

ED 688
SCIENCE METHODS AND CURRICULUM DEVELOPMENT
OFF-CAMPUS, FALL

INFORMATION

Credits: 3

Prerequisites: Participating in the Internship Year or Permission of Instructor

Location:

- Audio-Conference Number 1-800-570-3591 & Pin Number: 6944438
If problems are encountered please call Customer Service at 1-800-290-5900. Have the course number and instructor information available.
- Blackboard: <http://classes.uaf.edu>
Course Site: [ED F479 F688 STACKED 201103 \(CRN 77957, 77967\) Science Methods & Curriclm Dev](#)

Meeting Time: Dates and times noted on the internship calendar and on the syllabus calendar

INSTRUCTOR INFORMATION

Instructor: Cindy Fabbri

Office: 714D Gruening Building

Office Hours: Following the audio-conference or by appointment

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Email: cfabbri@alaska.edu

During the elementary internship year students are required to participate in university coursework with UAF faculty and in aligned internship year responsibilities in an elementary classroom with a qualified mentor teacher. The internship year follows the school district calendars for teachers (approximately 190 days per academic year) and during each school day, interns are required to be in their elementary classroom whenever they are not participating in university required coursework with their UAF instructor or UAF supervisor. There are additional evening and weekend requirements for students during the internship year.

Following the UAF formula for credit distribution, ED 479 includes approximately 33 hours of "lecture" (.i.e., face-to-face instruction and individual e-mail interaction with a UAF instructor and with a UAF supervisor) and 59 hours of internship time in the assigned elementary classroom with a qualified mentor teacher. In the catalog, the credit distribution for this 3 credit class is shown as ED 479 (2.5+0+1.5).

MATERIALS

Carin, Arthur A., et al. 2005. *Teaching Science as Inquiry, Eleventh Edition*. Pearson Education, Inc.: Upper Saddle River, NJ.

Campbell, Brian and Fulton, Lori. 2003. *Science Notebooks: Writing About Inquiry*. Heinemann: Portsmouth, NH

National Science Teacher Association – Student Membership

<http://www.nsta.org/membership/student.aspx>

Select *Science and Children* (grades K–6) for the journal you receive with your membership

National Research Council. 2011. *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. National Academy Press: Washington, DC. [online] http://www.nap.edu/catalog.php?record_id=13165

National Research Council. 1996. *National Science Education Standards*. National Academy Press: Washington, DC. [online] <http://www.nap.edu/readingroom/books/nses/>

Alaska State Board of Education & Early Development. 2005. *Standards: Content & Performance Standards for Alaska Students, Third Edition*. Alaska Department of Education & Early Development: Juneau, AK. [online] <http://www.eed.state.ak.us/standards/>

American Association for the Advancement of Science. 1989. *Science for All Americans*. Oxford University Press: New York, NY. [online] <http://www.project2061.org/publications/sfaa/online/sfaatoc.htm>

American Association for the Advancement of Science. 1993. *Benchmarks for Science Literacy*. Oxford University Press: New York, NY. [online] <http://www.project2061.org/publications/bsl/online/bolintro.htm>

American Association for the Advancement of Science. 2001 and 2007. *Atlas for Science Literacy Volumes 1 and 2*. Oxford University Press: New York, NY. [online] <http://www.project2061.org/publications/atlas/default.htm>

American Association for the Advancement of Science. 2011. Project 2061 Science Assessment Website. [online] <http://assessment.aaas.org/>

Annenberg Media “Video-on-Demand” (VOD) Series www.learner.org

If available, science curriculum framework for your school district

Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit. Classroom internship required. Prerequisites: Admission to internship year; concurrent enrollment in other internship year courses; Alaska passing scores for three Praxis I exams. (2+0)

COURSE GOALS

“Effective science teaching is more than knowing science content and some teaching

F 59% or below

As one of the culminating courses of the internship year, students are required to earn a “C” or better in order to successfully complete the licensure program. In addition to obtaining minimum grade requirements, students must meet all required ESAAP competencies in order to pass the class and continue with the internship. Any student in jeopardy of failing should contact the instructor to discuss options.

CALENDAR

Please note, that this is a tentative schedule and it may be modified. Homework assignments listed for each class are your major assignments and you should be prepared to discuss them during our next audio-conference. Additional readings/work will be announced in class each week. Additional readings will be posted on the Blackboard site.

Wednesday, August 24th 9:00-12:00

Bring these items to class (or be on the internet to access online versions):

- AAAS Benchmarks for Science Literacy (Link on Blackboard)
- National Science Education Standards (Link on Blackboard)
- Alaska Content Standards for Science & Grade Level Expectations (Link on Blackboard)
- Science curriculum for your school district
- Documents from Blackboard

Audio-conference:

- What do we currently think about science education? (Diagnostic assessment)
- Course business... syllabus, etc.
- How do we start planning a science unit?
 - o What is the *Understanding by Design* framework?
- NSTA Standards 1-4: What do we teach? (Content, Nature of Science, Inquiry, Issues)
 - o What are goals for science education?
 - o What are unifying themes in science education?
 - o What are big ideas in science?
 - o What do national and state research/standards tell us?
- NSTA Standard 9: What do I need to know about safety?

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Homework:

- 1) Read text Chapter 5, Planning and Managing Inquiry, pages 112-115
- 2) Complete *Unit Planning Worksheet 1: Choose a Topic & Brainstorm Learning Goals*
Be prepared to present the items in red at our next class. Please **post your answers in the Blackboard discussion forum**, so the group can see your work. Please type

directly in the forum box (rather than posting an attachment) so the group can view your work without having to download it.

- 3) What is Inquiry Assignment (See directions on Blackboard)
- 4) Read text Chapter 2, **Processes and Strategies for Inquiring**, Chapter 4, **Teaching Science for Understanding** and Chapter 6 **Assessing Science Learning**
- 5) Other readings TBA
- 6) Find a lesson in the back of your textbook and start making plans to teach it to an individual child or small group of children the week of September 12-16.
- 7) (Optional) Bring a resource to class (post resource in Blackboard Discussion Forum)

Friday, September 9th 9:00-12:00

Due today:

Unit Planning Worksheet 1: Choose a Topic & Brainstorm Learning Goals

Audio-conference:

- NSTA Standard 5: How do I teach science? (General Methods)
- What is inquiry?
- How do I ask good questions?
- What are the next steps in unit planning? (Steps 2 & 3 of Understanding By Design)
 - o Choosing assessments
 - o Choosing instructional activities
- NSTA Standards 5 & 8: What does it mean that assessment and instruction are two sides of the same coin?
 - o An introduction to assessment and instruction
 - o What is best practice in science assessment?
 - o What is performance assessment?

Homework:

- 1) Read text Chapter 5, *Planning and Managing Inquiry*, pages 116-134
- 2) Unit Planning Worksheet 2: Assessment & Instruction
- 3) Begin drafting unit
- 4) Take Home Lesson (guidelines will be provided)
 - Teach lesson and post your reflection on Blackboard **Sept 12-16**
 - Respond, critically, to at least two colleagues' reflections **Sept 17-23**
- 5) Chapters 1-3 in *Science Notebooks: Writing About Inquiry* by Brian Campbell and Lori Fulton. We will discuss science notebooks in our next class.
- 6) Chapter 9 of your textbook, *Connecting Science with Other Subjects*
- 7) Other readings TBA
- 8) (Optional) Bring a resource to class (post resource in Blackboard Discussion Forum)

Friday, September 23rd 9:00-12:00

Due today:

Posted reflection to science lesson due on Blackboard **Sept 12-16**

Respond, critically, to at least two colleagues' reflections **Sept 17-23**

Unit Planning Worksheet 2: Assessment & Instruction

Audio-conference:

- NSTA Standards 5 & 8: What does it mean that assessment and instruction are two sides of the same coin? (Continued)
- What is assessment and how do I do it?
 - o How do I use rubrics?
- How do I teach science and manage learning? What instructional methods exist? (Methods Specific)
 - o Science Notebooks, Interdisciplinary Learning, Collaborative Learning, Etc.

Homework:

1) Continue drafting unit

2) Watch *A Private Universe*

3) *Chapter 3, Learning Science with Understanding*

Chapter 10, Science for All Learners, Pages 253-267. (We will read the second part of the chapter after our next class.)

Reading TBA

4) (Optional) Bring a resource to class (c)TJ ? s t2r(e 36 >>B)4((97c1J ?),f - -1.15 Td [(4)-3() 14(

Due today:

Unit Planning Worksheet 3: Relevancy & Differentiation

Draft Science Unit

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November 21st – December 2nd

NSTA Standard 6:

TEACH Science Unit (5 days total)

Homework:

- 1) **Final reflections** (i.e. while you are teaching you should be writing daily reflections, collecting samples of student work, taking photos, etc.) are **due December 9th**.
- 2) **ED 688 Students Independent Projects Due on December 9th**.
- 3) (Optional) Bring a resource to class (post resource in Blackboard Discussion Forum)

Friday, December 9th 9:00-12:00

Due today:

Final reflections

ED 688 Student's Independent Projects Due

Audio-conference:

- How do I feel about teaching and learning science?
 - o Share your final reflections on teaching your science unit
- What is my understanding of science and science education now?
 - o Share your course summative assessment
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