EDEE 3330	
TEACHING SCIENCE EC-6	
Instructor Dr. Christopher S. Long	**Pronouns** He/Him/His
Office location Matthews Hall 218C	**Office hours** **TR 3:30 to 5:00**, **W 1:00 to 2:30 or by appointment**
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DEPARTMENT OF TEACHER EDUCATION AND ADMINISTRATION: PREPARING TOMORROW'S EDUCATORS AND SCHOLARS

The **Department of Teacher Education and Administration** seeks to improve educational practice through the generation of knowledge and to prepare education professionals who serve all students in an effective, inclusive and equitable manner. Its focus is on the preparation of highly competent educators, researchers and administrators who employ current theory and research as they fill these important roles.

Mission
    The Department of Teacher Education and Administration integrates theory, research, and practice to generate knowledge and to develop educational leaders who advance the potential of all learners.

Vision
    We aspire to be internationally recognized for developing visionary educators who provide leadership, promote social justice, and effectively educate all learners.

COURSE PREREQUISITES
Admission to the teacher education program, which includes participation in a field-based program, EDEE 3320, 3380; all courses in the reading/English/language arts part of the academic major (visual art, music, and theatre arts); and required core and academic major science courses and DFST classes. This course is to be taken in the professional year.

CATALOGUE DESCRIPTION
EDEE 3330: 3 hours. Science Grades EC-6
Subject matter background and material organization for an integrated science program in the primary/elementary school. Students experience firsthand the scope and sequence of science education in an elementary school setting. Students assignments and discussions are grounded in creating lesson plans and experiences inclusive of marginalized communities with a focus in bringing social justice and activism into the science classroom.

COURSE GOALS
 Upon successful completion of the course activities students will be able to:
1. Demonstrate professional skills, knowledge, and attitudes as outlined in the Texas Teachers Proficiencies Identify science materials and lessons to address the appropriate Science Content contained in the Texas Essential Knowledge and Skills.

2. Plan, develop, and implement inquiry-learning activities that follow accepted practice of inquiry-based science in the 5E format.

3. Select (and adapt if necessary) activities and lessons from various resources to an appropriate style and sequence based on science education research.

4. Organize and manage a safe hands-on approach to science instruction.

5. Make connections between social justice and activism in teaching and learning how to be a science educator.

6. Demonstrate an understanding of the true nature of serving underrepresented and marginalized populations through lesson planning and creating equal opportunities.

Pedagogy and Professional Responsibility Standards (PPR)

- Knows and understands the importance of the state content and performance standards as outlined in the TEKS.
- Uses the TEKS to plan instruction.
- Knows and understands the importance of designing instruction that reflects the TEKS through Grade 6.
- Plans instructional activities that progress sequentially and support stated instructional goals based on the TEKS through Grade 6.
- Knows the connection between the statewide Texas assessment program, the TEKS through Grade 6, and instruction.
- Standard I: Domain I: Competency 001-004 Domain III: Competency 007-010: The teacher designs instruction appropriate for all students that reflects an understanding of relevant content and is based on continuous and appropriate assessment.
- Standard II: Domain II: Competency 005-006: The teacher creates a classroom environment of respect and rapport that fosters a positive climate for learning, equity and excellence.
- Standard III: Domain III: Competency 007-010: The teacher promotes student learning by providing responsive instruction that makes use of effective communication techniques, instructional strategies that actively engage students in the learning process and timely and high-quality feedback.
- Standard IV: Domain IV: Competency 011-013: The teacher fulfills professional roles and responsibilities and adheres to legal and ethical requirements of the profession.
- Technology Applications Standard I: Domain III: Competency 007-010: All teachers use technology-related terms, concepts, data input strategies and ethical practices to make informed decisions about current technologies and their applications.
- Technology Applications Standards II: Domain III: Competency 007-010: All teachers identify task requirements, apply search strategies and use current technology to efficiently acquire, analyze and evaluate a variety of electronic information.
- Technology Applications Standard III: Domain III: Competency 007-010: All teachers use task-appropriate tools to synthesize knowledge, create and modify solutions and evaluate results in a way that supports the work of individuals and groups in problem-solving situations.
- Technology Applications Standard IV: Domain III: Competency 007-010: All teachers communicate information in different formats and for diverse audiences.
- Technology Applications Standard V: Domain III: Competency 007-010: All teachers know how to plan, organize, deliver and evaluate instruction for all students that

incorporates the effective use of current technology for teaching and integrating the Technology Applications Texas Essential Knowledge and Skills.

Curriculum Topics

- Code of Ethics per Chapter 247: Domain II, IV
- TEKS organization, structure, and skills: Domain I, III
- State assessment of students (STARR Responsibilities): Domain I, II, IV
- Curriculum development and lesson planning: Domain I, II, III
- Classroom assessment for instruction/diagnosing learning needs: Domain I, III
- Instructional technology: Domain I,III
- Pedagogy/Instructional strategies: Domain I, III, IV
- Differentiated instruction: Domain I, II, III, IV
- Classroom Management: Domain II, IV

REQUIRED FIELD HOURS If Applicable

Prerequisite(s): admission to the teacher education program, which includes participation in a field-based program, EDEE 3320, 3380; all courses in the reading/English/language arts part of the academic major (visual art, music, and theatre arts); and required core and academic major science courses. This course is to be taken PDS1.

REQUIRED TEXTBOOKS AND/OR MATERIALS

There are no textbooks for this course. All course readings are available online.

ATTENDANCE EXPECTATIONS

As the course involves frequent laboratory experiences, attendance to all class meetings is required except as noted by UNT Policy 06.039.

COURSE ASSIGNMENTS

	Required Assignments	Points	
1.	Class attendance: Participation	15	**Grading** **Course grade matrix:** **(for assigning final course grades)**
2.	**Science Journal Entry 1**: Modifying the Draw-a-Scientist Activity in the Elementary Classroom	5	
3.	**Science Journal Entry 2**: Me an Ambitious Science Teacher	5	
4.	**Science Journal Entry 3**: Culturally Sustaining Pedagogy in the Science Classroom	5	
5.	**Science Journal Entry 4**: My Social Justice Identity	5	**100% – 90% = A,**
6.	**Science Journal Entry 5**: Re-imaging the Elementary Science Teacher	5	**89% – 80% = B,**
7.	Draw-A-Scientist	30	
8.	Science Safety Quiz	35	**79% – 70% = C,**
9.	Deconstruct and Revise: Physical Science Lesson	35	
10.	Deconstruct and Revise: Life Science Lesson	35	**69% – 60% = D,**
11.	Deconstruct and Revise: Earth and Space Science Lesson	35	
12.	**Presentation:** My Social Justice Identity in My Future Science Classroom	15	**below 60% = F**
13.	Final Exam	50	
		240	
		100%	

STUDENT EVALUATION
Students will be evaluated on their individual assignments worth 80 % and the final exam worth 20%.

NOTE: This Syllabus is provided for informational purposes regarding the anticipated course content and schedule of this course. It is based upon the most recent information available on the date of its issuance; it is as accurate and complete as possible. I reserve the right to make any changes I deem necessary and/or appropriate.

UNT'S STANDARD SYLLABUS STATEMENTS
Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

ADA Accommodation Statement. UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu. (UNT Policy 16.001)

Course Safety Procedures (for Laboratory Courses). Students enrolled in [insert class name] are required to use proper safety procedures and guidelines as outlined in UNT Policy 06.038 Safety in Instructional Activities. While working in laboratory sessions, students are expected and required to identify and use proper safety guidelines in all activities requiring lifting, climbing, walking on slippery surfaces, using equipment and tools, handling chemical solutions and hot and cold products. Students should be aware that the UNT is not liable for injuries incurred while students are participating in class activities. All students are encouraged to secure adequate insurance coverage in the event of accidental injury. Students who do not have insurance coverage should consider obtaining Student Health Insurance. Brochures for student insurance are available in the UNT Student Health and Wellness Center. Students who are injured during class activities may seek medical attention at the Student Health and Wellness Center at rates that are reduced compared to other medical facilities. If students have an insurance plan other than Student Health Insurance at UNT, they should be sure that the plan covers treatment at this facility. If students choose not to go to the UNT Student Health and Wellness Center, they may be transported to an emergency room at a local hospital. Students are responsible for expenses incurred there.

Emergency Notification & Procedures. UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus

closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course.

Student Evaluation Administration Dates. Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via *IASystem* Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey, they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website at www.spot.unt.edu or email spot@unt.edu.

Sexual Assault Prevention. UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648.

Acceptable Student Behavior. Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at deanofstudents.unt.edu/conduct.

Course Policies
Face Coverings
UNT encourages everyone to wear a face covering when indoors, regardless of vaccination status, to protect yourself and others from COVID infection, as recommended by current CDC guidelines. Face covering guidelines could change based on community health conditions.

Attendance
Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.
 If you are experiencing any symptoms of COVID-19 (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) please seek medical attention from the Student Health

and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Team at COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure.

Course Materials for Remote Instruction
Remote instruction may be necessary if community health conditions change or you need to self-isolate or quarantine due to COVID-19. Students will need access to a [webcam and microphone – faculty member to include what other basic equipment is needed] to participate in fully remote portions of the class. Additional required classroom materials for remote learning include: [list specific software, supplies, equipment or system requirements needed for the course]. Information on how to be successful in a remote learning environment can be found at https://online.unt.edu/learn

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DEPARTMENT SYLLABUS STATEMENTS
Foliotek ePortfolio (where applicable). Foliotek is a software data management system (DMS) used in the assessment of your knowledge, skills, and dispositions relevant to program standards and objectives. You will be required to use your Foliotek account for the duration of your enrollment in the College of Education in order to upload required applications, course assignments, and other electronic evidences/evaluations as required. This course may require assignment(s) to be uploaded and graded in Foliotek. The College of Education will track your progress in your program through this data to verify that you have successfully met the competencies required in your program of study. All students must register in the program portfolio that aligns with their degree plan. Registration codes and tutorials can be found on this site: https://coe.unt.edu/educator-preparation-office/foliotek

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EDUCATOR STANDARDS
In order to recommend a candidate to the Texas Education Agency, the UNT Educator Preparation Program curriculum includes alignment to standards identified by the State Board of Educator Certification (SBEC). These standards are assessed throughout your preparation and through the TExES Certification exams required for your teaching certificate. The Texas State Board for Educator Certification creates standards for beginning educators. These standards are focused upon the Texas Essential Knowledge and Skills, the required statewide school curriculum. Additionally, the Commissioner of TEA has adopted rules pertaining to Texas teaching standards:

TEXAS TEACHING STANDARDS
Standards required for all Texas beginning teachers fall into the following 6 broad categories:
(1) Standard 1--Instructional Planning and Delivery.
   a. Standard 1Ai,ii,iv
   b. Standard 1Bi,ii (Lesson design)
(2) Standard 2--Knowledge of Students and Student Learning
(3) Standard 3--Content Knowledge and Expertise
(4) Standard 4--Learning Environment

(5) Standard 5--Data-Driven Practice

(6) Standard 6--Professional Practices and Responsibilities

Full description of the standards and competencies can be accessed using this link: Texas Teaching Standards Adopted in Chapter 149

EDUCATOR STANDARDS FOR EC-6 CORE SUBJECTS:
A full description of the standards and competencies can be accessed using this link:
https://tea.texas.gov/texas-educators/preparation-and-continuing-education/approved-educator-standards

SCIENCE GENERALIST EC–6 STANDARDS
- Standard I. The science teacher manages classroom, field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens.
- Standard II. The science teacher understands the correct use of tools, materials, equipment, and technologies.
- Standard III. The science teacher understands the process of scientific inquiry and its role in science instruction.
- Standard IV. The science teacher has theoretical and practical knowledge about teaching science and about how students learn science.
- Standard V. The science teacher knows the varied and appropriate assessments and assessment practices to monitor science learning.
- Standard VI. The science teacher understands the history and nature of science.
- Standard VII. The science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions.
- Standard VIII. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in physical science.
- Standard IX. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in life science.
- Standard X. The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in Earth and space science.
- Standard XI. The science teacher knows unifying concepts and processes that are common to all sciences.

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS
The following TEKS are addressed in this course. The Texas Essential Knowledge and Skills can be accessed on the Texas Education Agency Web site using the A-Z index at the following URLS:

- Science TEKS, Texas Administrative Code, Chapter 112 Science | Texas Education Agency

ENGLISH LANGUAGE PROFICIENCY STANDARDS (ELPS)
This course incorporates the ELPS in lesson planning and instructional delivery in order to improve language acquisition and content area knowledge of students who are English learners. The ELPs will be implemented by teacher candidates during instruction of the subject area for students who are English learners. The ELPs can be accessed via the Texas Education Agency using the following link: http://ritter.tea.state.tx.us/rules/tac/chapter074/ch074a.html#74.4.

TEXAS COLLEGE AND CAREER READINESS STANDARDS
The Texas College and Career Readiness Standards can be accessed at the Texas Higher Education Coordinating Board Web site using the following link: http://www.thecb.state.tx.us/index.cfm?objectid=EADF962E-0E3E-DA80-BAAD2496062F3CD8

TECHNOLOGY APPLICATIONS
Technology Applications (All Beginning Teachers, PDF) The first seven standards of the Technology Applications EC-12 Standards are expected of **all** beginning teachers and are incorporated in to the Texas Examination of Educator Standards (TExES) Pedagogy and Professional Responsibilities (PPR) test.

Technology Applications Standards
- Standard I. All teachers use and promote creative thinking and innovative processes to construct knowledge, generate new ideas, and create products.
- Standard II. All teachers collaborate and communicate both locally and globally to reinforce and promote learning
- Standard III. All teachers acquire, analyze, and manage content from digital resources. Standard IV. All teachers make informed decisions by applying critical-thinking and problem-solving skills.
- Standard V. All teachers practice and promote safe, responsible, legal, and ethical behavior while using technology tools and resources.
- Standard VI. All teachers demonstrate a thorough understanding of technology concepts, systems, and operations.
- Standard VII. All teachers know how to plan, organize, deliver, and evaluate instruction for all students that incorporates the effective use of current technology for teaching and integrating the Technology Applications Texas Essential Knowledge and Skills (TEKS) into the curriculum. Standard VIII. The computer science teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital

citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential Knowledge and Skills (TEKS) in computer science, in addition to the content described in Technology Applications Standards I–V.

- Standard IX. The digital forensics teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential Knowledge and Skills (TEKS) in digital forensics, in addition to the content described in Technology Applications Standards I–V.

- Standard X The digital art/animation teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential Knowledge and Skills (TEKS) in digital art/animation, in addition to the content described in Technology Applications Standards I–V.

- Standard XI. The robotics teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential Knowledge and Skills (TEKS) in robotics, in addition to the content described in Technology Applications Standards I–V.

- Standard XII. The digital communications teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential Knowledge and Skills (TEKS) in digital communications, in addition to the content described in Technology Applications Standards I–V.

- Standard XIII. The Web design teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential Knowledge and Skills (TEKS) in Web design, in addition to the content described in Technology Applications Standards I–V.

- Standard XIV. The game/application development teacher has the knowledge and skills needed to teach the creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts strands of the Technology Applications Texas Essential

Class Attendance: Participation & Professionalism

Active Participation Grade Rubric:

Points	Attendance	Preparedness	Participation
10	Present and Prompt.	*Has clearly read the reading assignments prior to class; has reflected upon them and is prepared to discuss them.	In small and large group discussions, participates frequently and appropriately. Comments are insightful and contribute positively to the discussion. Respects and listens to the perspectives and ideas of classmates.
8	Arrives within the 10 minutes of class.	Has clearly read the reading assignments prior to class; has reflected upon them and or is moderately prepared to discuss them.	In small and large group discussions, sometimes participates, and participations is generally appropriate. Comments are sometimes insightful and contribute positively to the discussion. Generally though, not always respects and listens to the perspectives and ideas of classmates.
6	More than 10 minutes late to class	Has skimmed the reading assignments or has not read them, and is clearly unprepared to discuss them.	Does not participate in class discussions, or participation is inappropriate. Comments are off-topic or otherwise do not contribute positively to class discussion.
0	Absent from class		

Lesson Plan Assignments

Three Lesson Plans

For this course you will deconstruct and revise three science lessons using the provided **Science Lesson Plan Template** –

	Science Discipline	Science Lesson
1.	**Physical Science**	Hurley, S. J., Murray, A. L., & Cormas, P. (2014). Friction in Different Languages. *Science & Children*, *51*(8), 36–40.
2.	**Life Science**	McCormick, M., & Lee, C. (2020). Frogs need homes and other ecological lessons: Learning about and building habitats for amphibians. *Science & Children*, *57*(9), 54–59.
3.	**Earth & Space Science**	Schneider, L. B., & Farren, F. (2020). Soil Texture 5E: Primary students learn about observing properties without leaving the schoolyard. *Science & Children*, *58*(1), 32–37.

Specific Instructions:

Deconstruct:
Read the assigned science lesson plan carefully.
Using the Science Lesson Plan Template

1. *List the appropriate TEKS.*
2. *List the science content described in the lesson.*
3. *List the objectives stated and described in the lesson.*
4. *List the relevant ELPS described in the lesson: Reading, Writing Listening, Speaking.*
5. *List the relevant TX CCRS.*
6. *Diagnostic Assessment/s: List the name/s of the diagnostic assessment/s described in the lesson.*
7. *Formative Assessments: List the name/s of the formative assessment/s described in the lesson.*
8. *Summative Assessment: List the name of the summative assessment described in the lesson.*
9. *List the safety rules and regulations described in the lesson.*
10. Engage Phase: *Briefly describe how students' prior knowledge is assessed.*
11. Explore Phase: *Briefly describe the inquiry activity.*
12. Explain Phase: *Briefly describe the students' Explain activity.*
13. Explain Phase: *Briefly describe the teacher's Explain activity.*
14. Elaborate: *Briefly describe the activity/activities within which students apply their newly constructed science content knowledge.*
15. Evaluate: *Briefly describe the evaluation activity/activities.*
16. *Briefly describe the* ELL strategies described and used in Engage, Explore, Explain, Elaborate, and Evaluate where appropriate. ***If there are no ELL strategies described and used, please list and describe TWO appropriate modifications.***
17. *List and describe the appropriate accommodation, modifications, adaptations in relation to Diversity and Equity Used in Engage, Explore, Explain, Elaborate, and Evaluate where appropriate.* ***If there are no appropriate accommodation, modifications, adaptations in relation to Diversity and Equity described and used, please list and describe TWO appropriate modifications.***
18. *List all materials used to teach the science content described in the lesson.*

Revise:
19. ***If there are no ELL strategies described and used, please list and describe TWO appropriate modifications.***
20. ***If there are no appropriate accommodation, modifications, adaptations in relation to Diversity and Equity described and used, please list and describe TWO appropriate modifications.***

For the Revise, please use the following readings and/or the assigned textbook to *list and describe TWO appropriate modifications: (ALL READINGS ARE AVAILABLE IN CANVAS)*

Greenberg, D. (2017). Why science teachers should care about social justice. I wonder: Rediscovering School Science 1 (3), 70-73.

Hurley, S. J., Murray, A. L., & Cormas, P. (2014). Friction in Different Languages. *Science & Children*, *51*(8), 36–40.

Irizarry, J. G. (2015). What Latino Students Want from School. *Educational Leadership*, *72*(6), 66.

Marsh, V. L., & Nelms, S. (2020). How STUDENT VOICE Transformed East High: A struggling school put student voice at the center of its turnaround. The results speak for themselves. *Educational Leadership*, *77*(6), 60.

McCormick, M., & Lee, C. (2020). Frogs need homes and other ecological lessons: Learning about and building habitats for amphibians. *Science & Children*, *57*(9), 54–59

Nunez-Eddy, E., Xue Wang, & Ying-Chih Chen. (2018). Engaging in Argumentation: Strategies for early elementary and English language learners. *Science & Children*, *56*(2), 51–59.

Okhee Lee. (2020). Making Everyday Phenomena Phenomenal: Using phenomena to promote equity in science instruction. *Science & Children*, *58*(1), 56–61.

Rebora, A. (2019). Turn and Talk. *Educational Leadership*, *77*(3), 12.

Schneider, L. B., & Farren, F. (2020). Soil Texture 5E: Primary students learn about observing properties without leaving the schoolyard. *Science & Children*, *58*(1), 32–37.

Tan, E., Barton, A. C., & Schenkel, K. (2018). Equity and the Maker Movement: Integrating children's communities and social networks into making. *Science & Children*, *55*(7), 76–81.

Thornburgh, W., McFadden, J., & Robinson, B. (2020). The Sixth E: Incorporating engineering into a 5E learning cycle on matter. *Science & Children*, *57*(6), 51–57.

Villegas, A. M., & Lucas, T. (2007). The Culturally Responsive Teacher. *Educational Leadership*, *64*(6), 28.

Science Lesson Plan Template (Total: 35 Points)

Relevant TEKS
List the appropriate TEKS. (1 point)

Science Content (Big Ideas: Definitions, Facts, Process/Integrated Skills, Explanations, etc.)
List the science content described in the lesson. (1 point)

Learning Objective(s):
List the objectives stated and described in the lesson. (1 point)

Relevant ELPS - Language Objective(s):
List the relevant ELPS described in the lesson: Reading, Writing Listening, Speaking. (1 point)

Relevant TX CCRS:
List the relevant TX CCRS. (1 point)

Assessments:
Diagnostic Assessment/s: List the name/s of the diagnostic assessment/s described in the lesson. (1 point)
Formative Assessments: List the name/s of the formative assessment/s described in the lesson. (1 point)
Summative Assessment: List the name of the summative assessment described in the lesson. (1 point)

5E Learning Cycle:	
List the safety rules and regulations described in the lesson. (1 point)	
Engage	*Briefly describe how students' prior knowledge is assessed. (2 points)*

Explore	*Briefly describe the inquiry activity. (2 points)*
Explain	*Briefly describe the students' explain activity. (2 points)*
	Briefly describe the teacher's explain activity. (2 points)
Elaborate	*Briefly describe the activity/activities within which students apply their newly constructed science content knowledge. (2 points)*
Evaluate	*Briefly describe the evaluation activity/activities. (2 points)*

Language Modification(s):
Briefly describe the **ELL strategies described and used in Engage, Explore, Explain, Elaborate, and Evaluate where appropriate.** *If there are no ELL strategies described and used, please list and describe TWO appropriate modifications.* *(5 points)*
Diversity and Equity (Accommodations, Modifications, Adaptations)
List and describe the appropriate accommodation, modifications, adaptations in relation to Diversity and Equity Used in Engage, Explore, Explain, Elaborate, and Evaluate where appropriate. *If there are no appropriate accommodation, modifications, adaptations in relation to Diversity and Equity described and used, please list and describe TWO appropriate modifications.* *(5 points)*
Materials and Resources:
List all materials used to teach the science content described in the lesson *(4 points)*

Class Meeting	Topic/Lecture/Activity/Assignments Due Dates	Readings:
1	**Topic:** Course Introduction and Class Canvas Science Instruction - The Basics Standards, Current Policies, Theories, and Strategies	
	Activity: Introduction to: • Social Justice in Science Education	
2	**Topic:** Draw-An-Elementary Science Teacher: Confronting the Invisibility of the Underserved Populations	Mensah, F. M. (2013). Theoretically and Practically Speaking, What Is Needed in Diversity and Equity in Science Teaching and Learning? *Theory Into Practice*, *52*(1), 66–72.
	Activity: Discussion and Presentation: Drawings Round Table**: Confronting the Invisibility of the Underserved Populations**	Nieto, S. (2017). Becoming Sociocultural Mediators: What All Educators Can Learn from Bilingual and ESL Teachers. *Issues in Teacher Education*, *26*(2), 129–141
		Parsons, E. R. C., Tran, L. U., & Gomillion, C. T. (2008). An Investigation of Student Roles within Small, Racially Mixed Science Groups: A Racial Perspective. *International Journal of Science Education*, *30*(11), 1469–1489.
		Suriel, R. L., & Atwater, M. M. (2012). From the Contribution to the Action Approach: White Teachers' Experiences Influencing the Development of Multicultural Science Curricula. *Journal of Research in Science Teaching*, *49*(10), 1271–1295.
		Taher, T., Mensah, F. M., & Emdin, C. (2017). Exploring the Impact of Reality Pedagogy: Understanding Its Implementation on Urban Immigrant Students. *Universal Journal of Educational Research*, *5*(11), 1853–1862.
3	**Topic:** Science Instruction - The Basics Standards, Current Policies, Theories, and Strategies	**Culturally Responsive Pedagogy**

		Activity: Discussion: • Are you a Culturally Responsive Science Teacher?	Gay, G. 2002. "Preparing for Culturally Responsive Teaching." *Journal of Teacher Education* 53 (2): 106–116. Howard, T. 2003. "Culturally Relevant Pedagogy: Ingredients for Critical Teacher Reflection." *Theory into Practice* 42 (3): 195–202. Matias, C. E. 2013. "Check Yo'self before You Reck Yo'self and Our Kids: Counterstories from Culturally Responsive White Teachers?... To Culturally Responsive White Teachers!" *Interdisciplinary Journal of Teaching and Learning* 3 (2): 68–81. Villegas, A. M., and T. Lucas. 2007. "The Culturally Responsive Teacher." *Educational Leadership* 64 (6): 28–33.
4	**Topic:** Science Instruction - The Basics Standards, Current Policies, Theories, and Strategies **Activity:** Discussion: • How do you practice Culturally Sustaining Pedagogy in the Science Classroom		**Culturally Sustaining Pedagogy** Kamania Wynter-Hoyte, Eliza Gabrielle Braden, Sanjuana Rodriguez & Natasha Thornton (2019) Disrupting the status quo: exploring culturally relevant and sustaining pedagogies for young diverse learners, Race Ethnicity and Education, 22:3, 428-447 Kinloch, V. 2017. "'You Ain't Making Me Write': Culturally Sustaining Pedagogies and Black Youths' Performances of Resistance." In *Culturally Sustaining Pedagogies: Teaching and Learning for Justice in a Changing World*, edited by D. Paris and H. S. Alim, 1–21. New York: Teachers College Press. Paris, D. 2012. "Culturally Sustaining Pedagogy: A Needed Change in Stance, Terminology, and Practice." *Educational Researcher* 41 (3): 93–97. Paris, D. 2016. On Educating Culturally Sustaining Teachers. Teaching Works working papers. http://www.teachingworks.org/images/files/TeachingWorks_Paris.pdf.

		Paris, D., and H. S. Alim. 2014. "What are We Seeking to Sustain Through Culturally Sustaining Pedagogy? A Loving Critique Forward." *Harvard Educational Review* 84 (1): 85–100.
5	**Topic:** Teaching for Social Justice in Science Education: Helping a New Teacher Develop a Social Justice Identity	Berg, A., & Mensah, F. M. (2014). De-Marginalizing Science in the Elementary Classroom by Coaching Teachers to Address Perceived Dilemmas. *Education Policy Analysis Archives*, *22*(57).

	Activity:
	Discussion:
	   1. Are Culturally Sustaining Pedagogies and Culturally Responsive Pedagogies enough?
	   2. Helping a New Teacher Develop a Social Justice Identity
		Maulucci M.S.R., Fann K.T. (2016) Teaching for Social Justice in Science Education. In: Avraamidou L. (eds) Studying Science Teacher Identity. New Directions in Mathematics and Science Education. SensePublishers, Rotterdam. https://doi.org/10.1007/978-94-6300-528-9_6
		Mensah, F. M., & Jackson, I. (2018). Whiteness as Property in Science Teacher Education. *Teachers College Record*, *120*(1).

6	**Topic:** Teaching for Social Justice in Science Education: Helping a New Teacher Develop a Social Justice Identity	Greenberg, D. (2017). Why science teachers should care about social justice. *i Wonder*, (3), 70-73. Voegal M. (2019) Social Justice in the Science Classroom **Website**: https://www.tolerance.org/magazine/summer-2013/just-science

	Activity:
	Discussion:
	   • Resources for Teaching for Social Justice in Science Education
		Guidry M., (2017) Science Serves Everyone
		   Website: https://www.tolerance.org/magazine/summer-2013/just-science
		Winmaier C., (2017) Teach Identify and Diversity – Even in Science Class
		   Website https://www.tolerance.org/magazine/teach-identity-and-diversityeven-in-science-class
		Diversity and inclusive teaching practice in STEM
		   Website: https://cte.virginia.edu/blog/2020/01/05/diversity-and-inclusive-teaching-practices-stem

7	**Topic:** Teaching for Social Justice in Science Education: Helping a New Teacher Develop a Social Justice Identity	Greenberg, D. (2017). Why science teachers should care about social justice. *i Wonder*, (3), 70-73.
		Voegal M. (2019) Social Justice in the Science Classroom
		Website: https://www.tolerance.org/magazine/summer-2013/just-science
	Activity: Discussion: • Teaching for Social Justice in Science Education	Guidry M., (2017) Science Serves Everyone
		Website: https://www.tolerance.org/magazine/summer-2013/just-science
		Winmaier C., (2017) Teach Identify and Diversity – Even in Science Class
		Website https://www.tolerance.org/magazine/teach-identity-and-diversityeven-in-science-class
		Diversity and inclusive teaching practice in STEM
		Website: https://cte.virginia.edu/blog/2020/01/05/diversity-and-inclusive-teaching-practices-stem
8	**Topic:** Want To Dismantle Racism In Science? Start In The Classroom: Social Justice Activism in Science Classrooms	Odekunle, E. A. (2020). Dismantling systemic racism in science. *Science*, *369*(6505), 780-781.
		Website: https://science.sciencemag.org/content/369/6505/780.3.full
	Activity: • Rewriting Science Lesson Plans: Dismantling Racism In Science	
9	**Topic:** Want To Dismantle Racism In Science? Start In The Classroom: Social Justice Activism in Science Classrooms	National Academies of Sciences, Engineering, and Medicine 2021. *Call to Action for Science Education: Building Opportunity for the Future*. Washington, DC: The National Academies Press.
	Activity: • Rewriting Science Lesson Plans: Dismantling Racism In Science	**Website**: https://doi.org/10.17226/26152

10	**Topic:** Confronting the Stereotypical image of the White Male Scientist	Jarvis, C (2020). Helping students (re)think of themselves as scientists: Understanding science identity and expanding the definition of a scientist to make chemistry more empathetic and equitable
	Activity: Discussions around scientists from marginalized groups beyond the typical "token" examples. - Recognizing the early contributions of Arab and Asian scholars to astronomy. (Most stars have Arabic names) - Learning about Scientists of color, both in history and today. - Studying the contributions of women in science both in history and today. - Examining how scientists are portrayed in educational materials.	**Website**: https://cen.acs.org/education/undergraduate-education/Helping-students-rethink-themselves-scientists/98/i28 Kelly, L. (2018). Draw a Scientist. *Science and Children*, *56*(4), 86-90. Kraig-Turner, G. (2017)**.** Beyond Just A Cells Unit: What My Students Learned From the Story of *Henrietta Lacks*. Rethinking Schools, 32(1). Scott, C. (2018). The Scientist Showcase. *Science and Children*, *55*(5), 73-77.
11	**Topic:** *Read Our Words* Poster: Using the voices and experiences of students to help create an anti-racist science classroom	Atwater, M. M. (2000). Equity for Black Americans in Precollege Science. *Science Education*, *84*(2), 154–179. Atwater, M. M., Lance, J., Woodard, U., & Johnson, N. H. (2013). Race and Ethnicity: Powerful Cultural Forecasters of Science Learning and Performance. *Theory Into Practice*, *52*(1), 6–13.
	Activity: The "*Read Our Words* Poster" is a call to action to help create an anti-racist nation by reading the words and engage in the depth and diversity of Minoritized Scientists/Science writers who have been resisting and challenging racism Profile ten easily accessible Minoritized Scientists/ Science writers authored science books.	Berg, A., & Mensah, F. M. (2014). De-Marginalizing Science in the Elementary Classroom by Coaching Teachers to Address Perceived Dilemmas. *Education Policy Analysis Archives*, *22*(57).
12	**Topic:** Want To Dismantle Racism In Science? Start In The Classroom: Social Justice Activism in Informal Science Settings	Rosa, K., & Mensah, F. M. (2016). Educational Pathways of Black Women Physicists: Stories of Experiencing and Overcoming

	Activity: Social Justice Letter Writing The need to celebrate scientific contribution of underserved populations: Scientists of Colour, Women of Colour, LGBT Scientists, and LGBT Scientists of Colour.		Obstacles in Life. *Physical Review Physics Education Research*, *12*(2), 020113.
13	**Topic:** Want To Dismantle Racism In Science: Organizational Stance on Science Instruction - Tolerance		Bang, M., McDaid-Morgan, N. & Tsoodle, A. (2020). Creating Science Learning Environments in Which Indigenous Students Can Thrive **Website:** https://www.nsta.org/blog/creating-science-learning-environments-which-indigenous-students-can-thrive Foster, J. (2020). Investigating Environmental Racism in the High School Biology Classroom **Website:**https://www.nsta.org/blog/investigating-environmental-racism-high-school-biology-classroom Frost, J. & Sanchez, A. (2020). Justice-Centered Science Pedagogy: Leaning Beyond the Boundaries of Equity and Culturally Responsive Practices **Website:** https://www.nsta.org/blog/justice-centered-science-pedagogy-leaning-beyond-boundaries-equity-and-culturally-responsive
	Activity Revisiting Science Lesson Plans – Integrating Tolerance		
14	**Topic:** Review of Science Journal Entries		
	Presentation: My Social Justice Identity in My Future Science Classroom		
15	**Presentation:** My Social Justice Identity in My Future Science Classroom		
16	**Final Exam**		

UNT's Course Policies
Face Coverings
UNT encourages everyone to wear a face covering when indoors, regardless of vaccination status, to protect yourself and others from COVID infection, as recommended by current CDC guidelines. Face covering guidelines could change based on community health conditions.

Attendance
Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.
 If you are experiencing any symptoms of COVID-19 (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Team at COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure.

Course Materials for Remote Instruction
Remote instruction may be necessary if community health conditions change or you need to self-isolate or quarantine due to COVID-19. Students will need access to a [webcam and microphone – faculty member to include what other basic equipment is needed] to participate in fully remote portions of the class. Additional required classroom materials for remote learning include: [list specific software, supplies, equipment or system requirements needed for the course]. Information on how to be successful in a remote learning environment can be found at https://online.unt.edu/learn

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UNT's Standard Syllabus Statements

Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

ADA Accommodation Statement. UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.

Course Safety Procedures (for Laboratory Courses). Students enrolled in [insert class name] are required to use proper safety procedures and guidelines as outlined in UNT Policy 06.038 Safety in Instructional Activities. While working in laboratory sessions, students are expected and required to identify and use proper safety guidelines in all activities requiring lifting, climbing, walking on slippery surfaces, using equipment and tools, handling chemical solutions and hot and cold products. Students should be aware that the UNT is not liable for injuries incurred while students are participating in class activities. All students are encouraged to secure adequate insurance coverage in the event of accidental injury. Students who do not have insurance coverage should consider obtaining Student Health Insurance. Brochures for student insurance are available in the UNT Student Health and Wellness Center. Students who are injured during class activities may seek medical attention at the Student Health and Wellness Center at rates that are reduced compared to other medical facilities. If students have an insurance plan other than Student Health Insurance at UNT, they should be sure that the plan covers treatment at this facility. If students choose not to go to the UNT Student Health and Wellness Center, they may be transported to an emergency room at a local hospital. Students are responsible for expenses incurred there.

Emergency Notification & Procedures. UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course.

Department Syllabus Statements

Foliotek ePortfolio (where applicable). Foliotek is a software data management system (DMS) used in the assessment of your knowledge, skills, and dispositions relevant to program standards and objectives. You will be required to use your Foliotek account for the duration of your enrollment in the College of Education in order to upload required applications, course assignments, and other electronic evidences/evaluations as required. This course may require assignment(s) to be uploaded and graded in Foliotek. The College of Education will track your progress in your program through this data to verify that you have successfully met the competencies required in your program of study. All students must register in the program portfolio that aligns with their degree plan. Registration codes and tutorials can be found on this site: https://coe.unt.edu/educator-preparation-office/foliotek

Student Evaluation Administration Dates. Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via *IASystem* Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete

the survey. Once students complete the survey, they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website at www.spot.unt.edu or email spot@unt.edu.

Sexual Assault Prevention. UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648.