

**EDUC 695**  
**Energy Educators Institute**  
**SCHOOL OF EDUCATION**  
**CHARLESTON SOUTHERN UNIVERISTY**

**CONCEPTUAL MODEL:** The conceptual model for all education programs in the School of Education is to prepare, nurture and sustain **competent, caring and committed** educators. The **competent** educator demonstrates the *knowledge, disposition, and skills to create, manage, and/or supervise supportive learning environments that result in increased student achievement*. The **caring** and reflective educator *relates effectively and sensitively to the diverse needs of all learners and creates a positive and productive classroom and/or school-wide learning environment through ongoing, systematic inquiry and reflection*. The **committed** educator *pursues personal and professional learning experiences alone and collaboratively on an ongoing systematic basis thereby demonstrating a true commitment to the profession, and to seeking the best educational practices*.

**I. DESCRIPTIVE INFORMATION**

- A. Course Description: An in-depth introduction to the science, economics, and environmental issues related to the electric utility industry. Teachers K-12 will explore and expand their knowledge of energy education by participating in presentations, discussions, demonstrations, hands-on and field experiences. This innovative education and business partnership will help teachers produce a relevant curriculum in a creative manner.
- B. Rationale of Course Description: This course is an interactive, interdisciplinary approach to understanding and teaching about current energy issues.
- C. Intended Audience: The course is designed for K-12 teachers and administrators who wish to explore and expand their learning in energy, electricity and environmental topics.
- D. Statement of Prerequisites: Certified teachers or administrators in grades K-12.
- E. Credit Awarded: 3 hours graduate credit
- F. Instructor: David L. Evans, (843) 761-8000, ext.5367 or  
John Inabinet, (843) 761-8000, ext. 4069

**II. COURSE GOALS AND OBJECTIVES**

- A. Course Goal: Educators will leave this class with a variety of ready-to-use tools for implementing high quality standards-based lessons into the curriculum of most subject areas. Activities will combine the content and concepts of life. Teachers will be able to transfer to their students the knowledge and experience gained through Institute participation, thus enabling them to become more effective educators.
- B. Course Objectives: The following objectives will guide the activities and assessments for this course. All course objectives are derived from and aligned with the School of Education's conceptual model of preparing **competent, caring and committed educators**. Further, all objectives represent competence expected to be gained and assessed at both professional knowledge and performance levels.

*The competent, caring and committed educator will:*

1. Demonstrate knowledge of the basic principles of electricity including generation and the journey from the power station.
2. Demonstrate the impact of energy efficiency on the consumer and the environment.
3. Relate the history of electricity and its impact on the economic development of South Carolina.
4. Explain the benefits of reduce, reuse, and recycle in the electric utility industry on the environment.
5. Demonstrate an understanding of man's impact on various ecosystems.
6. Develop curriculum activities integrated into courses of study addressing grade level standards using the resources provided.
7. Build networks with educators and experts in the fields of energy, environment and business.

### III. COURSE READINGS

- A. Required Readings: Grade specific publications and videos provided by the Institute.
- Reading assignment, "Discovering the "Power" Behind the People of South Carolina"—The History of Santee Cooper: *available on the CSU Blackboard web site, [www.csuniv.edu](http://www.csuniv.edu) on the first day of class. Students will submit a summary related to the reading assignment by Friday of the first week.*
- B. Selected Readings: Articles, videos, and web sites provided by instructor during second week of course.

### IV. INSTRUCTIONAL PROCEDURES

This Institute brings together teachers and administrators for the Energy Educators Institute at Wampee, Santee Cooper's corporate conference center in Pinopolis, S.C. The Energy Institute blends hands-on labs, field experiences, discussions, demonstrations, and presentations from leading energy and education experts.

### V. COURSE REQUIREMENTS

- A. Administrative Requirements
1. Absences: Students will meet online requirements during first and third week and will attend daily on-site program during the second week of the course.
  2. Assignments:
    - Reading assignment is expected to be completed and submitted through the CSU Blackboard website by Friday of the first week.
    - Group Discussions on the CSU Blackboard website are to be completed during the first and third week.
    - A minimum of one lesson plan will be submitted via web site by Friday of the first week.
    - Daily journal of on-site classroom experience at Wampee is due on Friday of the second week

- Feedback will be completed on at least three interactive activities due on the Tuesday of the second week
- A minimum of four lesson plans will be submitted via web site no later than Friday of the third week.

3. Word-processing: All assignments will be submitted through the CSU Blackboard Digital Dropbox, with the exception of the journal which can be hand written.

B. Academic Requirements:

1. Students must participate in all three weeks of the Institute.
2. Students must complete all classroom assignments; participate in all field experiences and discussions.
3. Students must complete second week daily reflective journal.
4. Students must create four (4) lesson plans incorporating field experiences and resources provided by the Institute relating to curriculum and state standards.

## VI. COURSE SCHEDULE

The course schedule is structured in three components: week one is an introduction to Santee Cooper and its significant contribution to the history of South Carolina, week two requires on-site attendance at Wampee Conference Center for research and activities, week three provides the opportunity to demonstrate how the resources and activities will be incorporated into the classroom experience.

Tuesday	8:00 AM	<i>Registration - Arrive at Wampee Conference Center, Pinopolis, SC</i>
	9:00 AM – 9:00 PM	<p><i>Overview – Institute goals and expectations</i></p> <p><b>“Electric Power – The Key to Your Highly Charged Life”</b></p> <ul style="list-style-type: none"> <li>• <b><i>Pushing Back the Darkness – A Historical Perspective.</i></b> Participants discover the historical link between connecting the Santee and Cooper Rivers to support commerce in 1920 and the creation of the Jefferies Hydroelectric Project and its impact on the state of South Carolina.</li> <li>• <b><i>Integrating Energy Resources into the Curriculum.</i></b> Participants become students in the classroom as they learn how to incorporate the Institute’s resources into the curriculum to meet district and state standards.</li> <li>• <b><i>“It’s not all about Generating Electricity” – Tour Jefferies Generating Station where Engineers and Biologists meet.</i></b> Participants hear from engineering experts how electricity is generated as they follow its journey from the generating station to the consumer. The experience becomes relevant as participants experience a walking tour of the station. The audience will learn how the Chinese Grass Carp and other species have a direct impact on the generation of electricity and the environment. <i>*Be sure to wear long sleeve shirt, ankle</i></li> </ul>

length pants (NO capris), and closed toed shoes (NO mules, slides, or sandals).\*

- ***How Reduce, Reuse and Recycle*** are partners in the Generation of Electricity. Participants learn how science experts use chemistry and technology to develop innovative pollution control projects to reduce toxins, while developing a renewable energy source through “Green Power” generation.
- ***History of Wampee, a Historical Working Plantation.*** Participants are treated to a lively presentation on the history of Wampee, a working plantation, and the ghosts, whom it is said, still occupy the grounds.
- **Lesson Planning and Journal Reflections.** Grade level groups work together to identify grade appropriate resources provided by the Institute, field experiences, and speakers and determine how these resources can be integrated into the curriculum while addressing district and state standards. Journal reflections are completed.
- ***Hands-on Activities*** Participants will engage in hands-on activities designed for the classroom to help students understand how electricity is generated.

Wednesday  
8:00 AM – 9:00 PM

**“It’s Electric” – A Powerful Link between Energy, Economics, and the Environment**

- ***Field Experience to Alcoa, an Alumna Smelting Plant.*** On a walking tour of Alcoa, participants learn how alumina is produced and the impact this industry has on the production and generation of electricity. \*Be sure to wear long sleeve shirt, ankle length pants (NO capris), and closed toed shoes (NO mules, slides, or sandals).\*
- ***Energy Efficiency and Conservation.*** Participants discover how concepts in math, science, environmental studies, and marketing and communication skills are taught through *Insulation Station*, a hands-on classroom project.
- **Lesson Planning and Journal Reflections.** Grade level groups work together to identify grade appropriate resources provided by the Institute, field experiences, and speakers and determine how these resources can be integrated into the curriculum while addressing district and state standards. Journal reflections are completed.
- ***Daily Wrap Up*** – Journal reflections, lesson planning and group discussions

Thursday  
8:00 AM – 9:00 PM

**Electricity and the Environment Co-exist in a Positive Way**

- ***Environmental Field Experience.*** A day filled with environmental topics and resources, coupled with quality presentations from experts, will make this field experience one to remember. Participants will:

- Identify natural habitats on a boat trip across Lake Moultrie through the Pinopolis Lock and down the Tail Race Canal.
- Learn the interconnection and relationship of all living things in the natural world at the Old Santee Canal Interpretive Center. An entomologist provides a lively hands-on and interactive presentation to demonstrate the connection of all living things.
- Swamps are often depicted as foggy, mosquito-ridden, water wastelands. Teachers will debunk this myth as the dive (figuratively speaking) headfirst into Biggin Swamp to discover another world teeming with life below the surface of its waters. From the plants to insects to plankton, teachers will learn the valuable roles in this fragile ecosystem.
- Discover how man impacts Aquatic Ecosystems as they paddle a canoe through the Old Santee Canal waterway to see wildlife and native vegetation.
- ***The Power of Vision.*** Participants will walk away inspired by this video as they realize the impact they have on the lives of their students.
- **Lesson Planning and Journal Reflections.** Grade level groups work together to identify grade appropriate resources provided by the Institute, field experiences, and speakers and determine how these resources can be integrated into the curriculum while addressing district and state standards. Journal reflections are completed.
- ***Daily Wrap Up.*** Journal Reflections, lesson planning and group discussions.

Friday  
8:00 AM – 2:00 PM

### **The Powerful Truth about Electricity**

- ***Understanding the Dangers of Electricity.*** Participants will be shocked as they watch the PHAD unit, a powerful, live demonstration that illustrates the importance of understanding how electricity travels and the hazards encountered in their daily routines when electricity is misused.
- ***Closing.*** Participants will share valued experiences and educational connections, and complete assignments.

## **VII. EVALUATION OF CANDIDATES**

### **A. Grade Breakdown and Equivalency**

1. Attendance at all sessions – 10pts.
2. Participation in hands-on projects, discussions, and class activities – 10pts.
3. Completion of hands-on review—8pts
4. Reading assignment and daily reflective journal – 20pts.
5. Five Lesson plans – 42pts.
6. Responses on the Discussion Board- 10pts

B. Explanation of Assessment Activities

1. Students must participate in all three weeks of the Institute.
2. Students will identify activities and resources appropriate for the development of five lesson plans identifying content and concepts gained through all field experiences, presentations and activities
3. Students will:
  - Complete reading assignment. Submit written responses through CSU Blackboard Digital Dropbox
  - Complete discussion board assignments on CSU Blackboard
  - Maintain a daily reflective journal during second week of the course. The journal will demonstrate growth and understanding, personal and/or professional, which has occurred as a result of the course.
4. Students will identify appropriate Institute resources to create at least five (5) lesson plans aligned with state standards. These lesson plans can be shared with other participants via CSU Blackboard web site.

**VIII. GRADING**

<b>A=</b>	<b>93-100</b>
<b>B+=</b>	<b>90-92</b>
<b>B=</b>	<b>85-89</b>
<b>C+=</b>	<b>82-84</b>
<b>C=</b>	<b>77-81</b>
<b>F=</b>	<b>76 and below</b>