PHYSICS I W/CALCULUS COURSE SYLLABUS

Instructor: Lawrence Hawkins                    Course: PHY2048-B51C-#82521
Room: A2/115                              FIU-N Office: AC1/304
Hours: TR 09:30-11:10AM              Phone: (305) 532-3845
Office Hours: TR 20:05-21:05             Term: Fall 2006 (4 credits)

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WWW Homepage: http://www.fiu.edu/~hawkinsl

Prerequisite: Calculus I

TEXT: UNIVERSITY PHYSICS, (11th edition), by Young & Freedman, Addison-Wesley

INTRODUCTION:
This is the first of a two-part core-curricular, general physics course intended for science and engineering majors. This course consists of a theoretical study of the fundamental concepts, applications, and foundations of Classical Mechanics and Thermodynamics, using the mathematical techniques of vector analysis and calculus. This is a foundation course for physical science and engineering majors.

Doing well in the course requires thinking about physics concepts and applying those ideas in order to solve computational problems. You will need your brain to think about the physics concepts and basic mathematical skills to solve the computational problems. Practicing these skills will be crucial to your successfully completing the course.

COURSE OBJECTIVES
The goals of this course are to:

- Develop critical and analytical thinking abilities
- Teach fundamental physics concepts
- Enable quantitative and qualitative analyses of these physics concepts
- Develop an appreciation of physics in everyday life

HAWKINS' POLICY ON ACADEMIC DISHONESTY
ZERO TOLERANCE FOR FIU STUDENT CODE OF CONDUCT VIOLATIONS!
Academic Misconduct:

Students at Florida International University are expected to adhere to the highest standards of integrity in every aspect of their lives. Honesty in academic matters is part of this obligation. Academic Integrity is the adherence to those special values regarding life and work in an academic community. Any act or omission by a student which violates this concept of academic integrity and undermines the academic mission of the University, shall be defined as academic misconduct and shall be subject to the procedures and penalties as stated in the University’s statement.

(http://www.fiu.edu/~oabp/misconductweb/1acmisconductproc.htm).

Any form of cheating is unacceptable. The minimum punishment for cheating will be receiving an "F" grade for the course. Further action may be taken including referral to the University Academic Conduct Review Board.

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Course Materials Needed

1. Bound Notebook required, containing all homework (50%), class lectures and discussion (25%), quizzes (20%), and exam corrections (5%). Quizzes may be
given at any time in class and will consist of even numbered problems selected from the course text illustrating the day’s assigned material and lecture. These quizzes will be graded with either \( \sqrt{ } = \) correct or \( X = \) incorrect as the student leaves the class. The notebook will be graded three times (during each of the three exams) The average of the three notebook grades (up to 10 points) will be added to each of the two best pre-final exams in the Final Grade Average.

2. **Scientific Calculator:** TI-30 IIS or its functional equivalent.

3. **Time to work on the material each and every day!** Successful completion of this class is highly correlated to the analytic, computational, and problem-solving skills developed by actual problem solution using proper (long term memory inducing) study techniques. Cramming for this course is ill advised: 8 hours on a Sunday won't make up for not looking at the material throughout the week. You need to plan on spending 1-4, or more hours every day on this material, reviewing the old ideas, working with the new problems.

**Homework Assignments:** At the beginning of each chapter, selected problems will be assigned from the above sections of the syllabus.

**Grading Methodology**

After each exam redo your entire exam at home, and then return to our next class with your computation of how many correct answers you produced on your original exam. A Test Correction Bonus (TCB) of up to 10 points will be added as extra credit to your exam if the final class exam average is <70. Your TCB is 10 points if your grading (total number correct) of your own exam exactly matches the actual grade (total number correct). Your TCB is reduced by one point for each point that the two totals differ.

In order to monitor the progress of the students and to give a numerical evaluation of their performance, letter grades are assigned at the end of the term according to the following weighted averages: **Test Correction Bonus** worth up to 10 points added to each exam **Notebook Bonus** worth up to 10 points added to each exam. **Three Exams** each exam worth (including bonuses) up to 100 points. **Cumulative Final Exam** worth up to 100 points.

**FINAL GRADE AVERAGE** = \( 0.8 \times [2 \times \text{Final} + \text{Two Best Pre-final Exams}] / 4 + 0.2 \times \text{HW} \)

**Grade average and Final course grade:**

\[
egin{align*}
100\geq A \geq 90 & > B+ \geq 88>> B \geq 80 & > C+ \geq 78 & > C \geq 70 & > D \geq 60 & > F \geq 0
\end{align*}
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The Instructor reserves the right to curve a student’s course grade distribution to reflect significant student progress, end-of-course achievement, and total course mastery as demonstrated by exceptional achievement on the Final Exam, by
replacing the lowest pre-final exam with the final exam score in the FINAL GRADE AVERAGE.

**Special Needs Students**: Contact me personally and/or FIU Office for Students Services.

**Missed Exam Policy**: Any unexcused missed exam will be given a zero. The final exam score will replace one minimum pre-final exam score.

**Extra Help**: FIU LEARNING CENTER provides free tutoring for students. While help is occasionally available on a walk-in basis, usually students have to make an appointment to see a tutor. At University Park, the location is PC 247 and the phone number is 305-348-2180. At the North Miami campus, the location is ACI 160 and the phone number is 305-919-5927.

**OFFICE OF MULTICULTURAL PROGRAMS AND SERVICES**: Free tutoring is available to both minorities and non-minorities. University Park students should go to GC 216 to fill out a request. North Miami campus students should go to WUC 253.

**FIU GRADUATE STUDENTS**: Free tutoring is available for students from our graduate students. Early each semester a memo is distributed announcing the hours and site.

**Withdrawal Date, Credit to Audit change deadline**: See FIU academic calendar at [www.fiu.edu](http://www.fiu.edu) for details.

**Working with Mastering Physics**

Mastering Physics is an on-line physics problem grading system provided by the publishers of your textbook. To use it, you must register for the course using the course ID number, **MPHAWKINS0005**. Once registered, you can access the problems in any open problem set using your personal ID number. Once a problem set is closed, you can still look at the problem solutions, but you will no longer be able to submit problem solutions.

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**How to Use the System**

1. Go to the mastering physics web site [www.masteringphysics.com](http://www.masteringphysics.com).
2. Log onto the system by entering your user name and password.
3. Choose the class **MPHAWKINS0005** (click the class list button on the left, if the system is not already set to this class) and then choose the problem set you want to work on (click one of the assignment buttons on the left).
Once you have chosen an assignment, you will see the due date at the top of the page and a list of problem numbers. Just click on a problem number to work on that problem.

The system is set so that you have five attempts at each problem. You can also ask for the solution at any stage, but if you do so, you will no longer be able to get credit for that part of the problem.

For problems with multiple parts, you can submit solutions to each part separately and get a response from the system, but when the problem is completely finished, you must click the SUBMIT PROBLEM button at the bottom of the page, or the system will not count any part of the problem that you have completed. Note that you must do this before the closing time. If you have completed some parts of the problem, but hit the submit problem button after the closing time, you will not receive any credit at all for that problem!

Trouble Shooting and Notation

(1) For numerical results, 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.

(2) In intermediate steps, it is generally a good idea to keep more decimal places of accuracy than in your final result in order to avoid round-off error.

(3) Note that in many calculations, the SIGN of the result is important. If you think that your numerical answer is correct, but the system won't accept it, it may be that your sign is wrong.

(4) For answers that require a mathematical expression, indicate multiplication with the asterix symbol, e.g., x multiplied by y should be written x*y.

(5) To indicate subscripts and superscripts use the underline and hat symbols in front of the subscript or superscript. For example, you might write the electron mass symbolically as \( m_e \), and \( x \) squared should be written \( x^2 \).

(6) To indicate a vector quantity, use _vec following the quantity, e.g., the position vector should be written \( r_{vec} \). To indicate a unit vector, use unit instead of vec, e.g., the unit vector in the direction of the position vector should be written \( r_{unit} \).

(7) For a square root, use sqrt, e.g., square root of \( x \) should be written sqrt(x).

(8) Greek letters are indicated by just writing out the name in latin letters, e.g., \( \pi \), \( \mu \), \( \epsilon \), \( \sigma \), \( \theta \), etc.