**K-8 ELEMENTARY SCIENCE METHODS**

# Edu 316

**Fall, 2010**

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**Office:** Glidden 311; 605-331-6779

**Classroom:** Glidden 212

**Meeting Time:** Wednesdays/Fridays 12:30 - 2:30 PM

## Mission Statement-University of Sioux Falls

The University of Sioux Falls, a Christian University in the liberal arts tradition, educates students in the humanities, sciences, and professions. The traditional motto of the University if Culture for Service; that is, we seek to foster academic excellence and the development of mature Christian persons for service to God and humankind in the world.

**Course Description:**

National and State Science Standards that focus on K-8 students' needs and specific learning environments will be addressed through practical applications of research in the classroom. Students will be encouraged to read and think about science and how to teach it through group interaction and activities. Problem solving, science in everyday life, integrating technology, inquiry –based learning, assessment, scientific methods, curricular materials, instructional strategies, and science issues are topics that will be studied. K-8 Health Standards will also be discussed. Field experience in a K-8 classroom will be completed in a local K-8 school. Prerequisite: Acceptance into the Teacher Education Program.

**Textbook:**

Internet Sites and Educational Journals

Peterson Home Page: <http://faculty.usiouxfalls.edu/arpeterson/>

Portaportal: <http://my.portaportal.com/> - [http://guest.portaportal.com/**scienceusf**](http://guest.portaportal.com/scienceusf)

WIKI: <http://usfmethods.wikispaces.com/>

**Prerequisite:** Students arerequired to be admitted to the teacher education program before taking the class*.*

**Instructional Methods:** lecture, discussion groups, group work, videos, student presentations, computer work

## Knowledge Base



The knowledge base for candidates in all teacher education programs at University of Sioux Falls is based on the conceptual framework, “Teacher as Developing Professional.” Coursework may emphasize some or all of the components of the framework*: cognitive mediator, manager, researcher, communicator, evaluator, and servant-leader*.

As *cognitive mediator*, the teacher helps students to become independent learners who construct meaning by combining new information with their own background knowledge.

As *researcher*, the teacher seeks to improve educational practices within the school setting, using an inquiry approach to serve students more effectively.

As *servant leader,* the teacher is able to integrate research on the development of moral reasoning, values, and ethical sensitivity into the classroom while following the model of empathetic personal interaction provided by Jesus Christ.

As *evaluator,* the teacher maximizes students’ learning by using a full range of formal and informal information-gathering processes in order to respond appropriately to student individual differences.

As *communicator,* the teacher is skill in modes of communication that will enable effective communication and collaboration with other educators, parents, and families.

As *manager,* the teacher plans and organizes the learning environment, established and maintains a positive learning climate, and implements effective intervention strategies.

INTASC Principles included in EDU 316 – K-8 Science Methods:

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Principle 1 The students understand the central concepts, tools of inquiry, and structure of the disciplines he or she teaches and can create learning experiences that make these aspects of the subject matter meaningful to the students.

* Lesson plans that correlate with state curriculum and show state and/or district curriculum goals and objectives;
* Inquiry lesson plans: lessons built around a central question

Principle 3 The students will understand how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

* Differentiated lesson plans showing how assignments and strategies are changed or extended to meet needs of all learners.

Principle 4 The students will understand and use a variety of instructional strategies to encourage students’ development of critical thinking, problem solving and performance skills.

* Lesson plans that show a variety of strategies including Multiple Intelligences, technology, and inquiry-based learning.

Principle 7 The students will plan instruction based on knowledge of subject matter, students, the community, and curriculum goals.

* Lesson plans: a series of lessons around a state standard concept

Principle 9 Each student is a reflective practitioner who continually evaluates the effects of his or her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally

* The students complete a 9-week practicum experience in a elementary or middle school classroom and they each keep a reflective journal on what they learned and experienced in the classroom.

ELEMENTARY SCIENCE METHODS OBJECTIVES

1. Students will research and demonstrate understanding of the National and State K-8 Science Standards and the State K-8 Health Standards.
2. Students will research and demonstrate understanding of Inquiry-based learning in K-8 science lessons.
3. Students will research and demonstrate understanding of several different teaching strategies that produce effective learning environments in K-8 science classrooms.
4. Students will design science lessons that are developmentally appropriate and sensitive to the needs, values, and interests of a diverse group of students.
5. Students will research and demonstrate ways to use the Multiple Intelligences in science lessons.
6. Students will use multimedia technologies and trade books to support meaningful learning.
7. Students will research and demonstrate ways to integrate other content areas into science lessons.
8. Students will research and construct assessment plans that are compatible with the teaching goals that allow for multiple ways of representing knowledge.
9. Students will complete an online Science Portfolio for their Student Teacher Portfolio.
10. Students will complete a practicum experience in a K-8 science classroom.

**Course Requirements:**

1. Attendance/Completion of assignments as assigned in class

 \*After two absences you will be asked to drop the class.

2. Participation in class discussions

3. School Observations/Classroom Journal

4. Science

5. Class Presentation

6. Journal article critiques

7. Test

8. Attend NASA seminar at Washington Pavilion

**Grading – go to myUSF**

**Accommodations:**

USF is committed to providing a supportive academic environment for students with disabilities. If you have a documented disability and are requesting accommodations, you are encouraged to contact Learning Accessibility Services. Accommodations can only be arranged through this office. They may be reached at (605) 331-6648 or billie.streufert@usiouxfalls.edu and are located in the Academic Success Center (lower level of the McDonald Center).

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**University Policy on Academic Misconduct**:

USF holds firmly to the conviction that personal and intellectual integrity should be fundamental at a Christian university. Full information about USF’s policy on academic misconduct can be found at:

<http://www.usiouxfalls.edu/index.php?option=com_content&task=view&id=1428&Itemid=310>



 **ASSIGNMENTS**: <http://faculty.usiouxfalls.edu/arpeterson/Science%20Methods%20Web%20spring2010.htm>



**JOURNALS**

**Creative Classroom Learning
Education Leadership Phi Delta Kappan**

**Educational Technology Science and Children**

**Electronic Learning Science Scope**

**Elementary School Journal Teaching Pre K-8**

**INTERNET SITES**

[**http://faculty.usiouxfalls.edu/arpeterson/**](http://faculty.usiouxfalls.edu/arpeterson/)

**Science K-8 methods**

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# SOUTH DAKOTA SCIENCE STANDARDS

# 5 THEMES

**NATURE OF SCIENCE**

**PHYSICAL SCIENCE**

**LIFE SCIENCE**

**EARTH/SPACE SCIENCE**

**TECH, ENVIRONMENT & SOCIETY**

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TEACHING CHILDREN SCIENCE – A DISCOVERY APPROACH

# PRESENTATION – 50-60 minutes – 100 points

#  PRESENTATIONS FOR STANDARDS LESSON PLAN

**\_\_\_\_\_\_\_\_\_\_\_\_Created a PowerPoint– 15 pts.**

**\_\_\_\_\_\_\_\_\_\_\_\_Presented a lesson from the Macmillian/MacGraw-Hill textbook to the class. – 50 pts.**

 **\_\_\_\_\_\_\_ Used a children’s literature book in the lesson 10 pts**

 **\_\_\_\_\_\_\_\_Used the SmartBoard in the lesson 10 pts
 \_\_\_\_\_\_\_\_Used an online video in the lesson 10 pts
 \_\_\_\_\_\_\_\_Developed a written lesson plan 10 pts
 \_\_\_\_\_\_\_\_Lesson flowed from activity to activity 10 pts**

### ALL PRESENTERS

**\_\_\_\_\_\_\_\_\_\_\_\_50 minutes – 10 pts.**

**\_\_\_\_\_\_\_\_\_\_\_\_ Presentation – 25 pts.**

 **\_\_\_\_\_\_\_\_\_\_\_ Hands-on 5 pts**

 **\_\_\_\_\_\_\_\_\_\_\_ Good student Involvement 5 pts**

 **\_\_\_\_\_\_\_\_\_\_\_ Prepared/Organized 5 pts**

 **\_\_\_\_\_\_\_\_\_\_\_ Interesting lesson and activities 5 pts**

 **\_\_\_\_\_\_\_\_\_\_\_ Good voice 5 pts**

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