

*The wicked leader is he who the people despise.
The good leader is he who the people revere.
The great leader is he of whom the people say,
"We did it ourselves."*

Loa Tzu

**SCED 4368
TEACHING SCIENCE IN SECONDARY SCHOOLS
Fall 2014**

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TEXT:

Author: Llewellyn
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Additional material for this class is available to you online and on Blackboard.

COURSE DESCRIPTION

The course is designed for all students who are seeking certification as secondary science teachers with a focus on critically examining the perspectives, philosophies, materials, and strategies for effective learning in secondary science classrooms. The ultimate goal is to understand how to design science inquiry curricula where every student is held to high expectations and achieves maximum learning. In this learning situation, students will participate in critically examining and analyzing nationally recognized inquiry science curriculum with an aim to ultimately design their own inquiry science lesson.

COURSE OBJECTIVES from TExES Standards: You will be practicing teaching using a constructivist/inquiry curriculum designed to provide successful learning experiences for all students. Through these teaching and learning experiences, you will be practicing concepts from Standards I, II, and III of the Pedagogy and Professional Responsibilities Standards (PPR) with particular emphasis on planning and designing inquiry-based instruction and strategies, informally and formally assessing students' and your own progress, and managing the science classroom environment. You will have opportunities to examine the remaining standards for advancing toward mastery in all levels.

Standard I: The science teacher manages classroom field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens.

Standard II: The science teacher understands the correct use of tools, materials, equipment, and technologies.

Standard III: The science teacher understands the process of scientific inquiry and its role in science instruction.

Standard III Assessment – Individual Lesson Designed for inquiry (rubric below)

Standard IV: The science teacher has theoretical and practical knowledge about teaching science and about how students learn.

Standard IV Assessment – Written submissions provide evidence (rubric below).

Discussions posted in Blackboard identify pedagogical knowledge.

Standard V: The science teacher knows the varied and appropriate assessments and assessment practices to monitor science learning.

Standard V Assessment – Discussions posted in Blackboard identify the assessment used in each Activity.

LEARNING OUTCOMES:

Demonstrate the following components vital to quality science education:

- Ability to implement an inquiry-based science curriculum
- Ability to assist students in designing investigations using scientific inquiry
- Understanding of the role of underrepresented groups in science decisions and science careers
- Exhibit professionalism as a science teacher
- Understanding of local resources and quality curriculum materials to assist your science program.
- Improvement in your personal understanding of science concepts
- Understanding of standards for excellence (National Science Education Standards, TEKS, Excellence in Environmental Education -- Guidelines for Learning)

TEXES

To adequately prepare for the TExES examination(s), if relevant, please refer to the (1) the preparation manual from http://cms.texas-ets.org/files/6113/2949/6243/136_Science_8-12.pdf and (2) the PPR manual available on Blackboard. Additionally, sessions will be provided during the semester to review and prepare for these examination(s). As a reminder, passing both of these examinations will qualify you for registration into your student teaching course in spring 2015.

STUDENT EVALUATION

Because this class is based on collective construction of knowledge rather than mastery, it is essential that students fully participate in all assignments. Distribution of points follows:

(30 points) CLASSROOM PARTICIPATION: Read assigned papers as indicated in calendar listing for individual and whole class reflection/discussion. Go to Blackboard for details and uploading. You need to bring a copy to class, or able to access it on your mobile device, to guide your participation. Lack of a reflection indicates you are not ready for participating in a class discussion and will result in loss of points.

The points will be awarded at the end of the semester per Rubric Reflection guidelines posted on Blackboard. The remaining 10 points are derived from your active participation in whole class discussions/ participation. Possible pop quizzes may be given and will be part of this grade.

(25 points) BLACKBOARD DISCUSSIONS

Learning is lateral. An optimum learning space is in a peer group where you are challenged to think about an experience or a written document and to express your thinking with peers. Therefore, your participation in the discussion group is very important. Successful participation includes these components:

- You post in a timely manner.
- Your posting shows that you have read and understand the material, or that you have accomplished the assigned task.
- You respond to your discussion group members' postings with comments that show one or more of these traits: probing questions, ask for clarification, elaboration on a point, and expanding a concept.
- Discussion group posting is informal, so sentence structure and formatting will be less formal. Occasional typos, punctuation and spelling errors are acceptable. However, as a future teacher, you must take care in using correct grammar and in expressing yourself in a cogent manner.

A rubric for discussions will be posted on Blackboard.

(20 points) INQUIRY (ACTIVITIES) LESSON(S)

These activities will be taken from a commercial curriculum module in order for you to experience first-hand a high quality curriculum unit meeting national science standards. You will be assigned a particular lesson for which you will be expected to:

- Identify and be able to critically reflect on relevant components, such as assessment and an inquiry approach to teaching and learning
- Demonstrate alignment to TEKS
- Provide evidence of your contribution to both teaching and analysis
- Actively engage all participants
- 15 points

These aspects will be a major component of the Final. Thus, it is imperative that you maintain a journal during these lessons, preferably a composition book with quadrille paper, in order to maintain detailed notes (journal=5 points).

(25 points) FINAL PROJECT: Due December 3 (see Blackboard for assignment details).

Grades will be determined as follows:

A	90 – 100 points
B	80 – 89 points
C	70 – 79 points
D	60 – 69 points
F	Below 60 points

STUDENTS WITH DISABILITIES OR IN NEED OF CLASSROOM ACCOMMODATIONS

If you have or believe you have a disability and/or need classroom accommodations, you may wish to self-identify. You can do so by providing documentation to The Center for Accommodations and Support Services (CASS) located in Union East Room 203. Students who have been designated as disabled and/or in need of classroom accommodations must reactivate their standing with on a yearly basis. Failure to report to CASS will place a student on the

inactive list and nullify benefits received. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or director of Disabled Student Services. Call 747-5148 or email cass@utep.edu for more information about the American Disabilities Act (ADA).

ACADEMIC INTEGRITY

In accordance with University regulations, scholastic dishonesty on a given assignment will be referred to the Dean of Students and may result in a zero on the assignment, an "F" in the course, or even suspension from the university. If you need assistance with your assignments, please consult authorized sources of help. "Plagiarism" is the unattributed use of someone else's work -- a classmate's, a website's, even a teacher's from another course. For more information on Scholastic Dishonesty and/or Plagiarism, consult the Handbook of Operating Procedures: Student Affairs, which is available in the Office of the Dean of Students and on the homepage of the Dean of Students at www.utep.edu/dos

RESOURCES FOR THE CLASS:

- OUR CURRICULUM UNIT (PROVIDED TO YOU ON BLACKBOARD)
- Science Education Standards: Science as Inquiry
http://www.nap.edu/openbook.php?record_id=4962&page=103
- National Science Content Standards 9-12
http://www.nap.edu/openbook.php?record_id=4962&page=173
- Great example of teaching about fossils from Standards
http://www.nap.edu/openbook.php?record_id=4962&page=182
- Texas Essential Knowledge & Skills [TEKS] for High School Science
<http://ritter.tea.state.tx.us/rules/tac/chapter112/ch112c.html>
- Texas Education Agency (TEA)
<http://www.tea.state.tx.us/index.aspx>
- STAAR
<http://www.tea.state.tx.us/student.assessment/staar/>
- State Board for Educator Certification (SBEC):
<http://www.tea.state.tx.us/index2.aspx?id=2147489433>
- Texas Examinations of Educator (TExES) Standards
<http://www.texas.ets.org/texas/>
- TExES Preparation Manuals
<http://www.texas.ets.org/texas/prepMaterials/>
- Pedagogy and Professional Responsibilities (PPR) Standards
http://www.tea.state.tx.us/index2.aspx?id=5938&menu_id=2147483671&menu_id2=

- Guidelines for Excellence
<http://eelinked.naace.net/n/guidelines>
- National Institutes of Health (NIH) Resources for Science Teachers
<http://science.education.nih.gov/home2.nsf/Educational+Resources/Topics/Child+&+Teen+Health>
- The NSTA [National Science Teachers Association] Learning
http://learningcenter.nsta.org/products/science_objects.aspx?lid=hp
- Inquiry materials, Science And Technology Concepts, Carolina Biological
<http://www.pageturnpro.com/Carolina-Biological-Supply-Company/26223-STC-Secondary-Brochure/index.html#20>

Syllabus subject to change

The instructor reserves the right to make minor changes in the course syllabus, calendar, and structure as needs dictate. The Course Requirements will not change - however, we may make procedural modifications as necessitated by course management concerns. All course changes will be posted in the "Announcements" in Blackboard or by group email. Be sure to check the Course Information page on a daily basis.

COURSE CALENDAR

DATE	CLASS ACTIVITIES	ASSIGNMENTS DUE
August 27 Week 1	Introduction to Course & Syllabus Overview Lesson Assignment: Lunar Phases/Seasons	N/A
September 3 Week 2	Lesson Plan Presentations Discussion on Reading 1	Assignment: Lesson Plan of Lunar Phases/Seasons (5 pts) Blackboard Post: Reading 1 Reflection (5 pts) <ul style="list-style-type: none"> • How Students Learn • Chapters 1 & 4
September 10 Week 3	Discussion on Reading 2	Blackboard Post: Reading 2 Reflection (5 pts) <ul style="list-style-type: none"> • Constructivism: Brooks & Brooks • Aspects of Constructivism • Chapter 5
September 17 Week 4	Discussion on Reading 3	Blackboard Post: Reading 3 Reflection (5 pts) <ul style="list-style-type: none"> • Subtractive Schooling • Hidden Curriculum • Chapter 6
September 24 Week 5	Discussion on Reading 4 Introduction to Forces and Motion	Blackboard Post: Reading 4 Reflection (5 pts) <ul style="list-style-type: none"> • FOSS and STC • Activitymania • Chapter 7
October 1 Week 6	Teaching module assignments (team and module) Begin teaching preparation	Blackboard Post: Reading 5 Reflection (5 pts) <ul style="list-style-type: none"> • Meaningful Content • Assessment • Chapter 10
October 8 Week 7	Prepare teaching activities	Update on progress
October 15 Week 8	Activities 2-3	Update on progress
October 22 Week 9	Activities 4-6	Blackboard Post: Reflection on activity (see Blackboard for details, 5 pts)
October 29 Week 10	Activities 7-9	Blackboard Post: Reflection on activity (see Blackboard for details, 5 pts)
November 5 Week 11	Activities 10-11 NOTE: Career Fair, 11/7	Blackboard Post: Reflection on activity (see Blackboard for details, 5 pts)
November 12 Week 12	Search internet resources for at least three good inquiry lessons.	Blackboard Post: Reflection on activity (see Blackboard for details, 5 pts)
November 19 Week 13	Final Project assignment and rubric	Be ready to present on inquiry lessons. See Blackboard for details on Final Project.
November 26 Week 14	No face-to-face class Blackboard discussion (content TBD)	Blackboard discussion (5 pts) Work on final project
December 3 Week 15	Discussion on Final Project	Final Project (25 pts)
Finals Week	FINAL EXAMINATION	