

SYLLABUS: PHY-2048-B51 Physics W/Calculus I - FALL 2012

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Lectures: Tuesday/Thursday 0930-1110, A1-329, Biscayne Bay Campus
Office Hours: Tuesday/Thursday Biscayne Bay North Campus, A1-329: 11:10 -12:10;
 Wednesday Modesto A. Maidique Campus, CP243: 11-15:00

COURSE DESCRIPTION

The course presents a quantitative and qualitative study of physical principles as applied kinematics, Newton's Laws, conservations laws, gravitation, fluids, sound, and thermodynamics. It is a calculus-based course. Knowledge of introductory calculus, algebra and trigonometry are required. Calculus I (MAC 2311 or equivalent) should be taken prior to or concurrent with this course.

TEXTS: "University Physics" 13th ed. by Young, Freedman and Ford, a student study guide and a student solutions manual for this text is also available.

OBJECTIVES AND COMPETENCIES: Through classroom discussion and textbook study you are expected to achieve a basic understanding of the topics covered by the course. You should be able to define the scientific terms used in the course and be able to explain the concepts to a fellow student. You should be able to analyze and solve problems. You should be able to apply methods of algebra, trigonometry, and calculus to the solution of physics problems.

Date		Chapter	Course Outline
8/21/2012	Tuesday	1/2	Units, Physical Quantities, and Vectors
8/23/2012	Thursday	2	Motion Along a Straight Line
8/28/2012	Tuesday	3	Motion in Two or Three Dimensions
8/30/2012	Thursday	3	Motion in Two or Three Dimensions RECAP T1
9/4/2012	Tuesday	TEST 1	
9/6/2012	Thursday	4	Newton's Laws of Motion
9/11/2012	Tuesday	5	Applying Newton's Laws
9/13/2012	Thursday	5	Newton's Laws
9/18/2012	Tuesday	6	Work and Kinetic Energy
9/20/2012	Thursday	6	Work
9/25/2012	Tuesday	7	Potential energy and Energy conservation
9/27/2012	Thursday	7	Conservation of energy; RECAP T2
10/2/2012	Tuesday	TEST 2	
10/4/2012	Thursday	8	Momentum, Impulse and Collision
10/9/2012	Tuesday	9	ROTATION: angular coordinates, moment of inertia, energy, torque
10/11/2012	Thursday	9	Rotation of rigid body
10/16/2012	Tuesday	10	ROLLING, TORQUE, and ANGULAR MOMENTUM: angular momentum
10/18/2012	Thursday	10	Dynamic of rotational Motion
10/23/2012	Tuesday	11	EQUILIBRIUM AND ELASTICITY: center of gravity
10/25/2012	Thursday	12	Fluid Mechanics RECAP T3
10/30/2012	Tuesday	TEST 3	
11/1/2012	Thursday	13	Gravitation
11/6/2012	Tuesday	14	Periodic motion, waves, acoustics
11/8/2012	Thursday	15	Mechanical waves
11/13/2012	Tuesday	16	Sound and Hearing
11/15/2012	Thursday	17	Temperature and Heat
11/20/2012	Tuesday	18	Thermal properties of matter; RECAP T4
11/22/2012	Thursday	-	Thanksgiving Nov 22- Nov. 25

11/27/2012	Tuesday	TEST 4	
11/29/2012	Thursday	19	First Law of Thermodynamics
12/4/2012	Thursday	20	Second Law of Thermodynamics; RECAP FINAL
12/6/2012	Tuesday	FINAL	COMPREHENSIVE FINAL EXAM

GRADING POLICY: You will have four tests and a Final Exam to establish your grade for the course. Each of the four tests will be worth 100 points. The comprehensive final exam will count for 100 points. The letter grade for the course will be calculated on the basis of a maximum total of 500 points. There are no makeup exams unless there was an extreme emergency or if you have contracted me prior to the test with a legitimate reason for missing it. No extra credit. If you miss one test, your final exam score will be used as a substitute score. Additional missing test scores will count as zeros. Your grade will be determined by taking the total of all the points you have earned. The FINAL EXAM is comprehensive and covers all sections of the course. The subject of physics is inclusive so material covered in earlier tests is needed for solving problems on later tests. The grading scale for a single test and total points at the end of the term is printed below. The exams are closed book. A formula sheet will be allowed. In borderline cases, consideration will be given to a student's attendance record and other factors related to academic performance such as class participation and contribution.

IMPORTANT: ALL PROBLEMS ON THE CLASS TESTS MUST BE SOLVED SHOWING CLEAR AND LEGIBLE STEP-BY-STEP CALCULATION AND UNIT OF MEASURES; IN ADDITION THE FORMULA USED IN SOLVING THE PROBLEMS MUST BE HIGHLIGHTED. PROBLEMS WITHOUT "CLEAR AND LEGIBLE STEP-BY-STEP CALCULATIONS" WILL COUNT AS ZERO POINTS EVEN IF MARKED CORRECTLY ON SCANTRON.

Student ID will be check during all tests. Always bring calculators, textbook and your notes.

	A	B	C	D	F
Single Test	90-100	80-89	65-79	55-64	0-54
Total Points	450 or more	400 - 449	325- 399	275 - 324	0 - 274

EXTRA CREDIT POINTS:

"Hand-written notes" taken in class will be checked twice on a voluntary basis during TEST 2 and TEST 4 for a total of 5+5=10 points. The notes will be evaluated on scientific accuracy and methodology, completeness of material and organization skills.

"Latest Science News" relevant to student's field of interest are worth 1 point; 3 students per week will be chosen between the volunteers, student will have max 40 seconds to deliver the Latest Science News in a scientific, journalistic, public speaking style to the classroom.

"4E Science Video" inspired by a scientific phenomena illustrated in class. Create a 4E=Entertain, Educate, Enlighten, and Enthrall video using high resolution images, add one or two short scientific sentences to the presentation material, give it a storyline, add music as appropriate, maximum 3-4 minutes length. Each 4E Science Video will be worth 5 points; max two per semester.

"Homework", end of chapter problems in the textbook are worth 1 point for the volunteer student that if selected will solve it at the whiteboard using correct scientific methodology including units of measurement and final correct result.

PLEASE TURN OFF ALL CELL PHONES AND PAGERS DURING CLASS.

ATTENDANCE: Punctual, reliable attendance is expected. Excessive absence during a regular 16 weeks semester is defined as missing more than 4 classes for a course which meets 2 times each week. Unsatisfactory progress may be regarded as missing 2 or more tests or an exceptionally low average on test scores.

ACADEMIC INTEGRITY: Cheating is considered a very serious offense and all offenders will be dealt with harshly. The *minimum* penalty for cheating on an exam will be a zero on the exam with the possibility of automatic failure for the course or a recommendation of expulsion from the university. All students should be familiar with the [FIU Student Code of Conduct](#). Do not come to class to socialize! Anyone disrupting the class by talking, reading the paper or coming in late (or leaving early) will be asked to leave immediately.

IN GENERAL: Your best bet for doing well in this course is to attend all of the lectures and do all of the assigned homework. Reading the text will provide a different perspective on the topics covered in the lectures. Don't expect to do well by putting off the homework and cramming for tests. The only way to learn physics is to keep on top of the subject and by practicing your problem-solving skills. **Don't get behind.** The material builds on itself and getting behind early will make it very difficult to catch up. Don't miss class; get notes from someone if you have unavoidable absence. Participate in class. Practice, practice, practice. Try to answer the conceptual questions and problems in each chapter. Try the worked examples in the book and from your notes. Try problems that have solutions in the back of the book first. Draw a picture whenever possible. Pay attention to units. Don't expect to always work straight through a problem. Wrong turns and dead ends are often instructive. Check results to make sure they are reasonable.

USE TWO DECIMAL PLACES a. The preceding digit is raised by 1 if the immediate insignificant digit to the dropped is more than 5. Ex: 4728 is rounded off to three significant figures as 4730. b. The preceding digit is to be left unchanged if the immediate insignificant digit to be dropped is less than 5. Ex: 472 is rounded off to three significant figures as 472 c. If the immediate insignificant digit to be dropped is 5 then there will be two different cases I) If the preceding digit is even, its is to be unchanged and 5 is dropped. Ex: 4.7258 is to be rounded off to two decimal places. The digit to be dropped here is 5 (along with 8) and the preceding digit 2 is even and hence to be retained as two only $4.7258=4.72$ II) If the preceding digit is odd, it is to be raised by 1 Ex: 4.7158 is to be rounded off to two decimal places. As the preceding digit 1 is odd, it is to be raised by 1 as 2. $4.7158=4.72$. **In general, make sure that you have enough decimal places of accuracy in your result. A good general rule is that your answer should have the same number of decimal places as in the input data, except if the first digit in your answer is 1. In that case, you should use one more decimal place in your answer.**

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and to honestly demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.

"I discovered I always have choices and sometimes it's only a choice of attitude!"