



HOUSTON COMMUNITY COLLEGE NORTHWEST
SYLLABUS FOR PHYS 2126 Lab
Spring 2017
Class Number 20071

Course Identification: PHYS 2126-12 Physics Laboratory II, CRN 20071

Time and location

12:30 – 3:30 pm Tuesday, Spring Branch Campus, room 610.

Instructor

G. Raymond Brown, Ph.D.

Office Hours: by appointment.

E-mail: g.brown@hccs.edu

Web site: <http://learning.hccs.edu/faculty/g.brown>.

Site name here (This last site is the web site for the course.)

Online Tutoring Link www.askonline.net.

Laboratory Manual: Handouts for each lab meeting will be posted on the web site for the course prior to the lab meeting time.

Course Catalog Description: For science and engineering majors. Selected experiments in technical physics. Core curriculum course. Credit 1 (lab 3)

Course Prerequisites/Co requisite: Physics 2326.

Course Intent: This course is intended for students majoring in engineering, physical or life sciences, or for those who are intent on preparing themselves for higher level science courses in their chosen curricula. Experiments have been selected to reinforce the material presented in Physics 2326, which may be taken concurrently.

Course Content: Laboratory exercises (experiments) are performed as listed in the tentative schedule below. These experiments cover topics associated with Physics 2326. Labs on these topics may be conducted before being addressed in the lecture classroom.

The laboratory exercises are performed by teams of 4 students. Grading depends on student videos of the experiments, use of tracking software downloaded from the web, simulations from the web, and problem-solving aids from supplemental materials – the Blender Algorithm[©]. The material emphasizes skills necessary in engineering practice: vector analysis, propagation of uncertainty through calculations, mathematical problem solving, and electronic communications. The course is capped with an

experiment forming a term project. Development of the term project constitutes 3 of the experiments in the course. Oral presentation of the term project and submission of the term project video constitutes the capstone final exam of the course.

Student Learning Outcomes

Upon successful completion of this course the student should be able to

1. Design and perform experiments, collect and analyze data, and interpret results obtained in a laboratory setting.
2. Analyze, evaluate, and test a model or scientific hypothesis by comparing with experimental data.
3. Use scientific language to demonstrate an understanding of the difference between scientific and non-scientific interpretations of phenomena observed

Course Learning Outcomes

Upon successful completion of this course the student should be able to

- 1.1 Identify appropriate sources of information for conducting laboratory experiments.
- 1.2 Design and/or conduct basic experiments involving principles of motion (mechanics).
- 1.3 Demonstrate competency in the use of laboratory instrumentation, including computer tools for data collection.

- 2.1 Relate physical observations and measurements involving mechanics to theoretical principles.
- 2.3 Evaluate the precision of physical measurements and the uncertainties in measurements and calculations.

- 3.1 Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.

The Final Grade Is Computed As Follows:

Lab reports ----- 80%
Final Exam ----- 20%

The overall score is calculated as follows:

Overall score = 0.80 (lab report average) + 0.20 (final exam score)

Letter Grading Scale:

A = 90 – 100% B = 80 – 89% C = 70 – 79% D = 60 – 69% F < 60%

Attendance: The HCCS attendance policy is stated in the HCC Schedule of Classes. A fast paced curriculum should be expected. Accordingly, regular class attendance is required; you cannot get credit for an experiment you did not perform during the class meeting time. Should a student miss a class for

any reason, that student is responsible for all the materials covered during her/his absence. The instructor checks class attendance at each meeting. Although it is the student's responsibility to drop a course for non-attendance, the instructor has full authority to drop a student for excessive absences. (Dr. Brown will *not* administratively drop any student from this class.) For this course, absences are limited to two class-periods.

Other Information: Free physics tutoring may be made available. If so, a tutoring schedule will be posted in the laboratory room, and also posted the course Eagle Online web site.

Last Day for Administrative and Student Withdrawals: The last day for withdrawals is June 24, 2016. Please contact the instructor prior to withdrawal. Jointly we may be able to arrive at a plan to help you succeed in the course.

NOTICE: Students who repeat a course three or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test-taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

Disability Support Services (DSS): The HCCS is committed to compliance with the Americans with Disabilities Act and the Rehabilitation Act of 1973 (section 504). If you have any special needs or disabilities, which may affect your ability to succeed in college classes or participate in college programs/activities, please contact the office of disability support at the college. Upon documentation, you will be provided reasonable accommodations and/or modifications. Please contact the DDS office as soon as you begin the term.

Academic Honesty: Students are expected to conduct themselves with honor and integrity in fulfilling course requirements. The college may initiate Penalties and/or disciplinary proceedings against students accused of scholastic dishonesty. Possible punishments may include a grade of "0" on the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the college system. "Scholastic dishonesty" includes, but is not limited to, cheating on a test, plagiarism, and collusion. The biggest temptation in this course will be copying other student's lab results. This practice results in penalties for both students.

HCCS Sexual Harassment Policy

HCC shall provide an educational, employment, and business environment free of sexual harassment. Sexual harassment is a form of sex discrimination that is not tolerated at HCC. Any student who feels that he or she is the victim of sexual harassment has the right to seek redress of the grievance. HCC provides procedures for reviewing and resolving such complaints through its Grievance Policy. Substantiated accusations may result in disciplinary action against the offender, up to and including termination of the employee or suspension of the student. In addition, complainants who make accusations of sexual harassment in bad faith may be subject to equivalent disciplinary action.

Important Dates:

Classes begin/system	January 17, 2017
Official day of record	February 1, 2017
Spring Break	March 13 – 17, 2017
Last date for administrative and student withdrawals	April 3, 2017
Spring Holiday (Good Friday)	April 14, 2017
Final Examination	May 9, 2017

Laboratory Policy: The instructor will review General laboratory rules and safety instructions. Experiments are performed by teams of 4 students. Lab reports consist of videos prepared by each lab team describing the purpose, procedure, results and conclusions of each experiment, submitted on the day that the next experiment is performed. Each report is graded on a 100-point basis. Come on time and be prepared. Read the experiment before coming to class and complete any pre-lab questions. If you follow this practice, you will be much better organized when doing the experiments and your lab experience will be much more rewarding.

Examination: Each lab team orally presents their video of the term project, and invites questions from the class.

Assignments: Outside of lab reports and the term project there are no special assignments.

General Suggestions for Learning Physics:

Physics, the most fundamental physical science, is concerned with the basic principles of the Universe. It is the foundation on which the other physical sciences - astronomy, chemistry, and geology - are based. The beauty of physics lies in the simplicity of its fundamental theories and in the manner in which a small number of basic concepts, equations, and assumptions can alter and expand our view of the world.

In this course we cover the topics of classical mechanics. As you might suspect, it can be easy to fall behind and not get your reports in on time. Following are

some general tips, which may be helpful:

- * Learning physics takes time! A reasonable guide is to allow you a minimum of three hours of study time for the preparation of each lab report. Heavy work and/or class loads are not compatible with learning physics.
- * Attend class regularly! Take generous notes during class. Ask questions.
- * Read each of the assigned experiments before you come to class. This makes the labs more meaningful for you.
- * Good math skills are a must! To be successful you must be comfortable with vector algebra, exponentials, logarithms, differentials, and integration.
- * You must have a good scientific calculator or math software with the necessary trigonometric, logarithmic, and exponential functions. Know how to use it and have it with you at all class periods. You are expected to use it during the execution of the experiments.
- * Go to the school sponsored tutoring sessions if you are having trouble keeping up. Remember that nobody can teach you physics the night before a test.

Lab Report Format:

All lab reports are videos made by the student lab teams. Lab report requirements will be provided for each of the lab experiments. Students perform experiments and prepare lab reports in teams of 4. Students who miss the performance of an experiment will not receive credit for the lab report. Deadlines for report submissions are absolute; no credit will be given for late reports.

Lab experiments and reports cannot be made up.

Video submissions must be in the form of a **single editable electronic file**, in one of the standard video formats, such as MP4, AVI, MOV, etc. Tables, graphs or images may be created in other software (for examples, a spreadsheet graph or png image) and made part of the video file. **Multiple files for a single report are not acceptable. Single image, PowerPoint and PDF files are not acceptable.** Online submission requirements are posted on the course web site.

PLEASE OBSERVE ALL SAFETY RULES

Tentative Schedule of Laboratory Experiments:

Lab #	Exp. Name
1 1/17	Uncertainty Review
2 1/24	Field Measurements and Calculations
3 1/31	The Ohm Law
4 2/7	The Wheatstone Bridge
5 2/14	The Kirchhoff Rules
6 2/21	RC DC Circuit
TP1 2/28	Term Project work
7 3/7	LR Circuit
TP2 3/21	Term Project work
8 3/28	LRC Circuit
TP3 4/4	Term Project work
9 4/11	Dispersion
TP4 4/18	Term Project work
10 4/25	Diffraction
TP5 5/2	Term Project work