Spring 2011

Teaching Science in the Elementary School
AEDL 432

Mission Statement: The USC Aiken School of Education, in partnership with the university community, regional schools, area professionals and businesses, prepares dynamic educators who are knowledgeable in their fields, skilled in the art and science of teaching, and dedicated to providing the quality education that every student deserves.

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Meeting Times: W: 9:00 AM – 12:00 PM
Meeting Location: AES, Portable P-6
Office: AES, Portable P-5
Office Hours: W: 12:00-1:00 PM
(Other times by appointment)

I. Descriptive Information

A. Course: AEDL 432 Teaching Science in the Elementary School

B. Catalog Description: (3 hrs.) (Prereq: admission to Education Professional Program or special permission of School Head; completion of at least 4 credit hours of natural or physical science; Coreq.: AEDL 432P, Senior Block) Materials and programs for teaching science in the elementary school.

C. USCA School of Education Conceptual Framework
The objectives of this course are designed to facilitate the candidate's development as a Dynamic Educator. This course will focus specifically on the development of the Dynamic Educator with respect to *planning, instructing, communicating, growing professionally, and managing elementary science classes*.

II. Course Goals and Objectives

A. Course Goals
The candidate will develop the skills to effectively teach standards-based science to students in grades 2 – 6. Knowledge of both the National Science Education Standards and the South Carolina Science Academic Standards will be emphasized. Multiple instructional strategies will be practiced and implemented during the co-requisite practicum.

B. Instructional Objectives
Each Candidate will:
1. formalize **what is science** and recognize the crucial role of science education in society.
2. understand the spirit and be able to implement the national and state **science education standards**.

3. understand the relationship among USC Aiken SoE Conceptual Framework, ADEPT, and TWS
4. develop a sense of what are realistic **classroom expectations and student readiness** for learning in typical elementary science classrooms. ☆
5. Use information about the **learning-teaching context** and student individual differences to set learning goals and plan instruction and assessment for short and long periods of time. ☆
6. value and apply an **inquiry approach** that maximizes student learning through active, hands-on problem-solving on the part of the student.
7. learn to **interact** with and **motivate** elementary students, **manage** their behavior toward positive outcomes, and **differentiate** instructional strategies to accommodate for individual differences.
8. select, based on developmental appropriateness and national and state standards, the most appropriate **curriculum materials** from commercial and other sources.
9. develop a beginning portfolio and a file of **resources** for his/her future teaching.
10. use effectively computer-based instruction and other forms of **instructional technology.**
11. **design science lessons** that accurately represent targeted science content, use effective instructional strategies, and fit the contextual features of the learning setting. ☆
12. **assess** student learning by traditional and alternative means.
13. **design a 5-day unit** of study for a specific set of learning targets, student characteristics and needs, and learning contexts. ☆
14. **reflect** formally on his/her instruction and student learning in order to improve teaching practice. ☆
15. document his/her personal growth by engaging in the **plan-observe-reflect cycle** of professional improvement. ☆

☆ *Introductory experience for a component of the Teacher Work Sample (TWS)*

III. Course Readings

A. Required Texts and Readings:

ADEPT Standards - http://www.scteachers.org/adept/evalpdf/adept_guidelines.pdf

Science and Children. National Science Teacher's Association Elementary School Journal. http://www.nsta.org/default.aspx (homepage) and http://www.nsta.org/membership/join.aspx (membership).

South Carolina Science Standards:
http://ed.sc.gov/agency/Standards-and-Learning/Academic-Standards/
http://ed.sc.gov/agency/offices/cso/standards/science/

South Carolina Science Standards Support Documents:
https://www.ed.sc.gov/apps/cso/standards/supdocs_k8.cfm

South Carolina Standards Support System (S^3 Curriculum)
http://www.s2martsc.org/index.php?option=com_content&view=category&layout=blog&id=186&Itemid=258

B. Supplemental Readings:

The following texts may be accessed free online or purchased at http://www.nap.edu

Atkin, J. M., Black, P., & Coffey, J. (Eds.). (2000). *Classroom assessment and the National Science Education Standards: A guide for teaching and learning*. Washington, D. C.: National Research Council.

Center for Science, Mathematics, and Engineering Education. (1997). *Introducing the National Science Education Standards*. Washington, D. C.: National Research Council.

Committee on Development of an Addendum to the National Science Education Standards on Science and Technology. (2000). *Science and technology and the National Science Education Standards: A guide for teaching and learning*. Washington, D. C.: National Research Council.

Committee on Science Education K-12 and the Mathematical Sciences Education. (2000). *Designing mathematics or science curriculum programs: A guide for using mathematics and science education standards*. Washington, D. C.: National Research Council.

National Committee on Science Education Standards and Assessment. (1996). *National Science Education Standards*. Washington, D. C.: National Research Council.

Olson, S., & Loucks-Horsley, S. (Eds.). (2000). *Inquiry and the National Science Education Standards: A guide for teaching and learning*. Washington, D. C.: National Research Council.

Singer, M., & Tuomi, J. (Eds.). (1999). *Selecting instructional materials: A guide for K-12 science*. Washington, D. C.: National Research Council.

Education North West
Additional readings as assigned.

IV. Professional Organizations

National Science Teachers Association (NSTA): *www.nsta.org*

South Carolina Science Council $(SC)^2$: http://scssi.scetv.org/sc2

Science Education for Students with Disabilities (SESD):
www.as.wvu.edu/~scidis/organize/sesdinfo.html

V. Instructional Procedures

A variety of instructional procedures will be used to further your awareness and experiential background of the diversity available for instruction. Instructional approaches may include, but are not limited to: lecture, small and large group discussions, demonstrations, activity groups, cooperative learning groups, projects, and hands-on activities.

VI. Course Requirements

A. Administrative Requirements

1. Honor Code: **Plagiarism is prohibited. Please review the sections of the USCA Academic Code of Conduct on plagiarism.** For additional information regarding

plagiarism, consult the Publication Manual of the American Psychological Association 5th ed..

The following statement is to be included on the first page of every assignment and on every exam:

On my honor as a University of South Carolina Aiken student, I have completed my work according to the principle of Academic Integrity. I have neither given nor received any unauthorized aid on the assignment/examination.
Signature _____ Date _____

If a signed and dated Honor Code is not on the assignment, no credit will be recorded.

2. **USCA Code of Conduct and Classroom Behavior:** Students will conduct themselves in class in accordance with the standards noted in the USCA Student Handbook. Given that this course is required in preparation for becoming a teacher, students should exhibit those behaviors expected of professionals, including but not limited to the following:
   - Please switch all cell phones and pagers to a non-audio mode during class.
   - Please do not bring children or guests to class unless prior permission has been given by the professor.
   - Do not submit full or partial assignments from other classes for requirements in this course.

   "It is the instructor's right to remove from the classroom any student who disrupts or disturbs the proceeding of the class. Disruption of the class includes, but is not limited to, the use of any portable electronic devices, including cell phones, MP3 players; iPods, etc. unless prior approval has been given to a student or unless required for the course. In extreme cases the faculty member can request assistance from University Police. If the student who has been ejected causes similar disturbances in subsequent meetings of the class, he/she may be denied admittance to the class for the remainder of the semester and assigned a grade of F."

3. **Students with Disabilities:** If you have a physical, psychological, and/or learning disability which might affect your performance in this class, please contact the Office of Disability Services, 126A B&E, (803) 641-3609, as soon as possible. The Disability Services Office will determine appropriate accommodations based on medical documentation.
4. **Attendance and Class Participation Policy:** As a part of your professional development, class attendance and participation is essential and punctuality is expected. You are responsible for material covered in class during any absence and for checking with the instructor or classmates about any changes in scheduling or assignments that may have been made. Missed in-class exercises may not be made up. If you anticipate an absence, notify the instructor in advance of the absence.
5. **Late Assignments:** No assignments will be accepted after 15 minutes past the scheduled class beginning time on the due date. If you are absent the day an assignment is due, please email it on time or make arrangements to have it turned in on time.

VI. **ADEPT Performance Standards**

Domain 1: Planning

APS 1 Long-Range Planning
APS 2 Short-Range Planning of Instruction
APS 3 Planning Assessments and Using Data

Domain 2: Instruction

APS 4 Establishing and Maintaining High Expectations for Learners
APS 5 Using Instructional Strategies to Facilitate Learning
APS 6 Providing Content for Learners
APS 7 Monitoring, Assessing, and Enhancing Learning

Domain 3: Classroom Environment

APS 8 Maintaining an Environment That Promotes Learning
APS 9 Managing the Classroom

Domain 4: Professionalism

APS 10 Fulfilling Professional Responsibilities

VII. **Evaluation and Grading Scale**

A. Assignment Criteria:

All out-of class writing must be completed on a computer, making use of spell check, and if available, a program which checks for grammatical errors. Fonts used must be of block type and size 12. Format and citations must use APA (5th edition) criteria. Lesson plans, unit plans, and teacher work sample components must be submitted **electronically** and in hard copy. Please do not use any fancy binders or plastic sheet protectors. Simply staple or clip work in the left-hand corner. Exception: The five-day unit plan may be submitted in a three ring binder. Rubrics, checklists or other scoring guide will be provided from most performance assignments. In such cases, place your name on the scoring guide and attach it to the front of your work.

B. Grading:

Grading in this course will be determined, in part, by the critical reading and writing activities regarding the course content and by attendance and contribution to class and group activities. The focus is on mastery of course objectives. Individual assignments targeting course objectives will be given grade points rather than traditional letter grades or percentage scores. Grade points will reflect performance on variety of written and non-written activities, including selected-response tests, extended written response assignments, in-class communications (discussion, journal entries, etc.), peer evaluations, performance assessments, and other constructed response assessments.

Evaluation will reflect the ability to identify important ideas, articulate the complexity of issues, recognize different points of view, and apply content in meaningful ways. Please understand that rubric scores are not grades, but provide feedback to guide the learner toward mastery of course content and skills. Rubric scores will be translated into grade points that accumulate to determine a final grade for the course.

Class participation is an important contributor to your development on course objectives. If you are unable to attend a class, it is your responsibility to acquire the information covered in the missed session. This includes all information from media used in class, such as handouts, films, and video and audiotapes, as well as presentations and discussions.

The following assignments are due no later than the beginnng of the class period on the due date of the assignment. The instructor reserves the right to change and/or delete activities or assignments as deemed necessary.

DATE DUE	AEDL 432 ASSIGNMENTS Spring 2011	POSSIBLE GRADE POINTS	EARNED GRADE POINTS
TBA	Professional Reading Assignment(s)	50	
On going	Class Participation & Professional Disposition (resource exploration, demo lessons collaboration, lesson planning, discussion, group work, disposition evaluation, etc.)	100	
On going	Science Journal (DLC, Warm Ups, One-Min. Papers)	50	
1/19/10	Selected Response Test Construction	50	
1/26/10	Model Lesson Plan	100	
2/09/10; 3/30/10	One-Week Unit Plan (draft and final)	200	
2/23/10	Lesson Execution (ADEPT Evaluation; all day observation)	100	
3/23/10; 4/13/10	All day observation; videotape lesson; ADEPT Lesson Evaluation of videotaped lesson	100	
4/20/10	Inquiry Leaning Cycle and Science Process Skills	50	
4/27/10	Teacher Work Sample (#1-7)	200	
	TOTAL GRADE POINTS	**1000**	

VIII. **Tentative Topics and Class Activities**

Course topics will include, but will not be limited to: What is science, how children learn, the inquiry learning cycle, standards-based instruction and assessment in science, inquiry methodologies, materials management, grade level science content, ADEPT Standards, plan-observe-reflect coaching cycle, research-based curricula, and technology in the science classroom. Instruction will be hands-on and activity-based.