LIBERTY UNIVERSITY
Physics 232 & 232L – University Physics II & Laboratory (4 Credit Hours)
Fall 2010

James Cook
jcook4@liberty.edu
434-582-2476
AS 105

Office Hours:
MW 4:00 - 5:00
TR 10:30 - 12:00
And by appointment

Thus shall you say to them: "The gods who did not make the heavens and the earth shall perish from the earth and from under the heavens" It is he who made the earth by his power, who established the world by his wisdom, and by his understanding stretched out the heavens. ***Jeremiah 10:11-12 (E.S.V.)***

I. Course Description

Electricity, magnetism, optics, and modern physics using calculus based mathematics.

II. Rationale

This course is required for the mathematics, biochemistry, computer science, and engineering majors. The study of physics 232 introduces the student to a thorough treatment of the use of electricity and magnetism, optics, and modern physics. The student will perform laboratory experiments and conduct measurements to support the theory. The emphasis will be mostly on the concepts of static electricity, circuits, capacitance, and magnetism.

III. Prerequisite statement

Math 132 & Phys 231 are the minimum prerequisites.

It is the student's responsibility to make up any prerequisite deficiencies, as stated in the Liberty University Catalog, which would prevent the successful completion of this course.

IV. Materials List

Required:

TEXTBOOK—Principles of Physics A CALCULUS-BASED TEXT FOUTH EDITION.
AUTHORS—SERWAY & JEWETT
ADDITIONAL REQUIRED MATERIALS—scientific calculator, no use of programmable functions permitted.

V. Learning Outcomes

A.

a. Demonstrate a basic understanding of electricity, magnetism, optics, and modern physics by mastering the learning objectives for each chapter and sections listed in the course content. These objectives provide the basis for tests. The concepts are as follows: Static Electricity, Magnetism, optics, and modern physics applications to physical problems using calculus and algebraic methods.

b. Analyze and solve problems using the laws, textbook examples and materials provided in the classroom.

c. Apply acquired problem solving skills to work physics homework.

B.

d. Reading assignments are on syllabus in schedule table below.
e. Homework will be assigned using Webassign and written problems given in lecture.
f. Students are responsible for all assignments given in lecture and assigned in Blackboard.

VI. Assignments/Requirements

Assignments:

- A daily quiz will be given at the start of lecture. Typically the quiz will concern the reading assignment and/or problems based on previous lectures.
- Webassign homework is available for this course and an email with the course key is posted in the announcements section of Blackboard.
- Written problems will be assigned approximately weekly. Typically such problems will be assigned as a particular topic is introduced.
- Three two-hour exams will be given during lab periods as detailed in the calendar in section X. These exams must be taken at the appointed time and date unless a university approved absence overlaps directly with the time.
- Final Exam is comprehensive, although I will allow a 3x5 card of formulas in contrast to the earlier exams.
- Overall we should cover the topics listed in the calendar in section X.

Requirements:

Cognitive Growth:	Demonstrate ability to apply the knowledge acquired to problem solving Demonstrate mathematical proficiency by simplifying expressions, using identities and solving equations
Product:	Homework, Two midterm exams partly in-class and a major term paper.
Process:	Student studies materials independently then conferences with professor to resolve problems. Lectures may be given if necessary to aid understanding.

VII. Grading Policies

- Homework must be turned in on or before the due date or no credit is generally awarded.
- **Tests and quizzes must be taken as scheduled.** No make-up tests/quizzes will be given after the scheduled time, except in the case of emergency (see Section X. below). If a test/quiz is missed due to an official university sponsored event, arrangements must be made with the instructor **in advance of departure** to take the test at an alternate time. For other excused absences, the student must contact the instructor by email at the earliest opportunity in order to make arrangements for make-up work. (See attendance policy below.) Generally it is not possible to make up labs since the only time of the week the lab is set-up is precisely during our lab time. The rest of the week it is set-up for mechanics. If you miss a quiz **with an approved absence** then the next quiz counts double.

Course Grade

Test 1	100 Points	10%
Test 2	100 Points	10%
Test 3	100 Points	10%
Daily Quizzes	56 Points	5.6%
WebAssign	70 Points	7%
Lab Reports	70 Points	7%
Written Assignments	154 Points	15.4%
Final Examination	350 Points	35%
Total	1000 Points	100%

A 900 – 1000 Points (90-100%) B 800 – 899 Points (80-89% C 700 – 799 Points (70-79%)
D 600 - 699 Points (60-69%) F below 600 Points (60%)

Grades are based on academic performance in this class. Effort is required but it is not necessarily a sufficient condition for success.

VIII. Attendance Policies

Class attendance is **essential** and students are expected to be present; however, if an absence is unavoidable, **students are responsible for ALL material covered and assignments made during an absence**.

Students should be present for the entire class and should be prepared to take notes in class.

Phones. beepers, iPods, etc. should be turned off and put away during class. No food or drink is permitted in class.

Official Liberty University Attendance Policy:

Classes that meet five times per week will permit no more than five unexcused absences per semester.

Classes that meet three times per week will permit no more than three unexcused absences per semester.

Those classes meeting twice per week will permit no more than two unauthorized absences per semester.

Classes that meet once per week will permit no more than one unexcused absence per semester.

Questions regarding unexcused absences must be resolved by the student with the faculty member within one week of the absence. Extraordinary circumstances regarding excessive absences will be addressed by the student with the faculty member, department chair, and dean as required.

Penalties for each unexcused absence over the permitted number per semester will be as follows:

30 points for classes that meet five times per week

50 points for classes that meet three times per week

75 points for classes that meet two times per week (lecture)

150 points for classes that meet once per week (lab)

Excused absences include all Liberty University sponsored events, to include all LU-sponsored events, and family situations such as a death in the family or severe medical condition. Absences due to medical illness that are accompanied by a doctor's note will be excused. Students will **not** be penalized for excused absences. **However, "let me be clear"**

- Students lose 1 allowed unexcused absence for each excused absence

- Students have 1 week to appeal an unexcused absence

Furthermore,

- Student is tardy if they are 10 minutes late or less

- Student is absent if more than 10 minutes late

- Professors may decide if work missed while tardy (such as a quiz) may be made up

- 3 tardies will count as 1 unexcused absence

In other words, if you have excused absences it uses up your unexcused absences.

Note: As stated in SectionVII., arrangements for make-up tests/quizzes must be made with the instructor in advance when possible and at the earliest possible opportunity in the case of emergencies.

IX. Other Policies

Dress Code

Students are expected to come to class dressed in a manner consistent with *The Liberty Way*.

Honor Code

We, the students, faculty, and staff of Liberty University, have a responsibility to uphold the moral and ethical standards of this institution and personally confront those who do not.

Academic Misconduct

Academic misconduct includes: academic dishonesty, plagiarism, and falsification. See *The Liberty Way* for specific definitions, penalties, and processes for reporting.

Disability Statement

Students with a documented disability may contact the Office of Disability Academic Support (ODAS) in DH 2016 to make arrangements for academic accommodations. For all disability testing accommodation requests (i.e. quieter environment, extended time, oral testing, etc.) the Tutoring/Testing Center is the officially designated place for all tests administered outside of the regular classroom.

DROP/ADD POLICY

A Fall/Spring course may be dropped without a grade, tuition, and fee charges within the first five days of the semester. From the sixth day until the end of the tenth week, a Fall/Spring course may be withdrawn with a grade of W or WF

Classroom Policies

The inappropriate use of technology, such as cell phones, iPods, laptops, calculators, etc. in the classroom is not tolerated. Other disruptive behavior in the classroom is not tolerated. Students who engage in such misconduct will be subject the penalties and processes as written in *The Liberty Way***.**

Laboratory Policies: *All labs for Physics 232L are from Wilson/Hernandez: Physics Laboratory Experiments, 6th Ed., Liberty Custom Edition. No photocopies are permitted due to copyright considerations.

Beneficial dictator policy:

I reserve the right to modify all aspect of this syllabus if the policies are seen (by me) to be needlessly hurtful to the students. This may result in the addition or subtraction of assignments and/or the shifting of due dates. All such changes are communicated via email and lecture meeting. Obviously, this policy does not apply to university-wide policies such as attendance or point scale since I have no authority to modify said policies. However, such policies as I initially set I reserve the right to modify said policies when it is beneficial for the student.

X. Calendar for the semester/term

Date	Topic	Pages in text	Comments
T/8-24	Electric fields & Coulomb's Law	603-616	
TH	Electric fields	603-616	No Lab Meeting
T/8-31	Electric fields from charge distributions	616-634	
TH	Flux & Gauss' Law	616-634	No Lab Meeting
T/9-7	Gauss' Law	642-656	
TH	$\vec{E} = -\nabla V$, the electric potential	642-656	Lab #9, Fields and Equipotentials
T/9-14	Potential due to charge distributions	656-673	
TH	Capacitors & energy	656-673	Lab #10, Ohm's Law
T/9-21	Capacitor physics	681-700	
TH	Resistors and resistance	681-700	TEST 1 in Lab Time: 5:10-7:00pm
T/9-28	Direct Current circuits	700-714	
TH	RC circuits	700-714	Lab #11, The Measurement of Resistance
T/10-5	Magnetic fields & magnets	727-752	
TH	Biot-Savart Law	727-752	Lab #12, Resistance is Series and Parallel
Date	Topic	Pages in text	
T/10-12	Ampere's Law	753-754	
TH	FALL BREAK		
F	FALL BREAK		
T/10-19	Faraday's Law	765-780	
TH	Lenz' Law & motional EMF	765-780	Test 2 in Lab Time: 5:10-7:00pm
T/10-26	Inductance & energy in inductors	780-787	
TH	LR circuits	780-787	Lab # 13, Reflection and Refraction
T/11-2	Maxwell's Equations	806-829	
TH	Radio waves & Polarizations	806-829	Lab #14a, Spherical Mirrors and Lenses
T/11-9	Ray reflections & Snell's Law	839-857	
TH	Wave dispersion, fiber optics	839-857	Lab #14b, Spherical Mirrors and Lenses
T/11-16	Interference	898-922	
TH	Thin films, diffraction	898-922	Test 3 in Lab Time: 5:10-7:00pm
M/11-22	THANKSGIVING		
T	THANKSGIVING		
W	THANKSGIVING		
TH	THANKSGIVING		
F	THANKSGIVING		
T/11-30	Nuclear physics	1017-1039	
TH	Nuclear physics	1017-1039	The Transmission Diffraction Grating
T/12-7	Something interesting.	Not in text.	
F/12-10	FINAL EXAM: 6:00-8:00, SH 105		(in the Lab Room)