



IS 351.01E, 20330, Science Inquiry

COURSE SYLLABUS: Spring 2024
Class meets M 5:00-7:40 pm, CHEC 229

INSTRUCTOR INFORMATION

Instructor: Elyzabeth Graham

Office Hours: Available after class or by appointment W/TH via Zoom

University Email Address: Elyzabeth.Graham@tamuc.edu

Preferred Form of Communication: email

Communication Response Time: 24 hours

Advanced
Integrated
Science I
351



COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) **Required: IS 351 Lab manual** available **only** at the campus bookstore; these are custom printed therefore not available for purchase elsewhere. Confirm you get the correct manual.

IS 351; ISBN: 978-1-64565-153-6

Software Required: regular MS office (or equal)

Printing options determined

Recommended Materials: notebook, calculator, computer, printer or printer access, and note taking materials

Course Description

Science topics and themes are chosen to emphasize broad concepts highlighted in the Texas and national science standards. Topics will include conservation laws, systems in nature, the nature of scientific inquiry, and the presentation of scientific information. The course will be taught by an inquiry-based method, modeling instructional techniques proved effective by current educational research. This course is designed for interdisciplinary education majors.

Science is an interesting and diverse topic; learning and teaching can be enjoyable as well as educational. Science is what allows mankind to function in a productive manner. We will explore the question, "What is Science?" and help each individual grasp an understanding of their own teaching philosophy.

The syllabus/schedule are subject to change.

Students will participate through hands-on experiments, in a cooperative learning environment with integrated lectures. Pedagogy, methods and techniques, critical thinking, data analysis, proper handling of equipment, and content will be explored in this course.

Topics Covered:

Forces and Motion

The focus on interactions and forces treats interactions, force, and motion for single forces, then with combinations of forces. The unit begins by introducing forces and their relationship with interactions and energy. The connection between force and motion is explored for short-duration forces, continuous forces, and backward forces; later, the effects of mass and force strength are included. These are synthesized into Newton's second law. The unit ends with a treatment of the vertical motion of falling objects (ignoring air resistance).

Students will examine the combination of forces, including balanced and unbalanced forces, arriving at the idea of net force. The unit includes a treatment of the horizontal motion of objects experiencing frictional forces and the vertical motion of falling objects with air resistance. The unit culminates with Newton's third law.

Energy and Electricity

Module Interactions deal with energy in the context of different types of interactions, kinetic and potential energy, conservation of energy, and fields. Students explore energy concepts in various interactions, including contact interactions (pushes, pulls, and friction), heat interactions, and electric circuits. Giver/receiver energy diagrams are used to describe the transfer or transformation of energy. Conservation of energy is introduced early in the case of two objects interacting and then expanded to account for more complex chains of interactions between multiple objects, including the surroundings.

Potential energy will be explored in the context of elastic objects, which then builds to introduce potential energy associated with non-contact forces: magnetism, static electricity, electromagnetism, and gravity. The concept of fields is used as a model for action at a distance and the associated potential energies.

Earth and Space Science

The Earth and Space unit will focus on the Earth-Moon-Sun system and the planets of the Solar System. Students will examine seasonal changes on Earth and explain this using the systematic changes to the Earth-Sun system. Students will also explore phenomena found on earth, such as weather and climate, the water cycle, and geology. Students will examine the Lunar Phase cycle and be able to explain what causes the change in the Moon's apparent shape. Students will also examine the planets and the characteristics of the structure of our solar system. The material covered in this unit will originate from content delivered in class and will not require additional printed text or material.

The syllabus/schedule are subject to change.

Student Learning Outcomes

1. Students will gain a better pedagogical understanding.
 - Students will identify and practice different teaching methods.
 - Students will identify different learning styles.
 - Students will be able to determine how teaching and learning styles complement or support material in various situations.
 - Students will better understand the NGSS/TEKs alignment and how that process applies to content delivery.
2. Students will be better prepared to achieve success completing the TExES exam.
 - Students will understand the basic methodology of science through experimentation.
 - Students will understand the meaning, application, and concepts of force and motion: types of forces, Newton's laws of motion, energy, conservation of energy, waves, astronomy basics, and historical contributors such as Aristotle, Galileo, and Newton.
3. Students will assist the instructor through cooperative learning to provide interesting and practical science knowledge and skills for taking instruction into the classroom and everyday life.
 - Students will learn and practice student centered instruction.
 - Students will develop a plan for laboratory safety and classroom management through daily practice and techniques.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

D2L will be used for grades and as a venue/repository of review material. All work to be graded will be submitted within the D2L platform, besides exams which will be given in person to the professor. Students should have basic understanding and ability to manage fundamental computer skills such as MS Word, Excel, & PowerPoint (or similar).

Instructional Methods

This class will meet in CHEC 221 from 5:00-7:40pm on Mondays. It is important that we start class on time in order to complete the hands-on labs; please practice professionalism and make it to class on time. The instructional methods for this course will vary with the topic being explored. Students will be attentive through any lecture, providing the instructor/presenter their full attention. Questions are welcomed and encouraged during lecture; however, students will not engage in "personal discussions" thus disrupting class.

Students will be working in groups to complete labs throughout the semester. This is a hands-on methods course. It is imperative that **students do NOT miss a class** as their group will not have each member's contribution. Any **missed classes will not be made up**. For clarification purposes, there are NO make-up labs. This includes any lab section of a test.

Student Responsibilities or Tips for Success in the Course

This class requires regular attendance as much of the content is delivered in a hands-on format that will build from one lesson to the next. If you miss a class, you may miss the skills needed for the next and future lessons. Missing even one class can cause a significant gap in your learning and understanding. The best thing you can do to be successful in this class is to not miss any classes.

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GRADING

Final grades in this course will be based on the following scale:

A = 90%-105%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

Weights of the assessments in the calculation of the final letter grade.

		<u>Tentative Exam Dates</u>
Exams (2 midterms)	40%	1) Feb 26
Labs and Homework	25%	2) April 15
Mini Lesson Project	20%	3) May 6 Extra Credit Practice TExES Exam
Class participation	15%	
<u>Practice TExES Exam</u>	<u>Extra Credit: 5%</u>	
TOTAL	100%	

Assessments

Labs - There will be no make-up labs. If you are absent on a day we take a grade for a lab, you will receive a grade of zero; there is no way to make up work missed. Daily assignments and labs are 40% of the course grade. One grade will be dropped at the end of the semester, this is generally your lowest lab and homework grade. There will be one opportunity for extra credit at the end of the semester coming from a practice TEXES exam. At the end of each lab, a scan will be uploaded to D2L and checked for completeness to assign lab grades.

Exams - If you know you are going to miss an exam, please **notify me in writing**, via email, to plan to **take the test early**. If you miss an exam, the make-up must be scheduled and completed before the graded exams are returned to the class, generally the next class day. For example if you miss an exam, you will have to coordinate with me to take it within the week; I teach another course on Tuesdays which would be a great option.

Homework - Up to 12 homework assignments will be assigned throughout the semester. The lowest grade will be dropped. Homework is due at the beginning of class. Homework will be accepted up to a week late without penalty. Homeworks will be in the course manual unless otherwise stated.

Class participation - You will receive a participation grade for each class day (except the first day and exam days) based on your participation in group activities. The lowest three grades will be dropped.

Participation grade calculation:

1. An absence will result in a zero for the missed class. This includes excused absences. If you have more than 3 excused absences, the resulting zeroes will be dropped before the calculation of your average. (See course policies below for details on excused absences.)
2. Missing 15-35 minutes of class will result in a 20-point deduction. Missing more than 35 minutes of class will result in a 50-point deduction. This includes tardiness, leaving early before finishing all class activities, or missing a portion of the middle of class.
3. The instructor will provide students with their participation through the D2L-Brightspace grade portal.

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Mini Lesson Project – More details will be available in the second half of the semester. Students will choose a competency from the TExES exam and prepare a short introductory activity and lesson at their intended grade level and then model the lesson for the class. There will be a full class period to work on the assignment and get instructor feedback before final presentations.

Tentative Schedule

Jan 15 – NO CLASSES

Jan 22 – Unit 1: Understanding Science and Unit 2: Metric System

Jan 29 – Unit 3: Pendulums

Feb 5 – Unit 4: Energy

Feb 12 – Unit 5: Inertia

Feb 19 – Unit 6: Work, Simple Machines, and Conservation of Energy

Feb 26 – TBD (Review or finishing labs if needed)

March 4 – Units 1-6 Test

March 11 - Spring Break

March 18 – Unit 7: Electricity

March 25 – Unit 8: Astronomy and Unit 10: Weather & Climate

April 1 – Unit 9: Waves

April 8 – Unit 11: Geology and Unit 12: Water Cycle

April 15 – Units 7-12 Test

April 22 – Mini Lesson Project Prep Day

April 29 – Mini Lesson Presentation Day

May 6 – Optional Practice TExES Exam

These dates are subject to change and the D2L Page will give a better guide to weekly activities as the semester progresses. Feel free to contact me with any questions about the schedule

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TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

Zoom Video Conferencing Tool

https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

Interaction with Instructor Statement

You are invited to take advantage of office hours. Those times are set aside weekly to meet with students. If the hours scheduled do not work with your schedule, please email and schedule an appointment. If you have a quick question, you are always welcome to shoot me an email, while I don't have a traditional office, I'm happy to help.

The syllabus/schedule are subject to change.

If you know that you have an event that is going to require missing a class, please send this to me through email so that I can get it on my schedule.

I will post any changes to the schedule in D2L in the course announcements. Please check these regularly or even better, set the announcements to email you as they are posted.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Course Specific Policies

Violation of any class policies will be reflected on the student's final grade for the course.

1. Be professional. You are completing your degree and preparing for the classroom as the facilitator of instruction. Your attitude should reflect your professionalism, which should include the remaining class policies.
2. Be here. Absences will result in lowering your overall grade, if you are not in class, you will miss important content. Much of the material covered in class builds from previous material so missing a class means a gap in content. If you know in advance that you are going to miss a class, please inform me in writing **via email**. If you know in advance that you are going to miss an exam, make arrangements with me to take the test early. Tests are handed back the very next class so you will only have one day to make up an exam.
3. Be on time. It is important that you arrive to class on time; tardiness is a direct reflection of your professional attitude. This class meets Mondays 5 – 7:40pm. Tardiness is a bad habit, very impolite, and unprofessional. We only meet once a week, so please strive to be on time.

As a teacher, you will be expected to turn in grades on time as well as meeting other deadlines; again, be professional. Absences are not considered a “good reason” for turning in late assignments. All due dates are given in advance; take them seriously. While late work is accepted, it’s very rarely worthwhile to turn things in late

4. Be courteous. Cell phones will be turned off; failure to comply will result in the student being excused from class and receiving a zero for the daily assignments. I will give you my undivided attention and I expect the same of each student.
5. This class meets in a lab, which usually means food is prohibited, however due to the timing of this course, eating a non-disruptive snack will be allowed so long as we are not working with chemicals; you’ll be notified in advance if food cannot be brought into the classroom and a break will be provided.

Course Specific Procedures

1. Students are required to take all exams and must be completed before the exams are returned to the class. Exams are 40% of your grade; 20% each (x’s 2).
2. Students will be responsible for their learning and participate in all class activities with a positive, constructive attitude. Professionalism will be practiced.
3. Students will have all homework completed upon entering class. Late work is not accepted so do not be

The syllabus/schedule are subject to change.

late to class. Students will not attempt to work on any material for another class.

4. Students will be uploading some assignments in the course shell. Other assignments will require printing materials for use in class. It is the student's responsibility to make arrangements to print. For the project I can print materials if you do not have access to a printer. Always cite work, we do not want to practice plagiarism.

5. All homework and labs will be turned in to D2L. Please hand write in the course manual and then scan in the labs and homeworks depending on what is required each week. I will not ask you to remove pages from the lab manual, so scans will be the only way I can grade homework and labs.

6. Students will participate and contribute equally in-group activities. Failure to comply will be reflected in the non-compliant student's grade and will not be a detriment to the remaining group members. All collaborative assignments will have an individual grade for each student dependent upon their contribution, collaboration, content, and professionalism. If there is a conflict within a group, please see me.

7. Students are welcome to stay after class to talk to me or make an appointment if the posted hours do not fit the need. If you are struggling, seek assistance early, I am here to help you learn.

ALL students have the option to earn an A for this class, however extra credit is not usually offered. Although I have the right to drop a student for excessive absences; I won't do so. Students have the right to earn an F if they decide not to complete the work. I generally do not offer or approve drops/incompletes for poor effort. Remember you are training to teach which will affect the next generation of students.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook

http://www.tamuc.edu/student_guidebook/Student_Guidebook.pdf

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: <https://www.britannica.com/topic/netiquette>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedures 13.99.99.R0.01](#)

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

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Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

[Undergraduate Student Academic Dishonesty Form](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/documents/13.99.99.R0.03UndergraduateStudentAcademicDishonestyForm.pdf>

[Graduate Student Academic Dishonesty Form](#)

<http://www.tamuc.edu/academics/graduateschool/faculty/GraduateStudentAcademicDishonestyFormold.pdf>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Velma K. Waters Library Rm 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Student Disability Services](#)

<https://www.tamuc.edu/student-disability-services/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

The syllabus/schedule are subject to change.

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

AI use policy [Draft 2, May 25, 2023]

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

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Department or Accrediting Agency Required Content

COURSE OUTLINE / CALENDAR

Science

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 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.

https://tea.texas.gov/sites/default/files/EC_6_Science_Final%283%29_0.pdf

https://tea.texas.gov/sites/default/files/4-8sci_0.pdf

https://www.tx.nesinc.com/content/docs/TX391_CoreSubjects_PrepManual.pdf (pp 27-33)

https://www.tx.nesinc.com/Content/StudyGuide/TX_SG_obj_116.htm#standards

In science, many of the concepts work in conjunction with others. The weekly outline is general and not specific. We will work at a pace needed for student success.

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