



PHYS-1410-102CL
Applied Physics
Spring 2021
Tuesday, Thursday
01:30PM - 04:20PM

Instructor Information: Tareq Ismail, Ph.D., tismail@com.edu, (409) 833-8772

Student hours and location:

M & W 2pm - 5pm

T & Th 4:30PM – 5:30PM

Location: STEAM Bldg. #22, Room 127

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-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 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 will perform the experiment using the lab manuals; calculate and answer all the questions in a logical manner. Lab manuals will be collected at the end of semester and will be graded.
- [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. emergency, 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 **25% + Lab manuals submitted 25%.**
 - 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 **is not timed**; 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:

Lecture

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

Laboratories:

- Thursdays: Labs (All 12 Labs) will be done at COM campus at S302 (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 the 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	10+10+10
Attendance	5
Homework (BB)	15
Quiz (BB)	15
Lab HW (BB) + Lab in class	10+10
Final Exam	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 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)

Class evaluation:

Class evaluation is part of the grading in my classes. I use the evaluation to improve on my teaching skills. Your feedback helps me become a better instructor. During the period of class evaluation, you will be marked half day present until the admission provide me with all names that evaluated my courses. The admission won't talk about the content of the evaluation. But will tell me if have completed the evaluation or not.

1% extra credit for class evaluation.

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 1 st and 2 nd 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 1410-102CL Applied Physics –Tentative Course Schedule

Week	Month	Date	Lecture Topics	Laboratories @ COM Room S302, Thursdays
1	Jan	Jan 18 20	Ch 1: Underpinnings Ratios, graphs, scientific notation, and significant figures, unit conversions, area under a graph, slope of a graph	No Lab
2		Jan 25 Jan 27	Ch 2: Position and Velocity Average velocity, position-time graphs, velocity-time graphs, displacement Lab 1	Lab 1. Introduction to Motion
3	Feb	Feb 1 3	Ch 3: Velocity and Acceleration Average acceleration, free fall, Lab 2	Lab 2. Changing Motion
4		Feb 8 10	Ch 3: Velocity and Acceleration Graphical interpretation of acceleration, constant acc. Lab 3	Lab 3. Passive Forces
5		Feb 15 17	Exam 1, in classroom S302 Ch 4: Force and Motion: Weight, friction, normal	Exam 1 No Lab, but lecture
6		Feb 22 24	Ch 4: Force and Motion: Weight, friction, normal Lab 4	Lab 4. Force and Motion
7	Mar	Mar 1 3	Ch 5: Work and energy: Work, kinetic energy, potential energy, mechanical energy, internal energy, power Lab 5	Lab 5. Work and Energy
8		Mar 8 10	Ch 6: Fluids Density, pressure, Archimedes, Bernoulli Lab 6	Lab 6. Conservation of energy
9		Mar 22 24	Exam 2, in classroom S302 Ch 7: Heat and Temperature Calorimetry, phase change, thermal expansion, heat.	Exam 2 No Lab, but lecture
10		Mar 29 31	Ch 8: Introduction to thermodynamics: Isochoric, isobaric, isothermal, adiabatic process, first law of thermodynamics Lab 7	Lab 7. Introduction of heat and Temperature
11		Apr 5 7	Ch 8: Introduction to thermodynamics: Isochoric, isobaric, isothermal, adiabatic process, first law of thermodynamics Lab 8	Lab 8. Energy Transfer and Temperature Change
12	Apr	Apr 12 14	Ch 9: Second Law of Thermodynamics Heat energy transfer, thermodynamic temperature, entropy, reversibility Lab 9	Lab 9. Heat and Energy Transfer
13		Apr 19 21	Exam 3, in classroom S302 Lab 10	Exam 3 Lab 10. First Law of Therm.
14		Apr 26 28	Ch 10: The ideal gas State variables, ideal gas, internal energy	No Lab
15		May 3 May 5	Review for final exam	
16	May	May 10	Final Exam, Online on Blackboard. Ch 1-10 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 from the 1st 8-week session is March 2. The last date to withdraw from the 16-week session is April 25. The last date to withdraw for the 2nd 8-week session is May 4.

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.

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. In compliance with Governor Abbott's May 18 Executive Order, face coverings/masks will no longer be required on COM campus. Protocols and college signage are being updated. We will no longer enforce any COM protocol that requires face coverings. We continue to encourage all members of the COM community to distance, when

possible, use hygiene measures, and get vaccinated to protect against COVID-19. Please visit com.edu/coronavirus for future updates.

Course policies are subject to change, and it is the student's responsibility to check Blackboard for corrections or updates to the syllabus.

