Science Education 480
Science Methods and Curriculum for the Elementary School
Preparing thoughtful, knowledgeable, and effective educators for a diverse society.

When: Fall 2015, TuesThurs 12-1:40:40, F 12-1:40 (every other Friday, starting in the second week)
Where: SL230 (SMATE)
Credit Hours: 5 credits
Prerequisites: Completion of natural science GURs, including SCED 201. ELED 370, ECE 372 or SPED 420
Instructor: Dr. Chris Ohana, Professor, Woodring College
Office & Phone: MH 315D; 650-6533
Email: chris.ohana@wwu.edu
Text: None, Readings as assigned. Most course materials are available through CANVAS.
Course information: Available on Canvas

Course Description: Classroom/laboratory study of theory, curriculum, science content, processes and effective teaching methods in the context of national standards in science including activities appropriate for the elementary classroom.

Requirements
Science Education 480 demands active participation and a willingness to learn and explore teaching and learning science. It is an investigation-intensive class and will require all students to be prepared each day. Excellent attendance is essential for success in this course.

1. Attendance and promptness are essential. The class is organized around many small and large group class activities during class sessions. Your attendance is necessary not only for your learning but also for the learning of others. If you are not in class, your group suffers. Three absences, for whatever reason, can result in a grade that is one whole step lower (e.g., from a B to a C). You should contact me in the event you need to miss class due to an illness, injury or an emergency. While absence from class should be a rare occurrence, the Western Washington University Student Health Center encourages students to make mature decisions when they are too sick to attend class. All decisions about the impact of an absence, as well as any arrangements for making up work, rest with the instructor.
2. Late work **is not accepted** unless you have spoken to me about an unusual situation **PRIOR** to the due date. Unless otherwise arranged, assignments are due before class.

3. Written assignments must model appropriate grammar, spelling, usage and punctuation. All written work is to be word-processed (double-spaced, 12 point font). Proofread your papers as you would if you were developing a handout for students. If an assignment contains more than 3 errors per page, it will be dropped a letter grade (for example, from an A to a B). A hard copy of the assignment must be turned in at the beginning of the designated class period.

4. You must complete all of the assignments listed in the course syllabus to receive credit for this course.

5. At least two lesson plans must have passing learning targets, proper structure or the student may receive an incomplete or fail the course.

6. There may be occasional, in-class, unannounced assignments and quizzes. **If a student is absent, these points cannot be made up.**

**Goals & Outcomes (PST= Pre-service teacher)**

PSTs will use documents such as standards & curriculum, to organize a unit of study around a big idea

A. Identify big idea/concept

B. Develop a storyline/learning progression of sub-concepts that will lead to big idea

C. Help students connect the sub-concepts to build the bigger idea

PSTs will define NOS, explain importance to science instruction, integrate into teaching

PSTs will describe similarities and differences between engineering and science

PSTs will describe design process in engineering

PSTs will develop assessment plan for unit and lessons incorporating pre-assessment, formative assessment and summative assessment

PSTs will design effective science lessons that:

A. State clear learning targets (for NOS and for content) for lesson

B. Elicit initial ideas

C. Communicate learning target

D. Engage students with phenomena/data

E. Use evidence to create claims and critique claims of others

F. Lead students to make sense of the lesson

G. Apply science concepts in a new context

PSTs will differentiate instruction for individual learners through appropriate teaching of academic language
**Student Evaluation:**

1) In-Class work, participation and quizzes (unannounced) 10-20
2) Folder Commentary (unannounced) 15
3) Reading Assignments
   - Nature of Science 10
   - How People Learn 10
4) Lesson Plans
   - Lesson 1 10
   - Lesson 2 30
   - Lesson 3 34
5) Final Essay 15

**TOTAL POINTS:** 134-144

Grades: The grading scale is as follows:

- A 95-100%
- A- 90-94%
- B+ 87-89%
- B 84-86
- B- 80-83%
- C+ 77-79%
- C 74-76%
- C- 70-73%
- D+ 67-69%
- D 64-66%
- D- 60-63%
- F <60%

Any student who receives less than a C grade must retake this course for certification.

**Academic Dishonesty Policy**

Western Washington University Students are responsible for reading, understanding, and following the policy and procedures regarding academic dishonesty as set forth in the WWU Academic Dishonesty Policy and Procedure (see Appendix D of the University Bulletin).

**Reasonable Accommodation Policy**

It is the policy of Western Washington University to provide reasonable accommodation to the known physical, sensory, or mental limitations of qualified individuals except where such accommodation would impose undue hardship on the institution. To request accommodation, Students must contact WWU disability Resources for Students at 360-650-3844 or www.wwu.edu/depts/drs/

**On-line References:**

- Next Generation Science Standards (also our state science standards)
  http://www.nextgenscience.org/next-generation-science-standards
- Benchmarks for Science Literacy (AAAS Project 2061), Oxford (1993) [Benchmarks]
  http://www.project2061.org/tools/benchol/bolintro.htm
- Science for All Americans (AAAS Project 2061), Oxford (1990) [SFAA]
  http://www.project2061.org/tools/sfaaol/sfaatoc.htm
- National Science Teachers Association: http://www.nsta.org/
- Science Notebooks http://www.sciencenotebooks.org/notebooks/entries.cfm

Hard-copy References in Learning Resource Center, SMATE


