The main goal of this course is to have you engage in a process central to science: the attempt to model a broad range of physical phenomena using a small set of powerful fundamental principles. To aid in this goal you will develop computational models that predict the motion of interacting objects. These models will be made using the VPython programming language (available for free from www.vpython.org).

**Topics include:**
- The different types of matter and interactions found in nature
- Using the momentum principle to predict future motion
- The momentum principle in moving reference frames
- Energy conservation
- Energy in macroscopic systems including thermal energy
- Multi-particle systems and the center of mass
- Collisions
- Angular momentum

**By the end of the course, you will be able to:**
- Apply a small set of fundamental physical principles to a wide variety of situations.
- Use these principles to explain a wide variety of physical phenomena.
- Modeling physical systems: make idealizations, simplifying assumptions, estimates.
- Constructing computational models to predict the time evolution of system behavior.
Evaluation

Numerical ranges for final grades are as follows: 90-100 points = A, 80-89 points = B, 70-79 points = C, 60-69 points = D, 0-59 points = F. Final grades will not be curved:

28pts - Tests: There are two tests, weeks are listed on the course schedule.
  • The tests are free response and closed book; a formula sheet will be provided.
  • Exams will be due by Friday with flexibility for proctor availability.
  • Students are expected to arrange a proctor through professional education
    https://pe.gatech.edu/summer-online-undergraduate-program/how-nominate-proctor
  • Please do not discuss the exam with students until a solution set has been posted to TSquare

18pts – Quiz Problem Presentations: There are 6 problem presentations on Fridays
  • Students will be assigned test level problems at the start of the week and asked to present a solution to their group during a one hour, online, meeting with their TA at the end of the following week.
  • TAs will grade both the solution and the quality of the presentation.
  • Presentation weeks are listed on the course schedule.

24pts - Final Exam: Your final exam schedule: http://www.registrar.gatech.edu/students/exams.php

25pts - Laboratory: Lab begin the first week of class
  • You must meet with your group and TA online each week in order to receive credit.
  • 10pts will be earned for successfully completing group problem solving activities
  • 10pts will be earned based on the quality of your video lab report as determined by your TA and instructors.
    ◦ There will be 5 video lab reports (submission dates posted to TSquare)
  • 5pts will be earned for participating in lab report presentations. These activities will including presenting a draft of your lab report and providing feedback to your peers on in-lab presentations.
    ◦ There will be 5 lab report presentations (dates posted to TSquare)

5pts - Homework: A weekly homework assignments will be due every Sunday Evening.
  • Correct submissions submitted more than 48 hours before the deadline earn a 40% bonus. Homework scores greater than 100% will count as extra credit. For example, correct homework always submitted early would earn 2pts of extra credit on the final course grade.

3pts – Optional Assignment: Points earned here replace missing points from the homework (not extra credit)
  • Two post exam reflection exercise on errors and time management
  • Review problems before each test and the final exam
  • Additional assignments offered at the discretion of the instructor
Guidelines

Honor

- The policy on academic honesty as stated in the Honor Code will be fully enforced during this course for both the instructor and student:
  http://www.honor.gatech.edu/index.php
- Collaboration with other students in this course on homework assignments and lab activities is permitted and strongly encouraged.
- Students may not use a second WebAssign account or another student's clicker.
- Collaboration is not permitted on exams.
- Unless otherwise specified, each student must make and record their own observations, models, and evaluations for lab reports.
- Honor code violations will be referred to the Dean of Students office.

Testing

- A formula sheet for all quizzes, tests, and exams will be posted to T-Square.
- If you feel that an error has been made in the grading of test, you will have until the start of the next test to meet with your instructor (online) to discuss the error.

Absences

- Students may be excused from core course work (exams, labs, and presentations) if they:
  - Participated in an approved Institute activity (e.g. athletics, conferences, etc...), were required to appear in court, were suffering from a serious illness that required a doctors visit, experienced the death of an immediate family member, observed a religious holiday.
  - There are no makeup labs, you can only be excused from these assignments.
  - If you are excused from a test or quiz your final exam grade will replace your missing test grade at the end of the term. Experience has shown this to be more beneficial for the student than giving a makeup test. If you disagree please speak with Dr. Greco.
  - For all circumstances, please contact Dr. Greco with documentation within one week of returning to campus.
- Missed homework can not be excused. Instead, students should complete optional assignment activities to make up for the missed work. No documentation is required but please contact Dr. Greco if you have questions or concerns.

Participation

- The secret to succeeding in this course is to actively participate in group hangouts and on Piazza.
There are no live lectures for this course. Instead, students will watch physics videos and meet online with their instructors and TAs several times a week. These meetings are important because they give you the opportunity to ask questions and clear up points of confusion.

- Lecture and instructional videos will be hosted by Coursera (see Tsquare for details).
- During the first week, student will fill out a poll to determine when they available to meet with their TA. Groups will be assigned based on availability and start meeting the second week of class.

- Each week, keep up with the assigned videos and suggested reading listed on Coursera
  - Do the stop and think activities and in-line exercises in the textbook.
- After studying the textbook sections, work through the WebAssign homework questions to check your understanding on your own or in a small group.

WebAssign

- Our coursework, both lecture and lab, will be completed using the WebAssign online homework system.
  - Accessed through T-Square by clicking on the left menu item “Course Tools>WebAssign”
  - Access has already been purchased using a portion of your lab fee.
- You are given three submissions for each question part within an assignment.
- Extension request for an individual assignment will be handled automatically by the WebAssign system with a 10 point penalty for each extension.
  - You are allowed a maximum of two extensions per assignment.
  - You may only complete an extension within a 48 hour window of the original due date.
  - Once you request an extension, you will immediately be given 12 hours to complete the assignment.

Getting Help

- Your instructors will schedule live hangouts for office hours (times TBD).
- Any issue related to the administration of the course should be directed Dr. Greco.
  - You can reach me by email ed.greco@gatech.edu or by cell phone 404-924-9148
- **You can request online help from students, TAs and instructors through Piazza**
  - Helpful responses are more likely if you don't wait until the last minute.
  - Accessed through T-Square by clicking on the left menu item “Course Tools>Piazza”