

PHYS 2000: PHYSICS FOR EVERYONE

A Clemson Think2 (CT²) introductory physics course

Class meetings: T, R 2:00–3:15 pm in Kinard G-01

Virtual classes: March 23–April 24 (hosted through WebEx)

Office hours: MWF 1:00 pm to 3:30 pm; TR 10:00 am to noon, or by appointment*.

Virtual meeting room: <https://clemson.webex.com/meet/ppuneet>

[*tentative, subject to change- may be re-scheduled or cancelled due to other obligations (any changes will be announced via email)]



Pooja Puneet, PhD
205 Kinard Lab
ppuneet@clemson.edu

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 Thinks2* (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. While learning about the physical world around us, we would train our mind to think logically and critically about these processes using scientific observation and concepts of physics. To this end, 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. Critical thinking does not come naturally to most people; therefore, you must practice critical thinking – which is one of the goals of this course. 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 prior to taking this course.

GEN ED REQUIREMENTS

This course satisfies the Mathematical and Natural Science general education requirements. A copy of lab report and exam will satisfy the Gen. Ed. Requirement for Natural Science with lab.

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:** This is a *textbook free course*. To reduce the overall course costs, we will use Open Access Resources (OERs) for this course. The instructor will post the links to open access resources, online course materials, and required lecture notes in your Canvas course.
2. For **online homework assignments:** We will use *ExpertTA* as our Interactive Homework Assignment system for this course. This HW system costs \$32.50 for a single-semester access. The details with the registration process will be posted in your Canvas course.
3. For **In-Class Assignments/Pre-class Quiz:** An internet device such as a laptop, tablet or cell phone with subscription/access to *free audience response system: Acadly* will be required for this course. For details on signing up: please use the [link here](#). Please note that we will sign up using invitation method for this course. For more details of the process, see Class Activities and Assignments section. Please *download Acadly app* on your cellphones for easy participation. **NOTE:** The instructor reserves the right to adopt another software during the semester (without additional costs to students), if there are any issues with the chosen one, and the students will be notified in advance.
4. For **Think page:** Canvas discussion forum will be used for our think page assignment.
5. **Calculator:** Any kind of calculator is allowed.

CLASS ACTIVITIES AND ASSIGNMENTS

1. **In-class Quiz:** We are using *free audience response systems* in class called *Acadly* for our daily in-class and pre-class quizzes. Each class, there will be several questions posed throughout class to strengthen your critical thinking ability based on the pre-assigned reading materials (Pre-lecture material) and the concepts discussed during the class.

Your *Acadly* account must be activated and registered as soon as possible. We will go over the registration process on the first day of classes and **begin using *Acadly* for a grade starting January 14th (Tuesday)**. Detailed step-by-step instructions will be posted on the Announcements page of the Canvas course for registering to *Acadly* account by the first day of classes.

Concerning scoring, you will receive 4 raw points for every correct answer, 2 point for participation for multiple choice questions (zero points are also recorded for no answer/an absence) in daily quizzes. Your grade for this portion is **10% of the total score** in class. **The lowest three daily quiz scores (including zeroes) will be dropped near the end of the**

semester. Each quiz day score is worth the same amount of credit regardless the number of questions asked on that day.

Instructions for Acadly registration: Acadly is a free audience response system. For this course, you can join Acadly by invitation only. Please follow the instructions below to register for Acadly:

- When you're added to a course by the professor, you will receive an invitation email to your Clemson account. (**Note:** If you cannot find this email, try searching your inbox for the phrase "You have been added as a student", which is a part of the invitation email's subject. If you still don't see the email in your inbox, please reach out to your course instructor. They should be able to verify if you've been added to the course.)
- Go to <https://app.acadly.com> or open the Acadly app (Android app, iOS app)
- In the "Email address" field, **enter the email address mentioned in the invitation email**. Important - if your email inbox has an alias (i.e., two separate email addresses point to the same inbox), **you will need to enter the email address mentioned in the invitation email. The alias will NOT work.**
- You will be emailed a verification code to the invitation email in order to verify that you're indeed the owner of the email inbox.
- Go back to <https://app.acadly.com> or your Acadly app and enter this verification code in the "Enter the verification code here" field.
- Once you enter the right verification code, you will be able to set up your password and username. (**Please ensure to use your Clemson username here**)
- You should be all set to participate in class activities now.

Missing daily quiz sessions: If you miss classes due to university excused absences or illnesses documented by a physician, you can be excused from the missed clicker session. In order to take advantage of this, you must email your instructor pdf's of your official excuses (written documentation) within 24 hours of the missed class.

Homework: Homework is a crucial component of this course. The total homework points earned over the semester will be averaged to **20% of the final letter 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. For each incorrect submission attempt, there will be a 2% value deduction and the deduction for accessing a hint is 1%. The worth of homework total points is 20% of the total points in class. 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.

The California Critical Thinking Skills Test (CCTST): The students are required to take the CCTST online test at the beginning of the term and at the end of the term (see the course schedule for due dates) as a homework assignment. This test is a premier critical thinking skills test in the world, and it provides a good assessment of your critical thinking skills in various areas, which is helpful for Clemson University in improving the quality of education and ensuring student success. The test DOES NOT require any additional preparation or reading, and it typically takes 45-50 mins to complete and **MUST be taken in one sitting**. The test CANNOT be resumed later, if you exit out accidentally. Before taking the test, please ensure a distraction-free environment and sufficient time in hand. The best of the two scores (CCTST pre-test and post-test) would be added as a “bonus” homework score at the end of the semester. Each student must spend reasonable amount of time and effort to receive credit for this bonus assignment.

2. **Think page- Discussion Forum:** The discussions offer a great way to improve your critical thinking skills and this assignment can be utilized as a CT² artifact. We will use Canvas platform for our discussion forum. Each week you will have a discussion question (initial post due on Mondays, 11:59PM) you must respond to (see the course schedule for due dates). In this assignment, you will apply scientific reasoning to various contemporary issues such as energy conservation efforts, alternative energy sources, use of nuclear power, etc. In the mid-week (follow up posts due on Wednesdays, 11:59 PM) you must provide substantive (and polite) comments to at least two other classmates and respond to all your classmates by the end of the semester. **The discussions will be averaged to 10% (100 points) of your final grade.**

- Examinations:** *All the exams are mandatory in this course.* There will be **two term (hour) exams**, held in class during the lecture period (for details, see class schedule at the end of syllabus) and a **cumulative final exam** on **Thursday, April 30th from 8 am to 10:30 am** in class (Go1 Kinard). **Each term exam is worth 10%** of the final grade (100 points each) and the cumulative **final exam is worth 15% of the final grade** (150 points). The exams will be administered via Canvas and will require Respondus Lockdown browser.

Make-up exam policies: If you miss an exam because of an excused absence 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. ***There are no dropped exams, exam grade replacements, or final exam exemptions in this course.***

Exam Aids: The students may use a calculator during the exams, given that there is no saved memory/ programming in the calculators. A **printed copy** of equation sheet (uploaded to canvas by the instructor) is allowed for the exams that can be downloaded and printed from the Canvas course: modules. The students are allowed to bring in several blank sheets of scratch paper and their laptop computers to the assigned examination room. The exams will be administered through Canvas and will require laptop computer. Students should make sure to fully charge laptop computers before entering the room as there are not enough power outlets for everyone.

- 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. You should bring a pencil and calculator to each lab. If you bring a cell phone, it must be silenced and put away during the lab. Spills and magnetic fields from some experiments may adversely affect cell phone. You will be briefed on the necessary safety precautions for each experiment. You will not be allowed to do the lab unless you are prepared to follow all safety instructions. For every lab you must pull back long hair and wear closed toed shoes. At no time may you have drinks, snacks, gum, dip, or any other material you would put in your mouth while you are in the lab. If you are not wearing a proper attire for the lab, bring food or drink, or otherwise fail to follow safety procedures, you will be dismissed from the lab and receive a zero for that experiment.

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.

A note on artifacts for CT² course: There are a variety of assignments (quizzes, homework and exams) in this course that can be utilized as artifacts to demonstrate your refinement of critical thinking skills over the term. More specifically, there will be 3-4 homework assignments (marked as CT exercise) in this course that will include reflective questions and would require deeper thinking skills than regular assignments. Additionally, a think page: discussion forum is being used in this course as a CT² artifact to encourage and improve critical thinking skills by posing important questions about the contemporary subject material and discussing it with the peers.

GRADING POLICIES

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

2 term (hour) exams (10% each)	20%	200 points
1 Final exam (cumulative)	15%	150 points
Daily quiz (<i>Acadly</i>)	10%	100 points
Homework (<i>ExpertTA</i>)	20%	200 points
Think page: <i>Canvas</i> Discussions	10%	100 points
Physics Laboratory (PHYS 2001)	25%	250 points
Total	100%	1000 points

This course follows the typical grading guidelines:

A = 90 to 100% ; B = 80 to 89% ; C = 70 to 79% ; D = 60 to 69% ; and F = 0 to 59%

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. Note that the total average of 89.4% (rounded to one decimal digit) will receive a B grade and 89.5% and above will receive an A grade. 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.

COURSE EXPECTATIONS AND POLICIES

- 1. Attendance Policy and Inclement Weather:** Attendance **is** required for this course. Because of the cumulative nature of principles involved and the pace at which material is covered, it is recommended that student not miss a class unless there is a compelling reason. Students are requested to wait 10 minutes in the unlikely event that your instructor is late for the class. In the event of an emergency, the student should make direct contact with the course instructor, preferably before a class or an exam takes place. Students should speak with their course instructor regarding any scheduled excused absence as soon as possible and develop a plan for any make-up work. Excused absences include documented illness, official university functions, court attendance, religious observances, military duty, and funeral attendance. Written documentation is required for the absence to be excused. **The MyCLE absence notification system is NOT an official absence excuse.** It is the student's responsibility to secure documentation of emergencies, if required. A student with an excessive number of absences may be withdrawn at the discretion of the course instructor.
Any exam that was scheduled at the time of a class cancellation due to inclement weather 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 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.
- 2. Faculty Response Time:**
Communications Response Time: Instructor response time is 36 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 to arrange an office 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.
- 3. 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.
- 4. 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 disseminated. Clemson students, faculty, and staff are expected to comply fully with institutional copyright policy as well as all other copyright laws.
- 5. Class Conduct and Etiquette:** I expect this class to be highly interactive and a good learning environment for all of you. Students are encouraged to speak up if they disagree with something or ask questions, if they do not understand a concept but please do so respectfully and politely. Students are expected to behave politely and to respect their fellow classmates and instructor at all times. *Students are strictly prohibited to use earphones, play video games, access websites (other than canvas or course-related material), text, check emails and talk to others during the lecture as it is disturbing to the class and the instructor.* Repeated disruptions by any of these activities may result in dismissal from class and loss of clicker points for that day. The students are expected to arrive on time and leave after the class is dismissed.
- 6. 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.
- **Do a quick check** of the discussion board or course site before posting or emailing questions to see if the question you are about to ask or the article you just read and were about to post has already been posted.
- **Keep your posts on-topic and on the proper board.** Keeping messages on topic will help with the organization and readability.
- **Share expert knowledge.** Post resources on how you found information.
- **Avoid sending large attachments** through email unless someone has specifically asked for it.
- When replying to an email message, don't "Reply to All" unless it's necessary. Also, only attach the portion of the original email that you are responding to. Do not attach the entire message when it's not necessary.

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.

7. **Accepting Late work:** Late Assignments will only be accepted if you have an unanticipated excused reason that kept you from completing the assignment on time. Computer crashes, lost laptops, and schedule mishaps are not excused absences. Following is the list of university approved excuses for allowing make up:

Valid excuses for make-up exams and other late work:

1. Travel for official university events is considered an excused absence if and only if, you have a letter from the event sponsor, and you provide that to me at least 1 week in advance.
2. Acute medical complication too severe or contagious to allow attendance to class. Paperwork of medical visits must be provided. Non-acute medical service scheduled during class time does not constitute an excused absence.
3. Death or serious illness in student's immediate family (parent/guardian, sibling, child, partner).
4. Religious observances if information provided at least one week in advance.
5. Court imposed legal proceedings (if noted in advance)
6. Military obligations (documentation from commanding officer and advanced notice required)

Online assignments must be completed on or before the due date for anticipated absences.

UNIVERSITY POLICIES

1. **Academic Integrity:** Coursework must be documented appropriately in CSE or APA format, based on your major. Content from previous classes may not be submitted.

The Clemson University Academic Integrity Statement

"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."

A simple definition of plagiarism is when someone presents another person's words, visuals, or ideas as his or her own. The instructor will deal with plagiarism on a case-by-case basis. The most serious offense within this category occurs when a student copies text from the Internet or from a collective file. This type of academic dishonesty is a serious offense that will result in a failing grade for the course as well as the filing of a formal report to the University.

See the Undergraduate Academic Integrity Policy website for additional information about academic integrity and Clemson procedures and policies regarding scholastic dishonesty.

2. **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-l@clemson.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).

- The Clemson University Title IX (Sexual Harassment) 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 (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) 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. To locate information on the [Title IX policy](http://www.clemson.edu/campus-life/campus-services/access/title-ix/), visit <http://www.clemson.edu/campus-life/campus-services/access/title-ix/>. Mr. Jerry Knighton is the Clemson University Title IX Coordinator, and is also the Director of Access and Equity. His office is located at 111 Holtzendorrf Hall, [864.656.3181](tel:864.656.3181) (voice) or [864.565.0899](tel:864.565.0899) (TDD).
- Academic Grievances:** Academic grievances are handled by [Dr. Jeffrey Appling](#) in Undergraduate Studies or [Dr. Frankie Felder](#) for Graduate Studies. Students are advised to visit the [Ombuds Office](#) prior to filing a grievance.
- 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 in, class will be conducted in a virtual (online) format. The University issues official disruption notifications through email /www /text notification/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: www.clemson.edu/canvas.

Secondary access link, if needed: <https://clemson.instructure.com/>.

You can also use the Canvas Student App.

In view of the currently evolving COVID-19 situation, Clemson university has moved all instruction to the online modality starting March 23 for the remainder of the term. Please see the detailed academic continuity plan below for this course:

- Class meetings:** There are two possible approaches that I would be using for delivering lecture materials online for the remainder of the term in this course.
 - Synchronous method:** I will hold class meetings **at the regular class meeting times** (TR 2:00-3:15 pm) using WebEx meeting (accessed through WebEx navigation menu in your Phys 2000 Canvas course). Please click on the JOIN button and then choose 'run as a temporary application option' to join the live lecture during each session. I will be using Acadly app for daily quiz questions as we usually do in class. We will not be taking in-class attendance, but students will be required to respond to the quiz questions during the online lecture using the Acadly app from home.
 - Asynchronous method:** In case of any problems related to the internet or WebEx server connectivity or other such issues, I would post pre-recorded lecture videos in canvas course modules for students to watch on the day of the class. Students would be notified via Canvas email or announcements about this as soon as possible, should this method of delivering lecture content be used. In this case, students would respond to the daily quiz questions through the Acadly app as pre-class quiz based on the materials provided through short videos as well as

post-class quiz based on the materials covered in the lecture (this will be due at 11:59 pm on the day of the scheduled class) to receive quiz credit for the day.

2. **Homework assignments:** Students will continue to submit their online ExpertTA homework assignments as usual according to the present deadlines listed in the course calendar.
3. **Discussions:** Students are expected to complete course discussions as usual on the scheduled dates in the course calendar (available on the last page of the syllabus).
4. **Exams:** Students will take the online canvas exams on the scheduled dates and time (or during a particular window of time) and will be required to download the Respondus Lockdown browser ([please download the Respondus Lockdown browser here](#)). The details about the exams will be communicated separately closer to the exam dates.
5. **Communication:** Any notifications or emails will be sent through Canvas inbox and Canvas course announcements. Students are highly recommended to check their canvas settings to ensure that they allow these notifications to be sent to their frequently used emails (Clemson email id) and are responsible for keeping track of the course progress accordingly.
6. **Office hours:** I will hold regular office hours virtually using WebEx meetings. Students are required to email me with a specific time during the scheduled office hours for an online meeting and I will send out a link for them to join through WebEx meeting.
7. **Laboratory:** A separate academic continuity plan for the lab sessions will be sent out through the canvas lab course: PHYS 2001.

Note to students: You are encouraged to email me or schedule a virtual meeting during office hours, if you face any difficulty with the course material being covered online or need to discuss any other concerns you may be having. I am committed to help you to the best of my abilities under these unexpected circumstances, while we work together on the method of online instruction. Stay safe and healthy!

6. **Inclement Weather Statement:** Any exam that was scheduled at the time of a class cancellation due to inclement weather 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 or postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather-related cancellation.
 - University officials monitor local weather conditions before making decisions to cancel classes, close offices or delay openings. For updates on the status of Clemson classes and office closings:
 - Check the Clemson University homepage (<http://www.clemson.edu/>) for messages about closings or delays;
 - Check the CU Safety page (<http://www.clemson.edu/cusafety/>) for detailed messages and weather advisories;
 - Check your Clemson University e-mail for CU Safe Alerts or Inside Clemson messages;
 - Check your cell phone if you have signed up to receive CU Safe Alert text messages (See the CU Safety page for sign-up instructions);
 - Call the Clemson University switchboard at 656-3311 for recorded updates between 8 p.m. and 8 a.m. Monday-Friday and on weekends (recorded messages provide closure information, not weather forecasts); and
 - Tune in to local TV and radio stations or log on to their Web sites.
 - When local county government offices are closed, local Clemson University campuses also are closed.

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>
- **The Writing Center** <http://www.clemson.edu/centers-institutes/writing/>
- **Online Library Resources** <http://www.clemson.edu/library/>
- **CCIT (Tech Support)** http://www.clemson.edu/ccit/help_support/ or **CCIT (Tech Support) email:** ithelp@clemson.edu
- **Academic Advising** <http://www.clemson.edu/academics/advising/index.html>
- **Registrar** <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, 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.
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.

Module 3: Light and Modern Physics

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 and Astrophysics:** Students will learn about fusion and fission reactions and describe exponential growth and decay. Nuclear reactors, nuclear weapons and medical imaging and formation of the early universe will be discussed as examples.
11. **Quantum Physics:** Students will explain how energy levels of the electrons are quantized and explain how this gives rise to spectral lines. Students will then learn about photoelectric effect, and technical applications of spectroscopy.

IMPORTANT DATES

January 14: Last day to register or add a class or declare Audit

January 22: Last day to drop a class or withdraw from the University without a W grade

March 27: Last day to drop a class or withdraw from the University without final grades (please note the extended date)

EXAMS:

February 13: Term Exam-1 (module 1) from 2:00 pm to 3:00 pm in Go1 Kinard.

March 31: Term Exam-2 (module 2) from 2:00 pm to 3:00 pm (online via Canvas).

April 30: Final Exam (cumulative) from 8 am to 10:30 am (online via Canvas).

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 24, 2020.**)

Monday	Tuesday	Wednesday	Thursday	Friday
January 6	7 No class	8	9 Intro/Unit 1	10
13 D-1 Initial Post Due	14 Unit 1	15 D-1 Follow up Post Due	16 Unit 1/2	17 Getting started
20 MLK Holiday	21 Unit 2 D-2 Initial Post Due	22 D-2 Follow up Post Due	23 Unit 2	24 HW#1 due
27 D-3 Initial Post Due CCTST pretest due	28 Unit 3	29 D-3 Follow up Post Due	30 Unit 3	31 HW#2 due
February 3 D-4 Initial Post Due	4 Unit 3/4	5 D-4 Follow up Post Due	6 Unit 4	7 HW#3 due
10	11 Unit 4/ Exam Review-1	12 HW#4 due	13 Term Exam 1	14
17 D-5 Initial Post Due	18 Unit 5	19 D-5 Follow up Post Due	20 Unit 5	21
24 D-6 Initial Post Due	25 Unit 5/6	26 D-6 Follow up Post Due	27 Unit 6	28 HW#5 due
March 2 D-7 Initial Post Due	3 Unit 6/7	4 D-7 Follow up Post Due	5 Unit 7	6 HW#6 due
9 D-8 Initial Post Due	10 Unit 7	11 D-8 Follow up Post Due	12 Unit 8	13 HW#7 due
16 Spring Break	17 Spring Break	18 Spring Break	19 Spring Break	20 Spring Break
23 D-9 Initial Post Due	24 Unit 8	25 D-9 Follow up Post Due	26 Unit 8/ Exam Review-2	27 HW#8 due
30	31 Term Exam 2	April 1	2 Unit 9	3
6 D-10 Initial Post Due	7 Unit 9	8 D-10 Follow up Post Due	9 Unit 9/10	10 HW#9 due
13 D-11 Initial Post Due	14 Unit 10	15 D-11 Follow up Post Due	16 Unit 10/11 CCTST posttest due	17 HW#10 due
20 D-12 Initial Post Due	21 Unit 11	22 D-12 Follow up Post Due	23 Final Review	24 HW#11 due
27	28	29	30 Final Exam	May 1

FINAL EXAM: Thursday, April 30, 8:00 am to 10:30 am online administered via Canvas.