

PHYS 2000: PHYSICS FOR EVERYONE

A Clemson Think2 (CT²) introductory physics course

Class meetings: T, R 2:00–3:15 pm (CRN: 10790) in Daniel Hall 100B+ (face-to-face at present+)

+The course modality may change temporarily due to pandemic situation, for additional details, check *Course Modality and Continuity Plan* section of the syllabus on page 2.

Time to Wait: 15 min after the class start time.

Course TA: Danielle Markowski

Virtual Office hours (via Zoom): By appointment only. Please sign up using the **Canvas “Calendar”** (available under the main canvas menu on the left side) to make an appointment for a zoom meeting. (**Zoom Meeting link:** <https://clemson.zoom.us/j/7842072533>).

I have set up several 15 min slots in your Canvas "Calendar". Please sign up for the time slot you would like to meet with me (you can sign up for 2 slots if you need more time) by going to the Calendar link, selecting your PHYS 2080 course, and then reserving a specific time slot (for step-by-step sign-up instructions, please see [this link](#)).

Face-to-face office hours can be arranged through prior email appointment if needed.

IMPORTANT NOTE: Please ensure that your canvas settings allow the announcements and canvas emails forwarded to your Clemson email ID so that you can receive any important notifications in a timely manner.

[*tentative, subject to change- may be re-scheduled or cancelled (any changes and alternate options will be announced via email)]



Pooja Puneet, PhD
205 Kinard Lab
ppuneet@clemson.edu
864-656-1408

My teaching philosophy:

"The value of a college education is not the learning of many facts but the training of the mind to think."

— Albert Einstein

Please do not hesitate to reach out to me if you have any specific concerns any time during this semester; I will work with you to address those. I can only help you if you let me know.

COURSE DESCRIPTION

(Credit hours: 4) This is an introductory one-semester physics course for non-science majors that includes topics, such as mechanics, heat, electricity, magnetism, light and nuclear processes. This course may be substituted for PHYS 2070 with the approval of the student's program of study department. Credit for a degree will be given for only one of PHYS 2000, or 2070.

This course is part of the Clemson Think2 (CT²) program, which is designed to improve your critical thinking ability. It is important to develop critical thinking ability rather than mere memorization of facts, as it is a vital skill set for your successful career in various fields. Critical thinking is a self-aware process of thinking in a clear and systematic way to gain a deeper understanding. Physics teaches you to think critically and logically using first principles approach. Most people need training in developing good

critical thinking abilities. I have high expectations from you, and I am determined to provide scaffolded instruction and assistance so you can reach this goal and be successful. You are expected to complete assignments in a timely manner, review materials daily and seek help when needed. To develop this ability, you would work on several in-class activities/assignments and homework assignments that involve defining and analyzing problems related to physics, identifying and evaluating options, inferring likely outcomes and probable consequences, evaluating and explaining the reasons. For more information, please visit: <http://www.clemson.edu/assessment/thinks2/>.

COREQUISITES

The students are **required** to be enrolled concurrently in **PHYS 2001 (physics lab)** with this course. The lab sessions are held on Fridays (Check lab schedule of Canvas course: PHYS 2001)

PREREQUISITES

The students are required to take MATH 1020 or equivalent prior to taking this course.

COURSE MODALITY AND CONTINUITY PLAN

This is a fully in-person course. **Class attendance is required.** Students who may be unable to attend classes in-person due to medical reasons, quarantine, or other official excuses should reach out to the instructor for alternate arrangements within 24 hours of the missed class.

If the course needs to be moved to online modality temporarily during the semester for any reason (including but not limited to, significant number of students being in quarantine, instructor being unwell or requiring quarantine, etc.), an alternative method (e.g., synchronous online class meetings, or access to asynchronous video materials) will be arranged depending on the situation. The detailed information will be emailed to students through canvas announcement if the course modality changes during the semester. If classes are held synchronously online via zoom during the semester, the zoom meetings will be treated as the regular class meetings and attendance will be expected. All class recordings (synchronous or in-person) will be posted in your canvas course for review later.

GEN ED REQUIREMENTS

Physics is a foundational science, forming a framework for the world around us, informing many of our daily activities and scientific inquiries. This course satisfies the general education competency (Ways of Knowing) for mathematics and natural sciences with the lab as evident in the lab reports of PHYS 2001. Students will demonstrate the process of scientific reasoning through experimental activity and critical comparison of their results to those predicted by accepted natural science principles. Students will also demonstrate the ability to assemble information relevant to a significant, complex issue, evaluate the quality and utility of the information, and use the outcome of the analysis to reach a logical conclusion about the issue.

Signature Assignment: This course has several laboratory-based activities, where students follow experimental procedures, collect data, and analyze data using scientific reasoning to compare their results to the accepted physical principles. One of the examples of the signature assignment for this course is 'Temperature and Specific Heat' lab. In this assignment, students mix varying volumes of different temperature water to collect data. They use their data to confirm the 1st law of thermodynamics in an isolated system, energy cannot be created or destroyed. Also, they analyze their data to calculate the

specific heat of an unknown material and to take into consideration experimental errors that lead to deviations from the accepted physical principles.

Learning Outcomes:

1. Understanding the basic terms (specific heat, first law) associated with heat and calorimetry.
2. Understand and apply the concept of heat transfer/calorimetry.
3. Perform experiment to collect data for finding the specific heat capacity of an unknown material.
4. Evaluate the specific heat capacity of the unknown material using mathematical analysis and application of the first law of thermodynamics/ calorimetry principle.
5. Provide objective and scientific reasoning in answering the post-lab questions.

STUDENT LEARNING OBJECTIVES

1. The student will familiarize themselves with the process of scientific observation through physics concepts associated with the objects and processes from everyday life.
2. The students will develop an ability to interpret and analyze general scientific information from various real-world physical situations.
3. The students will demonstrate a logical and critical approach to analyze various real world physical situations using the appropriate concepts of basic physics.
4. The students will be able to obtain a quantitative solution for introductory level physics problems using basic mathematical skills.

COURSE MATERIALS

1. **Textbook (cost \$0.00):** This is a *textbook free course*. To reduce the overall course costs, we will use Open Access Resources (OERs) for this course. The link to the free online College Physics e-textbook will be available in canvas course. Additionally, other course materials such as video-recorded lectures, worksheets, and links to other relevant free OERs will be posted in your Canvas course.
2. **Expert TA for online homework assignments (cost: \$32.50):** We will use *ExpertTA* as our Interactive Homework Assignment system for this course. The details with the registration process will be posted in your Canvas course.
3. **iClicker Reef for In-Class /Pre-class Quiz (cost: \$15.99 per 6 months):** An internet device such as a laptop, tablet or cell phone with subscription/access to *iClicker Reef* audience response system is required. Students can purchase an iClicker Cloud subscription from within the iOS or Android applications (apps) through canvas. All first-time users receive a free 14-day trial when they sign up for an iClicker Cloud account. A 6-month (or 1 year) subscription costs \$15.99 (\$24.99). For details on signing up and purchasing access, please see Class Activities and Assignments section. No clicker remotes are allowed for this course.
4. **Yellowdig for Think page (cost: \$0.00 courtesy Pearce Center):** *Yellowdig platform* will be used for our think page, one of the critical thinking (CT²) assignments for this course. The detailed instructions for the assignment and registration process can be found in the next section (Class Activities and Assignments) of course syllabus.
5. **Calculator:** Any kind of calculator is allowed.
6. Laptop or desktop computer.

7. Reliable internet service.
8. Web browser either firefox, chrome, or safari.
9. Ancillary information (lecture notes, recorded lectures, equation sheets, etc.) is provided in the Canvas course site and through Internet links (under the “Files” and “Modules” sections of Canvas).
10. Adobe Reader, Flash Player, Java, QuickTime Player.

CLASS ACTIVITIES AND ASSIGNMENTS

1. **Daily Quiz:** We are using audience response systems called *iClicker Reef* for our pre-class quizzes. Your *iClicker* account must be activated and registered as soon as possible. We will have our first graded PCQ assignment due on January 18th (Tuesday). The instructions for registering and accessing iClicker account will be posted separately on canvas course-Announcements page. The daily quiz score will be **worth a total of 20% of your total grade** and will be calculated as a total of the following two assignments:

a) Pre-class Quiz (PCQ): You will be pre-assigned short video lectures or reading materials through canvas ([Canvas course module: Pre-class assignments](#)) for introducing the concepts to be discussed in class on that day. After going over the assigned materials in canvas, you will be required to take a Pre-class Quiz before the actual class session by clicking on the **Assignments** tab in your iClicker Reef course titled PHYS 2000 Spring 2022. The PCQ assignments will be due **at 1 pm ET on the scheduled class day**, and you can work on this assignment at any time prior to the assigned due date. The assignments are expected to take approx. 25-30 mins of your time and will be worth 10% of your total grade.

b) In-class Quiz (ICQ): Each class session, there will be several questions posed through iClicker polling throughout class based on the materials being presented to strengthen your critical thinking ability, which you will answer using your internet device (cellphone, tablet, laptop, etc.). The **mobile iClicker Reef app is highly recommended for better experience** but is not necessary. We will begin using iClicker for a grade starting January 18th (Tuesday). This assignment will be worth 10% of your total grade.

Concerning scoring, you will receive 80% credit (8/10) for every answer (participation credit; regardless of correctness) and 20% credit (2/10) for each correct answer, and zero points are recorded for no answer/an absence. The **lowest three PCQ and ICQ quiz scores (including zeroes) will be dropped near the end of the semester**. Each quiz day score

TIPS FOR SUCCESS

- ✓ Carefully read/watch assigned pre-class readings/videos prior to lectures and complete PCQs. This will benefit and complement the in-class learning.
- ✓ Download/ print the provided lecture notes for the day to fill in the details during the lecture (rather than copying down all the material from the slides). This will help you focus on the explanations.
- ✓ Treat as if you are in a classroom. Engage fully in class by listening carefully and taking notes. It is easy to get distracted during online class meetings and engage in other activities, so maintaining your focus will be crucial for learning physics.
- ✓ The key to success in this class is PRACTICE, PRACTICE, and PRACTICE some more! Several HW problems as well as additional resources, such as worksheets/electronic resources and older exams, etc. will be provided for practice.
- ✓ Complete your HW by yourself. Do not rely on internet! Start early and seek help if needed.
- ✓ Familiarize yourself with provided equation sheet and use it regularly for HW problems.
- ✓ Ask questions and seek help in time rather than struggling at the last minute (Free resources: Instructor/TA Office hours, ASC tutoring, Physics Tutoring).

(for both PCQ and ICQ) is worth the same amount of credit regardless the number of questions asked on that day.

iClicker Reef (in-class quiz) makeup: If you miss more than three class days due to university excused absences or illnesses documented by a physician, you will have an opportunity to make up iClicker points or receive an excuse for the day. In order to take advantage of this, you must email your instructor pdf copy of your excuses. Your instructor will then give you an assignment for each day (or exemption) over the three quizzes that you miss in order to make up the points. The student will only be allowed a make-up if he/she shows written documentation *within one week of a particular iClicker session*.

- Homework:** Homework is a crucial component of this course. The total homework points earned over the semester will be averaged to **15% of the total grade**. We will be using **ExpertTA (accessed through canvas)** as our interactive homework submission system. Homework sets will be posted in the Canvas course under Assignments tab. Every student will have a free access to ExpertTA in the first two weeks of classes. The cost for using *ExpertTA* is 32.50/semester. Students have the option to purchase the access directly using a credit card during the registration process at *ExpertTA* through Canvas.

Homework is intended to take you approx. 2 and 3 hours per unit. For each problem, students are given 5 trial submissions to a correct answer. Homework is due at 11:59 pm on the day indicated in the schedule. There is a 1%/hour score reduction for a late homework with a maximum of 50% score reduction. All due dates are posted in the *ExpertTA* HW system that is linked with our Canvas course. Each homework is worth the same amount of credit (regardless of the number of raw homework points). **The homework with the lowest score will be dropped** at the end of the semester. *Online assignments must be completed on or before the due date for anticipated absences.*

Log in to ExpertTA

All students will have two-week grace period from the start date of the course to use ExpertTA for free, students have to pay for the access after the grace period for completing assignments. To access your Expert TA account directly from Canvas, please follow the steps below:

- Log in to Canvas and click Assignments, then click “Learning Expert TA – Tutorial” under Expert TA Assignments. These steps will log you in your Expert TA account.
- If this is your first time accessing ExpertTA through Canvas, you will be ported into Expert TA immediately, where you will have the option to pay with a credit card or choose a 14-day free trial. After the shopping card page, you can start working on your assignments.

NOTE: *The detailed instructions for registration to ExpertTA HW system will also be posted separately on the Announcements page of Canvas course by the first day of classes.*

- Think page (Yellowdig) discussions:** Discussions are a great way to improve your critical thinking and communication skills. Additionally, they provide an effective system for engagement and student-student interactions. Participation is a requirement for this course. **Yellowdig** is an online communication/ discussion platform that will be used to build our physics community for this course. The purpose of this community is to host meaningful course-related discussions on the topics that interest you the most. This game-based platform is designed for you have in-depth discussion on the topics you find yourself curious about as we learn various laws of physical world in this course. **Yellowdig grade is worth 10% of your total grade.**

To receive points for your Yellowdig Assignment each week, you will be

- Responding to the instructor's post in at least 75 words (300 points)
- Authoring/ Asking a new question in at least 75 words (300 points)
- Receiving a comment on your post (50 points)
- Receiving a reaction from a peer (20 points)
- Accolades from the instructor (20, 30, 40 or 50 points over the weekly target, if applicable)

For detailed instructions on the community guidelines and weekly posts, please read the instructor's introduction post in Yellowdig. The grading period for Yellowdig will begin on January 12th and ends on April 25th. Please check the due dates of each grading period in your course calendar (ends at 11:59 pm ET on the due date and the new YD period begins). **Your first YD assignment is due on Monday, Jan 24 at 11:59 pm.**

What to Write About

You can post a question on the course topics being covered during the week for your original posts. Examples and stories that illustrate a concept are always appreciated. If you know of video, audio, or visual art that are relevant to your posts, bring those in as well. You can also write about your course (physics) projects/ lab experiments—what you've learned, what's been challenging, where you've been creative, and more. The more interesting and engaging your posts, the better response you'll receive from your peers. Create posts early in the week so that there's plenty of time for others to read and reward what you say with comments and accolades. Please limit your posts to physics-based discussions. Any posts violating the community guidelines will be moderated (deleted).

Yellowdig grading:

Each week, the goal is to earn 1000 "Yellowdig" points. To get an "A" in Yellowdig, you must have at least 100% of the points by the end of the course (14 weeks x 1,000 = 14,000). If you reach the weekly max by the end of each week, you are guaranteed to get an "A" in Yellowdig. The points are configured so that you can actually earn up to 1250 per week (and thus get ahead). Your total weekly point goal in canvas will reset on **Mondays of each week after 11:59 pm ET.**

You are encouraged to reward your peers for producing excellent content by commenting on and reacting to their Posts. In addition, I will reward particularly exemplary Posts and Comments by giving Accolades. To earn as many points as possible, you are strongly encouraged to contribute to our Yellowdig Community earlier in the week and often. **Just keep in mind that, once you reach the weekly max (1250 points), you cannot earn additional points until the weekly reset deadline.**

Yellowdig passes back your Yellowdig grade to Canvas as a proportion that represents your current pace toward getting an "A" in Yellowdig. Therefore, the points you see in Yellowdig won't match the points you see in Canvas. If any of this confuses you, just remember: if you end every week with a Yellowdig grade of 100%, you are guaranteed to get an "A" in Yellowdig.

4. **Examinations:** There will be total 4 exams in this course: **three tests** or hour exams and a **cumulative (optional) final exam**. Each exam is worth 10% of the final grade. If you receive an A grade or are satisfied with your earned grade at the end of the semester (before taking the final exam), you can choose to drop the final exam by not taking it. With the lowest exam grades (out of 4 exams, including three tests (hour exams) and the final exam) being dropped, the total exam grade is worth 30% of your total grade in this course. The tests (hour exams) are scheduled at the class start time and you will be given 65 mins on your timer to complete the tests (for the exam dates, see course calendar at the end of syllabus). The **final exam** is scheduled for **Thursday, May 5th from 8**

am to 10:30 am. All exams will be administered online via Canvas and will require Respondus Lockdown browser and webcam.

Items allowed: The exams are closed notes/text. You may use a calculator and the printed copy of course equation sheet (available in canvas modules page) during the tests. You will also want several blank sheets of scratch paper. **You may NOT use any internet-based devices (including but not limited to cell phones, ipads etc.) during the exam.** The test will be administered through Canvas. You can take the exam in the classroom (will need to notify the instructor if you wish to use this option) or find a quiet place to take the exam. All audio and video will be recorded during the exam. Any violation of these conditions may result in serious penalties for the violation of academic integrity policy.

Make-up exam policies: If you miss an exam because of an excused absence or technical difficulties, you will be given a makeup exam. To obtain excused absence from an exam, you are required to request for the make-up exam within 24 hours of the originally scheduled exam explaining the circumstances for absence by emailing your instructor with an official document for absence as listed under official excuses by the University sources (see list of valid excuses under *Course Expectations and Policies* section of syllabus). Requests for make-up exams will be approved after verifying the letter of excuse.

5. **Labs (PHYS 2001):** This four-credit hour course includes a Friday lab. **The lab is worth 25% of the final grade** (250 points) in this course. The required lab materials and syllabus will be posted in a separate canvas “Intro Physics Lab” course (PHYS 2001) by your lab instructor. You must attend the section in which you are enrolled unless you make prior arrangements with the lab instructor. He/she has total discretion on whether to allow you to attend a different section.

Make up lab policies: There are three make up labs scheduled this semester (see lab schedule). If you missed a lab and have an excused absence (see list of valid excuses under Course Expectations and Policies section of syllabus), you may make up that lab. To do so, you must contact your lab TA and the course instructor and provide documentation of your excuse. Anticipated absences must be excused 1 week prior to the absence.

6. **Extra-credit (EC)-** There are several extra credit opportunities listed under modules with their due dates shown in the course schedule. EC assignments will be due on **Wednesdays of alternate weeks at 11:59 pm ET**. The total extra credit will amount for 2% of the total grade and will be added at the end of the semester. *These are the ONLY extra points offered in the course.* There will be NO ADDITIONAL POINTS awarded at the end of the semester. There will be no rounding of grades. If you feel you might be borderline, you will want to complete these assignments. No late assignments will be accepted.

A note on artifacts for CT² course: There are a variety of assignments (quizzes, homework, discussions, and exams) in this course that can be utilized as artifacts to encourage and demonstrate your refinement of critical thinking skills over the term.

GRADING POLICIES

The final letter grade will be calculated using the following grading scheme:

4 Exams: lowest of four exams (3 tests and 1 Final exam) will be dropped. (10% each)	30%
Daily quiz (<i>iClicker- PCQ and ICQ</i>)	20%
Homework (<i>ExpertTA</i>)	15%
Think page: <i>Yellowdig discussions</i>	10%
Physics Laboratory (PHYS 2001)	25%
Extra credit	2%
Total possible	102%

This course follows the typical grading guidelines:

A = 90 to 100%; B = 80 to 89.99%; C = 70 to 79.99%; D = 60 to 69.99%; and F = 0 to 59.99%

You are treated as a professional in the course. Accordingly, the grading is strict, but fair. Reading the directions and grading criteria provided for each assignment is the key to understanding how you will be graded. Following those directions is the key to doing well. No further changes to grades will be made after the last day of class. It is the responsibility of students to ensure that the correct grades have been entered in the Canvas gradebook and notify the instructor of any discrepancies.

Contesting grades: Grades will be updated typically weekly on Canvas. The students have one week to contest any grade after it is posted. It is the responsibility of students to ensure that the correct grades have been entered in the Canvas gradebook and notify the instructor of any discrepancies. Any requests for re-examination of scores more than one week after the grades are posted will not be granted. Scores for the in-class quiz assignments are typically posted weekly, so there should be plenty of time to contest a score within the allotted week. Requests for make-ups of the *in-class assignments* must also be made within the week of the question and must be backed up by a written document validating conflict.

MINIMUM TECHNICAL SKILL REQUIREMENTS

Students are expected to have a minimum working knowledge of computers and a word processing program to be successful in an online class. You must be comfortable with your computer system and willing to deal with any problems that may arise. Lack of technical knowledge can greatly interfere with your learning a new subject. If you do not have these skills, consider taking a short computer course prior to enrolling in an online course.

- Get your password and login to your class before the semester begins (if available)
- Attach files to email messages
- Compose written documents in a Word processor such as Microsoft Word
- Word processing tasks (type, cut, paste, copy, name, save, rename, etc.)
- Download information from the Internet
- Use of a Web browser
- Completing online forms
- Backup your files

- Install and maintain anti-virus and other software

Students are expected to be comfortable accessing the online course site and downloading files such as Microsoft Office documents, YouTube videos, and PDFs. In addition, students should be able to use Microsoft Office to compose written documents, spreadsheets, and PowerPoint presentations.

For technical assistance with the online course site, students should contact ithelp@clemson.edu or visit CCIT's website: (http://www.clemson.edu/ccit/help_support/).

COURSE EXPECTATIONS AND POLICIES

1. Faculty Response Time:

Communications Response Time: Instructor response time is 24 hours for questions posted in the Learning Management System and sent via email. This response times excludes weekends, official University closures, and other times as noted by the instructor. Should you need live assistance, email me (ppuneet@clemson.edu) to arrange an office (online) or phone consultation.

Important Note: Refer to the course calendar for specific meeting dates and times. Activity and assignment details will be explained in detail within each week's corresponding learning module. If you have any questions, please contact your instructor.

2. Class Roll:

Students can use iROAR to add courses through August 24, to drop courses without record through August 31, and to drop with a W grade through October 26, 2021. Students that have not participated in in-class activities by the second week, after the last day to add a class (August 24), may be removed from the roll. For students in a course where Canvas is used, instructors can view students' date of last activity and total activity under the "People" tab. A student with an excessive number of absences may be withdrawn at the discretion of the course instructor. For the Fall 2021 semester, "excessive absences" will apply to students that never engage in-class activity (in person and/or online), to keep the class roll accurate. Students will not be penalized for absences related to COVID-19 (e.g., illness, isolation, quarantine) but must contact the instructor to discuss make-up work.

3. Classroom Behavior:

The Clemson Office of Community and Ethical Standards maintain expectations for Student Classroom Behavior: <https://www.clemson.edu/campus-life/student-conduct/classroom-behavior.html>. The students must adhere to the online code of conduct while attending the online synchronous class sessions.

Adhering to Online Conduct: Appropriate academic conduct includes doing assigned work, meeting deadlines, participating in online discussions, and completing all the required elements of the course. It also means following basic rules of Netiquette. Netiquette or Network Etiquette is a set of rules for behaving properly online. When you enter any new culture, you're liable to commit a few social blunders. You might offend people without meaning to. Or you might misunderstand what others say and take offense when it's not intended. In general, there are two basic guidelines:

1. Don't waste people's time.
2. Don't say anything to a person online that you wouldn't say to face-to-face.

More specific guidelines for proper behavior in an online learning course are listed below.

- **Avoid Flaming-** using derogatory, obscene, or inappropriate language. This can either be on a discussion board or in email.
- **Use emoticons to smooth online communication:** Emoticons are keyboard produced pictorial representations of facial expressions used in email or discussion boards to indicate an emotion or attitude, as to indicate intended humor [:-)].
- **Don't SHOUT.** Use of all capital letters and exclamation marks indicates SHOUTING.

- **Avoid grammatical and spelling errors** by using Spelling and Grammar checker tools when they are available.

Furthermore, appropriate academic conduct means maintaining a safe learning environment based on mutual respect and civility. All participants in Clemson online courses are expected to behave professionally by adhering to these standards of conduct:

- **Never transmit or promote content known to be illegal.**
- Respect other 's privacy as well as your own.
- Forgive other people's mistakes.
- Never use harassing, threatening, embarrassing, or abusive language or actions.

Online communication that fails to meet these standards of conduct will be removed from the course. Repeated misconduct may result in being blocked from online discussions, receiving a grade penalty, or being dismissed from the course. Such misconduct in the online environment may also be reported to officials for appropriate action in accordance with University policy. If you ever feel as though our online classroom is inappropriate or uncomfortable, please first contact your instructor with your concerns.

4. **Inclement Weather Policy:** Any exam that was scheduled at the time of a class cancellation due to inclement weather or national emergency will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless contacted by the instructor. Any extension of postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather-related cancellation.
5. **Email Communication:** Because of privacy regulations, University faculty and staff may email students only through Clemson email. Therefore, you must use your Clemson email account in this course for all email communications. It is student's responsibility to check the Clemson email or any possible announcements in Canvas DAILY for important messages.
6. **Copyright Notice:** The materials found in this course are strictly for the use of students enrolled in this course and for purposes associated with this course; they may not be retained for further dissemination. Clemson students, faculty, and staff are expected to comply fully with institutional copyright policy as well as all other copyright laws.

UNIVERSITY POLICIES

1. **Academic Integrity:** As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

All infractions of academic dishonesty by undergraduates must be reported to Undergraduate Studies for resolution through that office. In cases of plagiarism instructors may use the Plagiarism Resolution Form. See the [Undergraduate Academic Integrity](#) Policy website for additional information and the [current catalogue](#) for the policy.

Engagement activities fall under the provisions of our campus's academic honesty policy.

Students must not engage in academic dishonesty while participating in the in-class engagement activities. This includes but is not limited to answering polling questions while not physically in class, looking at other students' devices while answering live questions, requesting for answers to assignment problems in chat apps or other web-based platforms, or using more than one

Expert TA account at a time. TEST QUESTIONS ARE NOT TO BE DISCUSSED UNTIL THE TEST GRADES ARE RELEASED TO YOUR CLASS. Breach of this policy will constitute academic dishonesty.

2. **Academic Grievances:** Undergraduate students are advised to contact the Ombuds' Office prior to filing an academic grievance. If the undergraduate academic ombudsman agrees that a grievable issue has occurred, students can contact Undergraduate Studies (656-3022) for assistance filing official paperwork within 30 days of the semester following the awarding of a disputed grade.
3. **Student Disability Services:** Student Disability Services coordinates the provision of accommodations for students with disabilities in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990.

Reasonable and specific accommodations are developed with each student based on current documentation from an appropriate licensed professional. All accommodations are individualized, flexible, and confidential based on the nature of the disability and the academic environment. Housing accommodations for a disability or medical condition are also coordinated through this office.

Students with disabilities requesting accommodations should make an appointment with Dr. Margaret Camp (656-6848), Director of Disability Services, to discuss specific needs within the first month of classes. Students should present a Faculty Accommodation Letter from Student Disability Services when they meet with instructors. Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester. Visit the Student Disability Services website for location, contact information, as well as official policies and procedures. To learn more information or request accommodations contact Student Disability Services (SDS) at sds@clemsun.edu or 864.656.6848 or visit [SDS's website: http://www.clemson.edu/campus-life/campus-services/sds/about.html](http://www.clemson.edu/campus-life/campus-services/sds/about.html).

4. **Commitment to Diversity:** *Clemson University aspires to create a diverse community that welcomes people of different races, cultures, ages, genders, sexual orientation, religions, socioeconomic levels, political perspectives, abilities, opinions, values and experiences.*

The Clemson University Title IX statement regarding non-discrimination: The Clemson University Title IX statement: Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This Title IX policy is located on the Campus Life website. Ms. Alesia Smith is the Clemson University Title IX Coordinator, and the Executive Director of Equity Compliance. Her office is located at 223 Brackett Hall, 864.656.0620. Remember, email is not a fully secured method of communication and should not be used to discuss Title IX issues.

5. **Academic Continuity Plan:** Clemson has developed an Academic Continuity Plan for academic operations. Should university administration officially determine that the physical classroom facility is not available to conduct classes, class will be conducted in a virtual (online) form. The university issues official disruption notifications through email, website, text notification and Social Media. When notified, use one of the following links to navigate to Clemson Canvas where you will find important information about how we will conduct class:
 - Primary access link: <http://www.clemson.edu/canvas>

- Secondary access link, if needed: <https://clemsontech.com/>
- You can also use the Canvas Student App. [Visit the downloads page](#) for this app.

Course activities will occur through the Canvas course.

6. **Emergency Preparedness:** Emergency procedures have been posted in all buildings and on all elevators. Students should be reminded to review these procedures for their own safety. All students and employees should be familiar with guidelines from the Clemson Police Department. [Visit here for information about safety.](#)

Clemson University is committed to providing a safe campus environment for students, faculty, staff, and visitors. As members of the community, we encourage you to take the following actions to be better prepared in case of an emergency:

- Ensure you are signed up for [emergency alerts](#)
- Download the [Rave Guardian app](#) to your phone (<https://www.clemson.edu/cusafety/cupd/rave-guardian/>)
- Learn what you can do to [prepare yourself](#) in the event of an active threat (<http://www.clemson.edu/cusafety/EmergencyManagement/>)

ACADEMIC SUPPORT SERVICES

Students may access a variety of academic support services to support your learning in the classroom. Here are links to services available:

- [Academic Success Center](http://www.clemson.edu/asc/staff.html) <http://www.clemson.edu/asc/staff.html>
- [The Writing Center](http://www.clemson.edu/centers-institutes/writing/) <http://www.clemson.edu/centers-institutes/writing/>
- [Online Library Resources](http://www.clemson.edu/library/) <http://www.clemson.edu/library/>
- [CCIT \(Tech Support\)](http://www.clemson.edu/ccit/help_support/) http://www.clemson.edu/ccit/help_support/ or [CCIT \(Tech Support\) email: ithelp@clemson.edu](mailto:ithelp@clemson.edu)
- [Academic Advising](http://www.clemson.edu/academics/advising/index.html) <http://www.clemson.edu/academics/advising/index.html>
- [Registrar](http://www.registrar.clemson.edu/html/indexStudents.html) <http://www.registrar.clemson.edu/html/indexStudents.html>

COURSE CONTENT

Module 1: Mechanics

1. **Introduction to Science, Scientific Units, and Math Review:** Students will learn scientific approach by making real-world observations and refresh required math/algebra skills to succeed in this course. Basic algebraic operations, vectors, units, Fermi calculations for order of magnitude estimates will be discussed in this unit.
2. **Motion:** Students will learn to identify and differentiate between distance and displacement; speed and velocity and learn the physics of motion (concepts of linear and centripetal acceleration) through several real-world examples using graphical and mathematical analysis.
3. **Gravity and Forces:** Students will distinguish between weight and mass and learn the concepts of long range and direct forces through several examples, such as orbital motion of planets, formation of tides (gravitational forces), use of seatbelts, etc. This unit introduces Newton's laws of motion.
4. **Energy and Power:** Students will be able to distinguish between work, energy and power, learn about various forms of energies and sources of assess the limitations to various forms of energy storage, and identify the pros- and cons- of various sources of energy.

Module 2: Heat and Electromagnetism and Waves

5. **Temperature and Heat:** Students will be able to identify and differentiate between concepts of temperature and heat, state and apply four laws of thermodynamics, discuss the limitations of the heat engines.
6. **Electricity:** Students will learn and relate to the physical quantities, such as charge, current, resistance, power and various applications of electricity in daily life. The student will also learn and distinguish between AC and DC currents and voltages.
7. **Magnetism:** Students will learn about the magnetism with various sources that can produce magnetic fields and the interaction between magnetic and electric fields. The application of magnetic fields in various fields and electromagnetism in power generation will be discussed.

Module 3: Waves, Optics, and Modern Physics

8. **Waves, Sound, and EM waves:** Students will be introduced to the wave phenomenon and various applications of waves in prediction of weather, location of galaxies, medical science and musical instruments, etc. will be discussed. Students will also learn about full electromagnetic (EM) spectrum including “visible” and “invisible” light. The students will assess the effect of various EM radiation on Earth’s atmosphere in relation to contemporary issues (greenhouse effect, global warming, etc.) that we are dealing with.
9. **Light and Optics:** Students will learn about mirrors and lenses using examples such as camera magnifying glasses and polarizers. Phenomenon of dispersion of light (splitting of colors of light) and interference will also be discussed.
10. **Radioactivity:** Students will learn about fusion and fission reactions and describe exponential growth and decay. Nuclear reactors, nuclear weapons and medical imaging will be discussed as examples.
11. **Quantum Physics:** Students will gain understanding of quantized energy levels and relation of spectroscopy, particle nature of light, photoelectric effect, de Broglie equation, and Heisenberg uncertainty principle.
12. **Our Universe (Astrophysics):** Students will learn about the early formation of universe including big bang, dark matter, black holes, and expansion of universe.

IMPORTANT DATES

January 19: Last day to register or add a class or declare Audit

January 26: Last day to drop a class or withdraw from the University without a W grade

March 18: Last day to drop a class or withdraw from the University without final grades

April 29: Last date to complete any assignments in the course

EXAMS: All exams are online. The exams will be administered online in canvas and proctored through Respondus Lockdown browser and webcam.

February 15: Test 1 or Hour Exam-1 covers Module 1 (Units 1-4), from 2:00 pm to 3:05 pm ET

March 15: Test 2 or Term Exam-2 covers Module 2 (Units 5-7), from 2:00 pm to 3:05 pm ET

April 26: Test 3 or Term Exam-3 covers Module 3 (Units 8-11), from 2:00 pm to 3:05 pm ET

May 5: FINAL EXAM (cumulative, Module 1-4), Thursday, 8:00 am to 10:30 am ET.

COURSE SCHEDULE

(NOTE: This schedule is tentative, and instructor reserves the right to make changes at any time. **The last date of submit any assignments (including make ups and extensions) is April 29, 2021.** PCQs are due at 1:00 pm on the assigned dates. All other assignments are due at 11:59 pm their due dates listed below.

Monday	Tuesday	Wednesday	Thursday	Friday
January 10	11 No class	12	13 Intro/Unit 1	14 HW: Getting started
17 MLK Holiday	18 PCQ-1 Unit 1	19	20 PCQ-2 Unit 1/2	21 HW#1 due
24 YD-1 Discussion due	25 PCQ-3 Unit 2	26 EC-1	27 PCQ-4 Unit 2	28 HW#2 due
31 YD-2 Discussion due	February 1 PCQ-5 Unit 3	2	3 PCQ-6 Unit 3	4 HW#3 due
7 YD-3 Discussion due	8 PCQ-7 Unit 3/4	9	10 PCQ-8 Unit 4	11 HW#4 due
14 YD-4 Discussion due	15 Test 1 (Units 1-4)	16 EC-2	17 PCQ-9 Unit 5	18
21 YD-5 Discussion due	22 PCQ-10 Unit 5	23	24 PCQ-11 Unit 5/6	25 HW#5 due
28 YD-6 Discussion due	March 1 PCQ-12 Unit 6	2 EC-3	3 PCQ-13 Unit 6	4 HW#6 due
7 YD-7 Discussion due	8 PCQ-14 Unit 7	9	10 PCQ-15 Unit 7	11 HW#7 due
14 YD-8 Discussion due	15 Test 2 (Units 5-7)	16 EC-4	17 PCQ-16 Unit 8	18 YD-9 Discussion due
21 Spring Break	22 Spring Break	23 Spring Break	24 Spring Break	25 Spring Break
28 YD-10 Discussion due	29 PCQ-17 Unit 8	30	31 PCQ-18 Unit 9	April 1 HW#8 due
4 YD-11 Discussion due	5 PCQ-19 Unit 9	6 EC-5	7 PCQ-20 Unit 9/10	8 HW#9 due
11 YD-12 Discussion due	12 PCQ-21 Unit 10	13	14 PCQ-22 Unit 10	15 HW#10 due
18 YD-13 Discussion due	19 PCQ-23 Unit 11	20 EC-6 (Course Eval)	21 PCQ-24 Unit 11	22 HW#11 due
25 YD-14 Discussion due	26 Test 3 (Units 8-11)	27	28 PCQ-25 Unit 12	29 HW#12 due

May 5: FINAL EXAM (cumulative, Module 1-4), Thursday, 8:00 am to 10:30 am ET.