

Physics 1402-A6
College Physics II
Blinn College – Bryan Campus
Summer 2, 2009

Instructor: Dr. Joel W. Walker

Email: joelwwalker@gmail.com

Office: G234

Phone: (979) 209-7495

Office Hours: MTWRF 1:15 pm – 1:45 pm, or by appt.

Course Web site: <http://www.blinn.edu/brazos/natscience/jwalker/>

Classroom Locations and Meeting Times:

G213 MTWRF 1:45-3:40; We will transfer to room G215 for Laboratory Sessions 3:50-5:45.

Course Description: A continuation of Physics 1401. Topics covered include fundamentals of electricity, magnetism, light and some modern physics.

Prerequisites: Physics 1401

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 be able to accomplish the following goals using algebra and basic trigonometry. Lecture and laboratory work will focus on these learning outcomes.

- Apply Coulomb's law describing the electrostatic interaction between point charges and solve qualitative problems involving Gauss's law.
- For discrete charge distributions, calculate the net electric field, net potential and the electric potential energy; solve problems involving relationships among electric fields, electric potential and potential energy.
- Solve problems involving capacitors with and without dielectrics.
- Analyze basic DC circuits, including calculating equivalent resistances, equivalent capacitances, currents and voltages.
- Analyze the transient response of circuits such as RC and RL .
- Find the force on charged particles and current-carrying wires due to magnetic fields, and find the magnetic field due to currents.
- Apply Faraday's law and Lenz's law to problems involving electromagnetic induction.
- Solve problems involving combinations of resistors, capacitors and inductors driven by AC sources.
- Solve problems involving electromagnetic radiation, including problems on such concepts as energy density, intensity, polarization, radiation pressure and momentum.
- Use the principles of geometric optics to solve problems involving reflection and refraction of light in applications such as plane mirrors, spherical mirrors and thin lenses.
- Use the principles of physical optics to solve problems involving interference and diffraction of light.
- Apply principles of modern physics to solve problems involving quantization of energy and momentum on topics such as blackbody radiation, the photoelectric effect and the Compton effect.

Overall objectives for the course include the following:

- The student will develop improved problem-solving skills.
- The student will develop an appreciation for the unity and elegance of the physical laws exhibited in the natural world.
- 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.

Note that physics is about learning to apply a very small number of fundamental observations about nature to creatively solve a wide variety of problems. It is an exercise in logic and resourcefulness, never memory work. Formula sheets will be provided for your assistance, but you should try to reduce your reliance upon this crutch as your understanding grows.

Laboratory work will be chosen to reinforce the stated lecture topics. The student will demonstrate in the laboratory an understanding of the experiment through compiling a report that analyzes the data and interprets the results.

Textbooks and other materials:

- Required Textbook: James S. Walker, *Physics*, 3rd edition (Vol. I)
- Required Homework System: Students *must* have 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 Walker text above to pair with *MasteringPhysics*. The *MasteringPhysics* CourseID for this section is: **BLINN1402A6SU209**.
- Required Laboratory Manual: *Physics 1402 Laboratory Manual*. Available at copy center on first floor of G Building (Bookstore Building).
- A scientific calculator * I will clear all programs before each test*

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. *** **On the third unexcused absence the student will be administratively withdrawn from the course without prior notification.*****

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 either the lecture or lab or both together will all count as one day's absence.**

E-mail Communication

All Blinn students have been assigned a Blinn email address in the form Fristname.LastnameLast2digitsBlinnID@buc.blinn.edu Your initial password is your student id number. This e-mail account is accessed at <http://mail.live.com> It is the student's responsibility to regularly check this e-mail account. Any e-mail communication sent by the instructor or the college to this account is assumed to be received and is an official method of communication.

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 labs 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

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 to complete them outside of class.

Due dates for laboratory reports will be announced. Late reports will not be accepted without a valid excuse. Generally, we will plan to hold lab twice per week, and collect each session's report at the time of the next meeting.

Eating and Drinking

Eating and drinking are not allowed in the laboratory at desks with computer equipment.

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.

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 silenced at all times while in the classroom or lab. If you are a parent, or otherwise have the reasonable expectation of a possible emergency contact, please excuse yourself from the room quietly if a call is received. If there is no such expectation, please turn off or disregard your phone altogether. Text messaging during class time will not be tolerated. Any non-compliance with this policy will be addressed in accordance with the Blinn College civility policy (Administrative Policy). The civility policy allows for the student to be asked to leave the classroom for violations of this nature. An unexcused absence will be assessed for the class day in question. Additionally, loss of class participation points may apply.

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. Cheating on exams or quizzes will result in an immediate and unconditional expulsion from the course, and the notification of university officials.

On group projects and lab reports, consultation with teammates is expected and, in fact, encouraged. 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. You may also wish to consult with your classmates while working on homework assignments. However, you miss the entire intended benefit of the assignment if you are not an active participant in each problem, continuously testing your own ability to solve problems creatively, independently and efficiently.

Criteria for Grading: Grades will be based on exams, labs, homework and quizzes.

- **Exams:** Exams will be composed of a mixture of multiple-choice and written portions. Exams are closed-book and closed-note. For written portions, **you must show your work in doing the calculations in order to receive credit!**
- **Labs:** There will be a lab exercise approximately twice per week, for a total of eight sessions.
- **Online Homework:** We will use the textbook publisher's online homework system, [MasteringPhysics](#). Each assignment will have a due date.
- **Quizzes:** Between 8 - 10 quizzes will be given during recitation time. Each students' single lowest quiz grade will be dropped.
- **Recitation Participation:** In addition to labs much of the lab time will be dedicated to problem solving practice. Occasionally I will collect this work for a grade.
- **Grading summary:** Exams 1-3 (40% together), Final (20%), Labs (10%), Online homework (10%), Quizzes (10%), Recitation Participation (10%).

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 | July 7 |
| Last day to drop course with a grade of "W" | July 28 |

** Tentative schedule ** Dates WILL vary from this tentative proposal.

M 6th Chapter 19
T 7th Chapter 19
W 8th Chapter 20
H 9th Chapter 21
F 10th Exam 1 and Chapter 22
M 13th Chapter 23
T 14th Chapter 24
W 15th Chapter 24
H 16th Exam 2
M 20th Chapter 25
T 21st Chapter 26
W 22nd Chapter 26
H 23rd Chapter 27
M 27th Chapter 28
T 28th Exam 3
W 29th Chapter 29
H 30th Chapter 30
M 3rd Chapter 31
T 4th Chapter 31
W 5th Chapter 32
H 6th COMPREHENSIVE FINAL EXAM