the Sonoran Desert?
2. Find person with most similar map.

Learning, Reflecting, Writing
and be prepared to share out loud some of your writing with your peers and instructors.

Essay (approx. 3 typed pages each; 40 points each; 60 points total)
Part of your learning process necessitates critical reflection on what you have seen and done.
To foster reflection and develop written communication skills, we are assigning five essays due at different points during the semester. You are expected to develop and support one or more arguments in your essay. Using logic and references in a well-organized paper will result in the best essays that also meet the most points. Writing should be grammatically correct and free of typographical errors and other sloopy mistakes. Having others proofread your work, or visiting the campus writing center, will substantially improve the final product. Please follow the parenthetically cited reference formatting as seen in published scientific papers in the journal Ecology (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2856451).

1. Choose a specific biological topic that is relevant to the concept of a "dry island." Describe and explain the topic to an audience of high school students. Get instructor approval of your essay topic before you begin writing.
2. What research does your faculty consultant (expert) do? Why is knowledge of their field and its findings important to the public? [Please include detailed contact information for your expert(s)]
3. What did you learn about teaching biology from visiting your classroom for the hour? In what ways did you think of similarities and differences from the Dewey approach we have read about? [Please include detailed contact information for your expert(s)]
4. You have spent a bit of time this semester actively engaged in teaching (and learning) biology. Discuss the similarities and differences between teaching and learning. How does the age of background of the student affect what teaching or learning, or both.
5. Topics to be announced later in the semester.

Be able to introduce your partner:
- Name
- Background
- Familiarity with Sonoran Desert (why map drawn the way it is?)
- Unique physical attribute of partner
- Goals in the course
- What other features can you identify on the map?
What makes the Sonoran Desert unique?

Discussion
What should the public know about biology, especially in the realms of ecology and evolution? Why?

What should the public know about the Sonoran Desert?

Reading Assignments:

For Monday 31 August:
A Natural History of the Sonoran Desert (Phillips & Comus, eds., 2000)

- Introduction
- Biomes and Communities of Sonoran Desert
- Monsoon etc.
- Zepeda poem, *Wind*
- *Wind* poems
- Geologic Origins
- Biodiversity & Pupfish
- Reptiles & Amphibians
- Rattlesnakes

For Saturday 07 Sept:
- Handouts on website

For Monday 14 Sept:
- Choose a Sonoran Desert topic and find a scientific paper about it.
- Bring the abstract of the paper and be ready to say a few words about the topic and the paper. Email the citation to Tiffany before class.
- Packrat
- Turkey Vulture
- Mexican Jay
- Pleasing Fungus Beetle
- Butterflies
- Saguaro
- Ocotillo
- Brittlebush
- Prickly Pear
- Oaks
- Grasses
- Yuccas
- Agaves
- Ponderosa Pine
- Douglas Fir
- Alligator Juniper
- Corkbark Fir

Readings from Dewey book.