	Course	ED 4343 5h1 Elementary Science Methods Grades EC-6
	Professor	Emily Hennessy
	Term	Fall 2025
	Meetings	Tuesdays 7:00-8:15 pm in ML 1.214 and Thursday 10/2 and 11/6

Professor's Contact Information

Office Phone	972-883-4008
Other Phone	contact via UTD email or through eLearning
Office Location	FN 3.218B
Email Address	ehennessy@utdallas.edu
Office Hours	After class or by appointment
Modality	Hybrid

General Course Information

Pre-requisites, Co-requisites, & other restrictions	As prescribed by the Teacher Development Office
Course Description	Science content and science methodologies, including all levels of inquiry-based instruction, appropriate for the EC-6 classroom, based on the Science TEKS and the National Science Standards. Hands-on activities are integrated into the coursework.
Learning Outcomes	<p>*Students will demonstrate the application of science process skills in both written and performance activities with 80% accuracy.</p> <p>*Students will be able to evaluate science content and apply it to the correct learning environment, developing and presenting an appropriate lesson without content errors.</p> <p>*Students will demonstrate pedagogical content knowledge evaluated through a grading rubric and a series of projects with 80% proficiency or better.</p>
Expectations	<ul style="list-style-type: none"> ○ Students will demonstrate the application of science process skills in both written and performance activities with 80% accuracy. ○ Students will be able to evaluate science content and apply it to the correct learning environment, developing and presenting an appropriate lesson without content errors. <ul style="list-style-type: none"> ○ Science Texas Essential Knowledge and Skills (TEKS) ○ Students will demonstrate pedagogical content knowledge evaluated through a grading rubric with 80% proficiency or better. <ul style="list-style-type: none"> ○ Science Texas Essential Knowledge and Skills (TEKS) ○ Students will demonstrate Science Generalist EC-6 Standards throughout the semester ○ Students will demonstrate Technology Texas Essential Knowledge and Skills (TEKS) through the semester ○ Students will demonstrate Pedagogy and Professional Responsibilities (PPR) throughout the semester <ul style="list-style-type: none"> ○ Domain 1- Designing instruction and assessment to promote student learning ○ Domain 2- Creating a positive, productive classroom environment ○ Domain 3- Implementing effective, responsive instruction and assessment ○ Domain 4- Fulfilling professional roles and responsibilities ○ Students will demonstrate T-TESS objectives throughout the semester <ul style="list-style-type: none"> ○ <i>Planning</i> 1.1 Standards and Alignment, 1.4 Activities;

	<ul style="list-style-type: none"> ○ <i>Instruction</i> 2.2 Content Knowledge and Expertise, 2.3 Communication, 2.4 Differentiation, 2.5 Monitor and Adjust; ○ <i>Learning Environment</i> 3.1 Classroom Environment, Routine, and Procedures, 3.2 Managing Student Behavior, 3.3 Classroom Culture; ○ <i>Professional Practices and Responsibilities</i> 4.1 Professional Demeanor and Ethics, 4.2 Goal Setting ○ Students will demonstrate InTASC objectives throughout the semester <ul style="list-style-type: none"> ○ S1 b,d-g; S2 g-K; S3 j,l,m; S4 j-n; S5 a-d,l,m,o,r, s; S6 b,f,j,n,q,r; S7 a,g,k,q,n; S8 a,b,e,f,h,l,o,r; S9 a, g; S10 n, g ○ Students will demonstrate Texas Teacher Standards throughout the semester <ul style="list-style-type: none"> ○ 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D <p>Adhere to: Code of Ethics and Standard Practices for Texas Teachers</p>
Required Materials	-Composition Book (provided) - Laptop or tablet for use with interactive class and online assignment presentations
Suggested Texts, Readings, & Materials	Sciencesaurus, Grades 4-5 <i>Elementary Science Methods: A Constructivist Approach</i> , Sixth Edition, David Jerner Martin <i>Science Notebooks: Writing About Inquiry</i> , Campbell and Fulton <i>Science Is.....</i> , Susan Bosak


5h1 Assignments & Academic Calendar -

[Topics, Assignments, Due Dates, Exam Dates]

Week	Modality	Topic	Science Processes/Concepts and References	Standards/Objectives	Notes
1	In-person Tuesday 8/26	Introduction: What is the Nature of science? Lab Safety	Making Observations Nature of Science (<i>NSTA</i> ; <i>R. Bell</i> ; <i>cognitivism</i> ; <i>J Piaget</i>)	TTS 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k	Go to eLearning Weekly Modules every week. <u>Online activities are due by next class.</u> Assign: Science Autobiography and Science in the News; Science Pretest
	Online in eLearning Weekly Modules	Nature of Science Activity Science Pretest	What is the nature of science? (<i>NSTA</i> ; <i>R. Bell</i> ; <i>cognitivism</i> ; <i>J Piaget</i>)	TTS 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k, 1.11k	
2	In-person Tuesday 9/2	Science Pretest Debrief; Interactive Science Notebooks and Lab Safety	Physical Properties of Matter <i>Science Notebooks: Writing About Inquiry, Campbell and Fulton</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k, 1.11k	Notebooks are provided. Due: Nature of Science Nearpod due and Science Pretest
	Online in eLearning Weekly Modules	Cooperative Learning, SEL and Accountable Talk: Setting up a science classroom	Scientific Processes; the safe and engaging Science classroom (<i>Casel.org, Johnson & Johnson, Kagan</i>)	TTS 1C, 2A, 4A, 6A, 6D PPR 2.1k, 2.2k, 2.3k, 2.4k, 2.5k, 2.23K, 3.9k	
3	In-person Tuesday 9/9	Unpacking the TEKS and Vertical Alignment; 3-dimensional learning with Scientific Engineering and Practices/Process Skills	Forms of Energy TEKS (K-5): Light TEKS (SEPs, RTCs content); Other TEKS exploration; Lesson Internalization	TTS 1A, 1B, 1C, 3A, 3B, 3C, 5A, 6A, 6D PPR 1.7-1.11k, 4.3k,1.12-1.15k, 1.30k	Due: Science Autobiography Due: Cooperative Learning and SEL in a Science Classroom Nearpod
	Online in eLearning Weekly Modules	Tools in the TEKS and Measurement	Science Tools and Safety Equipment;	TTS 1A, 1B, 1C, 3A, 3B, 3C, 4A, 5A, 6A, 6D	

			Mass, density and volume; <i>TEKS</i> Scientific Processes (<i>NSTA; constructivism</i>)	PPR 1.7-1.11k, 4.3k, 1.12-1.15k, 1.30k	
4	In-person Tuesday 9/16	Inquiry-based Instruction; The Inquiry Continuum	Force and Motion (<i>Bianchi & Bell's Levels of Inquiry model; NSTA</i>); <i>The Science of Learning with constructivism and direct teaching</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.2k, 1.4k, 1.11k, 1.20k	Due: Tools in the TEKS and Measurement Nearpod
	Online in eLearning Weekly Modules	Inquiry-based Instruction and Science Process Skills	Force and Motion (<i>Bianchi & Bell's Levels of Inquiry model; NSTA</i>); <i>science Process skills; The Science of Learning</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.2k, 1.4k, 1.11k, 1.20k	
5	In-person Tuesday 9/23	Writing and Sense-making in Science – Short Constructed Response CER – Claim Evidence Reasoning Critical Thinking in Science with STAAR Station	<i>States of Matter (NSTA; ADI)</i> <i>Life, Earth, & Physical Science TEKS</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 3.12-14k	Due: Inquiry Nearpod
	Online in eLearning Weekly Modules	Supporting Academic Language with Vocabulary Development and Discourse	Science terms, syntax, functions, grammar, Cycles and Systems (<i>S. Krashen, J. Seidlitz, R. Marzano</i>) <i>Life, Earth, & Physical Science TEKS</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.3-1.6k, 2.1k	
6	In-person Tuesday 9/30	Science Center Work Session – Plan and Prep	Life, Earth, & Physical Science <i>TEKS</i> ; Scientific Processes (<i>NSTA; constructivism; Lesson Internalization</i>)	TTS 1A, 1B, 1C PPR 1.7k, 1.11k, 3.5-3.9k, 3.11k	Due: Academic Language and Vocabulary Nearpod
	Meet on Thursday, 10/2 at the same time in our classroom.	Science Center Prep day	Life, Earth, & Physical Science <i>TEKS</i>	TTS 1A, 1B, 1C PPR 1.7k, 1.11k, 3.5-3.9k, 3.11k	Meet in classroom at 7:00 pm.
7	In-person Tuesday 10/7	Center Expo in-class	Life, Earth, & Physical Science <i>TEKS</i> <i>States of Matter (NSTA; ADI)</i> <i>Life, Earth, & Physical Science TEKS</i>	TTS 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.7k, 1.11k	Due: Completed Science Center
	Online in eLearning Weekly Modules	Science Center Self-Reflection Activity		TTS 1A, 1B, 1C, 2A, 4A, 5A	

8	In-person Tuesday 10/14	Differentiation in a Science Classroom: Reaching ALL learners	<i>Life Cycles (complete and incomplete metamorphosis) (TEKS; Project Wild; F. Froebel) (C. Tomlinson and K. Moon)</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.3-1.6k, 3.5-3.9k, 3.11k	Due: Completed Science Center self-reflection Assign: Live Insect observation
	Online in eLearning Weekly Modules	Differentiation Continued	<i>Inherited and Learned Traits (C. Tomlinson and K. Moon)</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.3-1.6k, 3.5-3.9k, 3.11k	
9	In-person Tuesday 10/21	Formative and Summative Assessment in a Science Classroom	<i>Circuits and Systems (Page Keeley; Robert Marzano); STAAR 2.0</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.3-1.6k, 1.7-1.15k, 1.16-1.24k	Due: Differentiation Nearpod
	Online in eLearning Weekly Modules	Common: Misconceptions – How do you know it's right?	<i>Life, Earth, & Physical Science TEKS</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k, 1.9k 1.16k, 1.29k	
10	In-person Tuesday 10/28	Addressing and Avoiding Misconceptions – How do you know it's right? Assign Concept Statement.	Moon Phases (NSTA) <i>Reasons for the Seasons (NSTA)</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k, 1.9k 1.16k, 1.29k	Due: Misconception Nearpod
	Online in eLearning Weekly Modules	Work on paper.	<i>Avoiding misconceptions</i>	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k, 1.9k 1.16k, 1.29k	Concept statement due by next class.
11	In-person Tuesday 11/4	5E Lesson Cycle Demo; Assign TEKS, overview of materials and outline (*Explore activity provided by the instructor)	Mixtures and Solutions (BSCS 5E Instructional Model; Rodger Bybee; <i>constructivism with direct teaching; TEKS; Lesson Internalization</i>)	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.3-1.6k, 1.7-1.15k, 1.16-1.24k, 1.28k, 3.5-3.9k, 3.11k	Concept statement due by 11:59 pm.
	Meet on Thursday, 11/6 at the same time in the classroom.	5E Lesson Cycle Continued	Sedimentary Rock formation 5E lesson example (BSCS 5E Instructional Model; Rodger Bybee; NSTA; <i>constructivism</i>) Life, Earth, & Physical Science TEKS	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.3-1.6k, 1.7-1.15k, 1.16-1.24k, 1.28k, 3.5-3.9k, 3.11k	Meet in classroom at 7:00 pm.
12	In-person Tuesday 11/11	5E Lesson Development for final exam prep;	Life, Earth, & Physical Science TEKS; (BSCS 5E Instructional Model; Rodger Bybee; <i>constructivism</i>)	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.8k, 1.16k, 1.26k, 1.30k	Due: First attempt at 5E Lesson Plan by 11:59 pm (written portion)

	Online	5E Science Lesson Preparation; Edit Phase	STAAR, Authentic Assessment and Rubrics Science Concepts (G. Wiggins, NSTA)	TTS 1A, 1B, 1C, 5A PPR 1.26k, 1.30k	Rehearse with your team. Edits due before next class.
13	In-person Tuesday 11/18	Science In-class lesson presentations of Engage and Explore (counts towards final exam)	Science Methods and Concepts; Question development (B. Bloom)	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.6-1.11s	Due: Revised 5E Lesson Plan BEFORE class (written portion)
	Online in eLearning Weekly Modules	Complete Lesson Reflection (counts towards final exam)	Science Concepts and Methods	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.24k	
	Fall	Break	Happy	Thanksgiving	
14	In-person Tuesday 12/2	Science In-class lesson presentations of Engage and Explore (counts towards final exam)	Science Methods and Concepts; Question development (B. Bloom)	TTS 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.6-1.11s	
	Online in eLearning Weekly Modules	Complete Lesson Reflection (counts towards final exam)	Science Concepts and Methods	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.24k	
15	In-person Tuesday 12/9	Final Review – Putting it all together	Science Methods and Concepts	TTS 1A, 1B, 1C, 2A, 3A, 3B, 3C, 4A, 5A, 6A, 6D PPR 1.24k	Due: Science Notebook (final check) Due: Live insect observation journal slides or notebook entry

Course Policies

Grading (credit) Criteria	In-person activities – 20% 200 points All in-class activities will count towards your grade. Must be present in class to receive credit.
	Online Lessons with embedded activities - 20% 200 points Each week will consist of an online interactive presentation with embedded activities. Points vary per week.
	Science Autobiography – 5% 50 points In an essay format, describe your experiences with science. What were your experiences in school, with family, or on your own? Positive and negative experiences need to be discussed. Spelling and grammar will be graded.
	Science in the News – 5% 50 points There are important science events in the news every day. Learning and understanding these events helps us to become a more scientifically literate society. This assignment will be a "group" effort. You will select a presentation date and a partner in the first week of class. Two presentations will be given at the beginning of each designated class period. Guidelines and grading rubric will be provided. Articles can be obtained science magazines and internet sites. See guidelines for further information. Spelling and grammar will be graded.
	Teacher Background Information (science content paper) - 5% 50 points In order to teach science accurately, one must have a working knowledge of the content. This exercise will help you understand the content behind the lesson you will develop for this class. Guidelines will be given. Papers will be submitted to turnitin.com to be screened for academic integrity. Spelling and grammar will be graded.

	<p>Live Insect Observation – 5% 50 points Bringing real-life experiences into the classroom is an integral part of science education. You will be given a live insect to observe and will record and illustrate the changes in its life cycle. Specific instructions will be given in class.</p> <p>Science Notebook - 10% 100 points You will record all lab work and online work throughout the semester in a science notebook. Your science notebook should be well organized and should include recordings from the hands-on lessons done in class. Your notebook might checked at midterm (50 points) and again at the final exam (50 points).</p> <p>Lesson Development and Presentation - 20% 200 points You will be assigned one of the three basic science areas from which to develop a lesson. One third of the class will present lessons in physical science, one third in life science, and one third in earth science. Your lesson content will be assigned according to the TEKS. All copies of your lessons will be submitted electronically through the eLearning. Lessons will be done in Word format following the outline and sample lessons provided. All lessons, upon completion, will be posted on eLearning. You will be responsible for the content presented by your peers. You will be filmed during your presentation and required to complete a self-evaluation, due a week after your presentation. Your grade will be based on the following: written lesson (40%), instructor assessment of presentation (35%), self-assessment of presentation (15%), and peer assessment of presentation (10%).</p> <p>Science Center – 10% 100 points You will be creating a science center that will be aligned to a TEKS assigned to you. This will be a collaborative activity with an included self-reflection.</p> <p>Total: 1000 points You will accrue a maximum of 1000 points for the semester. Grades will be assigned as follows:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>970-1000: A+</td> <td>870-899: B+</td> <td>770-799: C+</td> </tr> <tr> <td>930-969: A</td> <td>830-869: B</td> <td>730-769: C</td> </tr> <tr> <td>900-929: A-</td> <td>800-829: B-</td> <td>700-729: C-</td> </tr> </table> <p>Grammar and spelling will be considered in the grading of all written work. One point will be deducted for each spelling/grammar error. Be aware that Spell Check does not catch everything. It is advisable to have someone proofread any papers before they are handed in.</p>	970-1000: A+	870-899: B+	770-799: C+	930-969: A	830-869: B	730-769: C	900-929: A-	800-829: B-	700-729: C-
970-1000: A+	870-899: B+	770-799: C+								
930-969: A	830-869: B	730-769: C								
900-929: A-	800-829: B-	700-729: C-								
<p style="text-align: center;">Extra Credit</p>	<p>Opportunities for extra credit may become available throughout the semester. These opportunities usually involve attending workshops or working in a science classroom. Students may complete one extra credit opportunity during the semester for a maximum of 10 points. A one-page write-up of the experience is required and must be turned in one week after the experience has been completed. Further, any errors in grammar and spelling found in work passed out by the instructor will result in one extra point for each error found.</p>									
<p style="text-align: center;">Late Work</p>	<p>Late work will be accepted with a 10% deduction in the grade for each day an assignment is late. This begins at the time the class ends on the assignment due date.</p>									
<p style="text-align: center;">Class Attendance</p>	<p>Regular attendance and punctuality are critical to the collaborative learning environment and to your comprehension of the material being presented. If you have an emergency and cannot attend class, notify me prior to class. One point per class missed will be deducted from the final grade at the discretion of the professor. Points are also deducted for the in-class activities that are missed due to absence or tardiness (see above).</p>									

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Note:

- (a) Texas Senate Bill 17, the recent law that prohibits diversity, equity, and inclusion programs and activities at public universities in Texas, does not in any way apply to academic course instruction.**

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the AccessAbility Resource Center has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Classroom Citizenship

Respectful interaction between peers is expected.

Accommodations for Students with Disabilities

Please review [the section](#) within the UT Dallas Syllabus Policies and Procedures webpage.

Academic Support Resources

Please visit the [Academic Support Resources](#) page to view the University's academic support resources for all students.

UT Dallas Syllabus Policies and Procedures

Please visit the [Syllabus Policies](#) page to view the University's policies and procedures segment of the course syllabus.

Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Technology needed for ED 4343:

You will need a tablet or laptop/desktop computer. A phone will work as well, but it might be difficult to type into Nearpod (an interactive online platform I use for weekly presentations and lessons). If you are having issues accessing technology or WIFI, please let me know and we will figure out an alternative.

TECHNICAL REQUIREMENTS for Online Learning

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the eLearning website.

Please see the course access and navigation section of the [Getting Started with eLearning](#) webpage for more information. To become familiar with the [eLearning](#) tool, please see the [Student eLearning Tutorials](#) webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the Student eLearning Tutorials webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the [eLearning Current Students](#) webpage for more information.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.