Physics 2425-A1
Physics for Engineers I
Blinn College – Bryan Campus
Fall 2009

Course Information Sheet

Instructor: Dr. Terry Honan **Homepage:** http://www.blinn.edu/brazos/natscience/thonan
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Course Description:
A course primarily designed for students majoring in engineering and physical sciences. Topics covered include classical mechanics, heat and waves.

Prerequisite:
MATH 2413 or continuing enrollment therein.

Core Curriculum Course:
This is a course in the 42-hour Core Curriculum of Blinn College. As such, students will develop proficiency in appropriate intellectual competencies, exemplary educational objectives and general perspectives. The URL of the Blinn College core curriculum web site is: http://www.blinn.edu/corecurriculum.htm

Textbooks and other materials:

- **Required Textbook:** Young and Freedman, University Physics, 12th edition.
- **Required Homework System:** Students must purchase an access key to Mastering Physics, the textbook publisher's online homework system. This is bundled with the textbook at the Blinn bookstore. Alternatively, the access key can be purchased online at http://www.masteringphysics.com/. Be sure to select the textbook above (with proper edition) to pair with the Mastering Physics. The Mastering Physics Course ID for this section is: BLINN2425A1FA09 .
- **Required Laboratory Manual:** Each student *must* print out a copy of the labs for the semester. It is in the form of a single pdf file and can be found here.
- **Scientific Calculator:** Students must have a proper scientific calculator with them for every class.
- **Web resources:** Lecture notes, problems with solutions, labs, the exam formula list and previous exams with answers.

Course Objectives and Student Learning Outcomes:
Upon completing this course students should have a grasp of the listed concepts and be able to solve problems using calculus and these physics concepts. Lecture and laboratory work will focus on the following learning outcomes:

- Solve problems in 1D and 2D kinematics.
- Use vectors in solving physics problems.
- Apply Newton's laws of motion to problems involving the one- and two-dimensional linear dynamics of particles.
- Utilize the definitions of work and potential energy, the work-energy theorem and the principle of conservation of energy in solving physics problems.
- Apply Newton's laws to systems of particles and use the principle of conservation of linear momentum.
- For rotations of a rigid body about a fixed axis, use the equations of kinematics, calculate moments of inertia and apply energy considerations.

- Apply the equations of rotational dynamics, including the principle of conservation of angular momentum.
- Utilize principles such as Newton's law of universal gravitation, conservation of energy or Kepler's laws to solve problems in gravitation.
- Solve problems involving oscillations and waves.
- Solve problems involving temperature, including temperature scales, thermal expansion and the ideal gas law.
- Apply the concepts of specific heat and latent heat to problem solving.
- Apply the first and second laws of thermodynamics.

By the end of the course the student will maintain a minimum grade of **D** (60%) for completion of the course. This grade will include both lecture and laboratory components.
Laboratory work will be chosen to reinforce the above lecture topics. The student will demonstrate in the laboratory an understanding of the experiment through writing a report that analyzes the data and interprets the results.

Class Policies:

- **Attendance:** The College District believes that class attendance is essential for student success; therefore, students are required to promptly and regularly attend all their classes. Each class meeting builds the foundation for subsequent class meetings. Without full participation and regular class attendance, students shall find themselves at a severe disadvantage for achieving success in college. Class participation shall constitute at least ten percent of the final course grade. It is the reponsibility of each faculty member, in consultation with the division chair, to determine how participation is achieved in his or her class. Faculty will require students to attend class regularly and will keep a record of attendance from the first day of class or the first day the student's name appears on the roster through final examinations. If a student accumulates one week's worth of unexcused absences during the semester, he or she will be sent an e-mail by the College requiring the student to contact his or her instructor and schedule a conference immediately to discuss his or her attendance issues. **Should the student accumulate two weeks' worth of unexcused absences he or she will be administratively withdrawn from class.**
  There are three forms of excused absence officially designated by Blinn College: (1) observance of religious holy days: The student should notify his or her instructor not later than the 15th day of the semester concerning the specific date(s) that the student will be absent for any religious holy day(s); (2) representing Blinn College at an official institutional function and (3) official involvement in a high school activity for "dual credit" students. Other excuses will be considered and may be considered excused at the instructor's discretion, with documentation. **Missing lecture or lab counts as one absence. If a student misses both lecture and lab periods for a given day, this counts as only one absence.** For classes that meet twice a week in the Fall and Spring semesters, two absences counts as a week and four is the threshold for being dropped.
- **Dropping**: If a student chooses to drop the course, it is that student's responsibility to complete a drop order at the Office of Enrollment Services. Failure to do so could result in a grade of F in the course.
- **Student E-mails**: Students are assigned an E-mail address that must be checked regularly for official Blinn communications and course information. The address is of the form: *Firstname.LastnameLast2digitsBlinnID*@buc.blinn.edu . Information about accessing this account can be found at: www.blinn.edu/acadtech/studentemail/ .

- **Eating and drinking** are not allowed during class or laboratory work.
- **Cell phones and Electronic Devices:** Cell phones and all electronic devices are to be turned off when in the classroom. It is never acceptable to leave a class to answer a cell phone. Texting during class is totally unacceptable. Any use of a cell phone or other wireless device during an exam will be considered a major incident of scholastic dishonesty.
- **Dishonesty Statement:** Blinn College does not tolerate cheating, plagiarism or other acts of dishonesty. Definitions of these acts and procedures for dealing with them are described in "Scholastic Dishonesty" in the Blinn College Student Handbook, copies of which are available at the information desk in the administration building.
- **Civility Statement:** Members of the Blinn College community, which includes faculty, staff and students, are expected to act honestly and responsibly in all aspects of campus life. Blinn College holds all members accountable for their actions and words. Therefore, all members should commit themselves to behave in a manner that recognizes personal respect and demonstrates concern for the personal dignity, rights, and freedoms of every member of the College community, including respect for College property and the physical and intellectual property of others. Civility applies to attire as well as language and behavior. Please dress appropriately for the academic classroom and laboratory.
- If a student is asked to leave the classroom because of uncivil behavior, the student may not return to that class until he or she arranges a conference with the instructor. It is the student's responsibility to arrange for this conference.
- **ADA Policy**: Students with physical or learning disabilities must contact the Office of Disability Services (Room 165, Science Bldg.) to receive accommodation on exams and assignments. The Office of Disability Services will provide the student with an accommodation letter specifying the accommodations that are to be provided to the student. The student must present this letter to the instructor in order to receive accommodation. *Accommodation is not retroactive*. The above requirements and policies are discussed more fully in the **Blinn College Student Handbook** which, by reference, is incorporated into this information. Please obtain and read.

Course Requirements and Criteria for Grading:

There will be three major exams, several unannounced quizzes, labs, online homework and a cumulative final.

- **Major Exams and Final:** The three major exams and final will be closed book/closed note tests. A formula list will be provided; the exam formula list can be found at the web site. There will be a curve given for each major exam and the final. The curve will be based on the performance of the class relative to the expectations of the instructor. The curve will be a simple function that converts the raw grade to the standard scale.
- **In-class:** The in-class grade will consist of 10 point engagement exercises (usually involving Mathematica) and 30 point quizzes. There will be no make-up quizzes or engagement exercises, for any reason. At least 1/4 of the quiz grades and 1/4 of the exercises will be dropped. Quizzes will typically be open book / open note. After dropping, all the remaining quiz and engagement grades will be added and rescaled to 100 points.
- **Credit for Work:** On the major exams, final and all quizzes, all work must be shown and clearly documented for any show-your-work problem. The starting point in problem solving *must* be some expression on the official exam formula list for the class. Memorized intermediate expressions will receive no credit unless their derivation is included.
- **Labs:** Labs will be held without being previously scheduled. There will be no make-up labs, for any reason. Only students who attend laboratory may get credit for the lab. At least 1/4 of the lab grades will be dropped.
- **Online Homework:** We will use the textbook publisher's online homework system. Each assignment will have a due date. One assignment will be dropped, the one that gives the student the maximum benefit. The final point total for the semester will be rescaled to 100 points.
- **Calculation of Final Grade:** There will be 3 major exams, each worth 16%. The in-class grade, the lab grade and the homework grade are each 10%. The remaining 22% is the final. An alternative method is provided to partially alleviate a poor performance on one major exam; half of the worst exam grade is replaced with the final exam grade. The final average is calculated both ways; the grade will be the higher of the two.

	Normal	Alternative
Three Major Exams	16 % ×3	16% ×2 + 8%
In-class	10 %	10 %
Labs	10 %	10 %
Online Homework	10 %	10 %
Final Exam	22 %	30 %

Final Grade Calculation	
A	90 – 100 %
B	80 – 89 %
C	70 – 79 %
D	60 – 69 %
F	≤ 59 %

- **Class Schedule:** The order of the chapters is shown at the web site under the Lecture notes section. The test dates, shown below, will be rigidly held to.

Test 1	Monday, September 28
Test 2	Monday, October 26
Last day to drop with a W	Friday, November 20
Test 3	Monday, November 23
Final	Monday, December 14, 3:15-5:15