

Class meetings: MTRF 12:00-12:50 PM, Lind Hall, Room 215

Laboratory meetings: By Laboratory Section, in Lind Hall, Room 202

Instructor: Dr. Michael R. Braunstein, Assoc. Prof. of Physics

Office: Lind Hall, 203D Office Phone: (509) 963-2761 Email: braunst@cwu.edu

Office hours: 9:30 AM - 10:30 AM TR; Noon - 1:00 PM W; knock if office door is closed. Scheduled appointments are suggested for times other than these.

Text and Materials:

Required: **University Physics**, by Young and Freedman, A scientific calculator.

Optional: **Mathematics for College Physics**, Das

Library Reserve: **Physics for Scientists and Engineers, Volumes 1 - 5**, by Knight; **Mathematics for College Physics**, by Das; **Student Workbook for Physics for Scientists and Engineers** by Knight; **Student Solutions Manual for Physics for Scientists and Engineers, Volumes 1 and 2**, by Knight.

Prerequisite/Corequisite: **Math 173 -Calculus**: To understand the material presented in, and to successfully complete the requirements of this course, basic skills and a level of comfort with algebra and trigonometry are absolute necessities and facility with basic calculus must either exist or develop during the course. **If you do not have these skills you are "at risk."** Consult the instructor for further clarification of this issue; **Physics 182 Lab, General Physics Laboratory**.

Course content: The instructor intends to cover material from chapters 6 through 13, 15, 16, 33 and 34 of the text. Topics covered by this material are introductions to work and energy, momentum and collisions, conservation principles, the universal law of gravitation, rotational kinematics and dynamics, oscillations, waves and geometric optics. A variety of mathematical tools commonly used to describe physical processes will also be introduced.

Homework: Homework -- reading and problem sets -- will be assigned regularly. **Note that you will frequently be responsible for reading and understanding the material in the text BEFORE it is covered in class and you may be quizzed on the readings.** Problem sets will be due at the beginning of the class period for which it was assigned. Late assignments: Late assignments will not be accepted (grade = 0) without prior approval of the instructor or truly extenuating circumstances.

Attendance: Students are expected to attend each class meeting. Tests in the course will be strongly directed toward those concepts that are emphasized in the class sessions. It has proven extremely difficult for students to succeed in this course without applying genuine effort during the class meetings. The instructor will **not** provide makeup activities for missed classes.

Final exam: **Friday, March 17, 8:00 AM - 10:00 AM . Anyone with an APPROPRIATE ACADEMIC reason for missing the final scheduled at this time will be given an INCOMPLETE in the class and will be given the opportunity to take a makeup final exam during the first week of classes, Spring quarter. There will be no exceptions to this policy. Plan for this NOW. The final exam will be comprehensive.**

Tests: There will be three tests during the quarter. The tests will cover the assigned readings, problem sets, and material covered in the class meetings.

Quizzes and class activities: There may be a short quiz at the beginning of, or during any class period covering the assigned readings, problem sets, and material covered in the class meetings. There will be no makeup quizzes given. Graded class activities may be conducted during any class period. There will be no makeup activities.

Classroom Behavior: It is recommended that you NOT bring cell phones to class. If you feel that you must bring a cell phone (or ANY other noisemaking device that could bother either the instructor or your classmates, e.g., pagers, personal stereos), make sure that it is turned **OFF** before class and that it remains **OFF** during the entire class. While a portion of your time in the course will require extended interactions with your classmates, it is important to quickly make a transition to paying attention to the instructor for those periods when he is addressing the entire class – during these periods it is NOT appropriate to be involved in extended conversations with classmates. The instructor will make every effort to begin and end the class at the scheduled times. In return, the expectation for students is that the class make a rapid transition to quiet attention immediately at the beginning of each class and that no shuffling of papers/packing of backpacks/early classroom departures will occur until the entire class is released. Simply, for a class of this size, a single rude student can unfairly disrupt the learning environment for a large number of students and so rude behavior will not be tolerated.

Cheating: Cheating absolutely will not be tolerated. Instances of cheating will result in discipline consistent with CWU's policy on academic integrity. This policy on cheating includes, but is not limited to, such acts as copying assignments, plagiarizing material, using unauthorized resources on exams, tests or quizzes, copying from others on exams, tests, or quizzes, and submitting the work of another as ones own.

The class week will **usually** be organized in the following manner: Monday: Introduction to new concepts, conceptual activities, application of concepts; Tuesday: Active Learning Exercise(s) on new concepts; Thursday: homework questions, examples, hints, and dicussion, general questions, problem solving, application of concepts; Friday: homework sets due (beginning of class), introduction to new concepts, conceptual activities, application of concepts, tests.

Grading of problems: The following aspects of problem solutions will be considered in assigning a grade: Evidence of understanding and development in understanding; Choice of physical principles; Application of physical principles; Clarity and thoughtfulness of solution; Completeness of solution; Mathematical approaches, where appropriate; Interpretation of results.

Grading: Your course grade will be computed by the following weights:

Homework sets, quizzes, and class activities:	20 %
Tests:	55 %
Final Exam:	25 %

(Bonus points **MAY** be available on several occasions and for a variety of activities.)

Grade	% of total possible points		
A	92-100	C	72-78
A-	90-92	C-	70-72
B+	88-90	D+	68-70
B	82-88	D	62-68
B-	80-82	D-	60-62
C+	78-80	F	Below 60

The instructor reserves the right to alter the listed weights and to curve the final grades.

Physics 182 Course Objectives:

1. Develop understanding of and ability to apply physical descriptions of motion for a variety of simple systems.
2. Develop an appreciation of and facility for applications of Newton's laws and their consequences for a variety of simple systems.
3. Develop an appreciation of and facility for applications of conservation principles and their consequences for a variety of simple systems.
4. Develop familiarity and facility with some of the analytical approaches that have proven effective in the discipline of physics and in the advance of science.
5. Develop understanding of the overall structure of the discipline of physics.

Syllabus (approximate time frames):

- X Week 1: Course introduction, Work and Energy
- X Week 2: Energy, Conservation Principles, Universal Law of Gravitation
- X Week 3: Conservation of Energy, Momentum, Conservation of Momentum, Collisions
- X **Friday, Jan 20 Test 1**
- X Week 4: Rotational Kinematics and Dynamics
- X Week 5: Rotational Dynamics, Oscillations
- X Week 6: Oscillations
- X **Friday, Feb 10 Test 2**
- X Week 7: Wave Mechanics
- X Week 8: Wave Mechanics, Optics
- X Week 9: Optics
- X **Friday, Mar 3 Test 3**
- X Week 10 Optics, Additional Topics
- X **Date/Time: Friday, March 17, 8:00 AM - 10:00 AM , Final Exam**