

EDUC 3350-110

CRN: 10598

Science Instruction for Classroom Teachers

Spring 2020

Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

The meeting dates of this course are Wednesdays, 11:00 a.m. -1:45 p.m. This course is a face-to-face course.

This course uses the A&M-Central Texas Canvas Learning Management System [<https://tamuct.instructure.com>].

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Carl Juenke, PhD

Office: WH 322-P

Phone: 254-519-5795

Email: via Canvas only

Office Hours

W (8:30 a.m. – 3:30 p.m.)

Student-instructor interaction

As this course is critical in the growth and development of you as a teacher, I am readily available to you. You can reach me at any time during my office hours, by email, or by phone. If you would like to request a conference, please email me and I will get back to you with available times. If I am unavailable and you need to speak with someone about your placement or in an emergency, please call (254) 519-8737.

WARRIOR SHIELD

Emergency Warning System for Texas A&M University-Central Texas

Warrior Shield is an emergency notification service that gives Texas A&M University-Central Texas the ability to communicate health and safety emergency information quickly via email, text message, and social media. All students are automatically enrolled in Warrior Shield through their myCT email account.

Connect to Warrior Shield by [911Cellular](https://portal.publicsafetycloud.net/Account/Login) [https://portal.publicsafetycloud.net/Account/Login] to change where you receive your alerts or to opt out. By staying enrolled in Warrior Shield, university officials can quickly pass on safety-related information, regardless of your location.

COURSE INFORMATION

Course Overview and description

This methods course is concerned with providing experience for pre-service educators to plan, organize, deliver, and evaluate developmentally appropriate educational strategies and instructional techniques in teaching science to diverse learners. The students design responsive instruction appropriate for all learners which reflects an understanding of relevant science content, promotes active engagement, and is based on continuous and appropriate assessment.

Course Objective or Goal

This course is designed to prepare teacher educators to design and implement standards-based EC-6 science instruction that includes effective instructional strategies for a diverse population of learners. The teacher educator will be prepared to demonstrate the following student learning outcomes (SLO's).

Student Learning Outcomes

Texas Educator Standards and Student Learning Outcomes (SLO's):

Science Generalist EC-6:

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.

Competency Goals Statements (certification or standards)

Teacher Standards

Standard 1 - Instructional Planning and Delivery. Teachers demonstrate their understanding of instructional planning and delivery by providing standards-based, data-driven, differentiated instruction that engages students, makes appropriate use of technology, and makes learning relevant for today's learners.

Standard 2 - Knowledge of Students and Student Learning. Teachers work to ensure high levels of learning, social-emotional development, and achievement outcomes for all students, taking into consideration each student's educational and developmental backgrounds and focusing on each student's needs.

Standard 3 - Content Knowledge and Expertise. Teachers exhibit a comprehensive understanding of their content, discipline, and related pedagogy as demonstrated through the quality of the design and execution of lessons and their ability to match objectives and activities to relevant state standards.

Standard 4 - Learning Environment. Teachers interact with students in respectful ways at all times, maintaining a physically and emotionally safe, supportive learning environment that is characterized by efficient and effective routines, clear expectations for student behavior, and organization that maximizes student learning.

Standard 5 - Data-Driven Practice. Teachers use formal and informal methods to assess student growth aligned to instructional goals and course objectives and regularly review and analyze multiple

sources of data to measure student progress and adjust instructional strategies and content delivery as needed.

Standard 6- Professional Practices and Responsibilities. Teachers consistently hold themselves to a high standard for individual development, pursue leadership opportunities, collaborate with other educational professionals, communicate regularly with stakeholders, maintain professional relationships, comply with all campus and school district policies, and conduct themselves ethically and with integrity.

Pedagogy and Professional Responsibility Standards

Standard 1 - The teacher designs instruction appropriate for all students that reflects an understanding of content and is based on continuous and appropriate assessment.

Standard 2 - The teacher creates a classroom environment of respect and rapport that fosters a positive climate for learning, equity, and excellence.

Standard 3 - 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, high-quality feedback.

Standard 4 - The teacher fulfills professional roles and responsibilities and adheres to legal and ethical requirements of the profession.

Technology Application Standards

Standard 1 - All teachers use and promote creative thinking and innovative processes to construct knowledge, generate new ideas, and create products.

Standard 2 - All teachers collaborate and communicate both locally and globally to reinforce and promote learning

Standard 3 - All teachers acquire, analyze, and manage content from digital resources.

Standard 4 - All teachers make informed decisions by applying critical-thinking and problem-solving skills.

Standard 5 - All teachers practice and promote safe, responsible, legal, and ethical behavior while using

technology tools and resources.

Standard 6 - All teachers demonstrate a thorough understanding of technology concepts, systems, and

operations.

Standard 7 - 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.

TExES Competencies

TExES Competency 001: The beginning teacher understands human development processes and applies

this knowledge to plan instruction and ongoing assessment that motivates students and is responsive to their developmental characteristics and needs.

TExES Competency 002: The beginning teacher understands student diversity and knows how to plan learning

experiences and design assessments that are responsive to differences among students and that promote all

students' learning.

TExES Competency 003: The beginning teacher understands procedures for designing effective and coherent

instruction and assessment based on appropriate learning goals and objectives.

TExES Competency 004: The beginning teacher understands learning processes and factors that impact

student learning and demonstrates this knowledge by planning effective, engaging instruction and appropriate assessments.

TExES Competency 005: The beginning 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.

TExES Competency 006: The beginning teacher understands strategies for creating an organized and productive

learning environment and for managing student behavior.

TExES Competency 007: The beginning teacher understands and applies principles and strategies for

communicating effectively in varied teaching and learning contexts.

TExES Competency 008: The beginning teacher provides appropriate instruction that actively engages

student in the learning process.

TExES Competency 009: The beginning teacher incorporates the effective use of technology to plan,

organize, deliver, and evaluate instruction for all students.

TEExES Competency 010: The beginning teacher is a reflective practitioner who knows how to promote

his or her own professional growth and can work cooperatively with other professionals in the system to

create a school culture that enhances learning and encourages positive change.

TEExES Competency 011: The beginning teacher understands the importance of family involvement in

children's education and knows how to interact and communicate effectively with families.

TEExES Competency 012: The beginning teacher enhances professional knowledge and skills by effectively interacting with other members of the educational community and participating in various

types of professional activities.

TEExES Competency 013: The beginning teacher understands and adheres to legal and ethical requirements for educators and is knowledgeable of the structure of education in Texas.

Required Reading and Textbook(s)

Contant, T., Bass, J., Tweed, A., & Carin, A. (2018). Teaching science through inquiry-based instruction. New York, NY: Pearson.

Science TEKS: <http://ritter.tea.state.tx.us/rules/tac/chapter112/ch112a.html>

COURSE REQUIREMENTS

Science in the classroom reflection – 10% Students will write a 2 to 3 page paper reflecting on personal experiences with science instruction. This paper may include personal experiences as a student in a science classroom, personal experiences observing science instruction or personal experiences teaching science lessons.

The reflection should include the importance of science instruction and its impact on students, both positively and negatively and must include 2 citations. APA format is required.

5 E Lesson Plans – 30%

Students will develop four (4) lesson plans utilizing components of the 5 E Lesson Plan model. The lesson plan must include the TEKS to be addressed, instructional strategies to be implemented and the assessment opportunities to be provided for students to demonstrate their knowledge and understanding of the TEKS.

Science Micro-teach – 20%

Students will prepare and teach one 20 minutes science lesson to the class.

Science Lesson Reflections- 10%

Students will write a 1-2 page reflection over all lessons presented to the class. Reflections will include delivery, planning, strengths, areas of improvement, and collaboration if applicable. APA format required.

Quizzes – 10%

Quizzes will be given over the assigned reading. These quizzes will be accessed through Canvas. Quiz dates will be provided one week prior to date quiz is due.

Final Exam -10%

The exam will consist of content, process, and pedagogy related questions. It is designed to assess the SLO's of the course.

Professionalism & Participation- 10%

Students must attend class and actively participate in class related activities and labs.

*Grading rubrics will be provided and discussed in class.

Grading Criteria Rubric and Conversion

Assignment	Percent
Science in the classroom reflection	10%
5 E Lesson Plans	20%
Science Micro-teach	20%
Science Lesson Reflections	10%
Science Lab Notebook	10%
Quizzes	10%
Final Exam	10%
Professionalism & Participation	10%
Total	100%

A	(100 – 90)	exceptional demonstration and deep coherent understanding
B	(89 – 80)	proficient understanding
C	(79 – 70)	acceptable understanding in most areas
D	(69 – 60)	developing understanding with some critical deficiencies
F	(59 – 0)	unsatisfactory understanding with significant deficiencies

Posting of Grades

All grades will be posted in Canvas within a week of the due date. However, large projects or assignments may require more time to evaluate. It is encouraged that students monitor their status throughout the semester. Final grades will be posted to Canvas.

Grading Policies

Late work will be accepted with a 10 point deduction initially and additional point deductions depending on the lateness of the work.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar

Date	Assignment/Activity	Assessment
Week 1	Introductions; Syllabus and Course Overview	Read Syllabus Bring Spiral Notebook
Week 2	Unpacking the Science TEKS	Small Group/Large Group Activity
Week 3	Science and Science Education, Safety	Ch. 1
Week 4	Inquiry Instruction	Ch. 2
Week 5	The Learning Environment and Understanding Science	Chs. 3, 4
Week 6	Exploring the 5E Model of Science Instruction Building Teacher Science Content Knowledge	In Class Lab Activity, Ch. 5
Week 7	Effective Questioning and Assessing Learning	Chs. 6, 7

Date	Assignment/Activity	Assessment
	Inquiry-Based Lesson:	
Week 8	Using 5E components	Activities in back of textbook
Week 9	Building Teacher Science Content Knowledge: Physical Science Inquiry-Based Lesson: Physical Science	Activities in back of textbook
Week 10	Using 5E components	Activities in back of textbook
		Activities in back of textbook
Week 11	Building Teacher Science Content Knowledge: Life Science Inquiry-Based Lesson: Life Science	5E Lesson Plan on Physical Science Due
Week 12	Using 5E components	Activities in back of textbook
		Activities in back of textbook
Week 13	Building Teacher Science Content Knowledge: Earth & Space Science	5E Lesson Plan on Life Science Due
Week 14	Inquiry-Based Lesson: Earth & Space Science Using 5E components	Activities in back of textbook
Week 15	Student in Class Lesson Presentations Review Final Exam	5E Lesson Plan on Earth & Space Science Due
Week 16	Final Exam	In Class

Important University Dates

<https://www.tamuct.edu/registrar/academic-calendar.html/>

Attendance: Professional behavior and commitment to teaching are the expectations. Attendance and punctuality are required. Three class absences for any reason will result in lowering the final grade by a letter grade. Four or more absences will result in failure of the class. All tardies will result in the loss of participation points. Students missing class will be responsible for notes, handouts, assignments and any changes in schedules. I will not provide “make-up” work. You may access this work on your own through Canvas or

through collaboration with peers. Your commitment to becoming the best teacher possible includes regular, timely attendance and participation.

Class Participation: Being prepared to participate includes completing assigned reading and bringing necessary textbooks, assignments and materials to class. You are expected to read before the class session, actively participate in classroom assignments and discussions, and fully participate in online work. Any in-class reflections, presentations, and activities cannot be made-up. The use of technology, to include cell phones and any other electronic device, can enhance learning and the educational experiences; however, it can also become a distraction to the learning tasks at hand. Off-task technology usage may result in deduction in professionalism points.

Cell phones: Cell phones must be silenced during class. The use of cell phones, smart phones, or other mobile communication devices is disruptive and is therefore prohibited during class. Except in:

1. emergency situations - please make prior arrangements with the professor
2. acceptable use - the professor will direct you to utilize your cell phone, smart phone, or other mobile device for educational purposes

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. We strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.

Logon to A&M-Central Texas Canvas [<https://tamuct.instructure.com/>] or access Canvas through the TAMUCT Online link in myCT [<https://tamuct.onecampus.com/>]. You will log in through our Microsoft portal.

Username: Your MyCT email address. Password: Your MyCT password

Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select “Chat with Canvas Support,” submit a support request through “Report a Problem,” or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact your instructor.

Other Technology Support

For log-in problems, students should contact Help Desk Central

24 hours a day, 7 days a week

Email: helpdesk@tamu.edu

Phone: (254) 519-5466

[Web Chat](http://hdc.tamu.edu): [<http://hdc.tamu.edu>]

Please let the support technician know you are an A&M-Central Texas student.

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Drop Policy

If you discover that you need to drop this class, you must complete a [Drop Request Form](#)

[https://www.tamuct.edu/registrar/docs/Drop_Request_Form.pdf].

Professors cannot drop students; this is always the responsibility of the student. The Registrar's Office will provide a deadline on the Academic Calendar for which the form must be completed, signed and returned. Once you return the signed form to the Registrar's Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar's Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Academic Integrity

Texas A&M University -Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Academic integrity is defined as a commitment to honesty, trust, fairness, respect, and responsibility. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. Academic misconduct is any act that improperly affects a true and honest evaluation of a student's academic performance and includes, but is not limited to, working with others in an unauthorized manner, cheating on an examination or other academic work, plagiarism and improper citation of sources, using another student's work, collusion, and the abuse of resource materials. All academic misconduct concerns will be referred to the university's Office of Student Conduct. Ignorance of the university's standards and expectations is never an excuse to act with a lack of integrity. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more [information regarding the Student Conduct process](#), [<https://www.tamuct.edu/student-affairs/student-conduct.html>].

If you know of potential honor violations by other students, you may [submit a report](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0), [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

Academic Accommodations

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Office of Access and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information please visit our [Access & Inclusion](https://tamuct.instructure.com/courses/717) Canvas page (log-in required) [https://tamuct.instructure.com/courses/717]

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit [Student Affairs](https://www.tamuct.edu/student-affairs/index.html) [https://www.tamuct.edu/student-affairs/index.html]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these [requirements and guidelines](http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf) online, please visit the website [http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender—including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

Tutoring

Tutoring is available to all A&M-Central Texas students, both on-campus and online. Subjects tutored on campus include Accounting, Advanced Math, Biology, Finance, Statistics, Mathematics, and Study Skills. Tutors are available at the Tutoring Center in Warrior Hall, Suite 111. Tutor.com tutoring **will not offer writing support** beginning August 1, 2019, but will continue to offer other tutoring support.

If you have a question regarding tutor schedules, need to schedule a tutoring session, are interested in becoming a tutor, or have any other question, contact Academic Support Programs at (254) 501-5836, visit the Office of Student Success at 212F Warrior Hall, or by emailing studentsuccess@tamuct.edu .

Chat live with a tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional

cost. This tool provides tutoring in over 40 subject areas. Access Tutor.com through Canvas.

University Writing Center

Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University–Central Texas (TAMUCT) is a free workspace open to all TAMUCT students from 10:00 a.m.-5:00 p.m. Monday thru Thursday with satellite hours in the University Library Monday thru Thursday from 6:00-9:00 p.m. This semester, the UWC is also offering online only hours from 12:00-3:00 p.m. on Saturdays.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by visiting the UWC during normal operating hours (both half-hour and hour sessions are available) or by making an appointment via [WCOonline](https://tamuct.mywconline.com/) [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC and/or need any assistance with scheduling.

University Library

The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 250,000 eBooks and 82,000 journals, in addition to the 85,000 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place on Skype or in-person at the library. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our [Library website](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index].

OPTIONAL POLICY STATEMENTS

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the [Title IX webpage](https://www.tamuct.edu/departments/compliance/titleix.php) [https://www.tamuct.edu/departments/compliance/titleix.php].

Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, who are exhibiting concerning behaviors, or individuals causing a significant disruption to our community, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the [referral](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2) online [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2].

Anonymous referrals are accepted. Please see the [Behavioral Intervention Team](https://www.tamuct.edu/student-affairs/bat.html) website for more information [https://www.tamuct.edu/student-affairs/bat.html]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5800.

OTHER POLICIES

Copyright Notice

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

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