

Syllabus, Physics 213, Mechanics, 3 credits

Designation: Required for undergraduate Physics and Engineering Physics majors.

Course Description: Newtonian Mechanics.

Prerequisite: None.

Corequisite: Math 191.

Required Text: H. D. Young & R. A. Freedman, *University Physics with Modern Physics*, Pearson/Addison Wesley, 12th Edition, 2006. ISBN: 080532187X (hard cover) or 0-536-49620-X (loose-leaf binder)

Class Web Page: A class webpage with the syllabus and other information maintained at <http://www.physics.nmsu.edu/~kanani/PHYS213.html>

Course Objectives: In this course you will learn the fundamental ideas underlying classical mechanics (Newton's laws and conservation laws), the application of these ideas to quantitative physics problems, and the relationship between models physicists use and real-world phenomena.

Topics Covered: Measurement and units; forces in nature, Newton's laws, kinematic relationships between position, velocity and acceleration vectors; Newtonian dynamics, forms of energy; conservation of energy; conservation of momentum; rotational kinematics and dynamics; statics; oscillations and simple harmonic motion.

Class Schedule: Three 50 minute classes or two 75 minute classes per week; three mid-term exams; two-hour final exam during exam week.

Contribution of Course to Professional Component: This course sets the foundation for undergraduate physics and engineering curriculum. Students learn basic physics mechanics concepts, how to apply them, and how to solve physical problems. The course provides three credits of physics.

Relationship of Course to Program Outcomes: This course teaches students to:
Apply knowledge of math, science and engineering.

Prepared by Drs. Kanani K. M. Lee and Stephen Pate, Fall 2007.

PHYSICS 213: Mechanics
Fall 2007

Lectures: Tuesdays-Thursdays, 8:55-10:10 AM, Gardiner Hall, Room 229

Instructor: Kanani Lee, kanani@physics.nmsu.edu, (505) 646-1811

Office: Gardiner Hall, Room 153

Office hours: Tuesdays, Wednesdays 1:30-2:30 pm or by appointment

Course website: <http://www.physics.nmsu.edu/~kanani/PHYS213.html>

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Physics 213 is an introductory treatment of the phenomena of classical mechanics, designed for science majors. Topics we will cover include: measurement and units; forces in nature, Newton's laws, kinematic relationships between position, velocity and acceleration vectors; Newtonian dynamics, forms of energy; conservation of energy; conservation of momentum; rotational kinematics and dynamics; statics; oscillations and simple harmonic motion. Knowledge of elementary calculus will be needed in this course.

A schedule of chapter sections to be covered, along with the lab schedule, has been provided. *You are responsible for all materials in the sections listed in this schedule even if they are not specifically covered in class.*

Classroom participation: As you are training to be scientists, it is important for you to learn to express your thoughts in an open forum. I encourage you to ask questions — chances are good that there are a number of other students with the same question. As concepts are presented each day, problems using those concepts will be presented as well and we will discuss them. Additionally, you may be called upon to participate in the solution of these problems. There will also be short reading quizzes from time-to-time that will test your reading comprehension. For these reasons, it will be useful to read the relevant sections of the book *before* coming to class.

Homework: There will be a homework assigned during each class and will be due ~3-5 days after it is assigned. Most of the homework will be done using the MasteringPhysics (MP) website (<http://www.masteringphysics.com>) provided by the book publisher. Please follow the instructions in the Student Access Kit that accompanies your textbook. The Course ID is PHYS2132007. Please use your NMSU Student ID, **not** your social security number.

As most of the homework will be done online, there is a danger that no written record of how your homework was completed will exist. To address this problem, you will maintain a "homework notebook" which is essentially your "scratch pad" for doing your homework. As it is usually necessary to use paper and a pencil to solve many of the problems, please do so in this notebook. The notebook is primarily for your use, but I will ask to see it during the semester.

Exams: There will be two midterms plus a final exam. The midterms will emphasize new material, but may include earlier material as well. The final exam will be comprehensive with an emphasis on the material introduced after the last midterm.

Course grade: Your grade will be based on your performance as well as compared to the overall class performance. The grades will be updated and posted on my office door each week. Your course grade will be based on homework assignments, in-class work and reading quizzes, two midterms and final exam, weighted as follows:

Homework (based on 24 of your best scoring assignments): 50%

In-class work, reading quizzes and participation: 10%

Midterms (2 midterm exams, each worth 10%): 20%

Final exam: 20%

TOTAL: 100%

Extra Credit: Opportunities for obtaining extra credit will be available throughout the semester and on each exam. Additionally, students may receive extra credit (as part of their participation grade), for attending the Physics colloquia held each Thursday at 4pm. Please see me for details.

Ground rules: In general, late homework will not be accepted for a grade and makeup exams will not be given. Students who are passing the course and absent on university business have an automatic right to make up missing work; please inform me of this absence in advance. If you miss an exam due to illness, please bring a note from the student infirmary or a physician. If you miss an exam without a valid excuse, you will be given a zero for that exam.

Study center: Teaching assistants will be available for consultation in the physics study center located in Gardiner Hall, Room 225. This is also a good place to meet other students who are working on the same assignment. Check posted hours for availability.

Withdrawals: You will *not* be automatically dropped from the course. If you are worried about your grade, I encourage you to speak with me, particularly as the last day to drop (October 16th) approaches. I will give you some indication of your standing in the course before this date.

Additional University Policies

Plagiarism: Any student found guilty of academic misconduct, either intentional or unintentional, shall be subject to disciplinary action. Please see the following websites for details:

- <http://www.nmsu.edu/%7Evpsa/SCOC/misconduct.html>
- <http://lib.nmsu.edu/instruction/plagiarismforstudents.htm>

Students with disabilities: If you have or believe you have a disability, you may wish to self identify. Feel free to call Michael Armendariz, Coordinator of Services for Students with Disabilities, at 505-646-6840 with any questions you may have on student issues related to the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act of 1973. All medical information will be treated confidentially.

Discrimination policies: Feel free to call Jerry Nevarez, Director of Institutional Equity, at 505-646-3635 with any questions you may have about NMSU's Non-Discrimination Policy and complaints of discrimination, including sexual harassment.