PHYS-1410-102HY
Applied Physics
Spring 2021
1:30 pm to 4:20 pm,
Tuesdays and Thursdays

INSTRUCTOR INFORMATION:
Instructor: Dr. Suleyman Tari
E-mail: stari@com.edu
Phone: 409-933-8109 (office) / 773-368-3921 (cell)

STUDENT HOURS AND LOCATION:
Tuesday 9:30 am – 1:30 pm, walk in my office MS 111.
Thursdays 9:30 am - 1:30 pm, online via Blackboard Collaborate.

REQUIRED TEXTBOOK/MATERIALS:
- Applied Physics Guide, 2nd Edition
- You can download the "Applied Physics Guide 2nd Edition" free from ***BB under course resources tab.***
- If you want the hard copy of the book, you can purchase if from the College Bookstore.
- ***"Applied Physics Lab Manual",*** purchase from College Book Store.

COURSE DESCRIPTION:
- This is a one-semester, **non-calculus** approach to the principles of force and motion, work and energy, fluids, heat, and thermodynamics.
- The course is intended for students of process technology, other workforce students, and students seeking a foundation for further academic studies.
- The concepts of fluids, heat and thermodynamics are emphasized.
- Prerequisites: TECM-1303 and MATH-0320; or MATH-1314.
- This is an academic transfer course.

COURSE REQUIREMENTS:
Exams
- There will be ***three midterms*** exams (non-cumulative) and ***a final exam*** (cumulative).
- Exams will be given in class at COM in room MS 131.
- Exams questions consist of conceptual questions and problems that needs to be solved.
- A formula sheet will be provided in the exam.
- Midterm exams will last 2 hours, and final exam will last 3 hours.
- There are ***NO make-up exams (except emergencies, proof must be provided)*** so please make every effort to not miss a test.

Laboratory
This course consists of both a lecture and laboratory grade component. Students must earn a 70% or better in the laboratory component to successfully pass the course. Earning less than 70% in the laboratory component will result in an F for the course regardless of the lecture grade. Passing the laboratory component and failing the lecture component will not guarantee a passing grade for the course. Deviations from this policy will be at the sole discretion of the instructor.
- Students are required to perform lab work in classroom at COM campus and complete the "Lab Homework" online using **Blackboard.**
- Students must pass the lab in order to pass the course.
- There is no make-up lab because of scheduling problems unless in case of emergencies (prove must be submitted).
- If you miss **only one lab** (with a valid excuse, i.e emergence, sickness prove must be submitted), that lab will be dropped as the lowest grade.

- If you miss a lab for the second time (no excuse accepted), you will have grade of **zero** for that lab.
- If you miss a lab for the third time you may **fail** the class.
- Lab grading is:
    - Performing the lab in classroom **(50 %)**
    - Complete Lab HW on Blackboard **(50%).**
    - You **cannot** do the Lab HW if you do not perform the lab in class.

Homework Assignment (Online Blackboard)

- After each chapter, there will be a Homework consisting of 5 to 10 questions.
- Homework will consist of conceptual questions and problems where you need to use some math to solve.
- Homework have deadlines and must be completed in time.
- Homework does not have time limit; however, it must be completed before the due date.

Quiz (Online Blackboard)

- After each chapter, there will be a Quiz consisting of about 5 to 10 questions.
- Each quiz consists of conceptual questions and questions where you need to use some math to solve.
- Quizzes are **timed,** please complete the quiz once you start doing it.
- Quizzes must be completed before the due date.

METHODS OF INSTRUCTION: For Spring 2021 semester, class will be hybrid.

Lectures will be online:

- Thursdays: Lecture will be on Collaborate ***Blackboard***.
- Homework and Quizzes will be done using ***Blackboard***

Laboratories:

- Tuesdays: Labs (All 12 Labs) will be done at COM campus at building #9 room MS 131 (see syllabus for the labs and dates).
- Lab Homework will be done on **Blackboard.**

Classroom Conduct Policy:

- It is considered rude to not pay attention during a lecture or to distract others. If you must get out of your seat, or if you arrive late while a lecture is being delivered, you must do so without distracting the other people in the room or interrupting the instructor. Remember that all students have paid to attend the lecture, and they deserve to be treated with courtesy. They should have the opportunity to listen to the lecture without interruption.
- *Eating, iPods, I watch, laptop computer and any electronic devices* are *NOT allowed* in the classroom and the laboratory area.
- *Absolutely no using cell phones* during class and labs.
- Electronic video and/or audio recording is not permitted during class unless the student obtains written permission from the instructor. In cases where recordings are allowed, such content is restricted to personal use only. Any distribution of such recordings is strictly prohibited. Personal use is defined as use by an individual student for the purpose of studying or completing course assignments. Failure to abide by this policy will result in disciplinary action through thee code of Student conduct.

DETERMINATION OF COURSE GRADE/DETAILED GRADING FORMULA:

The details of how each item will be added to your final total are shown in the following chart.

Type of Assessment	% of the FINAL grade
Three Midterm Exams	12+12+12
Homework (BB)	15
Quiz (BB)	15
Lab HW (BB) + Lab in class (11+11)	22
Final Exam	12
Total	100

Percentage	Letter Grade
90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
0 – 59%	F

LATE WORK, MAKE-UP, AND EXTRA-CREDIT POLICY:

- All assignments must be completed before due dates. Extension for any assignment may be granted in case of emergencies prove must be submitted.
- Make up for exams may be granted in case of emergencies, prove must be submitted.

ATTENDANCE POLICY:

Lecture:

You are expected to attend all the lectures.
Missing lectures may affect your allover class performance.
Please let your professor know whether you will be missing the class.
You can attend the class when you can make it in case you are late without disturbing the class.

Laboratories:

Given the hands-on nature of the laboratory, participation in this portion of the course is crucial. A student must successfully complete 75% (9 out of 12 labs) of all laboratory assignments to pass the laboratory portion. Failure to complete 75% of the laboratory assignments will result in a failing laboratory grade and a failing grade for the course. Documented excused absences (i.e., death in the family or a documented illness) will be handled on a case by case bases and at the discretion of the instructor.

COMMUNICATING WITH YOUR INSTRUCTOR: ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means. (Faculty may add additional statement requiring monitoring and communication expectations via Blackboard or other LMS)

STUDENT LEARNER OUTCOMES:

Upon successful completion of this course, students will successfully demonstrate mastery of the Student Learner Outcomes listed below.

Student Learner Outcome	Maps to Core Objective	Assessed via this Assignment
1. Demonstrate an understanding of basic Newtonian mechanics for the special case of one-dimensional motion.	Teamwork.	Labs 1-4. Students work in teams to achieve the objectives of each lab activity. Instructor will monitor and guide students to ensure that each member of each team is working effectively to achieve those objectives.
2. Demonstrate an understanding of basic work and energy concepts for the special case of one-dimensional motion.	Communication Skills (Written).	Labs 5-6. Students are guided through a written inquiry that requires them to develop, interpret, and express ideas in writing involving the relationships between work and energy. Instructor monitors these activities in real time and reviews the written passages.
3. Demonstrate an understanding of basic fluid properties and heat and temperature concepts.	Empirical and Quantitative Skills.	Labs 7-9. Students collect data, make observations and manipulations of that data in an attempt to arrive at an understanding of the relationship between heat and temperature of fluids. Students submit their conclusions in writing and complete a homework assignment.
4. Demonstrate an understanding of basic thermodynamics concepts.	Critical Thinking Skills.	Labs 10-12. Students develop skills through creative thinking and innovation as they develop their ability to analyze, evaluate, and synthesize the information associated with an understanding of the 1st and 2nd laws of thermodynamics. Students submit their written work and complete a homework assignment.

ACADEMIC DISHONESTY:

- College of the Mainland is committed to a high standard of academic integrity. In becoming a part of the academic community, students are responsible for honesty and independent effort. Incidents of academic and scholastic dishonesty (including cheating, plagiarism, and collusion) will be dealt with in a manner consistent with College Policy and the Student Handbook.
- Violations may result in a penalty. The maximum penalty will be a grade of "F" for the course. Violations may also be reported to the Judicial Coordinator as instances of *Inappropriate Behavior*. Please see the section on Privileges and Obligations in the Student Handbook for a more complete discussion of *Inappropriate Behavior*, and of your rights and responsibilities.
- There are many situations where you will be required to submit written work to earn points. It is important that the work you submit be your own. You cannot copy the work of another, or have your work copied by another. Doing so will be considered a violation of Academic Honesty.
- The work that you submit must be a product of your own mind. When completing assignments, for example, you are encouraged to collaborate with others to try to come to an understanding. But when you set pen to paper to write your answer, what you write must be a product of your own mind. When identical, or nearly identical, writings are submitted by students, it will lead me to suspect that work was copied. You could then be in violation of the standards of academic honesty, as described above.

STUDENT CONCERNS:

If you have any questions or concerns about any aspect of this course, please contact me using the contact information previously provided. If, after discussing your concern with me, you continue to have questions, please contact the department chairperson, Professor Sheena Abernathy, either in person, by telephone at 409-933-8330, or by email at sabernathy@com.edu

COURSE OUTLINE:

Phys 1410-102HY Applied Physics –Tentative Course Schedule

Week	Month	Date	Lecture Topics	Laboratories @ COM Room MS131, Tuesdays
1	Jan	19 21	**Ch 1: Underpinnings** Ratios, graphs, scientific notation, and significant figures, unit conversions, area under a graph, slope of a graph	No Lab
2		26 28	**Lab 1** **Ch 2: Position and Velocity** Average velocity, position-time graphs, velocity-time graphs, displacement	Lab 1. Introduction to Motion
3	Feb	2 4	**Lab 2** **Ch 3: Velocity and Acceleration** Average acceleration, free fall,	Lab 2. Changing Motion
4		9 11	**Lab 3** **Ch 3: Velocity and Acceleration** Graphical interpretation of acceleration, constant acc.	Lab 3. Passive Forces
5		16 18	**Exam 1, in classroom MS131** **Ch 4: Force and Motion:** Weight, friction, normal	**Exam 1,** No Lab
6		23 25	**Lab 4** **Ch 4: Force and Motion:** Weight, friction, normal	Lab 4. Force and Motion
7	Mar	2 4	**Lab 5** **Ch 5: Work and energy:** Work, kinetic energy, potential energy, mechanical energy, internal energy, power	Lab 5. Work and Energy
8		9 11	**Lab 6** **Ch 6: Fluids** Density, pressure, Archimedes, Bernoulli	Lab 6. Conservation of energy
9		16 18	No Class Spring Break No Class Spring Break	No Lab
10		23 25	**Exam 2, in classroom MS131** **Ch 7: Heat and Temperature** Calorimetry, phase change, thermal expansion, heat.	**Exam 2,** No Lab
11		30 1	**Lab 7** **Ch 8: Introduction to thermodynamics:** Isochoric, isobaric, isothermal, adiabatic process, first law of thermodynamics	Lab 7. Introduction of heat and Temperature
12	April	6 8	**Lab 8** **Ch 8: Introduction to thermodynamics:** Isochoric, isobaric, isothermal, adiabatic process, first law of thermodynamics	Lab 8. Energy Transfer and Temperature Change
13		13 15	**Lab 9** **Ch 9: Second Law of Thermodynamics** Heat energy transfer, thermodynamic temperature, entropy, reversibility	Lab 9. Heat and Energy Transfer
14		20 22	**Exam 3, in classroom MS131** **Ch 10: The ideal gas** State variables, ideal gas, internal energy	**Exam 3,** No Lab
15		27 29	**Lab 10** **Ch 11: Heat Engines and refrigerators** Heat engine, efficiency, refrigerator, Carnot engine	Lab 10. First Law of Therm.
16	May	4 6	**Lab 11** **Lab 12**	Lab 11. Ideal Gas Law Lab 12. Heat Engines
17		11	**Final Exam, Online on Blackboard.** **Ch 1-11 included.**	**Final Exam, Tuesday**

Changes on this syllabus could be made at the discretion of the instructor and will be announced **in class** and **on Blackboard.**

Institutional Policies and Guidelines

Grade Appeal Process: Concerns about the accuracy of grades should first be discussed with the instructor. A request for a change of grade is a formal request and must be made within six months of the grade assignment. Directions for filing an appeal can be found in the student handbook.<https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf. *An appeal will not be considered because of general dissatisfaction with a grade, penalty, or outcome of a course. Disagreement with the instructor's professional judgment of the quality of the student's work and performance is also not an admissible basis for a grade appeal.* https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf

Academic Success & Support Services: College of the Mainland is committed to providing students the necessary support and tools for success in their college careers. Support is offered through our Tutoring Services, Library, Counseling, and through Student Services. Please discuss any concerns with your faculty or an advisor.

ADA Statement: Any student with a documented disability needing academic accommodations is requested to contact Holly Bankston at 409-933-8520 or hbankston@com.edu. The Office of Services for Students with Disabilities is located in the Student Success Center.

Counseling Statement: Any student needing counseling services is requested to please contact Holly Bankston in the student success center at 409-933-8520 or hbankston@com.edu. Counseling services are available on campus in the student center for free and students can also email counseling@com.edu to set up their appointment. Appointments are strongly encouraged; however, some concerns may be addressed on a walk-in basis.

Textbook Purchasing Statement: A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

Withdrawal Policy: Students may withdraw from this course for any reason prior to the last eligible day for a "W" grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law. The last date to withdraw is March 3rd for the 1st 8-week session, April 26 for the 16-week session, and May 5th for the 2nd 8-week session.

F_N Grading: The F_N grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The F_N grade may be issued for cases in which the student ceases or fails to attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the F_N grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an F_N grade.

Early Alert Program: The Student Success Center at College of the Mainland has implemented an Early Alert Program because student success and retention are very important to us. I have been asked to refer students to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If you are referred to the Early Alert Program you will be contacted by someone in the Student Success Center who will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

COVID-19 Statement: All students, faculty, and staff are expected to familiarize themselves with materials and information contained on the College of the Mainland's Coronavirus Information site at www.com.edu/coronavirus. Students are required to watch a training video, complete the self-screening, and acknowledge the safety guidance at: www.com.edu/selfscreen. In addition, students, faculty, and staff must perform a self-screening prior to each campus visit. Finally, students, faculty, or staff who have had symptoms of COVID-19, received a positive test for COVID-19, or have had close contact with an individual infected with COVID-19 must complete the self-report tool.