PHYS-1410-101C3
Applied Physics
Spring 2025
11:00 am to 1:50 pm
Mondays and Wednesdays

INSTRUCTOR INFORMATION:
Instructor: Dr. Suleyman Tari
E-mail: stari@com.edu
Phone: 409-933-8816 (office) / 773-368-3921 (cell)

STUDENT HOURS AND LOCATION:
Mon, Wed: 5:00 pm - 6:15 pm in my office S325-21
Tuesday: 5:00 pm - 6:00 pm in my office S325-21
Thursday: 5:00 pm - 9:00 pm **virtual (by appointment)**

REQUIRED TEXTBOOK/MATERIALS:
- Applied Physics Guide, 2nd Edition.
- You can download the ***"Applied Physics Guide 2nd Edition"*** free from D2L under the course materials tab.
- If you want a hard copy of the book, you can purchase it from the College Bookstore.
- ***"Applied Physics Lab Manual",*** purchased 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-1343 or MATH-1314 with a grade of C or better.
- This is an academic transfer course.

COURSE REQUIREMENTS:
Exams
- There will be ***three midterm*** exams (non-cumulative) and ***a final exam*** (cumulative).
- Exams will be given in class at COM in room S302.
- Exams questions may consist of conceptual questions and problems that need to be solved.
- A formula sheet will be provided in the exam.
- Midterm exams will last 2 hours, and final exams will last 3 hours.
- There are ***NO make-up exams (except emergencies, proof must be provided)*** so please make every effort not to miss a test.

Laboratory
This course consists of both a lecture and laboratory grade component. Students must earn 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 **Desire to Learn (D2L).**
- Students must pass the lab to pass the course.
- There is no make-up lab because of scheduling problems unless in case of emergencies (proof must be submitted).
- If you do not perform the lab in person, you will not get a grade for the Lab HW unless I approve of your absence. If I approve your absence, you will get only lab HW portion which is 50% of total grade.
- Lab grading is:
  - Performing the lab in classroom and completed lab manual **(50 %)**.
  - Complete Lab HW on D2L **(50%).**

Homework Assignment (Online D2L)

- 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 has deadlines and must be completed in time.
- Homework is not timed; however, it must be completed before the due date.

Quiz (Online D2L)

- 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:

Lecture

- Power point presentation may be available (PPT will be on D2L)
- Video and/or animation of concepts when suitable
- Solving examples in the book during lecture
- Demonstrations of concepts in class

Laboratories:

- Thursdays: Labs (All 11 Labs) will be done at COM campus at S302 (see syllabus for the labs and dates).
- Lab Homework will be done on ***D2L.***

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 (in class)	15+15+15
Homework (D2L)	10
Quiz (in class-D2L)	10
Lab (in class) + Lab HW (D2L)	10+10
Final Exam (in class)	15
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 the due date. Extension for any assignment may be granted in case of emergencies prove must be submitted.
- Make up for exams and laboratories may be granted in case of emergencies, proof must be submitted.

Extra Credit

Class activity: You may get extra credit (point) answering and/or solving questions during the class.

- %5 of extra points earned from class activity will be added to your final grade.
- The maximum extra credit can be earned in one semester from class activity is 5% (5 points) out of 100 points.
- If you earn more than 100 points in a semester you still get a maximum of 5 points.

Instructor evaluation:

- You may get up to 50 points extra credit as an "instructor evaluation" during the class to be added to the class activity (towards 100 points) mentioned above. This will be based on class **attendance**, **participation**, **being on time in class** etc. Please do not expect this credit, not everyone will get this credit. Please do not ask the professor to receive this credit at the end of the semester.

ATTENDANCE POLICY:

Lecture:

You are expected to attend all the lectures. Attendance is 5% of your total grade.
Missing lectures may affect your all over 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 may 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 D2L 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 1410-101C3 Applied Physics –Tentative Course Schedule

Week	Month	Date	Lecture Topics	Laboratories Room S302 **Wednesdays**
1	Jan	13 15	**Introduction, Math Review** **Ch 1: Underpinnings:** Ratios, graphs, scientific notation, and significant figures	 No Lab, but lecture
2		20 22	**No Class, MLK Day** **Ch 2: Position and Velocity:** Average velocity, position-time graphs	- No Lab, but lecture
3		27 29	**Ch 2: Position and Velocity:** velocity-time graphs, displacement **Lab 1**	- Lab 1. Intro. to Motion
4	Feb	3 5	**Ch 3: Velocity and Acceleration:** Constant acceleration, graphical interpretation of acc. **Lab 2**	- Lab 2. Changing Motion
5		10 12	**Exam 1, Chapters 1,2,3 included.** **Ch 4: Force and Motion:** gravitational, normal, tension, friction force	- No Lab, but lecture
6		17 19	**Ch 4: Force and Motion:** Newton's Laws Lab 3	- Lab 3. Passive Forces
7		24 26	**Ch 5: Work and energy:** Work, kinetic energy, potential energy **Lab 4**	- Lab 4. Force and Motion
8	March	3 5	**Ch 5: Work and energy:** mechanical energy, internal energy, power **Lab 5**	- Lab 5. Work and Energy
9		10 12	**Ch 6: Fluids:** Density, pressure, Archimedes, Bernoulli, Pascal's principles **Lab 6**	- Lab 6. Cons. of energy
10		17 19	**No Class-Spring Break** **No Class-Spring Break**	-
11		24 26	**Exam 2, Chapters 4,5,6 included.** **Ch 7: Heat and Temperature:** Heat, temperature, specific heat, calorimetry, phase change, thermal expansion.	- No Lab, but lecture
12	April	31 2	**Ch 8: Introduction to thermodynamics:** Isochoric, isobaric, isothermal, adiabatic process, First law of thermodynamics **Lab 7**	- Lab 7. Introduction of heat and Temperature
13	April	7 9	**Ch 9: Second Law of Thermodynamics:** Heat energy transfer, thermodynamic temperature, entropy, reversibility **Lab 8**	- Lab 8. Energy Transfer and Temperature Change
14		14 16	**Ch 10: The ideal gas:** State variables, amount of substance, ideal gas, **Lab 9**	- Lab 9. Heat and Energy Transfer
15		21 23	**Ch 10: The ideal gas:** internal energy, isobaric and adiabatic process for ideal gas. **Ch 11: Heat Engines and refrigerators:** Heat engine, efficiency, refrigerator, Carnot engine **Lab 10**	 Lab 10. First Law of Therm.
16		28 30	**Lab 11** **Exam 3, Chapters 7,8,9,10,11 included.**	Lab 11. Ideal Gas Law
17	May	5	**Final Exam, Ch 1-11 included, in classroom S302.**	

Changes to this syllabus could be made at the discretion of the instructor and will be announced **in class** and **on D2L.**

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://www.com.edu/student-services/docs/Student_Handbook_2024-2025_v2.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.*

Academic Success & Support Services: College of the Mainland is committed to providing students with 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 accommodation is requested to contact:
Kimberly Lachney, Student Accessibility Services Coordinator
Phone: 409-933-8919
Email: AccessibilityServices@com.edu
Location: COM Doyle Family Administration Building, Student Success Center

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 from the 1st 8-week session is February 26. The last date to withdraw from the 16-week session is April 21. The last date to withdraw for the 2nd 8-week session is April 30.

FN Grading: The FN grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The FN 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 FN grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an FN 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.

Resources to Help with Stress:
If you are experiencing stress or anxiety about your daily living needs including food, housing or just feel you could benefit from free resources to help you through a difficult time, please click here https://www.com.edu/community-resource-center/. College of the Mainland has partnered with free community resources to help you stay on track with your schoolwork, by addressing life issues that get in the way of doing your best in school. All services are private and confidential. You may also contact the Dean of Students office at deanofstudents@com.edu or communityresources@com.edu.

Nondiscrimination Statement:
The College District prohibits discrimination, including harassment, against any individual on the basis of race, color, religion, national origin, age, veteran status, disability, sex, sexual orientation, gender (including gender identity and gender expression), or any other basis prohibited by law. Retaliation against anyone involved in the complaint process is a violation of College District policy.