

# PHYSICS 386 – Classical Mechanics

## Syllabus, Fall 2009

*Modified: November 2, 2009*

**INSTRUCTOR** Dr. Eduardo Sánchez Velasco.

### OFFICE

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Note: Do not use the phone or e-mail for grade related questions.

### OFFICE HOURS:

**Monday, Friday :** 2:30 p.m. – 3:30 p.m.

**Wednesday:** 12:30 p.m. – 1:30 p.m. and 2:30 p.m. – 3:30 p.m.

**Thursday:** 1:30 p.m. – 2:30 p.m.

These are my official office hours, but frequently I am in my office at other times; you should feel free to stop by at any time, or to make an appointment, if this is more convenient.

### CLASS HOURS:

Monday, Wednesday and Friday: 3:30 p.m. – 4:20 p.m. in Magruder Hall 1099.

Thursday: 12:30 p.m. – 1:20 p.m. in Magruder Hall 1099.

### CATALOG DESCRIPTION:

Kinematics, dynamics of a particle, central forces, energy, and momentum. Lagrange and Hamiltons Equations, dynamics of a rigid body. *Prerequisites: grade of “C” or better in PHYS 275 and PHYS 382. Pre- or Co-requisite: MATH 365.* NOTE: General Honors Course.

### COURSE OBJECTIVES:

This is an introductory course to the basic concepts in Classical Mechanics, and it serves as the foundation for more advanced courses. The course examines the theoretical framework of mechanics, including the rudiments of Lagrangian and Hamiltonian mechanics. Along the way we will analyze simple but important systems, such as central potentials, two body systems and the motion of a rigid body.

- ☞ The main emphasis of the course is theoretical; therefore proofs and derivations, not just problem solving, are of fundamental importance. Knowing and understanding proofs and derivations will be expected from the students.

### TEXT:

- **Classical Mechanics** 5th Edition, by Tom W.B. Kibble and Frank H. Berkshire, Imperial College Press, 2004.

### ACADEMIC DISHONESTY:

Academic dishonesty of any form will not be tolerated in this class. Anyone caught cheating on a test, homework or quiz will automatically receive a grade of zero on that test, homework or quiz. Further disciplinary action consistent with University policy will be considered, including failing the course. Homework, quizzes and exams, unless instructed otherwise, must be done

individually. For more information about the University policy on academic dishonesty, consult the appropriate sections of the Student Conduct Code (see the code and related information at <http://conduct.truman.edu>).

## **STUDENTS WITH DISABILITIES**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Disability Services office (x4478) as soon as possible.

## **EXAMS:**

There will be four closed book exams in this class. The tentative exam dates are listed at the end of this syllabus. All exams, including the final (exam #4), will be on the material covered since the preceding test. That is, they are not “comprehensive”. However you may have to use as background material covered in previous exams. In addition to these exams there will be occasional quizzes. All exams and quizzes must be done individually.

## **HOMEWORK POLICY:**

There will be homework assignments during the course. Unless otherwise indicated, homework should be done individually. I will consider academic dishonesty homework done in group or copied from any unauthorized source. You must turn in your homework **in person** at the **beginning** of the class session in which they are due unless you have a valid reason not to attend the class. **No late homework will be admitted without a valid excuse.** Homework handed in after the class has started will be considered late homework. I will consider academic dishonesty to have someone turn in your homework assignment for you without my approval. If you have a valid reason not to attend a class, and a homework assignment is due that day, you should turn in your homework personally to me, preferably BEFORE the class. You will have to justify to me in person the reason for your absence. Remember that homework will be due BEFORE the class begins. Any missed homework will be counted as zero. I will give guidelines on homework presentation. Failure to follow these guidelines will be penalized.

## **MISSING A TEST, QUIZ OR CLASS:**

Students are expected to attend all class sessions. If you have a valid conflict that does not allow you to take an exam or quiz, or to handle your homework, you must **contact me as soon as possible**, preferably before the event takes place. In any case you should see me **in person** as soon as possible. Missing a test, quiz or homework requires a valid excuse, otherwise a grade of zero will be assigned. I reserve the right to determine what is, and is not, a valid excuse. As a rule only extreme situations, such as serious medical problems, will be considered valid excuses. Field trips and sport events are not usually considered valid excuses unless previously arranged personally with me. In general, having other exams in the same day is not a valid excuse. Adjustments to make up missed exams, homework, or quizzes, if any, will be made at my discretion, and only in extreme situations.

It is your responsibility to be on time for all classes exams and quizzes. Alarm clock malfunctions and similar events are NOT considered valid excuses for being late or absent. If you are late to a class, you will not be able to turn in your homework or take a quiz, which usually are done at the beginning of the class. Being late to an exam or quiz may disqualify you from taking that exam or quiz. The exact date and content of a quiz will be announced in a previous class; it is your responsibility to know that date and content. If you miss a class, make sure to ask if a quiz was announced in it. “I did not know there was a quiz today” is NOT a valid excuse for missing a quiz. The same applies to changes of date, time or content of exams, and homework.

## GRADING POLICY:

The grade for this class will be obtained from the four exams, and from the homework assignments and occasional quizzes. Each exam will count 18% towards the final grade, and the remaining 28% comes from the homework assignments and quizzes. You **MUST** keep all graded materials, and be able to produce them in case of grade disputes.

|                      |      |
|----------------------|------|
| Homework and quizzes | 28%  |
| Exam #1              | 18%  |
| Exam #2              | 18%  |
| Exam #3              | 18%  |
| Exam #4              | 18%  |
| <hr/>                |      |
| Total :              | 100% |

The minimum guaranteed grading scale is as follows:

| Final Percentage | Final Letter Grade |
|------------------|--------------------|
| 85 to 100        | A                  |
| 70 to 85         | B                  |
| 60 to 70         | C                  |
| 50 to 60         | D                  |
| below 50         | F                  |

Final letter grades are normally assigned according to the table above. However, at the end of the semester I may curve grades upward. If this curving is done and, for example, I add 1% to the all the final grades, a person with a final percentage of 69% may receive a B as the final letter grade, even though the above table indicates that a C would normally be assigned. However, **curving is not guaranteed, and you should not count on it**. I will never curve downward. As a rule, only the grades in the above table (A, B, C, D or F) will be given. Any other grade, like incomplete (IC), will be given at my discretion, and only under **very unusual and extreme circumstances**, like a serious medical problem. Poor performance will not qualify you for a grade other than A, B, C, D, or F.


## TENTATIVE EXAM DATES:

Exam #1: Wednesday, September 23 in class.

Exam #2: Wednesday, October 21 in class.

Exam #3: Friday, November 13 in class.

Exam #4: Monday, December 14, 3:30 p.m. – 5:20 p.m. (Finals week).

 This syllabus may change during the semester. Updated versions of this syllabus will be posted online at <http://www2.truman.edu/~velasco>