

**The College of Education and Behavioral Studies
School of Education
Houston Baptist University**

**Course Syllabus
INDC 4350 Essential Elements of Science
Spring, 2014**

COURSE DESCRIPTION

This course focuses on essential elements of science through the exploration of curriculum, concepts, methods, and materials related to the field. Content from the domains of science will be used to identify how diverse groups of students learn science through various methodologies of instruction. The course highlights practical and reflective approaches to foster active learners as well as the development of student-centered and inquiry-based curricula which is utilized to evaluate one's own instructional practices.

COURSE SEQUENCE IN CURRICULUM AND PREREQUISITE INFORMATION

Students must have been accepted into the Teacher Education Program and have completed EDUC 4301 or 4311, Curriculum and Instruction, with a "B" or better before taking EDUC 4350. EDUC 4350 should be completed before student teaching.

DATE AND TIME OF CLASS MEETINGS: Tuesday, 5:00-7:25 PM

ROOM NUMBER: 115

INSTRUCTOR INFORMATION

Name/Title: Dr. Heather Domjan

E-mail: hdomjan@hbu.edu

Office Phone: 281-380-0764

Office Hours: Available by appointment.

LEARNING RESOURCES

Course Text(s):

Bass, J.E., Contant, T. L., & Carin, A. A. (2009). Teaching science as inquiry, 11th/edition. New York, NY: Allyn & Bacon. ISBN: 978-0-13-159949-9.

Recommended:

Rezba, R.J., Sprague, C.R., McDonnough, J.T., Matkins, J.J. (2007). Learning and Assessing Science Process Skills. Dubuque, IA: Kendall/Hunt Publishing Company. ISBN: 0757537847

RELATION TO THE MISSION OF THE UNIVERSITY

The mission of Houston Baptist University is to provide a learning experience that instills in students a passion for academic, spiritual, and professional excellence as a result of our central confession, "Jesus Christ is Lord."

In relation to the mission of the University, this course will help students explore the tenets of teaching science as inquiry within the context of a rigorous academic experience.

RELATION TO THE GOALS AND PURPOSES OF THE COLLEGE OF EDUCATION AND BEHAVIORAL SCIENCES

The mission of the College of Education and Behavioral Sciences is to prepare students to be effective citizens and professional educators, administrators, counselors, and researchers who reflect Christ in their work and service.

To accomplish this mission, we will provide students with the following:

- the courses and mentoring necessary for a solid pedagogical grounding in their discipline;
- essential learning experiences that will provide opportunities to develop both knowledge and wisdom; and
- an understanding of their Christian mission and calling to influence individuals and the larger society.

This course is an important part of the theoretical and skills-training required for students to become effective, ethical, responsible professionals in the field of teaching. It will help students develop background knowledge about curriculum, standards, and teaching science as inquiry that will serve as a foundation for future studies in science education. Students will experience teaching and learning science concepts in the classroom setting and explore their Christian mission and calling including if it involves becoming professional teachers.

COURSE LEARNING OBJECTIVES

Upon completion of this course, students should be able to:

1. Understand and incorporate factual knowledge (terminology, classifications, methods, trends) of science concepts;
2. Understand and accurately apply fundamental principles, generalizations or theories;
3. Evaluate course content for improved thinking, problem solving and decision-making;
4. Develop specific skills, competencies and points of view needed by science teachers;
5. Demonstrate the teaching of science as inquiry from a process-product perspective and then analyze the expected outcomes;
6. Describe, use, and justify methods of instruction that reflect current knowledge and practice and which facilitate students' development of science process skills and content knowledge; and,
7. Effectively plan and implement developmentally appropriate science instruction, curriculum, and assessment.

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Foundational learning objectives, knowledge and skills required for all students seeking **initial teacher certification** are included in this course.

SCHOOL OF EDUCATION REQUIREMENTS RELATED TO STATE AND NATIONAL STANDARDS

- The course learning objectives acquired through the experiences in this course support both support-state and national standards including the TEA Standards for Pedagogy and Professional Responsibilities and Requirements of the Texas Administrative Code 9 (TAC §228.30) and H.B.2012.
- Appropriate grade level TEA guidelines and TEKS are included as part of this course.
- A matrix at the end of this document indicates the TAC §228.30 and H.B.2012 requirements addressed
- TEA Technology Standards are incorporated into this course. For a complete listing of the standards, please go to: <http://www.tea.state.tx.us/index2.aspx?id=906>
- Writing and Oral Standards. Each student is expected to be able to write and speak coherently, logically, and correctly in Formal Standard English during all class interactions, tasks, and assignments. Specific rubrics are provided for major papers and presentations.
- A list of specific TexES competencies and International Dyslexia Association (IDA) Reading Standards for this course is presented below. A complete listing of SBEC Standards for all certifications including knowledge and skills statements may be found at: <http://www.tea.state.tx.us/index2.aspx?id=5938>

TEExES Competencies

The following TEExES Pedagogy and Professional Responsibilities for the Generalist 291: EC-6 exam competencies are addressed in part or in full in this course:

Domain I. The teacher designs instruction appropriate for all students that reflects an understanding of relevant content and is based on continuous and appropriate assessment.

Competency 003: The teacher understands procedures for designing effective and coherent instructions and assessment based on appropriate learning goals and objectives.

Competency 004: The teacher understands learning processes and factors that impact student learning and demonstrates this knowledge by planning effective, engaging instruction and appropriate assessments.

Domain II. The teacher creates a classroom environment of respect and rapport that fosters a positive climate for learning, equity, and excellence.

Competency 005: The teacher knows how to establish a classroom climate that fosters learning, equity and excellence and uses this knowledge to create a physical and emotional environment that is safe and productive.

Competency 006: The teacher understands strategies for creating an organized and productive learning environment and for managing student behavior.

Competency 007: The teacher understands and applies principles and strategies for communicating effectively in varied teaching and learning contexts.

Competency 008: The teacher provides appropriate instruction that actively engages students in the learning process.

Competency 009: The teacher incorporates the effective use of technology to plan, organize, deliver and evaluate instruction for all students.

TOPICAL OUTLINE

A course agenda is included at the end of the syllabus. It includes the following topics:

1. Practice a variety of inquiry-based instructional strategies for teaching elementary science lesson.
2. Gain an appropriate level of science content knowledge in life science, physical science, and earth science.
3. Design and implement science lessons that promote inquiry and scientific literacy in elementary school science.
4. Understand the Nature of Science (NOS) and some important consensus views of the Nature of Science that science researchers presented.
5. Practice science process skills that can be used in the elementary science classroom.
6. Apply a variety of science activities by connecting an appropriate science concept into the science classroom.
7. Develop a knowledge of the EC-6 level science curriculum presented by national, state, and school district levels.
8. Use or design appropriate curricular materials which meets the developmental needs and interests of students.
9. Integrate other subject areas into the instructional process to enhance science teaching strategies.
10. Use technology to establish science teaching resources and communicate reflections for expanding learning and teaching ideas in the classroom.

The content of this outline and the attached schedule are subject to change at the discretion of the professor.

TEACHING STRATEGIES

A variety of learning methods will be used including the following:

1. Interactive lecture/discussion/reading
2. Small group and individual activities and/or projects
3. Designing and implementing learning activities
4. Use of media/technology/online interactive access
5. Literature research/review/presentation
6. A variety of instructional strategies will be used including inquiry, demonstration, simulation, experimentation, and cooperative groups.

ASSESSMENT OF LEARNING

Foundational learning experiences required for all students seeking **initial teacher certification** are included in this course.

Course Requirements. See the agenda at the end of this syllabus for due dates.

Assignment ¹	Learning Objective(s)	Standards ²	Point Value
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Class work, Homework, Quizzes	1, 2, 3, 4, 5, 6, 7	PPR: I, II, III, IV	10%
Misconception Review	1, 2, 3	PPR: I	10%
5E Science Lesson & Presentation	1, 2, 3, 4, 5, 6, 7	PPR: I, II, IV	20%
Science Literature Review	1, 2, 4, 6	PPR: I	10%
Assessment Development	3,7	PPR: I, III	15%
Organism Log & YouTube Story	7, 8, 9	PPR: III	15%
Final Exam	1, 2, 3, 4, 5, 6, 7	PPR: I, II, III, IV	20%

¹ Descriptions and rubrics for assignments are included at the end of this document.

² These assignment develop and/or assess state and national standards including TExES

Grading Standards

School of Education Undergraduate Grading Scale:

92-100 (A); 84-91 (B); 76-83 (C); 70-75 (D); <70 (F)

Student Appraisal

Students will complete faculty appraisal forms as regularly administered by the University.

CLASS POLICIES

Absence and Tardy Policies. In the College of Education and Behavioral Sciences, students must attend at least 75% of class sessions in order to receive a passing grade in the course. This means that if more than four absences occur, the course grade will be “F” no matter what test and paper scores might be.

Documentation of Difficulties If an education student fails to demonstrate an acceptable level of performance on one or more professional educator standards during any class or field experience, a form is filed in the Education Office (a PMID: Progress Monitoring & Intervention Documentation). If two such forms occur, a conference is held in which difficulties are identified and means for improvement are explored. [Sometimes specific interventions will be required.] A third form will result in a committee hearing to review difficulties and means for improvement and to determine conditions for continuance in the program. Professional standards include knowledge, skills and dispositions.

Late Work. All assignments are expected to be completed in their entirety by the beginning of class on the date due, even if the student is not in class. Late work will only accepted during the next class session (with a twenty-point grade penalty) unless there is proper documentation for illness or other emergency situations beyond the control of the student. The work must then be turned in to the student’s folder no more than one week after the student returns to class. No work will be accepted after the last day of class.

Missed Tests. All the tests should be taken on the day and at the time when they are scheduled. Make-up tests will be given ONLY when the instructor is notified prior to the exam, and there is a documented excused reason for missing the exam. Legitimate reasons include documented illness, death in the family, etc. A make-up test will then be completed at a time mutually agreed upon by both the professor and student—as soon as possible after the exam date. Any unexcused absence on the test day will result in a grade of zero for the particular test with no opportunity for a make-up test.

Use of Electronic Devices. During class sessions, electronic devices are only to be used to support class activities. Other uses (texting, surfing the web, etc.) will result in the device not being allowed in the classroom.

Students are required to read the University Classroom Policy addendum to this course syllabus that is included on Blackboard. In addition to the class policies listed here, it includes basic class policies that apply in all HBU classes.

PERSON RESPONSIBLE FOR DEVELOPING SYLLABUS

Dr. Heather Domjan
Instructor's Signature

January 7, 2013
Date

**EDUC 4350 Essential Elements of Science
TENTATIVE SCHEDULE**

Science as Inquiry = SI

DATE	TOPIC	ASSIGNMENTS (Due by the following class meeting at 5:00 PM unless otherwise noted)
January 7	<ul style="list-style-type: none"> Course overview Nature of Science Science process skills, safety, equipment Physical Science Investigation: Physical Properties 	<ul style="list-style-type: none"> Read SI: <i>Ch. 1 Children, Science, & Inquiry</i> Safety Scenarios Blog Response-Blackboard Bring to class next week: <ul style="list-style-type: none"> A copy of the K-5 Science TEKS Identify Misconceptions
14	<ul style="list-style-type: none"> Science Standards SI: <i>Ch. 3 Constructivism</i> Hypotheses & Variables Investigation: Ball Drop Misconceptions 	<ul style="list-style-type: none"> <i>Ch. 2 Processes & Strategies for Inquiry</i> Read and bring a copy of "Inquiry Based Science" article to discuss next week. Read SI: <i>Ch. 5 Planning & Managing Inquiry Instruction</i> <p style="text-align: right;">*Misconception Review is DUE TODAY</p>
21	<ul style="list-style-type: none"> Discuss: Inquiry Based Science article Teaching science as inquiry Physical Science Investigation <i>Quiz 1</i> 	<ul style="list-style-type: none"> Read SI: <i>Ch. 3 Learning Science w/ Understanding</i>
28	<ul style="list-style-type: none"> SI: <i>Ch. 4 (5E Model of Instruction)</i> Physical Science Investigation: Density 	<ul style="list-style-type: none"> Read SI: <i>Ch. 4 (5E Model of Instruction)</i> <i>Gizmos: Online Simulation Lab and Assessment -Density</i>
February 4	<ul style="list-style-type: none"> Assessment and Evaluation Energy Lab: Popper Investigation 	<ul style="list-style-type: none"> Read SI: <i>Ch. 6 Assessing Science Learning</i> Read "Seamless Assessment" and answer blog on Blackboard Find Books for Science Literacy Review
11	<ul style="list-style-type: none"> SI: <i>Ch. 9 Connecting Science with Other subjects</i> Science Literacy Review Presentations Energy Lab: Rollercoaster <i>Quiz 2</i> 	<ul style="list-style-type: none"> SI: <i>Ch. 7 Effective Questioning</i> <p style="text-align: right;">*Science Literacy Review is DUE TODAY</p>
18	<ul style="list-style-type: none"> Energy Lab: Electricity 	<ul style="list-style-type: none"> Blog Response to Article Reading: Learning the Ropes with Electricity- Blackboard
25	<ul style="list-style-type: none"> Energy Lab: Light 	<p style="text-align: right;">*Assessment Development is DUE TODAY</p>

March 4	<ul style="list-style-type: none"> • Constructive & Destructive Forces (Earth Science) <ul style="list-style-type: none"> ○ Earthquakes lab ○ Landslides lab • <i>Quiz 3</i> 	
11	Spring Break	
18	<ul style="list-style-type: none"> • Space Lab • Lunar Cycle 	<ul style="list-style-type: none"> • Journal 2 critter observations • Sign up on WIKI for 5E Lesson Presentation
25	<ul style="list-style-type: none"> • Lunar Cycle Continued 	<ul style="list-style-type: none"> • Journal 2 critter observations
April 1	<ul style="list-style-type: none"> • 5E Lesson Presentation • <i>Quiz 4</i> 	<ul style="list-style-type: none"> • Read SI: <i>Ch. 10 Science for ALL Learners</i> <p style="text-align: center;">*5E Science Lesson is DUE TODAY *5E Lesson Presentation</p>
8	<ul style="list-style-type: none"> • 5E Lesson Presentation continued 	
15	<ul style="list-style-type: none"> • 5E Lesson Presentation continued 	
22	<ul style="list-style-type: none"> • Life Science & Ecosystems • Organism Life Cycles and Digital Story Presentations 	*Organism log and YouTube Story is DUE TODAY
29	<ul style="list-style-type: none"> • Food chains & Food Webs • Environmental effects on populations • Life Science Investigation: Web of Life • Quiz 5 	
May 6	<ul style="list-style-type: none"> • Review for Final 	
13 <i>Final Exams Wk</i>	<ul style="list-style-type: none"> • Final Exam 	

Changes to the tentative agenda will be made as warranted by the professor with timely student notification.

Important Dates

January 24, 2014

Last day to add a class

February 5, 2014

Last day to drop without a "W"

April 4, 2014

Last day to drop with a "W"

COURSE ACKNOWLEDGEMENTS

Syllabus Statement

I am aware of all topics described in the course syllabus . These include, but are not limited to the following:

- course description; course sequence in the curriculum and prerequisite information;
- instructor information and learning resources;
- relation to the mission of the University and to the goals and purposes of the College of Education and Behavioral Sciences;
- course learning objectives;
- state and national standards covered (TEXES competencies, IDA standards, etc);
- topical outline and learning strategies;;
- assessment for learning: requirements & grading standards;
- **HBU CLASS POLICIES: -the University document posted on Blackboard;**
- additional policies for this class: attendance, late work, missed tests and electronic devices;
- the possibility of changes to the syllabus. [The content of this syllabus and the attached agenda are subject to change at the discretion of the professor.]

Professional Integrity Statement

To maintain and uphold the highest level of professional integrity and honesty, cheating and plagiarizing are not allowed. . If a student cheats and/or plagiarizes, then the student will receive a “0” for the assignment and/or fail the course

Cheating is a catch-all term for not doing your own work. Any attempt during a test to consult with notes or another person or to look at another’s test constitutes cheating. If answers are shared in any way, both students will receive the same penalty for cheating. Using stolen tests or “borrowed” tests (any test that is not readily available to all members of the class) to study for an exam is cheating. Within the broader view of cheating is the idea of using someone else’s work in place of your own. This is called plagiarism and is not allowed.

DO NOT:

- copy another person’s paper/project/work or part of that and turn it in as your own;
- copy a paper/project from the Internet and turn them in as your own;
- copy another paper/project (or cut and paste parts of Internet articles), make changes to it, and submit it as your own;
- include the work of others without documentation/reference (If seven or more words are taken directly from another source it must be quoted and referenced.);
- submit a paper/project or large parts of a paper/project you have done for another class at HBU or another institution to this class. (Always get a professor’s approval before using a prior work or topic from a different class.);
- have someone write parts or all of your paper/project/work
- share your work with others; and,
- change references or make up references.
- falsify fieldwork documentation

By signing this page, **I affirm** that I have read and understand the contents of this course **Syllabus Statement, the Professional Integrity Statement, and the University Class Policies.** I understand that at any time during the course, I may request clarification, if needed.

Printed Name

Signature

Date

[After reading the course syllabus and this page, please **print and sign this** form then turn it in to the professor.]

Pedagogy and Professional Responsibilities Course Correlation to TAC §228.30*

PPR Standard	Curriculum Topic TAC §228.30	Essential Components: Additional Information	Learning Experiences, Products &/or Assessments
I, III	1. Reading Instruction : A variety of theories and methods appropriate for teaching these five essential components of reading instruction.	1. Text Structure (organization) 2. Vocabulary teaching strategies 3. Identifying the word (root, prefix, suffix) 4. Fluency basic teaching strategies 5. Comprehension (finding main idea, summarizing, supporting details, synthesizing/making connections, inferences, making generalizations)	
II, IV	2. Code of Ethics	Texas Educators' Code of Ethics TAC§ 247.2 Ethics videos: http://www.youtube.com/playlist?list=PLYCCyVaf2q1vuF3qlz1NjEWFEMtxaBMvC	
I, II, III	3. Child Development	A variety of theories for child development.	
I, II, III,	4. Motivation	A variety of theories & methods appropriate for teaching motivation.	
I, II, III	5. Learning Theories	A variety of learning theories	Final Exam
I, III	6. TEKS Organization,	http://ritter.tea.state.tx.us/teks/http://www.tea.state.tx.us/ click on Testing/ Accountability, click on Texas Essential Knowledge and Skills for much more information.	Lesson
I, III	7. Content TEKS		Misconception Review
I, II, IV	8. State Assessment of Students & STAAR: Testing,	Requirements , responsibilities, scoring, analysis & use of results http://www.tea.state.tx.us/student.assessment/staar/	Son
I, II, III	9. Curriculum Development & Lesson Planning	A variety of theories & methods appropriate for teaching curriculum development & lesson planning.	Lesson
I, III	10. Classroom Assessment and Diagnosing Learning Needs	A variety of theories & methods appropriate for teaching formative assessment to diagnose learning needs & other types of classroom assessment.	Assessment Development
II, IV	11. Classroom Management	A variety of theories & methods appropriate for teaching classroom management.	
I, II, III, IV	12. Special Populations ELPS—English Language Proficiencies http://ritter.tea.state.tx.us/curriculum/biling/elps.html National Assoc. for Gifted Children Teacher Knowledge and Skills http://www.nagc.org/index2.aspx?id=1863 TEA website resources http://ritter.tea.state.tx.us/special.ed	A. ESL/ Bilingual /ELPS : Learning strategies , Listening ,Speaking , Reading & Writing	
		B. G/T: Learner characteristics and development , Instructional strategies, Socio-cultural influences & Identifying GT	
		C. Special Education: Acronyms/Terms , Modifications/ Accommodations, Inclusion, Parent Involvement , Discipline & Mental or emotion disorders including: characteristics of the most prevalent mental or emotional disorders among children, identification of mental or emotional disorders, effective strategies for teaching and intervening with students with mental or emotional disorders, including de-escalation techniques and positive behavioral interventions and support, and notice and referral to a parent or guardian of a student with a mental or emotional disorder so that the parent or guardian may take appropriate action such as seeking mental health services.	
III, IV	13. Parent Conferencing and Communication Skills	A variety of theories and methods appropriate for teaching communication skills & parent conferencing.	
I, III	14. Instructional Technology http://www.sbec.state.tx.us/SBECOnline/standtest/edstancertfieldlevl.asp	SBEC Technology Standards for All Teachers 1. Tech terms, concepts, data input strategies and ethical practices to make informed decisions about tech app 2. Identify task requirements, apply search strategies, use tech to acquire, analyze, and evaluate a variety of information 3. Use technology to synthesize knowledge, create and modify solutions, and evaluate results 4. Communicate in different formats. 5. Plan, organize, deliver and evaluate instruction that uses technology, and technology TEKS for students.	
I, III, IV	15. Pedagogy/ Instructional Strategies	A variety of instructional strategies suitable for all classrooms & for specific subjects and content. http://olc.spsd.sk.ca/DE/PD/instr/index.html	
I, II, III, IV	16. Differentiated Instruction	A variety of instructional strategies suitable for differentiating instruction.	
IV	17. Certification Test Preparation (6 clock hrs required)	Testing study guides, standards, frameworks, competencies, practice tests www.texas.ets.org	
TAC §228.35 & H.B. 2012 Requirements			
I,	Dyslexia: Detection and education of students with dyslexia [TAC RULE §228.35 (4)]	1. Characteristics of dyslexia 2. Identification of dyslexia 3. Effective, multisensory strategies for teaching students with dyslexia Dyslexia Informational Power Point Dyslexia Handbook - English (PDF, 2.45 MB, outside source)	
IV	Legal & Employment Issues	Contract abandonment & the effect of supply & demand forces on the educator workforce in TX (including difficulty of getting jobs in the I 35 Corridor from Dallas/Ft Worth to San Antonio)	
	Status of HBU program	Pass rates & accreditation status	
IV	Teacher & principal evaluation PDAS:: http://www4.esc13.net/pdas/	PDAS:: the purpose & process, what is evaluated, what the evaluation instrument look like, how could you can appeal,: the PDAS Teacher Manual which is required to be given to all teachers.	
I,II,III,IV	Skills & Expectations of Educators	The skills that educators are required to possess, the responsibilities that educators are required to accept, and the high expectations for students in Texas	

Assignment Descriptions and Rubrics

Class work, Homework, Quizzes (10%)

- This assessment category includes activities (individual, small group, and large group) that may take place during class time. Some tasks may require additional outside of the classroom time for completion. Full attendance and participation are expected with complete professionalism. Listed below are specific tasks that are assigned to this grading category.
 - **Quizzes.** Weekly assessments will be administered over the previous lesson content.
 - **Reading/Discussion Activities.** Reading and/or discussion activities or questions may be assigned for chapter and supplemental readings. These are posted in Blackboard or provided as a handout.
 - **Labs:** In class and online simulation labs that reinforce concept mastery will be administered.
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Misconception Review (10%)

There are four main categories in science: Life, Earth, Physical, and Nature of Science. Within each category students may hold beliefs in which some are noted as science misconceptions. Using the Misconception Template and the TEKS as a guide, bring to class 3 common science misconceptions with appropriate content explanations for each category. The explanations should detail the “correct thinking” that falsifies each misconception.

- Nature of science (3)
- Physical science (3)
- Life science (3)
- Earth science (3)

[For example: Misconception- Refraction is when light bounces off of objects in a symmetrical angle. This is false since it is reflection that bounces off of objects in a symmetrical angle. Refraction occurs when light is bent and causing it to spread in various directions such as when light interacts with a prism.]

5E Science Lesson and Presentation (20%)

You and a partner will choose a grade level science topic based on the TEKS to design an inquiry-based 5E science lesson. Approval from the professor regarding the grade level and topic of your choice must be obtained prior to lesson design. The lesson plan must include both the formatted elements as found in the 5E science lesson plan as well as the following:

- Your lesson should include 2 *literature references* (nonfiction or fiction that is related to the lesson topic)
- Describe the *integration of technology* used in the lesson.
- A minimum of 2 *formative assessments* are used in your lesson with an explanation of how they determine student comprehension.

Presentation:

- As a pair, teach a 20 minute section of the 5E lesson to your classroom peers.
- Submit a copy of the lesson plan, a grading rubric, and any other appropriate materials before teaching the lesson to the class.
- Prepare all materials and practice teaching the lesson along with the discussion questions that you might use with the children.
- Actually teach the lesson to the class on the assigned date with all required materials as for teaching a class room of children.
- Be prepared to conduct some “teacher talk” when appropriate during the lesson and after the completion of the lesson. Be sure that the underlying science knowledge and skills (content) is part of the lesson.
- After teaching the lesson, you are to record your personal teaching reflection to be submitted for review at least one week after teaching the lesson.

Science Literature Review (10%)

Choose two science TEKS and identify 2 nonfiction and 2 fiction literature resources that correlate to those standards. Use the Science Literature Template to complete the assignment and give a 2 minute presentation on your findings.

Assessment Development (15%)

Choose a science TEKS to develop an original 10 item assessment. Use the DOK Chart, Assessment Template, and Constructed Response Template for this assignment. Assessment items must be thought of carefully when writing for a particular grade level. For example, if you assess Kindergarten students multiple choice question using pictures with labels for the options should be used instead of words only. Each assessment must include 1 short answer question. Cite the source of each question originally used before it was altered. If images are used cite the source as well.

Note:

- Each multiple choice question should be developed on an Assessment Template thus resulting in 9 Assessment Templates.
 - Only 1 short answer question is required thus resulting in 1 Constructed Response Template.
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Organism Log & YouTube Story (15%)

Write at least 2 self-reflective journal entries per week during the critter project for this assignment. Your journal entries must be thorough and thoughtful including information on your observations, questions, thoughts, and at least 3 experiments that you conducted written in the provided Experiment template. Although there is no length requirement, it is expected that your journal clearly represents your journey with the critters.

Final Exam (20%)

- Details class discussions, chapter readings, and other pertinent material covered in class.

Misconception Rubric

Criteria-Expectation Level	Yes	No	N/A	Points
Content & Organization 20 points each				
1. All (3) misconceptions for the nature of science are present.				
2. All (3) misconceptions for physical science are present.				
3. All (3) misconceptions for life science are present.				
4. All (3) misconceptions for earth science are present				
5. Major points are stated clearly; are supported by specific citations.				

Content Lesson Individual Grade _____

Comments:

Name:

Lesson Topic:

5E Science Lesson Plan Scoring Rubric

Element	Proficient (5-6)	Acceptable (3-4)	Minimal (0-2)	Total
Basic Lesson Components	All components are complete and appropriate.	Some components are complete and appropriate.	Few components are complete and appropriate.	
Misconceptions	Lists misconceptions relevant to the lesson topic with an explanation of correct thinking.	Lists misconceptions relevant to the lesson with a minimal explanation of correct thinking.	Lists misconceptions relevant to the lesson topic that are inadequate or questionable. The explanation of correct thinking is not evident.	
Materials/ Resources/ Technology	A complete inventory of needed materials and resources including the source of supplies not available at typical stores. Technology needs are listed and described.	Inventory is nearly complete and resources are provided. Technology needs are listed.	Inventory is appreciably incomplete and resources are lacking. Technology needs are not listed and described.	
Literature References	Includes 2 literature references that are related to the lesson.	Includes 1 literature reference that is related to the lesson.	Does not include literature references.	
Safety	Safety measures are explained in detail.	Safety measures are briefly explained.	Safety measures are not evident.	
Technology	Technology is integrated within two phases.	Technology is integrated within one phase.	Technology is not integrated within any phase.	
Engage	A clear and complete description of the activities and questions that accomplishes all of the following: Generates interest and curiosity Raises relevant questions Assesses current knowledge Exposes misconceptions	A good description of the activities and questions that accomplishes most of the following: Generates interest and curiosity Raises relevant questions Assesses current knowledge Exposes misconceptions	An incomplete description of the activities and questions that accomplishes only one or two of the following: Generates interest and curiosity Raises relevant questions Assesses current knowledge Exposes misconceptions	
Explore	*A clear complete description of activities that is student-focused, hands-on, inquiry-based, and often done in groups. *Students do many of the following: make observations, collect data, hypothesize, predict, discuss. *Includes numerous questions to probe, guide, and redirect students' thinking or work	*A good description of Activities that is student-focused, hands-on, inquiry-based, and often done in groups. *Students do at least three of the following: make observations, collect data, hypothesize, predict, discuss. *Includes some questions to probe, guide, and redirect students' thinking or work	*An incomplete description of some activities that is not student-focused, hands-on, inquiry-based. *Students do one or two of the following: make observations, collect data, hypothesize, predict, discuss. *Lacks questions to probe, guide, and redirect students' thinking or work	
Explain	*Clearly and completely describes how teacher will facilitate students discussing results of "Explore" activities in their own terms. *Clearly and completely describes how the teacher will facilitate student analysis and explanations based on their evidence. *Provides grade-appropriate scientific explanations and vocabulary.	*A good description of how teacher will facilitate students discussing results of "Explore" activities in their own terms. *A good description of how the teacher will facilitate student analysis and explanations based on their evidence. *Provides good grade-appropriate scientific explanations and vocabulary	*An incomplete description of how teacher will facilitate students discussing results of "Explore" activities in their own terms. *A poor description of how the teacher will facilitate student analysis and explanations based on their evidence . *Inadequate grade-appropriate scientific explanations and vocabulary.	
Elaborate	Clearly and completely describes activities that will encourage students to apply scientific concepts, skills, and vocabulary to new situations as well as possibly modify and improve conceptual understanding. Includes activities for large and/or small groups.	Description of activities is not clear; however the activity is sound and seemingly effective and includes activities for small and/or large groups.	Description is neither clear nor complete OR it is complete and clear but is not sound nor seemingly effective.	
Evaluate	2 varied and creative formative assessments are utilized and explained.	1 formative assessment is utilized and explained.	There are no formative assessments.	
Modifications	Provides accommodations for a wide range of diverse learning needs, (i.e. learning styles, ability levels, multiple intelligences, cultural diversity).	Provides accommodations for a limited range of diverse learning needs.	Does not provide accommodations for diverse learning needs.	
Style	Very clearly written containing only a few grammatical, syntax, and spelling errors.	Clearly written containing some grammatical, syntax, and spelling errors.	Somewhat clearly written containing many grammatical, syntax, and spelling errors.	
Developmentally Appropriate	The procedures and assessments fit the grade level designation of the lesson.	The procedures and assessments are close to the grade level designation of the lesson.	The procedures and assessments do not fit the grade level designation of the lesson.	

5E Science Lesson Presentation Rubric

(Print out 1 sheet per partnership)

Presenters:

Topic:

Date:

Ranking: 5 is the highest; 1 is the lowest score

Criteria	Rating
1. Preparation: To what extent was the lesson planned, prepared, and ready for delivery? <i>Comments:</i>	5 4 3 2 1
2. Delivery: To what extent did the delivery of instruction was interactive, engaging, and provide a concrete experience? <i>Comments:</i>	5 4 3 2 1
3. Teacher Attributes: To what extend did the presenters' verbal, attitudinal, and behavioral actions enhance communication, management, and understanding? <i>Comments:</i>	5 4 3 2 1
4. Comprehension: To what extend did he delivery/presentation make sense? <i>Comments:</i>	5 4 3 2 1
5. Overall Reaction: Rating: <i>Excellent Good Fair with minor problems Unacceptable</i>	
Total	

Science Literature Review Presentation Rubric
(print and submit to instructor prior to presentation)

Criteria-Expectation Level	Yes	No	N/A	Points
20 points each				
1. Two TEKS are noted				
2. The first TEK has 1 nonfiction and 1 fiction literature summary.				
3. The second TEK has 1 nonfiction and 1 fiction literature summary.				
Presentation Is the student professional in the presentation of literature and execution of delivery? 10 points				
1. Organization Presentation of science literature flowed with ease due to proper preparation and rehearsal.				
2. Visual Aids Student displays the books either via electronic or hardback form.				
3. Professional Presence Presents in a professional manner and demeanor.				
4. Delivery Eye contact with audience.				
Total				

Content Lesson Plan Teaching Rubric

Please print a copy of the scoring rubric and attach it to a hard copy of the lesson plan for submission to the instructor.
Submit an electronic form of the lesson plan to Blackboard.

Criteria-Expectation Level	Yes	No	N/A	Points
Content & Organization 50 points				
1. All key elements of the assignments are covered, roles for each partner are apparent, and lesson plan was complete.				
2. The content is comprehensive, accurate, and/or persuasive				
3. The lesson develops a central theme or idea, directed toward the appropriate age child.				
4. Major points are stated clearly; are supported by specific details, examples, or analysis; and are organized logically.				
5. The introduction provides sufficient background and motivates the learner.				
Format & Style 10 points				
1. Paragraph transitions are present and logical and maintain the flow throughout the lesson.				
2. The tone is appropriate to the content and assignment.				
3. Sentences are complete, clear and concise.				
4. Sentences are well-constructed with consistently strong, varied sentences.				
5. Sentence transitions are present and maintain the flow of thought.				
Mechanics 10 points				
1. The lesson plan follows correct formatting (HBU-ECE).				
2. Correctly cite original works within the body of the lesson.				
3. The lesson's layout has effective use of headings, font and size, and white space.				
4. Rules of grammar, usage, and punctuation are followed.				
5. Spelling is correct.				
Presentation Is the student professional in presentation of the lesson and execution of delivery? 30 points				
1. Organization Presentation of lesson flowed with ease due to proper preparation and rehearsal.				
2. Visual Aids Student has an excellent visual aid that is directly related to the lesson.				
The following will be assessed on an individual basis regarding the participation level within the teaching of the lesson.				
3. Professional Presence Presents in a professional manner and demeanor.				
4. Delivery Eye contact with audience.				
5. Mastery of Research Conducted Student shows confidence and mastery of topics/content being taught during entire presentation.				
6. Teacher Talk Appropriate discussion and teacher talk was integrated into the lesson with a very distinct "closure" to the lesson for the learner and for the future teachers.				

- **Submission:** Electronic and hard copy. Please note that your project is NOT considered for grading until it is submitted as directed on the due date. Points will be deducted for late submissions when graded. Be sure that your technology is reliable.
- Each student will print the rubric and submit with ONE copy of the lesson plan for the partnership.

Content Lesson Individual Grade _____

Organism Log

Focus: You will be given an “organism” population. Your task is to carefully observe and record what you see and learn. This population will change over time (a matter of days). **This log is a total of 60 points.**

Directions: The population should be kept at room temperature and is self sustaining. The organisms are not harmful; they do not transmit disease. They are, however, fragile and must be handled with care. The log/diary will be submitted according to the syllabus time frame.

The log should ...

- contain a minimum of 2 observations entries/week, noting changes and/or behaviors of the organisms. The observations should be dated and organized into a systematic format of your choice.
- reflect an “**inquiring mind.**” Communicate questions, feelings, speculations, predictions, and intuitive leaps that you experience as you try to understand and learn about the population. Recordings should indicate that you are, indeed, thinking about what you see.
- contain a number of simple, labeled drawings and sketches that visually communicate observations (Artistic talent is not a requirement; thorough observation is). Illustrations can be scanned and then inserted into an electronic journal.

Organism YouTube Story		
Criteria-Expectation Level	Points	Comments
Presentation of YouTube Items (10 pts each)		
1. Digital story clearly presents your and/or a partnership organism investigation.		
2. Includes quality images and video.		
3. Incorporates a meaningful audio soundtrack.		
4. Shows organism’s journey with detail in a 3 minute maximum time frame.		

Composite Grade _____