Physics 2425-A4
Physics for Engineers I
Blinn College – Bryan Campus
Fall 2009

Instructor: Grady Hendricks
Office: G205
Office Hours: TR 3:15 pm – 4:00 pm
(other times by appointment)

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Course Web site: www.blinn.edu/brazos/natscience/ghendricks/physics2425/

Classroom Locations and Meeting Times:

Lecture	Lab
Room G213 TR 4:15 pm – 5:30 pm	Room G233 TR 5:40 pm – 6:55 pm

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. 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 www.blinn.edu/corecurriculum/42hourcore.htm.

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

- Be able to define displacement, velocity and acceleration in words, symbols (using calculus) and graphically. From the definitions of velocity and acceleration, be able to derive the equations which describe the motion of a particle with constant acceleration in one and two dimensions.
- Understand and be able to use vector analysis in solving problems in physics
- Be able to define work and mechanical energy. Understand the work-energy theorem, the definition of potential energy and the principle of conservation of mechanical energy.
- Understand and be able to describe both uniform and non-uniform circular motion.
- Understand the concepts of impulse and momentum, the principle of conservation of linear momentum and the distinction between elastic and inelastic collisions
- Understand and be able to describe the bulk motion of a system of particles and the definition of the center of mass.
- Understand the concepts of rotational kinematics.
- Understand rotational dynamics, specifically torque, angular momentum and its conservation, and the rotational form of the second law of motion.
- Understand the conditions for static equilibrium.
- Understand the zeroth law of thermodynamics, temperature and temperature scales.
- Understand heat, thermodynamic work, first and second laws of thermodynamics and entropy.
- Understand the basics of wave motion, including a description of harmonic waves. Understand the examples of waves on a string, sound waves and standing waves.

Overall objectives for the course include the following:

- The student will maintain grade of **D** (60%) for completion of the course. This grade will include both lecture and laboratory components.
- The student will develop improved problem-solving skills.
- The student will develop an enhanced appreciation for the integration of physics and math and improved skill in interpreting the physical meaning of mathematical equations which occur naturally in the course.

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.

Textbooks and other materials:

- **Required Textbook:** Young and Freedman, *University Physics*, 12th edition (Vol I).
- **Required Homework System:** Students *must* purchase an access key to MasteringPhysics, 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 www.masteringphysics.com; be sure to select the Young and Freedman text above to pair with MasteringPhysics. The MasteringPhysics Course ID for this section is **BLINN2425A4FA09**.
- **Required Laboratory Manual:** Each student *must* print out a copy of the labs for the semester. The lab manual 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.

ADA Statement:
Students with physical or learning disabilities must contact the Office of Disability Services (Room 157, 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.

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 responsibility 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.**

Student E-mails
All Blinn students have been assigned a Blinn e-mail address that must be checked regularly for official communications and course information. This e-mail account can be accessed at mail.live.com. Your e-mail address (and Windows Live ID) is of the form *Firstname.LastnameXX*@buc.blinn.edu. (XX = last two digits of Blinn ID.) Your initial password is your Blinn ID number. Additional information about accessing this account can be found at www.blinn.edu/acadtech/studentemail/.

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.

Make-up work
Students will not be permitted to make up missed work except in extremely rare circumstances. Before any make-ups are permitted, students must provide the instructor with appropriate documentation. Permission to make up work will be granted solely at the discretion of the instructor.

Laboratory Work
Except for a few circumstances, you will have only one lab period in which to work on the laboratory experiments. Additional class time for working on these experiments will be given solely at the discretion of the instructor. This means that when you are working through the experiments, you should focus on making sure you have made all the required measurements and have recorded all the required data. Only after this is completed should you spend class time working through calculations called for in the experiment. If you do not complete the calculations in class, I expect you complete them outside of class.

You may hand in labs at any time up until the time I begin grading them. However, once I start grading them, I will not accept any additional labs.

Eating and Drinking
Eating and drinking are not allowed in classrooms or laboratories.

Classroom Civility
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 physical and intellectual property of others. Civility applies to attire as well as language and behavior.

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.

Mobile Phones
All mobile phones must be turned off at all times while in the classroom or lab, except as needed for emergency situations.

Scholastic Dishonesty
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. On group quizzes, consultation with the members of your lab group is expected and, in fact, encouraged. You may also wish to consult with your lab partners in preparing your laboratory report. However, **each student is expected to hand in his or her *own* lab report.** Also, in your lab reports, you are expected to be **absolutely honest** when presenting your data and answering questions about your results. This means that you **do not ever falsify, erase, white out, or otherwise alter** your experimental results, nor do you ignore or exclude some data points when drawing conclusions about your experimental results without presenting a convincing argument stating *why* those data points should be ignored or excluded. Furthermore, cheating on exams will not be tolerated. Any violation of these rules may result, at the very least, in your receiving a zero for any work affected by the violation.

Description of Course Content and Tentative Class Schedule:
The course will cover Chapters 1-20 in the text. I will try to post a tentative schedule for lectures and labs on the course Web site. The material covered on the exams and tentative dates for the exams are as follows:

Exam	Material Covered	Date (tentative)
1	Chapters 1-4; Chapter 5, Sections 5.1, 5.2	Tuesday, September 29
2	Chapter 5, Sections 5.3, 5.4; Chapters 6-8	Tuesday, November 3
3	Chapters 9-13, 15	Tuesday, November 24
Final Exam (and post-test)	**Chapters 1-20**	**Tuesday, Dec. 15, 3:15 pm – 5:15 pm, G233**

Criteria for Grading: There will be three major exams, a cumulative final exam, in-class assignments, labs, and online homework.

- **Exams**: All exams will be closed-book and closed-note exams.
- **In-class:** The in-class grade will consist of engagement exercises (usually involving *Mathematica*) and quizzes. Approximately 5-10 in-class assignments will be given. Most of the quizzes will be *group quizzes* or *take-home quizzes* and will be announced in advance. Group quizzes are timed quizzes that you work on in class with the members of your lab group. On group quizzes, you may use your class notes, but not the textbook. On take-home quizzes, you may use any resources.

  In addition, it is possible that there could be *unannounced* quizzes. These are quizzes that you work on individually and that are, of course, not announced in advance.

  Students' lowest score will be dropped.
- **Labs:** There will be a lab exercise approximately every other week. Students' lowest lab grade will be dropped.
- **Online Homework:** We will use the textbook publisher's online homework system, *MasteringPhysics*. Students' lowest score will be dropped.
- **Grading summary:** Exams 1-3 (13% each), Final (27%), In-class (10%), Labs (12%), Online homework (12%).

The grading system of Blinn College is as follows*:

A = 90 –100 Superior
B = 80 – 89 Above Average
C = 70 – 79 Average
D = 60 – 69 Passing
F = < 60 Failing

*from Board Policy Manual EGA(LOCAL), issued 05/24/2004

Important dates to remember:

Last day to register or add classes	Friday, September 4
Last day to drop course with a grade of "W"	Friday, November 20
Holiday! (Thanksgiving)	**November 25 through 27**
Final Exam (and post-test)	**Tuesday, Dec. 15, 3:15 pm – 5:15 pm, G233**