LIBERTY UNIVERSITY

Physics 231 – University Physics – (3 Credit Hours)

Spring 2011

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Office Hours:
MWF: 12:25-1:15
TR: 9:40-10:40
(and by appointment)

I. Course Description

A study of mechanics, gravitation, waves, sound, and heat from a calculus perspective.

II. Rationale

This course is required. In the laboratory, the students shall learn and familiarize themselves with the various uses of instruments to obtain physical measurements. The students shall learn the standard units and the method of conversions within the said system both in class and in the laboratory. During lectures, they will learn the basic principles of mechanics. The speed of sound will be measured in the laboratory. Furthermore they shall be able to solve problems in the said topics with varying degrees of success. This is usually based on individual students, their efforts, and abilities. Several physical laws will be verified in the laboratory by recording experimental data and writing a laboratory report to be handed for grading.

III. Prerequisite statement

Math 131 and 132 (may be a corequisite).

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:

- A **NON-GRAPHING** scientific calculator is required. Use of calculators on cell phones, PDA's, etc. is not permitted.
- Textbook – Physics for Scientists and Engineers; 6th Edition; Paul A. Tipler; W. H. Freeman & Company. *Note: electronic copies or just the first volume of the two volume set should also suffice. Visit the LU bookstore for further details.*
- NOTE: All students must purchase a laboratory manual. No photocopies of experiments will be accepted because of copyright laws.
- * All Labs from Wilson/Hernandez: Physics Laboratory Experiments (Custom Edition).

V. Learning Outcomes

Course Outcomes

The student will be able to:

1. Demonstrate a basic understanding of the physics principles by mastering the learning objectives for each chapter, which are provided in lecture, the course website and Blackboard. These objectives provide the basis for quizzes and tests.
2. Analyze a physical situation using physics principles and concepts.
3. Apply problem solving skills to work physics problems.
4. Analyze and interpret laboratory data in order to verify God's natural laws
5. Use proper mathematical terminology to correctly phrase physical laws.

Core Competency Outcomes

The student will be able to:

1. Solve problems (including word problems) utilizing arithmetic concepts and algebraic equations. (Mathematics)
2. Interpret information presented in various graphs and diagrams. (Mathematics)
3. Solve problems using insight or logical reasoning. (Mathematics)

VI. Assignments/Requirements

Assignments/Requirements:

Cognitive Growth:	Demonstrate mathematical proficiency by working exercises and solving problems related to the topics discussed (see sections I. and V. above)
Product:	Daily assignments through Web Assign, Problem Sets and in-class quizzes, three in-class tests, lab reports and comprehensive final exam
Process:	A student will demonstrate individual progress by solving problems in daily assignments, quizzes, and tests (see section V. above)

Additional information on Requirements:

a. Reading assignments are to be studied before coming to class. By reading the text before a lecture is delivered, students improve their understanding of physical concepts much better than coming to class unprepared.

b. Homework: most homework sets will be on the WebAssign website. Login at www.webassign.net . Register using your Webassign class key number for your section, found on Blackboard. You will have free access for approximately 1 week. Problem Sets in addition to Web Assign will be assigned from time to time to supplement and complement Web Assign.

c. Quizzes: Announced and unannounced quizzes may be given. Make-up quizzes are given only for serious excuses. Otherwise a grade of zero is given.

d. Exams: Three tests and a final exam will be given. The final exam will be comprehensive, covering all the semester learning objectives. Test dates are given in section X below.

e. Laboratories: The laboratory experiments schedule is given in section X. Each student is responsible for completing the "Advance Study Assignment" prior to the start of the lab.

Short quizzes may be given to insure advance preparation. Laboratory reports not completed by the end of the lab period are due at the beginning of the next lab period or on a the week of a test they are due in class on the Monday following the lab. Late reports will receive a 20% reduction in grade if turned in late on the due day. No credit will be given for labs that are turned in later than the day due unless approved by the instructor. Ignorance of this policy does not constitute an excuse.

f. Students are responsible for all assignments posted in WebAssign and announced in lecture or email. I often email hints/advice so it is in your best interest to read my emails.

VII. Grading Policies

- Quizzes may or may not be announced in advance.
- Online assignments must be completed by the published due dates and should be completed as soon as possible after the material is presented in class.
- No online assignments will be dropped.
- **Tests and quizzes must be taken as scheduled,** except in the case of an excused absence (see attendance policy below). All make-up tests/quizzes must be taken within two days of the scheduled date. 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/quiz 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 within the two day time constraint. If a test cannot be made up within two days, then the score from the final exam may be substituted.
- **NOTE:** ***No formula sheets or cards*** are allowed during any test ***except*** the final. The students must know the formulas --memorize them-- or derive those that can be derived. Physical constants shall be provided on page one of each test when necessary by the professor.
- **CLASS ATTENDANCE:** You are required to attend all classes. Please **be** in class on time. It is the sole responsibility of the student to make-up all missed work.

Course Grade:

Quizzes, WA and Problem Sets: 130 points
Laboratory Grade: 70 points
Test 1: 200 points
Test 2: 200 points
Test 3: 200 points
Final: 200 points

GRADES ARE BASED ON ACADEMIC PERFORMANCE and no extra credit is available.

Letter grades will be assigned as follows:
A 900-1000 points B 800-899 points C 700-799 points D 600-699 points F below 600

Tutoring

Generally we do not provide tutoring for this course. A large part of this course is self-study. It is important you learn how to acquire information from the textbook, notes and lecture without additional help. If you need help then please make use of the office hours.

Study Groups and Submitted Work

Forming study groups is encouraged. However, it is important that you do not simply copy other student's homework. You may check answers, but you should not replicate steps. Exceptions to this rule should be clear; no group work on tests and no group work when I outlaw it. For example, I typically outlaw group work on an easy take-home test. Blatant copying may result in a grade of zero for both students and possible further academic ramifications as suggested by the Liberty Way.

VIII. Attendance Policies

For the good of the Liberty University student body, a consistent attendance policy is needed so that all students in all majors will understand the expectations of faculty in all their courses. **In general, regular and punctual attendance in all classes is expected of all students.** At times, students will miss classes. These absences will be identified as either excused or unexcused and will be handled per the policy below.

Excused Absences

- Excused absences include all Liberty University sponsored events, to include athletic competition or other provost-approved event.
- Absences due to medical illness that are accompanied by a doctor's note will be excused.
- Absences due to family situations such as a death in the family or a severe medical condition will be excused
- Students will **not** be penalized for excused absences and will be permitted to make arrangements to complete missed work.

Unexcused Absences

- Classes that meet:
    - Three times per week will permit three unexcused absences per semester.
    - Twice per week will permit two unexcused absences per semester.
    - Once per week will permit 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. Students may appeal decisions to the dean.
- 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:

  50 points for classes that meet 3 times per week
  75 points for classes that meet 2 times per week
  150 points for classes that meet once per week
- Students who are late for class 10 minutes or less are considered tardy but present for the class. If a student misses in-class work due to tardiness, the faculty member may choose not to allow the student to make up this work. Three class tardies will be counted as one unexcused absence.
- Students who are more than 10 minutes late for class are considered absent

Note: As stated in Section VII, 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

Classroom Etiquette

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.

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 last day of class, a student may withdraw from the course with a grade of W.

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 to the penalties and processes as written in *The Liberty Way*.

LAPTOPS: please no laptops out during lecture, sorry too much surfing has ruined this for everyone. In short, pay attention and don't do stuff that distracts your peers from their learning. Thanks!

X. Calendar for the semester/term

The due dates for the online assignments are posted in Web Assign. Homework is expected to be completed promptly after the material is presented in class.

Note: Students are expected to come to laboratory period having studied the Introduction, Objectives and Theory sections of the lab text and having completed the **Advance Study Assignment.** For all Advance Study Assignments only the **TI** (Traditional Instruction) portion should be completed.

Date	TOPICS	Lab #
Jan 21	(no meeting)	
Jan 28	Experimental Uncertainty and Data Analysis (Omit questions 7 and 8 of the Advance Study Assignment.)	1
Feb 4	The Addition and Resolution of Vectors: The Force Table	2
Feb 11	**Quiz 1**	
Feb 18	**Test 1**	
Feb 25	**(newly added, TBA)**	?
Mar 4	The Scientific Method: The Simple Pendulum	4
Mar 11	**Quiz 2**	
Mar 25	**Test 2**	
Apr. 1	Torques, Equilibrium and Center of Gravity	5
Apr. 8	Simple Harmonic Motion	6
Apr. 15	Air Column Resonance: The Speed of Sound in Air	7
Apr 22	**Quiz 3**	
Apr 29	**Test 3**	

All Labs from Wilson/Hernandez: Physics Laboratory Experiments (Custom Edition).

Final Exam: The final exam schedule can be found on the LU Registrar's Office web pages and it is the student's responsibility to be aware of the date and time for each of his/her finals.

XI. Disclaimer:

While I have attempted to completely specify the content of this course, I reserve the right to change this syllabus if necessary. It is your responsibility to monitor your Liberty University email account for any changes in the syllabus.