Teaching Science in the Elementary School
AEDL 432 & 432P

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.

Instructors:	**Dr. Jeff Priest**	**Dr. Windy Schweder**	Meeting Time:	**T 8:30-1:30**
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I. **Descriptive Information**

A. AEDL 432 Teaching Science in the Elementary School

1. 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, Junior Block) Materials and programs for teaching science in the elementary school.

B. AEDL 432P Practicum in Teaching Science in the Elementary School

1. Catalog Description: (1 hr.) (Prereq: Admission to Education Professional Program or special permission of School Head; AEDC 310; Coreq: AEDL 432, Junior Block) Supervised clinical experience in an elementary education classroom. Observations and participation in a classroom setting are required with a focus on science learning experiences, materials and equipment. Seminars and group discussion included.

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 all students in grades 2 – 6. Knowledge of both the National Science Education Standards and the South Carolina Science Academic Standards will be emphasized.

Additionally, candidates will learn how to implement modifications and accommodations to help all learners succeed. Finally, candidates will learn strategies for successfully collaborating with other professionals in the field.

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 readiness for learning and discover what are realistic classroom expectations for all elementary school students.
4. learn to interact with and motivate elementary students, manage their behavior toward positive outcomes, as well as provide varying instructional strategies to accommodate for individual differences.
5. select, based on developmental appropriateness and national and state standards, the most appropriate curriculum materials from commercial and other sources.
6. use contextual factors to plan, co-plan, and sequence successful science instruction for periods of a few minutes to one school year that include relevant applications to the students' communities. (Contextual factors include information such as gender, race, ethnicity, SES, and IEPs)
7. use individual and co-teaching approaches to teach science in the inclusive classroom.
8. use appropriate educational and assistive technologies.
9. assess student learning by traditional, authentic, and alternative means.

III. **Course Readings**

A. Required Texts and Readings:

National Committee on Science Education Standards and Assessment. (1996). *National Science Education Standards*. Washington, D. C.: National Research Council.
http://www.nap.edu/openbook.php?record_id=4962&page=R1

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

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

Readings from *Science & Children* http://www.nsta.org/elementaryschool/

Readings from *Teaching Exceptional Children*
http://www.cec.sped.org/content/navigationmenu/publications2/teachingexceptionalchildren/
and
Teaching Exceptional Children Plus http://escholarship.bc.edu/education/tecplus/

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.

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.

Additional readings as assigned.

Professional Organizations

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

Council for Exceptional Children (CEC)
http://www.cec.sped.org//AM/Template.cfm?Section=Home

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

IV. **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, co-teaching, small and large group discussions, demonstrations, activity groups, projects, and hands-on activities.

V. **Course Requirements**

A. Administrative Requirements

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 the Honor Code is not on the assignment and signed and dated, the grade for that assignment will be a zero.

2. USCA Code of Conduct: 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.

- 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.

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. Missing more than two class sessions may result in an F for the course. Points will be deducted from the final grade of anyone arriving late for class or leaving class early.

5. Late Assignments: No assignments will be accepted after 8:30 AM on the due date. If you are absent the day an assignment is due, please make arrangements to have it turned in by a peer by 8:30 AM.

VI. 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. Please do not use any fancy binders or plastic sheets. Simply staple work in the left-hand corner.

B. Grading:

Grading in this course will be determined, in part, by the critical reading and writing activities regarding the course material and by attendance and contribution to class and group activities. Evaluation will focus on the ability to identify important ideas, articulate the complexity of issues, recognize different points of view, and apply content in meaningful ways. If you are unable to attend class, it is your responsibility to acquire the information covered in that session. This includes all information from media used in class, such as handouts, films, and video and audiotapes, as well as presentations and discussions. Grades will be determined through a variety of written and non-written activities, including exams, as well as class attendance and participation.

A Narrative Description of Grades (from John H. Lounsbury)

> The grade of *A* is distinctly a mark of superiority. It represents much more than mere competence in meeting assignments. There is a "plus factor" involved. "*A"* students do not only what is expected of them but go beyond that. They dare to be themselves, use initiative, and don't need prodding. Even their occasional failures are magnificent failures; like the late Babe Ruth who struck out with a mighty swing. They work well with groups and regularly assume leadership in groups and in class.
>
> The grade of *B* indicates a high level of accomplishment, though the plus factor may be diminished. It represents less originality, less artistry, less depth of analysis than the *A,* yet all three qualities are sometimes present. Able students that do not live up to potential may warrant this grade as well as limited-ability students who apply themselves fully and effectively. *B* students cooperate well in groups and sometimes assume leadership.
>
> The grade of *C* represents accomplishment that is in the middle state, sufficient but not high. *C* students do what they are asked to do in an acceptable fashion but little more. They may fail to live up to their potential and often require prodding. They cooperate but offer little leadership.
>
> The grade of *D* covers a multitude of sins, such as carelessness, indifference, or laziness; or it may reflect lack of reading skill, writing ability, or difficulty in concentrating. *D* students rarely, if ever, assume leadership or offer assistance in group projects although they do not obstruct the progress of others.
>
> The grade of *F* indicates indifference and failure to make an honest effort. It is not given to students who make a conscientious effort to master the material or apply themselves. It is reserved for those who apparently do not care, who procrastinate, who openly refuse to cooperate, and those whose behavior interferes with the ability of others to learn.

The following assignments are due no later than the end of the class period on the due date of the assignment.

1. Modified TWS 20 points **DEC 2**
2. Self-reflection of videotaped lesson 10 points **OCTOBER 21**
3. Instructor evaluation of final lesson 30 points **NOV25-DEC11**
4. Student interviews 5 points **SEPT 9**
5. Teacher interviews 5 points **SEPT 9**
6. Science Fair Project 10 points will present projects in class on **DEC 9**
7. Lesson Plans 15 points **FIRST DUE SEPT 9** and others as assigned
8. Candidate created assessments 5 points **OCT 7**

   Total points= 100 points

Grading Scale

90-100%=A
87-89%=B+
80-86%=B
77-79%=C+
70-76%=C
67-69%=D+
60-66%=D
<60%=F

VII. Tentative Schedule

Date	Topic	Resource
August 26th	Introduction and overview Candidate pictures Pretest Inquiry Activity	Syllabus, Science Standards
September 2nd	Pretest results ADEPT jigsaw activity Brain Theory Standards Lesson Plans	ADEPT Standards
September 9th	Candidates teach mini-lessons Student mini-lessons Roles of general and special educators	Science Standards, ADEPT Standards
September 16th	Science kits Five steps to collaborative settings	Science Standards, ADEPT Standards, Handouts

September 23rd	Science kits Dimensions of successful inclusive classrooms Questions educators ask before co-teaching	Science Standards, ADEPT Standards, Handouts
September 30th	Activities working in teams (inquiry, collaboration) Six approaches of co-teaching Finding shared planning time	Science Standards, ADEPT Standards, Handouts
October 7th	Teaching in classrooms	Science Standards, ADEPT Standards
October 14th	Teaching in classrooms	Science Standards, ADEPT Standards
October 21st	Teaching in classrooms	Science Standards, ADEPT Standards
October 28th	Teaching in classrooms	Science Standards, ADEPT Standards
November 4th	**Election Day No Classes**	
November 11th	Teaching in classrooms	Science Standards, ADEPT Standards
November 18th	Teaching in classrooms	Science Standards, ADEPT Standards
November 25th	Teaching in classrooms	Science Standards, ADEPT Standards
December 2nd	Post test Teaching in classrooms	Science Standards, ADEPT Standards
December 9th	Science Fair Project Presentations	