

# PHYS 301 Syllabus

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<http://galaxy.cofc.edu/>

**Text:** *Classical Mechanics* by John R. Taylor.

**Lecture:** MWF 9:00–9:50, Room 126

**Office Hours:** T & R 9:00-11:00 and by appointment.

**Web:** This class has a WebCT page at <http://webct.cofc.edu>. All students will be automatically enrolled. This gives you access to the latest homework assignment, posted solutions or corrections, answered questions, etc. Some simulations and other materials may be added during the semester.

**Course Description:** One of the upper-level core Physics courses, *preferably taken before Quantum Mechanics*. You thought you learned classical mechanics in PHYS 201, but you will find the subject is much richer and deeper than that.

In 201, we concentrated on *forces*, but this concept does not generalize well to Quantum Mechanics or Special (and General) Relativity. Instead, we shall work hard on more general and powerful quantities, especially elaborating energy and angular momentum conservation. We can also relax some of the old rules (“Never work in accelerating coordinate systems”) and learn to work comfortably in rotating coordinates.

We shall also see two additional ways (Lagrangian and Hamiltonian dynamics) to formulate Mechanics that look nothing like Newton’s laws. They are over-kill for a block on a ramp, but let us handle much more complex and interesting problems than we can with forces.

**Pre- or Co-requisites:** MATH 323 (DEQ) and PHYS 202 (General Physics sequence), or permission of the instructor. Some prior experience with MATHEMATICA or IDL, is valuable.

**Attendance:** Curiously, I think attending and participating in class is to your advantage, and I expect you to attend each class. I will. You are also expected to **read** the appropriate sections of your text. Rather than repeat verbatim what is in the text, we will work problems, answer questions, talk about topics that your book does not discuss, or which I want to handle differently. **You** are responsible for what is discussed in class. If you miss class the day assignments or new test dates are announced, it is your responsibility to find out about it. **Excessive absences ( $\geq 5$ ) will result in a grade of ‘WA’.**

**Homework:** There will typically be one or two homework sets per week. Homework is due at the beginning of class, and late homework will not be accepted except by pre-arrangement. You are **encouraged** to work together on the homework, but each person must turn in their own problem solutions. Homework problems will be done by hand, rather than solved with MATHEMATICA, to ensure proficiency, although that tool may be used for checking.

**Doing the homework is so important to your learning that you are *required* to do all the homework – you will receive an Incomplete if more than three assignments are missing.**

**Tests:** There will be three tests throughout the semester (see dates below). Each will be one period long. No formula cards or symbolic math programs are allowed, only calculators, sharp pencils, and sharp minds. You will be notified at least a week in advance (and the web page will be updated) if there are any changes in the test dates. An excuse from the Dean of Undergraduate Studies is required to make up an examination. The lowest midterm grade will be replaced by the final exam grade when computing your final grade, if this is to your advantage.

**Grading:**

Homework:	30%
Midterms:	40%
Final:	30%

A:	90-100	C:	70-75
B+:	86-89	D:	65-69
B:	80-85	F:	Below 65
C+:	76-79		

**Honor Code:** The Honor Code of the College of Charleston specifically forbids cheating, attempted cheating, and plagiarism. A student found guilty of these offenses will receive a failing grade in the course. Additional penalties may include suspension or expulsion from the College at the discretion of the Honor Board.

### Important Dates (Tentative)

M	Jan	21	MLK Jr. Day
M	Feb	11	Test #1, Chapters 1-3
M-F	Mar	3-7	Spring Break!
M	Mar	17	Test #2, Chapters 4-5
M	Apr	14	Test #3, Chapters 6-9
M	Apr	28	<b>EXAM</b> , 8-11 am