PHYS 3311:301 – Classical Mechanics  

**Fall 2012**

*This is a distance education course that TAMUCC receives from TAMUK.*

*Dr. Philippe Tissot will be the Instructor of Record.*

Latest changes August 19, 2012

**Course Description:** (3 hours credit, 3 lecture hours weekly)
A mathematical treatment of the fundamentals of classical mechanics. Topics include particle dynamics in one, two and three dimensions; conservation laws; dynamics of a system of particles; motion of rigid bodies; central force problems; accelerating coordinate systems; gravitation; Lagrange's equations and Hamilton's equations. Prerequisites: PHYS 2426; MATH 2414.

**Meetings:** 11:00-11:50 MWF, Hill 102 and other TTVN sites

**Faculty:** Dr. Paul H. Cox, Professor (TAMUK)
Office: Hill 211, TAMUK Phone: (361)593-2623; or department phone 2618.
email: phcox at tamuk.edu Department fax number: (361)593-2184.
webpage: [http://physics.tamuk.edu/~cox/](http://physics.tamuk.edu/~cox/) (Note no www on the front.)

**Office hours:**
Scheduled office hours (subject to change): 9:30-10:50, 12:00-12:50 MTWRF
Note: I may be elsewhere in the building during these times, but what I'm doing can usually be interrupted.
Unscheduled Office Hours by appointment Informal office hours when in

**Course objectives:**
Students who should pass this course should be able to work first-year-physics mechanics problems almost as fast as they can read them, and be able to solve advanced problems in the areas covered.

**Student learner outcomes:**
Upon successful completion of this course, the student will be able to recognize, in unfamiliar contexts, the concepts covered in the course, and will be able to work unfamiliar problems involving these concepts, as evidenced by satisfactory completion of an assessment exam.


**Evaluation:**
Assignments and Participation: 30% Midterm exam: 30% Final exam: 30%
10% will be credited to one of the above 3 categories, whichever gives the student's best score.

**Attendance**, etc.:
Prompt regular attendance is important to success in every scheduled endeavor, including classes. If circumstances that require your absence from class discussions are explained promptly to the instructor and are reasonable, other components will be given increased weight to adjust for lack of participation.
I do not drop students for excessive absences, normally; if you simply stop coming, you may expect to receive an F.

**Homework:** Homework problems will generally be chosen from the text, to be due about 1 week after they are announced. Late work will be accepted and evaluated, subject to penalty, except to
the extent that a particular problem has been worked in class. If the degree of lateness corresponds to a reasonable circumstance that is adequately explained to the instructor, some or all of the penalty will be waived.

Homework must be submitted via email. Because your work will be loose-leaf when it is being graded, make sure your name and a page number appear on each page of a printout, and put a page count on the first page of any group that you send at one time. Scan and attach is one possibility, but if possible preview your attachment before you send it so you can judge legibility; default scan settings are often significantly sub-ideal. Also, picture files are typically large and some email services impose size limits. Less-than-maximum (and non-default) scan settings for resolution are probably quite adequate and will make a big difference in file size. It is likely that some of the problems will be difficult. You may work on problems together; if you do, please submit only one copy if you all agree on it, but put all names on each page of the one copy. (Test questions may include selected problems from the text.)

DROPS: Unless you have Texas public college or university credits prior to Fall 2007, you are limited to six as the number of times in your public college career you may drop a course after the ‘census date’ and have it not count in your GPA (nor for academic progress; it will still show on your record, with a grade of QI). After six drops, dropped courses will carry a grade of QF which counts as an F in your GPA. (Some exceptions qualify for a QE instead.) If your performance has been adversely affected by reasons unconnected to this class, a grade of Incomplete may be an option. In such a case, contact the Professor.

Refer to the published academic calendar for important days of the semester.

Content, schedule:
Most material in the book will be covered. The pace should be at least a chapter a fortnight; students are expected to read ahead so as to be prepared with questions on any confusing points.

The following Tentative Schedule is provisional; it is subject to change.

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<thead>
<tr>
<th>Dates</th>
<th>Monday</th>
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<th>Friday</th>
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<tr>
<td>Aug. 27-31</td>
<td>Opening matters; begin Ch. 1.</td>
<td>Continue Ch. 1</td>
<td>Continue Ch. 1</td>
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<td>Sep. 3-7</td>
<td>Labor Day holiday</td>
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<td>Sep. 10-14</td>
<td>Begin Ch. 2</td>
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<td>Sep. 17-21</td>
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<td>Begin Ch. 3</td>
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<td>Sep. 24-28</td>
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<td>Continue Ch. 3</td>
<td>Continue Ch. 3</td>
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<td>Oct. 1-5</td>
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<td>Oct. 8-12</td>
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<td>Oct. 15-19</td>
<td>Midterm, covering Ch. 1-4</td>
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<td>Oct. 22-26</td>
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<td>Nov. 5-9</td>
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<td>Nov. 12-16</td>
<td>Begin Ch. 9</td>
<td>Continue Ch. 9</td>
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<td>Nov. 19-23</td>
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<td>Nov. 26-30</td>
<td>Continue Ch. 10</td>
<td>Continue Ch. 10</td>
<td>Continue Ch. 10</td>
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<td>Dec. 3-7</td>
<td>Other topics</td>
<td>Continue</td>
<td>Exams have begun</td>
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By locally published schedule: Final exam. My "final exam" grading component usually includes a take-home element with a common schedule plus an in-class element administered according to local schedules, differing at different TTVN sites.

**Students with Disabilities**, including learning disabilities, may have reasonable accommodations made if appropriate notice is given. This normally requires registration, including appropriate documentation, with the Services for Students with Disabilities office.

**Misconduct**: See your Student Handbook: [http://studentaffairs.tamucc.edu/handbook.html](http://studentaffairs.tamucc.edu/handbook.html). Students who engage in any form of misconduct are subject to disciplinary procedures. This includes academic misconduct which specifically includes plagiarism and all forms of cheating.

The purpose of tests is to see if you have learned at least some of what you were supposed to. In a physics course that learning does not involve straight memorization, it involves understanding of basic principles and of how to apply them. The reason physics is required or recommended by most curricula that expect it, is that people in that field believe it is important for you to understand these principles and be able to use them in new situations - the situations that were not covered in your courses. The only way to test if you have some degree of that ability is to give you test problems that call for you to apply your knowledge in a new situation, or at least one that is at least somewhat different from those that were previously discussed.

"If you don't ask questions, you stay stuck wherever you are." - Madeleine L'Engle

I think the approach to learning physics that seems to work for the most students is: read, then work problems, then **ASK QUESTIONS**. First, read the text, seeing if it seems to make sense. If so, try some problems. If a single problem gives you some difficulty, try another before spending a lot of time on one: just a change of context might be enough to let you recognize what you missed on the first try. As a rule of thumb, if you have spent half an hour on a single problem without making progress, it's time to look at a different one. (A long problem may require more than half an hour simply to work out the details; that's why I indicate 'half an hour without progress'.) At whatever point you encounter significant difficulty, you have identified something to ask about in class. Continue reading and noting questions through the chapter; you may even find that some later application of the concept answers your early questions. Now attend the class, and ask your questions. After lecture continue with reading and problems. When no one asks questions, a lecture may go smoothly but not as much learning may occur.

**IF YOU DON'T ASK YOUR QUESTION, IT PROBABLY WON'T GET ASKED.** And in that case you won't have the knowledge you need come test time. Don't wait, thinking to ask someone else; they are likely to have an inadequate answer, if not a wrong one, if they have an answer at all. As college students, you are becoming adults, expected to act responsibly on your requirements; you are also expected to be learning how to acquire knowledge on your own initiative, not waiting for it to be handed to you. Even if I recognize what your difficulty may be, I won't come to you to resolve it. In most cases I won't even recognize what your problem is until you can put it into some specific question.