

## Physics 247 Policy and Syllabus

**Course Web page:** /uw.physics.wisc.edu/~djchung/phys247/phys247.html

Homework assignments and solutions will be posted on this web page, as will other announcements.

**Professors:** Daniel Chung (danielchung@wisc.edu) and Gary Shiu (shiu@physics.wisc.edu).

**Teaching Assistant:** Ryan Gavin (rgavin@wisc.edu)

**Office Hours:** Daniel Chung (5207 Chamberlin, T 9-10 AM, W 10-11 AM), Gary Shiu (5279 Chamberlin, TW 2-3 PM), Ryan Gavin (4257 Chamberlin, MT 4:30-5:30 PM) Feel free to make appointments outside of these hours.

**Prerequisite:** We will use calculus throughout the course. We are assuming that students have completed at least one semester of calculus and are currently taking second semester calculus.

**Text:** "Modern Physics" by Llewellyn and Tipler

"Physics for Scientists and Engineers" by Tipler and Mosca.

(These texts will be used as well for 248 and 249. Only Volume 1 of Tipler and Mosca will be used for 247.)

**Grading:** 20% homework, 20% laboratory, 20% final exam, and 40% for the sum of the three midterms. This last 40% will be 2/5 your best midterm, 2/5 your second best, and 1/5 your third best (for those who are counting, that 16%, 16%, and 8% of the total).

**Homework:** Homework will be due on the announced days in the physics 247 mailbox by 5pm. Late homework is not accepted. We will drop your lowest homework score. Each homework problem is worth 0-3 points and will be graded according to the following scale: 0 hmmm, 1 tried but little progress, 2 on the right path but significant errors, 3 correct or only minor errors.

**Lab** Lab grading policy will be determined by Ryan. A bound quadrule notebook is required for laboratory write-ups.

**Midterms** The three 50 minute midterm exams will be on October 4, November 1, December 6 during lecture.

### Topics

1. Space-time Coordinate Newtonian Dynamics
  - (a) Measurement + 1D (DC .5 week) TM 1+2
  - (b) 2D & 3D motion (DC 1 week) TM 3
  - (c) Newton's laws (DC 2 weeks) TM 4 + 5
2. Space-time Coordinates in Special Relativity
  - (a) Relativistic motion (GS 1 week) TL Ch 1; TM R-1 R-6
  - (b) Lorentz transformations (GS 2 weeks) TL Ch 1
3. Newtonian Energy-momentum space
  - (a) Work and Energy (GS 1 week) TM 6+7
  - (b) Conservation Laws and Multiple Particles (DC 1 weeks) TM 8+9
  - (c) Rotation and Angular Momentum in spherically symmetric systems (DC 2 weeks) TM 9+10
4. Special-relativistic conservation laws: Energy-Momentum Conservation (GS 2 weeks) TL Ch 2; TM R-7
5. Static Equilibrium (GS 1.5 weeks) TM 12
6. Gravity (DC 1 lecture) TM 11