

Phys 322: “Classical Mechanics II”--- Spring 2019

Course Information:

Instructor: Dr. L. Gan
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Tel: 962-3583
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Classes meet: Tue and Thur at 12:30pm-1:45pm
DL Rm. # 213

Office hours: Wed 4:00pm-5:30pm
Thur 2:00pm-5:30pm
Other hours by appointment

Course web site: <http://people.uncw.edu/ganl/phy322/index.htm>

Objectives:

This course is a continuation of Classical Mechanics I (Phys 321). We will explore classical mechanics in further detail, specifically focus on selected topics, such as two-body system, rigid bodies, coupled oscillators, collision theory and special relativity. To do so, we will make use of mathematical techniques and physics concepts you have learned to solve a variety of different topics.

Required Text:

“Classical Mechanics”, by John R. Taylor, University Science Books

Important!!!

You must read ahead of the lecture. Weekly reading assignment is given below in the course outline. A few conceptual questions will be given at the beginning of each class. You will be much better prepared for those questions if you have read the material before we begin them. **Up to 5 bonus points** will be given to students who are actively involved in the class room discussion and answer the questions correctly. The course will move at a fast but steady pace and it is your responsibility to keep up with the lectures.

Homework:

Approximately 3-7 problems will be assigned every week. Homework will be collected on Thursday during the class in one week after each assignment is announced. The solution of the homework will be posted on the web at the end of each homework period. The work of three students will be randomly selected to be graded each time. The average of graded homework will be added to the final score. On the other hand, a missing homework will result a **deduction of 0.5%** from the final score. Show all works clearly. **Late homework will not be accepted.** It is

absolutely essential that you work out the assigned problems. You are encouraged to talk and work with others on the problems, especially after you've made a first attempt at them by yourself. The final write-up, however, should be yours completely--and in it, you should name your collaborators or sources you've used, as well as write and sign the honor code "I affirm that I have adhered to the honor code in this assignment."

Project:

At the end of the semester, you will be asked to give a 10 minutes oral presentation concerning a specific issue in classical mechanics, with additional 3 minutes for questions. You should prepare a worksheet which summarizes the calculations/derivations involved in your presentation. The topic is of your choosing, but it must relate to classical mechanics and have at least one appropriate published reference. Further details and topic ideas will be given later in the semester. The presentation should give you an opportunity to apply classical mechanic in real problem solving (and even publishable!) as well as to improve your presentation skills.

Examinations:

There will be two tests during the semester and a three-hour comprehensive final exam. The exams will consist of a mixture of multiple choice, conceptual questions, and selected problems. The tentative dates of these exams are given below in the course outline. Do not miss any of the exams.

Make-up Exams:

There will be no make-up exams. In case of evidence of extraordinary circumstance, each case will be discussed and evaluated on an individual basis. No general policy will apply to the class as a whole.

Grading:

| | |
|---|-----|
| Homework | 10% |
| Project | 10% |
| Two tests | 40% |
| Final examination | 40% |
| Bonus points for class room discussions | 5% |

Grading scale:

| | |
|----------|-----------|
| 90–100 | A-, A |
| 80–89 | B-, B, B+ |
| 70–79 | C-, C, C+ |
| 60–69 | D-, D, D+ |
| Below 60 | F |

Attendance:

YOU ARE EXPECTED TO ATTEND ALL OF THE LECTURES! Your final grade will be dropped by **half a letter grade** if you have more than five absences.

The “**F**” grade will be given if you have more than ten absences. No absences can be excused. Attendance will be taken at the beginning of each class and will be closed 15 minutes after the class starts. Please do not be late!

Academic Integrity:

All members of UNCW’s community are expected to follow the academic Honor Code. Please read the UNCW Honor Code carefully (as covered in the UNCW Student Handbook). Academic dishonesty in **any** form will not be tolerated in this class.

Disability Services:

Students with diagnosed disabilities should contact the Office of Disability Services (962-7555). Please give me a copy of the letter you receive from Office of Disability Services detailing class accommodations you may need. If you require accommodation for test-taking please make sure I have the referral letter no less than three days before the test.

Violence and Harassment:

UNCW practices a zero tolerance policy for any kind of violent or harassing behavior. If you are experiencing an emergency of this type contact the police at 911 or UNCW CARE at 962-2273. Resources for individuals concerned with a violent or harassing situation can be located at <http://www.uncw.edu/wsrc/crisis.html>.

Course Outline:

| Date | Topic | Reference |
|-----------------------------|--------------------------------------|------------------|
| Jan 15 | Introduction to PHY322 | |
| Jan 17, 22, 24, 29 | Two-Body Central-Forces Problems | Chapter 8 |
| Jan 31 Feb 5, 7,12 | Rotational Motion of Rigid Bodies | Chapter 10 |
| Week of Feb 14 | Exam # 1 | Chapter 8 & 10 |
| Feb 19, 21, 26, 28 | Coupled Oscillators and Normal Modes | Chapter 11 |
| Mar 5, 7, 19, 21 | Collision Theory | Chapter 14 |
| Week of Mar 26 | Exam # 2 | Chapter 11 & 14 |
| Mar 28 April 2, 4, 9, 11 | Special Relativity | Chapter 15 |
| April 16, 23, 25, 30 | In class presentations | |
| May 9 | Final exam (11:30am-2:30pm) | All |

This schedule is subject to change.