

Lectures and Section

Lectures are 10:10–11:00 am on Monday, Wednesday and Friday in 112 Rockefeller. Section meetings are 2:30–3:20 pm on Friday in 231 Rockefeller. The instructor of the course is Prof. Matthias Neubert (neubert@lepp.cornell.edu), and the TA is Björn O. Lange (bol1@cornell.edu). The course web-page can be found at:

<http://www.lns.cornell.edu/~neubert/P318/index.html>

Office Hours

You are encouraged to come to Prof. Neubert's office hours (318 Newman Lab., ext. 5-3302, Friday 3:00–4:30 pm), or to the TA's office hours (Wednesday 3:00–4:30 pm, or by appointment). During office hours we will help clarify questions regarding the material presented in the lectures, give guidance with problem sets, and answer administrative questions.

Homework

Homework assignments will be handed out in class each Monday and are due in lecture Monday of the following week. Questions concerning the problem sets will be discussed during the section meetings on Friday. No late problem sets will be accepted without prior approval of the instructor, which will only be given if exceptional circumstances prevail.

Homework assignments are an essential part of the course and should be taken very seriously. Solving problems is the most effective way of learning physics. Any effort (and pain) put into it is an investment that will pay off later. It is legitimate, even desirable, for you to discuss the problems with other students, consult textbooks, or get advice from your TA or the instructor. However, the final work should be yours!

Exams

There will be two exams and a final for this course. The first exam will be 7:30–9:15 pm on Tuesday, February 24, in 115 Rockefeller. This is sufficiently early in the term that students who perform far below average will have a chance to drop back to Physics 314 (non-honors mechanics). The second exam will be 7:30–9:15 pm on Thursday, April 8, in 115 Rockefeller. The final is scheduled for 9:00–11:30 am on Friday, May 21.

Grades

Grades for the course will be based on the homework assignments and the exams. Approximately one third of the course grade will be based on the homework performance, another third on the final exam.

Text

The required text for the course is *Classical Mechanics* by Goldstein; the recommended texts are *Classical Mechanics* by Marion & Thornton, and *Analytical Mechanics* by Hand & Finch. The lectures will not follow any of these books closely. However, Goldstein is an excellent, advanced textbook, whereas Marion & Thornton and Hand & Finch are good references containing many examples and useful exercises.

I have also recommended the first volume of *The Feynman Lectures on Physics*, not because I will follow them, but because every physicist should read them at an early stage in his/her career.

Syllabus

The following topics will be covered during the course:

1. Review and limitations of Newtonian mechanics
2. Lagrange formalism
3. Variational principles
4. Central force motion
5. Rigid bodies
6. Oscillations
7. Hamiltonian formalism
8. Continuous systems and field theories
9. Relativistic mechanics