Physics 135 Course Syllabus, Fall 2007

Class time and location
MWF 10:10 – 11:00 (Lecture) Nielsen Physics Rm 304
F 2:30 – 4:25 (Lab section 1) Nielsen Physics Rm 203
F 4:40 – 6:35 (Lab section 2) Nielsen Physics Rm 203

People
Dr. Stuart Elston, Instructor
Office: Nielsen Physics 515
Office phone: 974-7818
Office hours:  M 1:30 – 3:00
           TR 10:10 – 11:30
           F  1:30 – 2:30
or by appointment.
Email: selston@utk.edu  ---BUT if it’s about an assignment, please use WebAssign’s Ask Your Teacher or Extension Request at the end of the assignment.

Catalog Description
Introduction to Physics for Physical Science and Mathematics Majors I (4) Calculus-based physics of mechanics and waves. (NS)
Contract hour distribution: 3 hours lecture and 2 hours lab.
(RE) Corequisite(s): Mathematics 141.
Comment(s): Alternative to 137 for physics majors.

Course Description
Physics 135 is the first of two semesters of a calculus-based introductory course in physics for math, computer science, and science (including physics) majors, and for anyone else interested in learning physics with calculus. The course includes laboratory exercises. Topics covered in the first semester include the description of motion (kinematics), the causes of motion (forces and dynamics), conservation laws (momentum and energy), motion of extended systems (including rotation), gravitation, fluids, oscillations, and waves.

Course Schedule
A current schedule can be found in the Schedule folder of the Course Materials section of the Blackboard course site for this course.

Course Materials
Required course materials include a textbook, a lab manual, WebAssign online homework system access (included in price of a new textbook), and a clicker (personal response system device). Each of these are discussed below.

WebAssign access
WebAssign access is required for this course, and is included with a new textbook purchase. Raw, unadorned (“vanilla”) WebAssign access can be purchased online (using a credit card) and
costs $14.95 per semester. WebAssign is the premier online assignment and grade management system, and is well worth the cost. Using it permits us to free up teaching assistants for appointments in our tutorial center.

WebAssignPlus is an enhanced version of WebAssign that provides (in addition) online access to electronic versions of the full textbook (see below for textbook details), a student study guide, hints and answers to selected end-of-chapter problems, check-yourself quizzes, videos to complement textbook figures, and a variety of simulation “applets”. You can purchase standalone WebAssignPlus directly online from WebAssign, using a credit card. The cost is $32.00 per semester; you only need to purchase one semester at a time. See http://www.webassign.net/info/pricing.html for more details on the difference between vanilla WebAssign and WebAssignPlus.

Textbook

*Understanding Physics, 1 ed.*, Cummings, Laws, Redish, and Cooney (John Wiley & Sons, Inc.). This is a modern text which is a rewrite of one of the most popular introductory physics textbooks ever written, with the rewrite based on the results of physics education research done over the past 20 years. Cost: approximately $158.00 (new) for the physical hardcover textbook. This is a relatively new textbook, so there may not be many used copies around. The new price, at the campus bookstore, includes WebAssignPlus access codecards good for two semesters (this is worth $64.00, if purchased separately). If you find and purchase a used book, you will need to purchase WebAssign access (see above) to complement the book. It is also possible to purchase standalone WebAssignPlus access only, as that will provide access to an electronic version of the textbook.

The choices of combinations of varieties of WebAssign and textbook are a little complicated, so – in summary, there are four options:

1) Purchase a new textbook ($158), which includes WebAssignPlus access.

2) Find and purchase a used textbook (cost=??), also purchase WebAssignPlus online for $32/semester. For this option to make financial sense, the used text should cost less than $158 - $64 = $94.

3) Find and purchase a used textbook (cost=??), also purchase vanilla WebAssign online for $15/semester. This option will not provide the online access to electronic goodies that put the Plus in WebAssignPlus.

4) Purchase WebAssignPlus online ($32/semester), and either read the text material from the electronic version on a computer display, or print the needed sections out (probably easier on the eyes).

I’m old fashioned – I like to have a hardcopy book to read, so I’d recommend any option but (4). If you can handle the eyestrain of reading it from a computer screen and the hassle of not being able to flip through the pages, or the hassle of having to print out the assigned reading sections every few days, option (4) will save about $94 over option (1).

Note: if you hunt around a little, you may find that there is a version of this textbook that is published as four separate paperback volumes (the book at the UT Book and Supply Store is the equivalent of all 4 volumes in a hard binding plus WebAssignPlus). You could get away with the first 3 volumes (we won’t cover the material in volume 4 in this course), but you would still need the WebAssignPlus access (at $64 for two semesters). So, this approach is not cost effective unless you can get those 3 volumes for less than (and considerably less than) $158 - $64 = $94, or less than about $31 per volume.
Lab Manual
Selected Introductory Physics Experiments, 2002 edition, Parks (Thompson Custom Publishing). Cost: approximately $56.00. This manual is required for the laboratory sections. Used copies may be available at a substantial discount.

Clicker
“Clickers” (personal response systems) have been shown by research to be effective in keeping students engaged in a large class environment (more than about 20 students). The University of Tennessee has adopted a particular clicker system (the CPSrf clicker system) by a company called eInstruction. This way, you only need one clicker for all the courses you take that may use them, and they should be easier to sell when you no longer take courses large enough to need them. We will use the CPSrf clickers in this class, so you need to have one. They are available at the UT Book and Supply Store, and probably at other local bookstores. The cost of a physical, hold-it-in-your-hand clicker is $21.25 at the UC bookstore. There may be used clickers available. To use the clicker you purchase, it must be registered. Registration is done online and costs $12.00 per semester; the registration fee covers all courses you have using clickers for one semester.

Tutorial Center
The Physics Department operates a tutorial center on the second floor of Nielsen. See http://www.phys.utk.edu/tutorial_center/ for an up-to-date listing of dates, times, and places of operation.

Attendance
Attendance is required. Physics is a subject that builds upon itself. You will quickly find that if you miss classes, you will rapidly fall behind and it will be very difficult to catch up. If you do miss a class, it is your responsibility to get (and study!) the course notes from a classmate. Missed in-class clicker questions cannot be made up (but some fraction of the lowest scores will be dropped from the final average). A missed exam can be made up only by producing documented evidence of a legitimate medical reason or personal family emergency.

Assignments
The reading and homework policies below are designed to encourage you to learn a little physics every day, rather than cramming a lot into a short period prior to a homework or exam deadline.

Reading and Reading Exercises
Reading the text for understanding is critical in a physics course. A text reading assignment will be given for every class day except when an exam is scheduled. It is expected that you do this reading before class. You can expect to be lost in class if you have not done this reading, but you can not expect all of the reading material to be reviewed or discussed in class. Pre-class reading exercises will be WebAssigned from the chapter reading assignment, and these will be due (must be submitted online) 30 minutes prior to classtime. You may also be (Web)assigned homework problems that depend on reading material that has not been covered in class.

Homework (WebAssign-ed and “Paper Problems”)
Individual homework will be submitted using the WebAssign homework and course management system. Assignments will be made almost every class day and will typically
consist of 3 or 4 problems from the textbook. They will be nominally due the following Friday at 5:00 p.m., with limited extensions (with a small point penalty) automatically available. Homework exercises will be absolutely due one week after the nominal due time. WebAssign will automatically grade your numerical answers as soon as you submit them, and you will have 3 chances (‘submissions’) to get each question right. One of the assigned problems, per week, will also be assigned to be handed in with the solution written out on paper. You will get credit for the numerical answer to this “paper-problem” through WebAssign, but your handed-in paper problem will be graded, in addition, for its exposition of the solution, including use of proper diagrams, verbal reasoning, conceptual understanding, calculation details, and units.

Exams
Three hour exams are scheduled throughout the semester. The specific dates and topical coverage for the three hour exams is listed in the course schedule posted in the Schedule folder in Course Materials. The final (third) exam is scheduled at the University-mandated time and date. The final exam will concentrate on material from the last third of the course, but may be partially comprehensive, i.e. it may cover some material from the entire course over the semester.

Clicker Questions
Clicker questions will be designed to guide discussion during lecture. They will not be graded, but responses will be recorded and contribute to the “clicker question” component of the grading procedure as “participation points.”

Laboratory
Laboratory will be conducted in Room 203 of Nielsen Physics Building. Lab reports will be graded by the lab instructor and a final lab grade determined by that instructor will be incorporated into the final course grade as detailed in the Grades section below.
**Grades**

Final course grades will be determined from a weighted average, as shown in the table below. Grades will never be curved downward – if everyone in the class does well, everyone can get an A. It may happen that a particular exam is unexpectedly difficult and no one does well; in that case, the grades for that exam may be curved upward, or the grades may be left as is, and consideration of a curve left for final grade time.

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<tr>
<th>Component of grade</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Hour exams (3 @ 15% each)</td>
<td>45%</td>
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<tr>
<td>Reading exercises</td>
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<td>WebAssign homework</td>
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<td>Lab</td>
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<td>Clicker questions</td>
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