Syllabus for:
SCI 422/522 Research Trends & Updates for Science/Math Teachers

Instructor:
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Office hours:
To be held in Flandrau Science Center, Room TBD
Wednesdays 5:00 - 6:00 and by appointment

Prerequisites:
None, but see Course Objectives for targeted audience.

Schedule:
This 1-credit hour course will meet 8 times for two-hour sessions on Wednesday evenings
between September 15 and November 10. In general, a 1-hour lecture will be followed by a 1-
hour hands-on activity, tour, and/or group discussion.

Location:
Flandrau Science Center, planetarium. Will meet Week 5 at The Nature Conservancy, 1510 E.
Ft. Lowell Road.

Reading:
There is no textbook for this course; readings will be assigned from various sources.

Course Objectives:
This course is designed for those teaching, or planning to teach, science at the K-12 level.
Students signing up for SCI 522 are expected to have completed a bachelors degree in education,
science education, a science field, or mathematics. Students signing up for SCI 422 typically
will be in their Senior year in education or science education or a science field.

The course will focus on the science of sustainability in the Southwest. What is the concept of
sustainability and why its current appeal? Drivers include climate change, population growth,
national security concerns. Dimensions include energy, water, land use, food and fiber; in the
desert Southwest, the focus is on energy and water. This course will look at how researchers in
biology, chemistry, physics, earth sciences and optics are working to make sustainable
production of energy and water an affordable reality.

Week 1  Overview of Sustainability in a Desert
Week 2  Water/Energy Nexus
Week 3  Biofuels
Week 4  Sustainable Homes
Week 5  Water Harvesting and Water Reuse
Week 6  Sustainable Transportation
Week 7  Solar Energy for Power and Heat
Week 8  Renewable Energy Sources and Energy Storage
Incompletes:
Incompletes will be given only if a student has satisfactorily completed the majority of the work in the class and has a valid reason, such as medical, for not completing the remainder of the course. Students must make arrangements with the instructor to receive an incomplete.

Homework:
Homework will consist of both individual and group assignments, which may begin in the classroom. Homework will focus not only on deepening the students’ understanding of the concepts presented, but also on developing various ways the information in the lectures can be effectively taught in the K-12 science classroom.

Those taking the course at the 500 level will have an additional assignment. This final project, due at the end of the course, will consist of preparing a teaching plan on how a portion of the material presented (corresponding to one week of the course) could be taught at a given grade level, consistent with state standards.

Grading:
Grades for those taking the course at the 400 level will be based on class participation (25%) and weekly homework (75%); grades for those taking the course at the 500 level will be based on class participation (15%), weekly homework (50%) and the final project (35%). The grading scale will be A = 90 – 100%; B = 80 – 89%, etc.

Absence Policy:
All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students will be honored.

General:
Students are expected to show up promptly for class and to silence their cell phones during class. Students are expected to read the assigned materials prior to class and be prepared to discuss. Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements are encouraged to register with the Disability Resource Center and contact me to discuss access issues. Students are expected to understand and follow the Student Code of Academic Integrity. See: http://dos.web.arizona.edu/uapolicies
Threatening behavior will not be tolerated. See: http://policy.web.arizona.edu/policy/threatening.pdf
Other than grade and absence policies, the information contained in this syllabus may be subject to change with reasonable advanced notice.