CIEE 3335 SCIENCE INSTRUCTION IN THE ELEMENTARY SCHOOL
FALL 2017
CIEE 3335 is a required course EC-6 Certification.

College of Education, Department of CURRICULU & INSTRUCTION

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Class Format:
Class day and time: T 9-11:50 and 1-3:50
Class location: TWC #215

Course Description: This unique classroom and field-based experience is designed to acquaint the *prospective* elementary teacher with a variety of instructional principles and practices for engaging children in the learning of relevant science concepts and skills. This course is intended to help teacher candidates develop the knowledge, attitudes, and skills necessary to effectively nurture children's curiosity and guide them in exploring and learning about the fascinating world around them.

The nature of science as a discipline and the scope and sequence of appropriate content for each grade level will be explored. Active involvement in class projects and assignments will enable teacher candidates to develop an understanding of curriculum, instructional methods and materials, and evaluation techniques for elementary science based upon educational research, contemporary practice, and state and national standards for science education. Teacher candidates will have opportunities to demonstrate your knowledge, attitudes, and skills both in class with peers and with elementary students during field placement.

Textbooks: REQUIRED AND RECOMMENDED TEXTS (in APA format)

Project Learning Tree (11th edition) America Forest Foundation – Make $55.00 check out to PLT and give to your section leader before the PLT Workshop.

Science EC-6 and 4-8 TEKS Charts – *Purchase online from Region IV @ http://www.region4store.com/ $2.00 each.*

Professional Organization Membership Opportunities: (You are encouraged to join at least one!☺)

Science Teachers Association of Texas (STAT) http://statweb.org/ $10.00 Student Membership
National Science Teachers Association (NSTA) http://nsta.org/ $35.00 Student Membership
Phi Delta Kappa International (PDK – Sam Houston State Chapter) http://pdkintl.org $54.00

Course Objectives: The following objectives will be met during this course:

The EC-6 science teacher:

1. Explores the history and nature of science and identifies the role of science in contemporary classrooms;
2. Manages classroom, field, and laboratory activities to ensure the safety of all students;
3. Uses the correct tools, materials, equipment, and technologies in science instruction;
4. Describes the processes of scientific inquiry and explains the role of inquiry in science instruction
5. Has theoretical and practical knowledge about teaching science and about how students learn science;
6. Develops varied and appropriate assessments to monitor science learning; and
7. Appreciates how science affects the daily lives of students and how science interacts with and influences

A matrix that aligns course objectives, activities, assessments, and standards can be viewed at this end of v

this syllabus.

IDEA Objectives: The instruction in this course will address the following major objectives (as assessed by the IDEA course evaluation system:

Essential:

1. Develop specific skills, competencies, and points of view needed by professionals in the field most closely related to this course.

Important:

2. Apply course materials to improve thinking, problems solving, and decisions.
3. Acquire skills in working with others as a team member.
4. Find and use resources for answering questions or solving problems.

Course/Instructor Requirements:

Field-based:

The intent of this course is to immerse teacher candidates in the culture and context of the elementary/middle school with the idea that both confidence and competence in science teaching is key. The role of the teacher candidate throughout this experience is that of a learner and a teacher. The teacher candidate works collaboratively with practicing EC-6 and 4-8 teachers in field based settings. group discussions, virtual classroom visits through videotaped case studies, hands-on science activities (individual, paired, cooperative groups), inquiry activities, peer teaching, review of kp'instructional resources, reflective journaling, lesson planning, supplemental professional

development opportunities, etc. The field component of the course involves 120 hours with one or more mentor teachers at an assigned public school campus at a grade level corresponding with student's certification goals. **Students will teach a minimum of 1 science lesson to students in their field based placement.** Special professional development activities as well as TExES reviews and qualifying exams will be scheduled throughout the semester.

Course Outline

Assignments

Activity/Project	Point Value	Due Date
Moon Phase Project	100	October 31st
*Reflections (10pts each)	100	*Ongoing*
*Science-Eyed Case Study	100	November 14th
*Science Lesson Plan/Teach	100	November 14th
Science Journal Peer Review	100	November 30th
*Professional Attributes	100	November 30th
*Capstone Portfolio	100	October 17th
*Project Based Learning Unit	200	December 5tj
*PBL Presentation	100	December 5th
Total Points Possible	**1000**	**Due by December 12th**

Descriptions and Rubrics are provided for all Assignments.
*Denotes Field-based Activities
***Denotes Shared Points in Methods Block**

Grades
A minimum of 50% of the grade for this class is based on field experience related activities. Please check your Common Syllabus for this information.

The correlation between total points and letter grades for the course appears below:

A = 900 - 1000 points
B = 800 – 899 points
C = 700 – 799 points
D = 600 – 699 points
F = 599 or Below

Please Note: Students receiving a grade less than "C" either cumulatively or in field-based activities, will either not be recommended for student teaching or will be offered a professional growth plan that must be completed during student teaching.

Schedule
A detailed schedule is provided in an attachment.

Sam Houston STATE UNIVERSITY

Student Guidelines

University Policies

- SHSU Academic Policy Manual-Students
  - Procedures in Cases of Academic Dishonesty #810213
  - Students with Disabilities #811006
  - Student Absences on Religious Holy Days #861001
  - Academic Grievance Procedures for Students #900823
- SHSU Academic Policy Manual-Curriculum and Instruction
  - Use of Telephones and Text Messagers in Academic Classrooms and Facilities #100728
  - Technology during instruction: INSTRUCTOR'S POLICY ON TECHNOLOGY USE DURING INSTRUCTION
  - Technology during exams: INSTRUCTOR'S POLICY ON TECHNOLOGY USE DURING EXAMS
  - Technology in emergencies: INSTRUCTOR'S POLICY ON TECHNOLOGY USE IN EMERGENCIES
- Visitors in the Classroom- Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance.

Attendance

Regular and punctual attendance is required and will be documented every class period. As per University policy, candidates will not be penalized for three (3) hours of absence during the semester. This means 1 meeting *not* 3 meetings. This class absence should be used carefully for emergencies and illnesses.

Upon the second absence, after the three (3) hours of absence allowed by the University, the Department of Curriculum and Instruction will be notified and a notation will be made in the candidate's file. After the third absence, the candidate's name will be sent to the Concerns Committee for further evaluation. The candidate will then attend a conference with the committee to discuss and evaluate reasons for the absences, and to determine if the candidate needs to continue in the program. Excessive absences can constitute reasons for lowering of semester grades, and possibly, removal from the course or block of courses.
It is the student's responsibility to obtain prior approval from the instructor for making up class assignments. Documentation from the student may be required for approval. It is also the student's responsibility to retrieve handouts and materials from the missed class from classmates. Any missed group work may not be made up.

Tardies
If a student is fifteen or more minutes late to class or leaves class fifteen minutes or more before class is over, an absence will be recorded. A student who shows a pattern of being a few minutes late (but less than 15) will be notified that continuation of that pattern will result in an absence and will impact student's disposition/professionalism.

IF YOU KNOW YOU WILL BE ABSENT:

- Notify the professor (or mentor teacher) via email or phone call prior to, or on the day of the absence;
- Contact a student in the class in order to find out what work was completed in class and what homework is required of you for the next class meeting;
- Designate a student to collect handouts or materials received in class during your absence;
- Complete the assignments that are due and bring them to the next class meeting so you will stay current with the assignments. Any missed in-class group work may not be made up.

Course Expectations

Methods Block Professionalism and other Expectations:

- Regular attendance, prepared to actively participate in class and in the field
- Team collaboration, active listening
- Thoughtful reflections on teaching practices and learning opportunities
- Relate or make cognitive connections between and among readings, discussions, activities, assignments and the PPR competencies.
- **Consistently demonstrate good disposition**
- Observe strictly the student Interaction Policy below. *This is for your protection.*
  - Do not communicate with any public school student inside or outside the school unless it concerns academics or classroom learning;
  - Do Not text, tweet, email or access students' Facebook, Instagram, etc … pages;
  - Do Not call students on their cell phones or home phones;
  - Do Not contact any student outside of school;
  - Do Not give students rides or socialize with them or their families.
- Check Blackboard regularly for assignments, announcements, grades, changes.

Bibliography

American Association for the Advancement of Science. (1989). Science for all Americans. Oxford University Press.

American Association for the Advancement of Science. (1993). Benchmarks *for science literacy*. New York. Oxford University Press. ISBN #0-19-58986.
http://www.project2061.org/publications/sfaa/default.htm

Carin, A., Bass, J., & Contant, T (2016). *Teaching Science as Inquiry* (10th edition). Merrill Prentice Hall, ISBN 0-13-118165-3.

Lowery, L.F. (1998). The biological basis of thinking and learning. Full Option Science System. Lawrence Hall of Science, Berkeley, CA.
http://lhsfoss.org/newsletters/archive/pdfs/FOSS_BBTL.pdf

National Science Teachers Association. (1997). *Pathways to the standards: Elementary school edition.* Lowery, L. (Ed.) NSTA. ISBN #0-87355-161.

Ostlund, K., & Mercier, S. (1996*). Rising to the challenge of the National Science Education Standards: The processes of science inquiry*. Primary or Intermediate Edition. S&K Associates.[1] http://www.sciencesbookreview.com/Rising_to_the_Challenge_of_the_National_Science_Education_Standards_The_Processes_of_Science_Inquiry_0965876802.html

National Research Council. (1996). National science education standards. NSTA. http://www.nap.edu/readingroom/books/NSTA/NSES/html/

Next Generation Science Standards
http://www.nsta.org/about/standardsupdate/default.aspx

National Research Council (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas.* National Academies Press. ISBN-10: 0-309-21742-3 & ISBN-13: 978-0-309-21742-2

College of Education Information

Accreditation

The programs within the SHSU College of Education have the distinction of receiving accreditation and national recognition from multiple accrediting bodies. All educator certification programs, including teaching and professional certifications, have received ongoing accreditation from the Texas Education Agency (TEA). Additionally, the educator preparation program has been accredited by the Council for the Accreditation of Educator Preparation (CAEP-formerly NCATE) since 1954. Many of the educator preparation concentration areas have also chosen to pursue national recognition from their respective Specialized Professional Associations (SPA), signifying the program is among the best in the nation. The programs within the Department of Counselor Education have also received accreditation from the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Course and Program Evaluation

Near the end of the semester, students are asked to take part in the University's adopted course evaluation system, IDEA. The assessments are completed online and instructions are emailed to each student. Students' assessments of courses are taken are systematically reviewed by the Dean, Associate Deans, Department Chairs, and individual faculty members. Only after the semester has completed are faculty members allowed to view aggregated results of non-personally-identifiable student responses.

The College of Education conducts ongoing research regarding the effectiveness of the programs. Students receive one survey in the final semester prior to graduation regarding the operations of the unit during their time here. A second survey occurs within one year following completion of a program, and is sent to students and their employers. This survey requests information related to students' quality of preparation while at SHSU. Students' responses to these surveys are critical to maintaining SHSU's programs' excellence.

Standards Matrix:
This course meets the following state and national standards:

- ✓ State Board for Educator Certification (SBEC)- http://www.sbec.state.tx.us
  Pedagogy and Professional Responsibilities (PPR)
- ✓ National Science Teachers Association http://www.nsta.org/pdfs/NSTAstandards2003.pdf
- ✓ Association for Childhood Education International (ACEI) - http://www/acei.org
- ✓ **Association of Middle Level Education (AMLE)**
  http://www.amle.org/ProfessionalPreparation/NMSAStandards/tabid/374/Default.aspx
- ✓ **SHSU Conceptual Framework**
- ✓ **National Council for Accreditation of Teacher Education** (NCATE)

Objectives/ Learning Outcomes	**Activities (* indicates field-based activity)**	**Performance Assessment**	**Standards:** **PPR** **NSTA/NSES** **ACEI** **CF** **NCATE**
The EC-6 science teacher explores the history and nature of science and identifies the role of science in contemporary classrooms.	Complete a Science Survey (See Science Survey) Create a Science Journal with a "Science in my World" themed cover Explore the journey of science education today via PowerPoint. Construct a set of science-eyes and reflect: *What are science eyes and why should elementary teachers have them?*	See Journal Peer Review Rubric Reflection Rubric	**PPR:** Standard 1 1.7k, 1.19k 1.16s-1.18s 1.19s-1.23s 1.6s -1.11s **NSTA/NGSS**: IV **ACEI** 2.2 AMLE 7 **CF: 1** NCATE: 1
The EC-6 & 4-8 science teacher manages classroom, field, and laboratory activities to ensure the safety of all students.	*Teach a hands-on Science Lesson	See Lesson Plan Rubric	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS** I **ACEI** 3.4 **AMLE 5** **CF: 5** NCATE: 1, 2, 3
The EC-6 & 4-8 science teacher uses the correct tools, materials,	*Teach a Science Lesson EC-6/4-8 Participate in a Metric Olympics competition (Activities that Integrate	See Lesson Plan Rubric See Reflection Rubric	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s

equipment, and technologies.	Mathematics and Science – AIMS) and write a reflection that addresses the prompt: *Why do children need to learn and use the metric system in science?*		3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS**: III **ACEI** 3.3 **AMLE 4** **CF: 2** NCATE: 1
The EC-6 & 4-8 science teacher describes the processes of scientific inquiry and explains the role of inquiry in science instruction.	Conduct an egg-in-the-bottle inquiry. Complete a sea shell process skill lab activity and write a reflection from the point of view of their sea shell. Students use the processes skills of science as they investigate sea shells. Identify three types of hands-on activities: guided, challenge & inquiry and participate in an exploration of foam. See: http://www.exploratorium.com	See reflection rubrics	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS**: III **ACEI** 3.3 **AMLE 3, 4, 5** **CF: 4** NCATE: 1
The EC-6 & 4-8 science teacher has theoretical and practical knowledge about teaching science and about how students learn science.	FOSS Kits – Full Option Science Systems FOSS and read "The Biological Basis of Thinking and Learning" by Lawrence Lowery http://lhsfoss.org/newsletters/archive/pdfs/FOSS_BBTL.pdf		**PPR: PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS**: IV **ACEI** 3.2 **AMLE 3,5** **CF: 1**
The EC-6 & 4-8 science teacher develops varied and appropriate assessments to monitor science learning.	Great Performances Power Point Creating Classroom-based assessment tasks Cookie Rubric Activity Creating a Unit Performance Assessment	See unit rubric	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS**: V **ACEI** 3.4

			AMLE 5 **CF: 4** NCATE: 2
The EC-6 & 4-8 science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions. ***ACE**	*Write a Science-eyed Case Study Field Paper that identifies and describes science in the elementary and middle school Students conduct a long-term observation of Moon Phases and write a grade-level appropriate lesson plan for moon phases. Project Learning Tree Professional Development **Community Service Science Learning Project**	See science-eyed case study rubric See Moon Phases Rubric Reflection rubric PLT Reflection **CSSLP Reflection**	**PPR:** Standard IV 3.1s – 3.3s 4.5s-4.15s 4.9k-4.12k PPR Domain 04 – Fulfilling professional roles and responsibilities. **NSTA/NGSS**: VII **ACEI** 5.2 **AMLE: 6** **CF: 5**
The EC-6 & 4-8 science teacher knows and understands the science content appropriate to teach the statewide curriculum (TEKS) in physical science.	Students explore physics and simple machines by creating a bobble head Students identify state of matter and rewrite an ice-cream activity using the Five-E instructional model. Student map the states of matter TEKS strand K-8 and then reflect on *how elementary science programs are like and ice-cream cone.*	See Bobble Head Rubric Reflection rubric	**PPR:** Standard I, II 1.8k-1.11k 1.10s-1.11s 1.23k, 1.23s 3.8s – 3.14s **NSTA/NGSS**: VIII **ACEI** 5.1 **CF: 1** **AMLE 4** NCATE: 1
The EC-6 & 4-8 science teacher identifies the science content appropriate to teach the statewide curriculum (TEKS) in life science.	Students are introduced to the unit development process through a classic "Fishy Business" unit. Students explore the interdependence of living things and symbiosis through a "Fishy Feeding Frenzy" activity. Students explore the external anatomy (structure/function of fish) through Fish Printing – Gyotaku	See unit rubric	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS**: IX **ACEI** 5.1 **AMLE: 4** **CF: 1** NCATE: 1
The EC-6 & 4-8 science teacher knows and understands the science content appropriate to teach the statewide curriculum (TEKS) in Earth science.	Students conduct a long term observational moon phase study. Develop an integrated thematic science unit centered on one of four themes: 1. Nature of science 2. Properties, patterns, and models 3. Constancy and change	See unit rubric	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and

	4. Systems		assessment **NSTA/NGSS** 023 **ACEI** 5.1 **AMLE: 4** **CF: 1** NCATE: 1
The EC-6 & 4-8 science teacher can identify unifying concepts and processes that are common to all sciences.	Develop Project-Based Learning unit plan centered on one of four themes: Nature of science Properties, patterns, and models Constancy and change Systems	See unit rubric	**PPR:** Standards I, III 1.12k - 1.18k 1.20k 1.11s – 1.22s 3.4s -3.6s PPR Domain 03 - Implementing effective, responsive instruction and assessment **NSTA/NGSS**: VII **ACEI** 3.1 **AMLE: 4** **CF: 1** NCATE: 1

National Research Council. (1996). *The National Science Education Standards*. National Academy Press, Washington, DC. http://www.nsta.org/publications/nses.aspx

Web address for state standards: http://tea.state.tx

Web address for specialty organization standards: www.nsta.org

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I have read the complete syllabus and understood all its content. I also understand that this is a legally binding document between the course instructor and me.

Student printed name and signature

Section: _____

Date: _____

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