

PHYS 2080: GENERAL PHYSICS II

Class meetings: T, R 12:30 pm to 1:45 pm in 100B Daniel Hall

Office hours: T, R 9:00 am to 11:45 am or by appointment.

COURSE DESCRIPTION

(Credit hours: 3) General Physics II is a continuation of PHYS 2070 and covers topics such as electricity, magnetism, electromagnetic waves, optics, and modern physics. Credit for a degree will be given for only one of PHYS 2080 or 2210.

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 in order to gain a deeper understanding. 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/>.

PREREQUISITES

The students are required to take PHYS 2070 or PHYS 1220 prior to taking this course.

STUDENT LEARNING OBJECTIVES

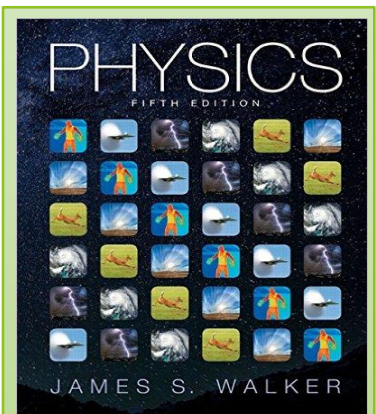
1. The student will demonstrate critical thinking ability using appropriate concepts to analyze problems or situations involving physics qualitatively.
2. The student will demonstrate the ability to use appropriate mathematical techniques and concepts for obtaining quantitative solutions to problems in physics.
3. The student will develop the ability to read, evaluate, and interpret numerical and general scientific information and apply physical principles to real-world problems.

REQUIRED MATERIALS

1. **Textbook:** Physics, 5th edition by James S. Walker, ISBN 978132359051 (optional)



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

— Albert Einstein

Tips for Success:

- ✓ Practice, practice and practice to develop and improve your critical thinking skills and excel in the course.
- ✓ Come to the class prepared. Pre-lecture assignments (readings/ videos) would help in understanding the in-class material.
- ✓ Keep up with the material and seek help in time, if having difficulty with the material.

2. For **online homework assignments**: Mastering Physics (MP) access (ISBN: 9781323590515) can **ONLY** be purchased from the **Clemson University bookstore**. The MP access provides free access to Walker 5th edition e-text OR it can be purchased as a package along with the ring-bound textbook (Physics Technology Update a la carte Package). The package is much cheaper than purchasing the components separately. The chapters 16 through 32 will be covered during this semester.
3. For **In-Class Assignments/Quiz**: An internet device such as a laptop, tablet or cell phone with subscription/access to REEF audience response system.
Purchasing REEF subscription: Download the REEF mobile app via the App Store or Google Play or visit app.reef-education.com and then click **Sign Up!** Select Clemson University as your institution. Follow the sign in instructions. You should then click the plus sign in the upper right hand corner to select the course titled as: PHYS2080_Fall 2017.
4. **Calculator**: Any kind of calculator is allowed.

CLASS ACTIVITIES AND ASSIGNMENTS

1. **Clicker Quiz**: We are using audience response systems in class called **REEF Education*** for our daily in-class clicker quiz. Each class, there will be several questions posed throughout class to strengthen your critical thinking ability which you will respond with your internet device. Your REEF account must be activated and registered as soon as possible. We will begin using REEF for our first in-class quiz on August 29th (Tuesday).

Concerning scoring, you will receive 3 raw points for every answer (regardless of the correctness) and five raw points for each correct answer (zero points are recorded for no answer/an absence). Your grade for this portion of the class 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.

Daily (Pre-lecture) Quiz: At the beginning of the class lecture, there will be an assessment based on a video lecture and/or reading material that has been viewed/ read by the students prior to coming to class. This quiz will also be administered through **REEF Education* system**. Students will use their REEF account to register responses. This short lecture/reading material will be provided by the instructor (Course modules: “Prelecture Assignments” on Canvas course page) to introduce the concepts and topics to be covered in the class. The cumulative daily quiz scores will be averaged to **10% of the final letter grade. The lowest 3 quiz grades will be dropped.**

**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 REEF points. In order to take advantage of this, you must email your instructor pdf's of your excuses. Your instructor will then give you an assignment for each day (or exemption) over the three 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 REEF session.

2. **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**. The regular homework assignments are administered through **Mastering Physics** (accessed through Canvas), which is an

“There is no true understanding of Biology without Chemistry. And there's no true understanding of Chemistry without Physics.”

-Neil deGrasse Tyson

online interactive homework submission system. There will be a homework assignment after completion of each chapter in the text. The homework assignments are generally due a day after the completion of chapter at 11:59 pm. The detailed schedule for Homework assignments and due dates can be found under the Course Schedule on **page 8**. The due dates will not be extended unless approved by the instructor due to an official excuse. The homework assignments will be available on Mastering Physics for the entire semester period but the grades for the homework assignment completed after the deadline will reduce by 25% of the total points per day past the due date. Each homework assignment will be graded for 100 points (regardless of the number of raw homework points). **The homework with the lowest score will be dropped** at the end of the semester.

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 semester as a homework assignment. This test 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.

3. **Examinations:** There will be **four mid-term exams**, held in class during the lecture period (for details, see class schedule at the end of syllabus- page 8) and a **final exam** during the semester. Each exam is worth 150 points or 15% of the final letter grade. In case of missing a mid-term exam, the student will be required to take the cumulative final exam as the make-up exam. In the extremely unlikely case, if more than one exam is missed, the student must obtain an excuse which is verified by University sources before a makeup exam will be granted.

Final Examination: The final exam is cumulative and it will be given on **December 11, 2017 (Monday) from 3:00 pm-5:30 pm**. The lowest mid-term exam grade will be dropped and replaced by the final exam grade, if it is higher. An exemption from the final exam may be granted based on the total points earned before the final exam. The students, who have accumulated 90% or more before dropping the lowest exam score may be exempted from the

Guide for optimal learning in class

- ✓ Download or print lecture presentation/ outlines from Canvas prior to lectures.
- ✓ Carefully read or watch any assigned pre-lecture readings/videos prior to lectures and preview lecture notes.
- ✓ Fill in the details and points discussed during the lecture in the printed handout (rather than copying down all the material from the slides).
- ✓ Ensure to bring a laptop or tablet or smart phone with REEF app for answering all the in-class quiz questions.
- ✓ Pay attention during lectures and answer all the in-class quiz questions efficiently.
- ✓ Watch recorded lectures (posted after each lecture), if any information is missed during the lecture.

final and obtain A as their letter grade. All the mid-term exams must be taken for exemption from the final exam.

Exam Aids: The students may use a calculator during the exams, given that there is no saved memory/ programming in the calculators. An equation sheet printed from Canvas (provided by the instructor) is allowed during exams. This equation sheet can have no additional writing on it. 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.

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 in this course that will include reflective questions and would require deeper thinking skills than regular assignments. These assignments will be marked as CT-exercise and can be identified as critical thinking artifacts.

GRADING POLICIES

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

4 midterm exams and final exam (each 15%) (Lowest midterm or final exam will be dropped)	60%	600 points
Clicker questions	10%	100 points
Daily (Prelecture) quiz	10%	100 points
Homework	20%	200 points
Total	100%	1000 points

The following scale (%) will be used: A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 0-59. 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. Homework grades will be posted in MasteringPhysics.com and any contesting of grades should be done within a week of completion of the assignment. 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 assignments (*Clicker* and *Quiz*) 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 not 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 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 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:** Decent classroom behavior is important for good learning environment. Students are expected to behave politely and to respect their fellow classmates and instructor. Students are not allowed to use earphones/access websites (other than canvas or course-related material) or talk to others during the lecture. The students are expected to arrive on time and leave after the class is over. They should be willing and ready to participate in class activities. If a student is found disturbing the class, they would be asked to leave the classroom immediately. I expect our classroom to be a safe and comfortable environment to all the students for learning, communicating and sharing ideas.

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).

3. **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).

4. **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 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>

AVAILABLE HELP

In addition to the instructor's availability outside of regular class time, there are other opportunities for students to get help on course materials. Firstly, the **Physics Learning Center** is *free* tutoring in Kinard 223B where physics graduate student tutors are available to help. Detailed scheduled (TBA) will be available on Canvas, which is determined once the semester starts. Secondly, **Academic Success Center** offers SI sessions and *free* drop-in tutoring for this course during the week. Their SI schedule (if offered) and tutoring information (TBA) will be posted on the Canvas course page under available help, once the semester starts. Tutoring should be used to discuss course materials and ask questions but not as a replacement for class or office hours. Drop-in session will be available weekly in the Academic Success Center Building! For details on policies, please see the ASC website at www.clemson.edu/asc. Information about tutoring is available at <http://www.clemson.edu/asc/tutoring/schedule.html>.

IMPORTANT DATES

August 29: Last day to register or add a class or declare Audit

September 5: Last day to drop a class or withdraw from the University without a W grade

October 31: Last day to drop a class or withdraw from the University without final grades

COURSE SCHEDULE

(NOTE: This schedule is tentative and is subjected to change. All the assignments (including extensions) MUST be submitted by December 6, 2017.)

Monday	Tuesday	Wednesday	Thursday	Friday
August 21	22 No class	23	24 Intro/Ch 16	25
28	29 Ch 16/ PL 16A	30 CCTST pre-test due	31 Ch 16/Ch17/PL 17A	September 1 HW 16 due
4	5 CH 17/ Ch 18/ PL 18A	6	7 Ch 18 / PL 18B	8 HW 17 due
11	12 Exam Review-1	13 HW 18 due	14 Exam 1	15
18	19 Ch 19/PL 19A	20	21 Ch 19/ PL 19B	22 HW 19 due
25	26 Ch 20/ PL 20A	27	28 Ch20/ PL 20B	29 HW 20 due
October 2	3 Ch 21/ PL 21A	4	5 Ch 21/ Exam Review-2	6 HW 21 due
9	10 Exam 2	11	12 Ch 22/ PL 22A	13
16 Fall break	17 Fall break	18	19 Ch 22 / PL 22B	20 HW 22 due
23	24 Ch 23/ PL 23A	25	26 Ch 23/ PL 23B	27 HW 23 due
30	31 Ch 25 / PL 25A	November 1	2 Exam Review-3	3
6	7 Exam 3	8 HW 25 due	9 Ch 26/ PL 26A	10
13	14 Ch 26/ PL 26B	15	16 Ch 28 / PL 28A	17 HW 26 due
20	21 Ch 28/Ch 29/ PL 29A	22 Thanksgiving	23 Thanksgiving	24 Thanksgiving
27	28 Ch 29/ Exam Review-4	29 HW 29 due	30 Exam 4	December 1
2	3 Ch 30	4	5 Ch 31-32	6 HW 30-31-32 due and CCTST post-test due
9	10	11 Final Exam	12	13