IS 351.51E, 80353, Science Inquiry I

COURSE SYLLABUS: Fall 2022
Class meets M 5:00-7:40 pm, CHEC 229

INSTRUCTOR INFORMATION

Instructor: Kenric Davies, MAT
Office Hours: **By Appointment ONLY** W/F 6:00-8:00 pm
Zoom Meeting ID: https://zoom.us/j/3512721625
University Email Address: Kenric.Davies@tamuc.edu
Preferred Form of Communication: email
Communication Response Time: 24 hours, week days only

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) **Required: IS 351 Lab Manual – NEW Edition** available only at the campus bookstore. These are custom printed. Confirm you get the correct manual

ISBN: 9781645651536

Software Required: regular MS office (or equal), Google Drive access

Recommended Materials: notebook, calculator, computer, scanner or scanner app, and note taking materials

FACE MASKS

Face masks are not required however it is recommended that you exercise safety and be cautious. We have a full class so it will be tight-close conditions. I recommend wearing a face mask for at least the first few weeks of the semester to keep from sharing any germs. It is common for colds, the flu, and strep throat to go around at the beginning of a semester due to close conditions and many people crowding into rooms together. Different variants of COVID are currently prominent in Hunt County. I prefer that you exercise safety and stay healthy.

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 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.

The *syllabus/schedule are subject to change.*

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 his/her own teaching philosophy.

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

Topics covered:

Forces & 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 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

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.

Astronomy

The astronomy 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 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 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.

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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 compliment 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, 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 and PowerPoints. All work to be graded will be submitted within the D2L platform. Students should have basic understanding and ability to manage fundamental computer skills such as word processing, spreadsheets, & presentations. We will be using the Google Suite (Google Docs, Sheets, etc) during this course.

Instructional Methods

This class will meet in CHEC 229 from 5:00 -7:40pm on Mondays. 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 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.

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 class.

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GRADING

The following scale will be used for determining final course grades:

Grades will be based on four components:

Exams	45%
Notebook	25%
Homework	20%
Class participation	10%

Grading scale:

90% ≤ A < 100%
80% ≤ B < 89%
70% ≤ C < 79%
60% ≤ D < 69%
F < 60%

<u>Tentative</u> Exam Dates
1) October 3
2) November 7
3) Finals Week

The syllabus and/or schedule are subject to change.

Plagiarism or cheating will not be tolerated for any reason and violation will provide the individual(s) involved with a failing grade and a referral to the dean's office for further disciplinary action.

Assessments

Exams: There will be two midterms and a final. They will be weighted equally. Midterms will be scheduled at least two weeks in advance. The date will depend on the speed at which material is covered. See the course outline for *approximate* dates. Make-up exams will only be allowed for excused absences. See course policies below for details on excused absences.

Notebook: Guidelines for the notebook will be provided in a separate document.

Homework: Up to 10 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.

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 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.

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

YouSeeU Virtual Classroom Requirements:
https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

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

Please take advantage of office hours; they are provided for you. Please also feel welcome to email any questions you may have. Appointments can be made outside of stated office hours if needed but must be requested through email. All written communication should be through email at this address:
Kenric.Davies@tamuc.edu

Students will be expected to regularly check their email provided by the University through D2L as this address is provided to the instructor. In **ALL email**, students are required to include the following information in the subject line: **the course name, last then first name, and a (very) brief statement/inquiry.**

e.g. Subject: IS 351, Davies, Kenric lesson #3 question

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This will allow all inquiries to be answered as soon as possible. If a response is not received within 2-weekdays then assume there was a problem with the email and please follow-up through other contact options.

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. Attendance will be taken by sign-in sheet at the beginning of class.

2. The instructor must be notified by email (Kenric.Davies@tamuc.edu) about any excused absences **no later than 24 hours after the missed class**. Even if you choose to notify the instructor in person, you **must still follow up with email** within 24 hours of the missed class. If you do not follow this policy, you will have the zero participation grade counted and may not be able to make up a missed exam.

3. You are responsible for obtaining notes and class announcements from missed classes.

4. Excessive absences may result in being dropped from the course.

5. When emailing the instructor, include the **course and section number in the subject line**.

6. You are expected to check your email at least once a day for class announcements. Emails will be sent to the email addresses you provided to MyLeo. Notify the instructor if you would prefer to receive emails at a different address.

7. Homework is due at the beginning of class.

8. Students should fully participate in class activities. Failure to do so will impact the student's class participation grade.

9. Students are expected to be professional and respectful and take responsibility for their learning. If you find yourself struggling, the instructor is available to provide extra help outside of class.

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 45% of your grade; 15% each.

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 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.

4. Students are welcome to visit during office hours, 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 to not 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/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

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 Procedure 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

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

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

Graduate Student Academic Dishonesty 13.99.99.R0.10

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

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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
Gee Library- Room 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu
Website: Office of Student Disability Resources and Services
http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

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

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

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COURSE OUTLINE / CALENDAR

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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

In science, many of the concepts work in conjunction with others. The weekly outline is general and not specific. (list outline is for a long semester)

Week (**Exam dates are approximate**.)

8/29	Syllabus, Relationships, Nature of Science
9/5	**Labor Day – No Class**
9/12	Motion – Constant Velocity
9/19	Motion – Motion Graphs
9/26	Motion – Constant Acceleration
10/3	**Exam 1 – Motion**
10/10	Forces – Inertia & Newton's 2nd Law
10/17	Forces – Newton's 3rd Law
10/24	Energy – Work & Energy
10/31	Energy – Conservation of Energy
11/7	**Exam 2 – Energy**
11/14	Astronomy - Seasons
11/21	Astronomy – Moon Phases
11/28	Astronomy – Solar System
12/5	Review
12/12	**Final Exam (normal class time)**

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