PHYS 2211
Principles of Physics I
Fall 2017
Dr. Marco Guzzi
Office: SC 436
Phone: (470) 579-4583
email: mguzzi@kennesaw.edu (When e-mailing, put “PHYS2211” in the subject line along with the subject of your message. Please do not use D2L or WebAssign to email me, you will not get a reply.)

Lectures: MWF 4:00-4:50pm, Science 109
Recitations: M 2:00-2:50pm, Bagwell Education Building-119 (24 students)
Recitations: M 3:00-3:50pm, Clandenin Building-1005 (24 students)
Recitations: W 2:00-2:50pm, Bagwell Education Building-129 (24 students)
Recitations: W 3:00-3:50pm, Clandenin Building-1005 (24 students)

Office hours:
Mon 5pm - 6pm (it's after class)
Tue 11am-12pm
Wed 5pm - 6pm (it's after class)
Thu 11am - 12pm
Fri 11am - 12pm

Textbook: Physics for Scientists and Engineers with Modern Physics, Serway and Jewett, 9th ed.

Catalog course description
PHYS 2211. Principles of Physics I

Prerequisite: A grade of "C" or better in MATH 1190.
This course is an introductory calculus-based course on classical mechanics, waves, and special relativity. The student will be able to apply Newton's laws and conservation of energy and momentum to various problems in kinematics and dynamics, use the law of universal gravitation to analyze the behavior of falling objects and objects in orbital motion, describe simple harmonic motion, oscillations, and waves, and explain the basic ideas of special relativity.

Course content
PHYS 2211 is a calculus-based course on classical mechanics and related topics. Problem solving will be emphasized. Homework is an integral part of the course.
The course will cover one- and two-dimensional motion, Newton's laws, work and energy, momentum and collisions, rotational motion, gravitation, simple harmonic motion, waves, and special relativity.

Learning Outcomes
The topics covered in this course constitute the most fundamental background for a pathway in science and engineering. The overarching objective of this course is to provide an appreciation for the power of physical law and an understanding of its logic, beauty and universality, including the connection between symmetries and conservation laws in physics. Some specific objectives are listed below:
1. Analyze and solve kinematical problems for systems moving in one and two dimensions using pictorial, graphical, physical, or mathematical representations (including calculus and vectors) of the system, and other representations as appropriate.

2. Analyze and solve statics and dynamics problems using Newton's laws (including the law of gravitation) in one and two dimensions using multiple representations including free-body diagrams and mathematical descriptions (including calculus and vectors) of the system.

3. Analyze and apply the conservation laws (energy and momentum) for linear and rotational systems, and develop solutions using multiple representations, including pictorial, graphical, or mathematical (including calculus and vectors) descriptions as appropriate.
4. Explain simple harmonic motion and compute parameters related to it in such applications as mass-spring oscillators, simple pendulums, and sinusoidal transverse waves.

5. Use special relativity to analyze differences in the behavior of objects as observed in different inertial reference frames, and explain the equivalence of mass and energy.

**Grading policy**

Your grade will be determined by your performance on three exams

- Homework 10%
- Tests 60% (3 tests, 20% each)
- Final Exam 30%

Grades: A >90%; B 80%-90%; C 70%-80%; D 60%-70%; F <60%

**D2L (Internet-based utility)**

Grades, course information, homework solutions and announcements will be available “D2L”. This online course information system is accessible from [http://d2l.kennesaw.edu/](http://d2l.kennesaw.edu/).  
To sign on, use your KSU Local Area Network (LAN) username and password.

**Homework Assignments**

Homework assignments and homework grading will be done through the WebAssign on-line homework tool. Go to The Moodle KSU page has instructions for log in. Due dates are on Sapling Learning.  
Students should use the class key: kennesaw 2746 1015 in order to see and submit the homework.

**Withdrawal**

Last day to withdraw without academic penalty is October 4. The university's withdrawal policy is explained at: [http://registrar.kennesaw.edu/student-records/registration-policy.php](http://registrar.kennesaw.edu/student-records/registration-policy.php)  
The Academic Standing Appeal policy is explained at: [https://appeals.kennesaw.edu/withdrawal_appeal.php](https://appeals.kennesaw.edu/withdrawal_appeal.php)

Students are solely responsible for managing their enrollment status in a class.  
Nonattendance does not constitute a withdrawal.

**Tentative Schedule**

Aug 14-18  
**Physics and Measurement; Motion in One Dimension**  
**Chapter 1:** Sects. 1.1-1.6  
**Chapter 2:** Sects. 2.1-2.8

Aug 21-25  
**Vectors; Motion in Two Dimensions**  
**Chapter 3:** Sects. 3.1-3.4  
**Chapter 4:** Sects. 4.1-4.6

Aug 28-Sept 1  
**The Laws of Motion**  
**Chapter 5:** Sects. 5.1-5.8

Sep 4: Labor Day - NO Classes  
Sep 6-11  
**Test 1:** Circular motion and Other Applications of Newton’s Laws  
**Chapter 6:** Sects. 6.1-6.3  
Sep 6: Test 1

Sep 13-18  
**Energy of a System**  
**Chapter 7:** Sects. 7.1-7.9
Sep 20-25  
**Conservation of Energy**  
Chapter 8: Sects. 8.1-8.5

Sept 27-Oct 2  
**Review; Test 2**  
Sept 29: Test 2

Oct 4-9  
**Linear Momentum and Collisions**  
Chapter 9: Sects. 9.1-9.9

Oct 11-16  
**Rotation of rigid objects**  
Chapter 10: Sects. 10.1-10.9

Oct 18-23  
**Angular momentum; Static equilibrium and Elasticity**  
Chapter 11: Sects. 11.1-11.4  
Chapter 12: Sects. 12.1-12.3

Oct 25-30  
**Universal Gravitation**  
Chapter 13: Sects. 13.1-13.6

Nov 1-6  
**Review; Test 3**  
Nov 3: Test 3

Nov 8-13  
**Oscillatory Motion**  
Chapter 15: Sects. 15.1-15.5

Nov 15-17  
**Wave Motion**  
Chapter 16: Sects. 16.1-16.2, 16.6

Nov 20-26 - No classes; fall break

Nov 27-Dec 1  
**Test4; Relativity**  
Chapter 39: Sects. 39.1-39.9

Nov 29: Test 4  
Dec 4 **Review**

**Final Exam:** Friday, Dec 8 2017, 3:30pm-5:30pm

**Exams Policy**

Four exams will be given in this semester. The test dates are reported on this syllabus. The lowest test score will be dropped. Please note that the use of any mobile device that transmits a signal is not permitted in an exam. ALL mobile devices should be deactivated during exams. You must have a valid KSU identification card to take the final exam.

**Make-up Exam policy**

Make-up exams will not be given. If you know ahead of time you have a conflict, let me know. If you miss an exam because of an illness (yours or a family member’s) or some other unforeseeable event, contact me as soon as you can. You can e-mail me, or call the Physics Dep. Office at 470-570-4205. You must provide documentation showing the reason for missing the exam. Final make-up exam is ONLY for documented and excused emergencies or for scheduling conflicts with other final exams.
**Academic Integrity**
Every KSU student is responsible for upholding the provisions of the Student Code of Conduct ([http://scai.kennesaw.edu/codes.php](http://scai.kennesaw.edu/codes.php)), as published in the Undergraduate and Graduate Catalogs. The Student Code of Conduct addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University, which include either an “informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct’s minimum one semester suspension requirement.

**Attendance & Participation**
Students are expected to attend all lectures and recitations, take all tests and exams, and complete all homework assignments.

**Students with Disabilities**
Any student with a documented disability or medical condition needing academic accommodations of class-related activities or schedules must contact the instructor immediately. Written verification from the KSU Student Disability Services ([http://sds.kennesaw.edu/](http://sds.kennesaw.edu/)) is required. No requirements exist that accommodations be made prior to completion of this approved University documentation. All discussions will remain confidential.

**Other Policies**

**Inclement Weather**
For the official status of the university check the KSU website [http://www.kennesaw.edu](http://www.kennesaw.edu)