

Georgia State University - Perimeter College Alpharetta Campus

Principles of Physics I – PHYS 2211– 3 Credit hours

Spring Semester 2025: MW 4:00 pm—5:15 pm

In Person class meeting at Room: **AB – 204**

The principle of physics course, PHYS 2211 is a **Core IMPACTS** course that is part of the **STEM** area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question: **How do I ask scientific questions or use data, mathematics, or technology to understand the universe?**

Completion of this course should enable students to meet the following Learning Outcomes: **Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems, and explain natural phenomena.**

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies: (1) Inquiry and Analysis, (2) Problem-Solving, (3) Teamwork, (4) Information Literacy

CONTACT INFORMATION:

Name: Taha Mzoughi (pronounced Emzouri)

Phone #: 678-891-3544 (Clarkston), 770-274-5601 (Alpharetta).

I also use this Google Voice number to make calls: (404) 548-8324.

Email: tmzoughi@gsu.edu **WebEx:** <https://gsumeetings.webex.com/meet/tmzoughi>

Please do not use iCollege's email to try to contact me, use instead: tmzoughi@gsu.edu.

Associate Head Department: Michael R. Nelson, Jr. (**Phone #:** 678-891-3750, **Email:** mnelson38@gsu.edu)

Direct Communication: I am available anytime during normal business hours and at other times to talk over the phone, or via WebEx. To arrange for a meeting, just send me an email including the times you will be available for the call.

COURSE MEETINGS

This course is taught in an in Person format. Still, it is designed to give you an opportunity to manage your own learning. We have two lecture meetings per week for one hour and 15 minutes. Each week, you will be expected to read the course material before class. The class meetings, for the most part, are not formal lectures, but a discussion of concepts that you are expected to learn. In iCollege, you find links to the book content, some concept videos, and fully worked examples (worksheets). Weekly guiding quizzes will help guide you through what needs to be studied. Homework is provided as a formative assessment of your learning. During the class meetings, I will model working through some examples and I will answer your questions. You are also encouraged to ask questions about the homework, the worksheets, as well as the guiding quizzes on the course message board in the homework site MyOpenMath (MOM).

COURSE EXPECTATIONS

In a physics class, during a regular semester, students usually have to spend a minimum of 3 hours of coursework for every course credit hour. That is in addition to the ~3 hours spent in class. That adds up to a minimum of about 9 hours of coursework a week. Engagement with the course entails logging in to the course website and working on assignments at least three times a week. The role of the instructor is to facilitate your learning. I will try to provide guidance and help when needed. You will benefit of more guidance when you start on your assignments early and not wait until the due date to start working on them. **Please Note that this is a demanding course – be prepared to spend the time necessary to grasp these often complicated topics.**

COURSE DESCRIPTION

The principle of physics course, PHYS 2211, is the first in a calculus-based two-course survey of the primary fields of physics. This course will cover mechanics, waves, simple harmonic motion, and thermodynamics.

The co-requisite is: PHYS 2211L Laboratory. **The pre-requisites** are: MATH 2431 (with a C or better) and exit or exemption from Learning Support reading or all ESL requirements except ENSL 0091.

The course is a **Core IMPACTS** course that is part of the **STEM** area.

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GENERAL EDUCATION OUTCOMES EXPECTED FROM THE COURSE

Communication Skills: Students develop reading skills by reading the text and handout materials; their listening skills through lectures; and writing skills through problem-solving activities. Students are also encouraged to provide written or oral solutions to problems in order to develop their presentation skills.

Problem Solving and Critical Thinking Skills: Students develop individual and group problem-solving skills by doing problems both in the classroom and at home; critical thinking skills are encouraged by requesting student responses to questions asked during lectures.

Recognizing and Applying Scientific Inquiry: Students are taught by using conceptual and physical models of phenomena emphasizing the methods of data collection, doing experiments and developing the result into theory.

TIPS FOR SUCCESS

Please note this: “Physics is *not* a spectator sport and *no* amount of listening to lectures, however clear they may be, can replace thoughtful study and routine practice. Furthermore, this course covers a lot of material and new material relentlessly assumes an understanding of and builds on previous material.” (Mallinckrodt, 1998) Accordingly, I am providing the following tips:

1. **Carefully read/study the text.** Please plan on carefully reading the textbook material, taking notes and on having to re-read sections that at first might seem confusing.
2. **Work and understand** the examples provided with each section.
3. **Complete the Guiding Quiz (GQ) assignment.** Make sure to authentically answer the questions. When you don’t get the correct answer, please review the related concept or view the related concept recording instead of just trying other answers. When there is a question about any of the concepts, use the GQ message board to post questions. Answers, for postings made during normal hours, are usually answered within an hour or two. Make sure to post a detailed account of what you are having difficulty with. Just stating “I don’t understand” or something similar will not be helpful.
4. **Attempt the Worksheet (WS) problems** and make sure you understand the provided solutions. Ask questions on the course message board when you don’t understand them.
5. **Start working on homework assignments early.** Please don’t wait until the last minute to get started - don’t let yourself get behind. As you work through the problems, if you encounter difficulties, review your notes and the related concept recordings. If you still have difficulties, use the Homework message board to post questions. Answers, for postings made during normal hours, are usually answered within an hour or two. Please explain what you have attempted in your posting and precise which part of the question are you having difficulties with. If all fails, don’t get obsessed about solving the question, just skip it and then revisit it when the solutions are available.
6. **Read assignment questions** carefully before attempting to answer them.
7. **Review homework solutions after the deadline.**
8. **Pay careful attention to the assignment deadlines.** They are accessible from the login link in the assignment website.
9. **Regularly monitor** postings on iCollege and on the assignment message board.
10. **Do not miss class.**
11. **Use the message board** to ask questions and to find answers about the course.
12. **Please remember** that “Getting you to follow instructions is decidedly not the goal of this course. Not following instructions, however, is a common cause of failure” (Mallinckrodt, 2004) of any course.

GETTING HELP WITH THE COURSE

For Help with course content, the Learning Tutoring Center (LTC) offers FREE, walk-in tutoring and academic support at all Perimeter College campuses. It provides a variety of other resources and services to accommodate student needs. Please visit <https://success.students.gsu.edu/learning-tutoring-center/> to find information about locations, hours of operation, tutoring and workshop schedules, handouts, online tutoring and links to online practice resources.

If you experience a technology issue that prevents you from completing a course activity or test, immediately take action by emailing the instructor about the problem and Contacting the [GSU Helpdesk](#) or [D2L Help Center](#). For workshops or tutorials on using iCollege or other technologies, checkout: [GSU Panther Tech Training](#) & [Linkedin Learning](#)

RECOMMENDED TEXT:

At no cost to you, a marked and rearranged PDF version of an openStax book is provided in iCollege through LibreTexts.

OFFICE HOURS: CA1112, AB213 & VIA WEBEX

Bookings: You can book a meeting with me by using this: <https://bit.ly/TMGSU> Starting the second week of classes, the link provides the times I am available at the time you clicked it.

Office Hours: Starting the second week of classes, I will hold office hours according to the schedule in the table on the right in Person in rooms AB 213 and CA 1112 and via [WebEx](#) (<https://gsumeetings.webex.com/meet/tmzoughi>) .

Please note that I check message board postings (link through assignments) and **Paws** email (tmzoughi@gsu.edu) regularly. I also try to answer them as soon as possible (I often answer emails at odd hours, ***when I cannot,*** I try to answer in the following morning.) In other words, I am available to help you at any time.

| | CA1112 | AB205 (LTC Room) | AB213 | WebEX |
|-----------|----------------|------------------|-----------------|------------------|
| Monday | | 2:30 — 3:30 pm | 1:00 — 2:30 pm | 7:00 — 7:30 am |
| Tuesday | | | | 10:00 — 11:00 am |
| Wednesday | | | 10:00 am - noon | 10:00 am - noon |
| Thursday | 8:00 — 9:30 am | | | 8:00 — 9:30 am |
| Friday | | | | 7:30 — 8:00 am |

Other times: I am available anytime during normal business hours and at other times to talk over the phone, or via WebEx. To arrange for a meeting, just send me an email including the times you will be available for the call.

ICOLLEGE

Please **do not** use iCollege’s email to try to contact me, use instead: tmzoughi@gsu.edu.

GSU EMAIL POLICY

Every student is assigned an official Georgia State University email address at the time of acceptance. It is essential that students regularly check this email account. Academic departments and student service units across campus use the University assigned email as a means of communicating with students about official university business, and students are held responsible for this information. Email from Georgia State will be sent to the student’s official GSU e-mail address (that is PAWS not iCollege). **It will not be sent to any other address** (such as Apple, Gmail, or iCollege account).

COURSE MESSAGE BOARD

The course will use a resource (<https://www.myopenmath.com/> (MOM)) that is equipped with a message board that can be used to address content related to assignments. It is important to always check and read the postings on the message boards even when the threads are started by peers. Providing answers to peers is strongly encouraged. Most importantly, as students often have the same questions and concerns, it is helpful when general course questions are asked via the message board. To be more effective in helping you, I sometimes have to ask for elaboration, restatement or clarification. Please note the following when asking questions:

- 1. You may post messages anonymously. **However, it is much easier for me to assist you when you don't post anonymously.**
- 2. Note that, I have access to tools that allow me to see your identity and check your class web records.
- 3. Please do not start a new thread for something already listed.
- 4. Please read all available (if any) answers on a thread carefully before posting your own questions.
- 5. Please help by answering questions posted by your peers if you already know the answer.
- 6. Please don't expect the answer to be instantaneous but trust that if it is not answered correctly by one of your peers, I will answer it as soon as I can.
- 7. Please make sure your questions are clearly written so that I understand them and provide a good answer.
- 8. Please expect and excuse that I sometimes answer postings and emails by using a phone. This often results in spelling, erroneous phone predictive text and grammar errors.
- 9. Please try not to consult the answers to assignment questions until you make your own attempts.
- 10. Please detail what you have tried as part of your question and explain what question part you are asking about.
- 11. Please remember that my duty is to teach you how to fish. Depending on the question, I will try to lead you to the answer by providing you with hints or by asking you other questions. I know that this might frustrate you sometimes and I sometimes cave in because of that. Yet, in most cases, real learning does not happen when I just provide clear answers. More learning happens when you struggle with the process. It is harder both of us, but it is more effective.

GRADE DETERMINATION

| Assessment Item: | | Percent of the grade: | Final Grade Calculation | |
|--|---------------------------------------|-----------------------|------------------------------|-----------|
| I. In-class work, Phantom Quizzes (PQ) | | 5% | A: | > 89.99 |
| II. Guiding Quizzes (GQ) | | 10% | B | > 79.99 |
| III. Homework | | 15% | C | > 64.99 |
| IV. Quizzes | Every Class Period – best 60% | 20% | D | > 54.99 |
| V. Exams | Midterm (E1)– March 12 th | 20% | F | Otherwise |
| | Final Exam (E2) – May 5 th | 30% | (There is no roundup) | |

INCOMPLETE

A grade of incomplete (“I”) may be assigned at the instructor’s discretion if a student **(1)** is earning a passing grade at the time the incomplete is requested, and **(2)** has completed most of the major assignments, generally all but one, and **(3)** cannot complete the remainder of the coursework due to non-academic reasons beyond the student’s control. Please refer to the link <https://registrar.gsu.edu/academic-records/grading/> to learn more about grades.

LECTURES

Please remember that: “Physics is **not** a spectator sport and **no** amount of listening to lectures, however clear they may be, can replace thoughtful study and routine practice. Furthermore, this course covers a lot of material and new material relentlessly assumes an understanding of and builds on previous material.

The key is to take good notes, to complete all assignments and make sure to learn from errors in assignments.

GUIDING QUIZZES (GQ):

Guiding questions (GQ) are assigned to help you navigate through the list of course concept recordings. All GQs should be submitted online. Paper and email submissions will not be accepted. It is not possible to make up missed quizzes. Due dates for these are available on the check list. These are automatically graded with immediate feedback. The two lowest grades will be dropped.

WORKSHEETS (WS):

A worksheet for each the units covered will be provided in iCollege. They are intended as an additional mean for practicing problem solving. Worksheet solutions will also be provided. Worksheets will not be graded and will not be submitted.

HOMEWORK

Homework is made up of hands-on activities and typical end of the chapter problems. It can be submitted only by using the link provided through iCollege. It is automatically graded and it provides limited immediate feedback. The two lowest homework grades will be dropped. Email submissions will not be accepted. There will be approximately one homework set due each week usually posted around mid-week. The due dates are also available in iCollege in the Course checklist file.

Homework problems are your best indication of the material that is emphasized in the course and the level of understanding needed. Furthermore, working out solutions to these problems is probably about the bare minimum of practice on your part that is likely to yield that level of understanding. You should make sure that you understand the concepts involved not just get the correct numerical answer. The goal is to practice and then demonstrate (later in exams) that you have learned 1) how to determine the fundamental physical principles that are involved in each situation and 2) how to apply those principles in a disciplined, clearly, and orderly fashion. The worksheet solutions and the homework detailed solutions should provide you with ample examples on what you are expected to do when you work on problem.

IN CLASS WORK

5% of the course grade are earned by answering the Phantom Quiz at the beginning of every lecture.

IN CLASS QUIZZES

20% of the course grade are earned by answering the Quiz at the end of every lecture. The grade will be based on the best 15 grades out of the possible 25.

MISSED DEADLINES

Whenever you find yourself unable to complete an assignment on time, you can use the homework or Guiding Quiz interface to setup a one day extension. Please note:

1. You are allowed a total of 10 one-day self-extensions for online assignments.
2. The extension need to be setup online **by you, before the deadline** of that particular assignment.
3. While you should not expect other accommodations, remember that my aim is to help you succeed, so feel free to contact me if a need arises.
4. **There are no extensions or make-up for** Quizzes and Phantom Quizzes.

TESTS AND EXAMS

You will need to complete One Midterm Exam and one Final Exam for this course. Practice for these will be made available one week before the exam. You are encouraged to submit detailed correct solutions in the homework message board for the practice for bonus credit. **You cannot take exams at other times, please plan ahead.**

For the midterm, you will be provided with the opportunity to complete test retake online. The midterm final grade will be computed according to this formula: $\text{grade} = \text{Max}(\text{midterm}, (2 \text{ midterm} + \text{retake})/3)$

Exams are designed to test your full understanding of the concepts covered and to demonstrate problem-solving skills. You must show all your work to be eligible for full credit. Problems will be graded for "coherence" as well as "correctness". Clear, organized and concise writing is expected. In writing the answers, you need to use words, symbols, equations, sketches, graphs, and numbers. You must state the reason (i.e., physical law or principle) for all equations used that are not simply the result of mathematical manipulation or substitution.

While not specifically targeting earlier chapters, since the content builds on itself, expect all exams including the Final to test competency on all course content.

Students are expected to bring a **scientific calculator** for all exams.

For any concerns and issues that arise during the tests and exams, students should communicate only with the instructor by quietly raising their hands.

You can earn bonus points for the exams by completing the practice and by asking questions in the early morning WebEx help sessions on Mondays and Fridays.

BONUS CREDIT WHEN THE AVERAGE GRADE IS BELOW 80%

- I) You can earn up to 5 bonus points added to your final overall course grade by completing the "Bonus assignment". The "bonus" cannot be used as a substitute to the regular assignments. It is made up of one of two components:
 - a) Homework component: For homework, you get bonus credit by submitting (a) fully worked out, (b) properly presented, (c) correct solutions to the homework, (d) submitted as a PDF document.
 - b) Lecture component: For Lecture, you get bonus credit by submitting a PDF document of your course self-made notes. You need to submit **the bonus component you choose** in a weekly basis, 10 times during the semester. You earn the 5 points by submitting 9 out of the 10.
The detailed homework solutions or your lecture summary can be typed or handwritten. If handwritten, I recommend that you use the Microsoft Lens for making multipage PDF documents of your notes. Microsoft Lens is available for both the Android and iOS phone platforms and is ad free.
 - II) You can also earn 2 bonus points added to your final overall course grade by completing a minimum of a two page synopsis of the history of our understanding of one of the topics discussed in the course (for example electricity). The synopsis should include both the concepts and the historical details. Guidelines for the synopsis are available in the submission box in iCollege.
 - III) You can earn a maximum of 6 bonus points added to your final overall course grade by completing one or more of the items listed above. Bonus work is not accepted after the deadline.
- IV) **The letter grade "A" can be earned only without bonus credit.**

MAKE-UP EXAMINATION

There will be no makeup tests/exams given. The exception to this rule is for a student who has special permission by the Instructor, Associate Head Department, or Dean of Students for being absent during the exam time. Students who miss tests and exams without a valid and verifiable excuse will receive a score of zero for the missed test or exam.

ATTENDANCE/ABSENCES

Students who want to do well in this course will attend class following the class attendance policy. You will need an excused absence due to illness.

STUDENT EXPECTATIONS

Students are responsible for all material covered and announcements made in class. Students should conduct themselves professionally and academically that respects the rights of other students and the instructor. Because entering and exiting the room during class can be distracting, please refrain from such movements except as physiologically necessary. Any unnecessary or loud talking during class should be avoided. Eating and drinking are prohibited in the classroom. All electronic devices must be turned off during class time. Students that do not conduct themselves professionally and academically may be asked to leave class.

INCLEMENT WEATHER

If the College is closed due to inclement weather or other reasons, any scheduled tests, quizzes or examination during that period will be conducted during the next available full class period in the order of the initial schedule.

WITHDRAWAL POLICY

Students are responsible for formally dropping or withdrawing from courses using PAWS at <http://paws.gsu.edu>. Students should not simply stop attending. They should be aware of the financial and academic consequences of dropping and withdrawing from courses by consulting with an academic advisor and referring to information concerning the tuition refund schedule found on the Student Financial Services web page, available through <http://gsu.edu>.

Georgia State University reserves the right, at any time during the semester, to drop any student from classes for failure to pay tuition and fees. However, students should not assume that Georgia State will drop them from classes for failure to pay tuition and fees. Please refer to the following link for the detailed withdrawal policy.

<https://registrar.gsu.edu/registration/registration-guide/#dropping-a-class>

I urge you to consult with me before dropping the course.

CHEATING AND PLAGIARISM

As stated in the Georgia State University, "Cheating is contrary to the policy of Perimeter College. Cheating includes any attempt to defraud, deceive, or mislead the instructor in arriving at an honest grade assessment." Plagiarism is a form of cheating that involves presenting as one's own the ideas or work of another. Cheating of any kind may result in penalties ranging from a grade of 0 on the assignment to a final course grade of F. The instructor may also refer cases to the College Court for assignment of additional penalties that may include suspension or expulsion from Perimeter.

The following are examples of cheating unless the instructor has specifically authorized them. This is not an exhaustive list.

A. On quizzes, tests and exams:

1. Looking at or copying from another student's work or allowing another student to look at or copy work.
2. Having a copy of the test before actually taking the test.
3. Communicating in any form with anyone except the student's instructor.
4. Accessing unauthorized material whether it be student notes, printed material, online material, or any other way.
5. Leaving the exam room for any reason without the permission of the instructor before completing the test
6. Taking a cell phone with you to the restroom.

B. On homework, papers, and other out-of-class assignments:

1. Copying work or answers from any source.
2. Having a person do another student's work.
3. Allowing a student to use another student's work as his or her own.
4. Presenting one student's work as the work of another.
5. Submitting false results of an experiment, data collection, a computer program, or any other assignment.
6. Submitting work that has been previously submitted in another course.

Please refer to the GSU's Academic Honesty Policy at the following link: <https://codeofconduct.gsu.edu/>

MISUSE OF COURSE MATERIALS

All materials, both physical and electronic, used in this course are copyrighted by the instructor. They may not be reproduced physically or electronically by any student without the expressed written consent of the instructor. This provision includes posting any course materials to the Web or social media. Students who violate these copyright protections will be subject to charges of intellectual property theft that may result in suspension or exclusion from the University.

BASIC NEEDS STATEMENT

A student facing challenges securing food or housing and believes this may affect their school performance is urged to contact the Dean of Students for support. Please also notify the professor if you are comfortable in doing so. This will enable us to provide resources that we may possess. The [Embark program at GSU](#) provides resources for students facing homelessness.

DIVERSITY, INCLUSIVITY, AND RESPECT

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of all diversity including gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your comments (in the discussion posts and in person) related to the class and content will be encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups.

AMERICANS WITH DISABILITIES ACT STATEMENT

If you are a student who is disabled as defined under the **Americans with Disabilities Act (ADA)** and require assistance or support services, please seek assistance through the [Access & Accommodations Center \(AACE\)](#).

Students who wish to request an accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.

TITLE IX

Georgia State University seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment/misconduct/assault, we encourage you to report this. If you report this to a faculty member, he or she must notify one of our college's Assistant Title IX Coordinators about the basic facts of the incident (you may choose whether you or anyone involved is identified by name). For more details: <https://victimassistance.gsu.edu/>.

EQUAL OPPORTUNITY STATEMENT

No person shall, on the grounds of race, color, sex, religion, creed, national origin, age or disability, be excluded from employment or participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity conducted by Georgia State University - Perimeter College.

AFFIRMATIVE ACTION STATEMENT

Georgia State University adheres to affirmative action policies designed to promote diversity and equal opportunity for all faculty, staff, and students.

VETERANS AND SERVING MILITARY

GSU honors its military and veteran men and women returning to pursue their educational goals. A Military Outreach Center (MOC) is provided on the ground floor of Building H on the Clarkston Campus. Veterans, serving the military, their dependents, and the survivors who are attending college are encouraged to avail themselves of a full range of services and activities through the MOC. MOC resource tables are also located on all campuses to provide them with valuable information. MOC maintains an Outreach website at <https://veterans.gsu.edu/>, their telephone number is 678-891-3025.

PREGNANT AND PARENTING STUDENTS

A student seeking an adjustment due to pregnancy or childbirth should discuss the request with the dean of Students: <https://deanofstudents.gsu.edu/student-assistance/>.

CHILDREN IN CLASS / AT COLLEGE

The college has a policy that prohibits children from sitting in or being left in the hallway during class. If you come to class with a child, then you will be asked to leave the class. If you bring a child to a test, then you will not be allowed to take the test, and the policy of no make-up tests for missed tests WILL apply (no exceptions).

GEORGIA STATE UNIVERSITY PERIMETER COLLEGE COVID-19 POLICIES

Should a student test COVID positive, any accommodations to the class attendance policy will be informed by evolving guidance from the CDC on quarantine. In most cases there will be no major change to mode of course delivery, so students will be responsible for collecting notes for missed in-person classes and making up any work they miss during quarantine. Anyone who has a positive COVID test is encouraged to alert the university so that appropriate contact tracing can be conducted. All students who have a positive COVID-19 test should report it on [the voluntary COVID-19 reporting form](#). If you have questions about reporting, email caseinvestigation@gsu.edu or call 404-900-0203.

Face Coverings Policy: You probably have an opinion on the effectiveness and use of masks to limit the spread of COVID-19 but wearing a face mask is not required in Georgia State classrooms. I will be wearing my face mask, and you are encouraged to wear yours. If you choose not to wear a face mask there is no penalty, and students should not engage on any type of disruptive behavior towards those who have made a different choice about wearing a mask.

Social Distancing Policy: Fully vaccinated individuals can resume campus classes, work and other activities without physically distancing. Unvaccinated individuals are strongly encouraged to continue socially distancing from others when possible. More information can be found at the Georgia State Ahead website: <https://covidinfo.gsu.edu/>

TOBACCO AND SMOKE-FREE CAMPUS

GSU is committed to providing a clean, healthy, and comfortable environment for all students, faculty, staff and visitors. The use of tobacco products is prohibited on all property owned, leased or used by GSU, including but not limited to all internal and external areas; parking garages and parking lots; and in GSU-owned and/or leased vehicles. Such use is also prohibited within 25 feet of all GSU building entrances and exits. Tobacco products include cigarettes, cigars, pipes, smokeless tobacco, clove cigarettes and any other smoking devices that use tobacco, such as hookahs or simulate the use of tobacco such as electronic cigarettes. The advertising, sale or free sampling of tobacco products on GSU property is also prohibited.

CAMPUS CARRY STATEMENT

The Campus Carry legislation allows anyone properly licensed in the state of Georgia to carry a handgun in a concealed manner on university property with noted exceptions. It is the responsibility of the license holder to know the law. Failure to do so may result in a misdemeanor charge and may violate the GSU's Code of Conduct."

COURSE EVALUATION

Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take the time to fill out the online course evaluation.

PHYSICS LEARNING OUTCOMES

- Students demonstrate the ability to interpret and analyze quantitative information; apply mathematical principles and techniques; and to use mathematical models to solve applied problems.
- For the cases of one- and two-dimensional linear motion, and rotational motion, apply equations of kinematics in order to describe non-accelerated and uniformly accelerated motion.
- Apply Newton's laws of motion to analyze and solve problems in cases where (a) A single or multiple sets of forces act on a single object both in or out of equilibrium; (b) there exist forces of kinetic and/or static friction that act on an object or system of linked objects; (c) frictional forces and the force of gravity affect the motion. Apply Newton's Universal Law of Gravity.
- Apply the work-energy theorem to account for conservative and non-conservative forces that act on a system in relation to the kinetic energy, potential energy and the work done by non-conservative forces.
- Apply momentum conservation to account for changing motions in the form of Newton's Second Law, elastic and inelastic collisions and rotational motion.
- Apply Newton's Laws of Motion, Energy Principles and Momentum principles to rotational motion and to translational motion involving rotation.
- Discuss simple harmonic motion, characterize motion by the amplitude and frequency; recognize and be able to apply

the equation for a one-dimensional harmonic traveling-wave; determine the direction of a traveling harmonic wave; apply the concept of superposition to combine two harmonic waves and predict the result; determine the energy intensity at some distance from a sound source; employ the equation for the Doppler effect to predict the observed frequency and wavelength shifts; use the principle of superposition to predict the nature of standing waves on a string and in an air column; apply the phenomena of resonance in mechanical systems

- Convert between the temperature scales; Solve problems that involve the thermal expansion coefficients of solids and liquids; Apply the ideal gas law in the solution of related problems; Employ the equations that apply to specific heat capacity, latent heat and the law of conservation of energy to solve calorimetric problems; State the Laws of Thermodynamics and apply these laws to solve problems in thermodynamic processes; Apply the equations that relate to heat transfer by conduction, convection, and radiation to solve realistic examples of heat transfer mechanisms between a system and its surroundings (tentative)