

University of North Alabama
Spring 2012

<u>Course</u>	<u>PH 252 Technical Physics II</u>
<u>Credit</u>	Five semester hours
<u>Class Times</u>	Lecture: M,W,TH, F at 10-10:50 Lab: M at 4-5:50 or 6:00-7:50
<u>Textbook</u>	Physics for Scientists and Engineers 8 th ed. By Serway & Jewett
<u>Instructor</u>	Dr. D. Brian Thompson
<u>Office</u>	FSB 219
<u>Telephone</u>	765-4881
<u>Email</u>	dbthompson@una.edu

<u>Office Hours</u>	M	8:30 to 9:00 & 1:00 to 2:00
	T	8:30 to 9:00 & 11:00 to 12:00
	W	8:30 to 9:00 & 1:00 to 2:00
	R	8:30 to 9:30
	F	8:30 to 9:00 & 1:00 to 2:00

<u>Course Description</u>	This calculus-based physics course covers electricity, magnetism, electromagnetism, and light. It is required for pre-engineering, physics, general and professional chemistry, and industrial hygiene programs.
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<u>Learning Objective</u>	Upon Completion of this course, students will <ul style="list-style-type: none">• Demonstrate comprehension of the essential ideas of unifying concepts associated with particle and wave motion• Apply expert problem-solving strategies to address quantitative questions about these topics• And apply these same strategies to address qualitative questions about these topics
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Secondary Education Majors:

<i>Objective:</i>	<i>Demonstrate knowledge of</i> <i>electrical phenomena including electric fields, vector analysis, energy, potential, capacitance, and inductance. 290-3-3-.18(1)(c)4.</i> <i>physics including light, optics, electricity, energy and order, and magnetism. 290-3-3-.15(1)(a)2.(ii) [partial fulfillment of 290.3.3.15(1)(a)2.(ii)-- See Technical Physics I, PH</i>
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251, syllabus for content and assessment related to the remainder of this standard--sound and thermodynamics will be taught and assessed in PH 251.]

physics, including energy, properties and functions of waves, electricity, and magnetism. 290-3-3-.15(1)(b)2.(iii) [partial fulfillment of 290.3.3.15(1)(b)2(iii)—See Technical Physics I syllabus , PH 251, for content and assessment of motions and forces and Modern Physics, PH 343, for content and assessment of stellar evolution.

physics, including electricity, energy, magnetism, optics, as well as basic quantum theory. 290-3-3-.15(1)(c)2.(iii) [partial fulfillment of 290.3.3.15(1)(c)2.(iii)] See Technical Physics I syllabus for content and assessment related to forces and motion, thermodynamics and sound will be taught and assessed in PH 251. Quantum theory will be taught and assessed in Modern Physics PH 343.

wave theory, sound, light, the electromagnetic spectrum, and optics. 290-3-3-.15(1)(d)1.(viii)

electricity and magnetism, including charge, current, electrical potential energy, potential difference, resistance, and electrical power for simple series, parallel, or combination direct current circuits. 290-3-3-.15(1)(d)1.(ix)

fundamental processes of investigating in physics. 290-3-3-.15(1)(d)1.(x)

Course Requirements:

Students will demonstrate an understanding of principles, problems and solutions through collaborative and independent work. 290-3-3.14 (1)(a)4(i); 290-3-3-.18(1)(c)4.; 290-3-3-.15(1)(a)2.(ii)—partial fulfillment; 290-3-3-.15(1)(b)2.(iii) —partial fulfillment; 290-3-3-.15(1)(c)2.(iii) —partial fulfillment; 290-3-3-.15(1)(d)1.(viii); 290-3-3-.15(1)(d)1.(ix); 290-3-3-.15(1)(d)1.(x);

Course Content Topics Include:

Electric Force and Fields, Gauss's Law, Electric Potential, Capacitance, Current and Resistance, Magnetic Force and Fields, Faraday's Law, Electromagnetic Waves, Light and Geometric Optics.

Assessment: Students' knowledge of the course content and each of the stated objectives will be assessed in exam procedures, mid-term or final, or in laboratory reports or exams.

Course Grading

The list of exercises, along with each exercise's contribution to the final grade, is listed below.

Laboratory.....	100 points
Writing Quizzes, Homework.....	200 points
Exams, including final.....	700 points

These exercises sum to a total of 1000 points. Additional exercises, called Reading Quizzes, offer bonus points. The total number of bonus points from Reading Quizzes is 32.

The numerical grade for the semester, obtained using the percentage components listed above, will then be converted to a letter grade for the course according to the following table:

900-1000 points.....	A
800-899 points.....	B
700-799 points.....	C
600-699 points.....	D
>600 points.....	F

In case of school closures due to snow, hurricanes, etc., we may not be able to collect all points during the semester. In that case, the grades will be scaled according the points available.

Course Policies

Class Attendance:

Students are expected to attend all class meetings, and to have read and worked on assigned material beforehand in order to participate fully in class discussions. Missed laboratories cannot be made up.

Homework assignments and reading quizzes will be assigned via the internet. To download and complete homework assignments and reading quizzes, students must have access to the internet. Instructions for accessing these items appear on the next page. If you have difficulty accessing the internet assignments, *see me as soon as possible so that we can make alternative arrangements.*

Academic integrity:

The instructor assumes absolutely the academic integrity of students. However, any student found cheating on an exam will be assigned a final grade of “F” for the course.

Accommodation Statement:

In accordance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973, the University offers reasonable accommodations to students with eligible documented learning, physical and/or psychological disabilities. Under Title II of the Americans with Disabilities Act (ADA) of 1990, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Amendment Act of 2008, a disability is defined as a physical or mental impairment that substantially limits one or more major life activities as compared to an average person in the population. It is the responsibility of the student to contact Disability Support Services to initiate the process to develop an accommodation plan. This accommodation plan will not be applied retroactively. Appropriate, reasonable accommodations will be made to all each student to meet course requirements, but no fundamental or substantial alteration of academic standards will be made. Students needing assistance should contact Disability Support Services (256-765-4214).

Grading Information

Laboratory

Laboratory exercises contribute 100 points (10%) toward a student’s course grade. There are ten laboratory exercises, and so each lab is scored as ten points. Note that a missed lab exercise cannot be made up.

Laboratory exercises are performed each Monday evening. There are two lab sections, one beginning at 4 pm and the other beginning at 6 pm.

Quizzes and Homework

Internet-based Homework Assignments and hand-written Writing Quizzes contribute 200 points (20%) toward a student's course grade. Each of the twenty four internet-based Homeworks counts 5 points, and each of the eight Writing Quizzes counts 10 points.

In addition, there are internet-based Reading Quizzes. Each of the eight Reading Quizzes counts 4 bonus points, for a total of 32 possible bonus points.

Internet-Based Homework Assignments

Once the student accesses her personal homework page on *WebAssign*, she should find a list of internet assignments. Homework assignments in this list appear as links with titles of the form "HW 1a" where the number identifies which exam this homework covers, and the letter identifies the sequence of homeworks covered by the exam. For example, "HW 2c" is the third homework covered by the second exam.

Students are meant to use the homework assignments to learn how to solve problems. Key features of homework assignments:

- **Clicking on a homework assignment will begin that assignment. When a student submits an answer to a question, she finds out immediately whether her answer is correct. Once an answer to a question is marked correct, the student should not submit a new answer to that question.**
- **A student is allowed up to five submissions for each answer in a homework assignment. If a student needs approval for more submissions, that student must come to my office for approval.**
- Points are deducted from the homework assignment from those problems in which the correct answer was not submitted before the due date.
- Answers to questions in an internet homework assignment cannot be submitted after its due date and time. Due dates for homework assignments are shown in assignment schedules posted at regular intervals on the *angellearning* website. The due time of all homework assignments is 4 pm on the date it is due.
- Once a homework assignment's due date expires, a student can still view the assignment but can no longer enter answers to assignment. A student can also view her final score on the assignment. Also, after the due date, the correct answers for each question will be displayed on the assignment.

Internet-Accessed Writing Quizzes

Once a student accesses the course page on her *angellearning* website, she can locate the links to writing quizzes. Writing quizzes are designed to prepare students for the exam, and to monitor a student's progress in learning from her internet-based homework assignment. The writing quiz links have titles of the form "WQ1" and "WQ2" where WQ1 is the first quiz.

Key features of writing quizzes:

- **A student works out answers to writing quiz questions on paper, and submits then paper for grading.**

- Students hand in the paper (stapled or paper-clipped together) at the beginning of lecture on the day it is due. Due dates for the writing quizzes are shown in assignment schedules posted at regular intervals on the *angellearning* website. These quizzes are turned in during lecture on the date it is due.
- Solutions to a writing quiz will be posted outside my office on the day that it was due.
- The graded writing quiz will be returned next lecture.

Internet-Based Reading Quizzes

Once the student accesses her personal homework page on *WebAssign*, she should find a list of internet assignment. On this list, reading quizzes appear as links with titles of the form “RQ 1 sections 23.1-7, 24.1-4” the “RQ X” gives the order number of the reading quiz. The numbers following “sections” shows quiz sections in the textbook are covered by the quiz. In the example given, students should read sections 1 through 7 in chapter 23 and sections 1 through 4 in chapter 24.

These reading quizzes are used by me to monitor how closely you are studying the textbook. They are not example questions for students to learn from. However, students are free to ask about particular questions during lecture. Key features of reading quizzes:

- **You have only one opportunity to take each reading quiz, and each is a timed quiz. Clicking on a reading quiz link will begin the times quiz immediately, and you then have 30 minutes to complete the quiz.**
- **You can only submit one answer to each question in a reading quiz. To do so, after choosing a radio button corresponding to your answer, click on the “submit new answer” button.**
- Answers to questions in a reading quiz cannot be submitted after its due date and time. Due dates for the reading quizzes are shown in assignment schedules posted at regular intervals on the *angellearning* website. Due time for reading quizzes is 10 am on the date it is due.
- Some quiz questions refer to particular examples in the textbook, so it is a good idea to keep scratch paper, calculator, and the textbook nearby.
- A student can find out her total score on a reading quiz after its due date. The student cannot find out which questions in the quiz were marked incorrect, or what the correct answers to the questions are.
- **Recall that points earned for reading quizzes are *bonus points*.**

In-Class Exams

In-class exams contribute 640 points (64%) toward a student’s course grade. Eight exams will be given, and each will be scored on an 80 point scale.

Key features of exams:

- Exam dates are shown in assignment schedules posted at regular intervals on the *angellearning* website.
- Students will have the lecture hour to complete each exam.
- A student may bring with her to the exam: Pens or pencils, a calculator, and one sheet of paper with anything she wants written upon it. Cell phones must be turned off and put away during exam times. After completing the exam, the student will turn in her sheet of paper along with the exam.
- About half the problems on each exam require a quantitative (numerical) solution and a student should show work done to solve the problem. About half the problems require a student should show work done to solve the problem. About half the problems require a qualitative solution, and the student should provide a clear explanation of her solution.

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- Solutions to an exam will be discussed briefly next lecture. At that time, students learn how they scored on the exam. A student cannot keep her exams, so she should write down her score for her own record-keeping.

Final Exam

A two-hour final exam will be held on Monday, May 7 at 8 am. The final exam contributes 60 points (6%) toward a student's course grade.

The final exam is composed of 30 multiple choice questions covering selected topics presented during the semester. Exactly which topics will be identified in the final lectures. A student may only bring with her a pencil to fill out a scantron sheet, a calculator, and a blank sheet of paper. The blank sheet of paper must be turned in with the exam. Only exam scores will be released; we will not discuss exam solution in lecture.

Where to locate scores used for grading:

Scores for Reading Quizzes and Homework are available on *WebAssign*.

Writing Quizzes and Laboratories are handed back in class with scores written on them.

Exam scores are available on the *angellearning* website. Instructions for accessing them are posted there.

Instruction for Accessing Reading Quizzes, Writing Quizzes, and Homework Assignments

The university uses course software located at the website: <https://una.angellearning.com>. The username and password for logging onto this site is the same as those used to log into UNAPORTAL; each student should already know her username and password for logging onto this site. This will bring up a webpage with a link to this course (PH252-01 Technical Physics). Clicking on the link will bring up this course's *angellearning* webpage. On this webpage, you can find links to this course syllabus, to the writing quizzes, and to WebAssign. The links with titles of the form "WQ1" and "WQ2" are the **WRITING QUIZZES**. Clicking on one of these links downloads a pdf that contains the quiz.

Internet homework assignments and reading quizzes are handled at the website: <http://www.WebAssign.net> . In order to access these assignments, **a student eventually must purchase a WebAssign access code. Without an access code, you can still access your assignments during a limited grace period of a few days.** The access code may have come bundled with your new textbook or it can be purchased via credit card directly from the WebAssign website.

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To log into the WebAssign website, each student has a username and password. A student's username is the same as her UNAPORTAL username, initially, a student's password is the same as her username...**it is the student's responsibility to change this password once she has logged onto the website.** Logging in requires entering information into three slots on the WebAssign website. For example, if you were Jennifer Anne Doe, your UNAPORTAL username might be jadoe3. In that case you would enter the following information in the slots:

Username: jadoe3

Institution: una

Password: jadoe3

After entering this information, click on the "Log In" button to access your personal assignments page. At this point, you will be asked to enter an access code, or alternatively, you will be given the option to purchase an access code.

Without an access code, you can still access your assignments during a limited grace period of a few days.

When you have logged in, after entering the access code or not, you should see your personal WebAssign page. On this page, you should see a list of clickable links under the heading "My Assignments." The links with titles of the form "**RQ1 sections 23.1-7, 24.1-4**" and "**RQ 2 sections 25.1-8 26.1-2,4**" are the **READING QUIZZES**. The links with titles of the form "**HW 1a**" and "**HW 2c**" are the **HOMEWORK ASSIGNMENTS**.

Further information about writing quizzes, homework assignments, and reading quizzes is available in the previous sections.