

## SYLLABUS

### PHYSICS 261: ATOMS AND FIELDS

#### SPRING 2013

**INSTRUCTOR:** Prof. Donald Umstadter

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**CLASS MEETING ROOM:** 149 Jorgenson Hall

**CLASS MEETING TIME:** MWF 9:30 AM – 10:20 AM

**OFFICE HOURS:** TBA

**PRE-REQUISITES:** Two years of high-school algebra are required.

**REQUIRED MATERIALS:** **Textbook** (listed below). You will need a **calculator** that is capable of doing sines and cosines, and a **registered radio-frequency clicker for the UNL personal response system**, both of which you will need to bring to class each day.

**TEXT:** *Physics of Everyday Phenomenon, 7E*, by W. Thomas Griffith and Juliet W. Brosing

**MATERIAL COVERED:** We will cover part or all of Chapters 12--21. You are responsible for *all* material presented in lecture, in recitation, and assigned for reading.

**Course Description:** Basic concepts of physics in a historical context and in relationship to the intellectual development of humankind. Atomic structure of matter, states of matter, waves, and light. Practical consequences of the properties of matter and physical phenomena. 3 credit hours.

#### **Course Objectives:**

1. Develop basic science literacy of students, particularly with regard to physics, so that they can better fulfill their role as knowledgeable citizens.
2. Improve students' quantitative reasoning skills.
3. Develop an appreciation for the processes by which scientific knowledge is obtained and evaluated.
4. Develop an understanding of some of the fundamental laws and principles of physics.
5. Develop an understanding of common phenomena from the perspective of physics.

**LEARNING METHODOLOGY:** This is a student-centered-learning course. This entails learning the concepts and methods associated with physics and physics problem solving. Extensive research on learning has shown that mastery of a subject comes not from the instructors or the text, but from the active engagement of every student in the consideration of the concepts and methods of physics. The course activities lead you through the stages of learning from *knowledge* and examples in the textbook and lecture, to *comprehension* of how the concepts work together, to *application* of your mastery in analyzing and solving problems.

**COURSE MATERIALS, LECTURE NOTES, ETC.:** We will cover ten chapters of the textbook during the course of the semester (see **Calendar** on **Webassign**). In addition to reading assignments from the textbook, there are corresponding study materials online.

#### **COMMUNICATION:**

- I am happy to talk to you about any aspect of the course *in person*. Feel free to talk to me during office hours, or before or after class, or make an appointment for a mutually convenient time.

- I may send occasionally e-mail to the class, and so please make sure your correct e-mail address is listed in BlackBoard, and that you check your email regularly.
- If you send me e-mail, please put “PHYS 261” in the subject heading – this allows me to separate your e-mail from all the spam and reply promptly.

**Resource Center:** Besides your instructor and TA, you may get help from recitation instructors who at the Physics Resource Center located in Jorgensen Hall, Room 253. Please consult the Physics Resource Room Schedule in the Main Office, Jorgensen Hall, Room 208, for hours.

**ATTENDANCE: Attendance is required.** In order for students to be prepared to participate in discussions and problem solving during the class meetings, they must have read the assigned reading and taken the online **reading quiz** (discussed below). *Class participation is an important part of the learning process.* Please notify me in advance of any absences, or as soon as possible if your absence is due to an emergency.

**TESTS:** There will be two in-class quizzes, plus one midterm and one final exam. The midterm, final and in-class quizzes will be given exclusively at the **Instructional Design Center, Room # 123 Henzlik Hall**. Note that you *MUST present your NCard to take a proctored exam*. No make-up tests will be given; if you have a conflict, you must notify the instructor at least two weeks in advance. The quizzes and exams will be closed book and notes. A pen or pencil, ruler, calculator, and one 8 1/2" x 11" sheet of notes will be allowed.

Non-programmable calculators may be used in the exams and quizzes.

**FINAL EXAM DATE:** 10:00 to 12:00 noon, Monday, April 29<sup>th</sup>

**EXPECTATIONS OF STUDENTS:**

- It is important that everyone feel free to express his or her understanding – or confusion – during class discussions. Derogatory comments, non-constructive criticism, and other disrespectful behavior (reading newspapers or other materials not related to class, talking while others are talking, etc.) is not acceptable.
- Cell phones must be turned off during class.

**Students with disabilities** are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

**GRADING:** The components that contribute to your grade and their weights are shown in the table to the right.

Although the grading reflects the determination of grades under typical circumstances, the instructor reserves the right to adjust grades - *both up and down* - based upon the subjective assessment of elements such as participation, diligence, and improvement in class performance, among other factors.

**READING QUIZZES:** The philosophy behind “reading quizzes” is to prepare the student for the work done in class. Reading assigned for each class period, and a reading quiz whenever new material is introduced (see **Calendar on Webassign**). The reading must be done and quiz taken *before* the lecture so that you can participate meaningfully in the class discussion.

Item	%
Quiz 1	10
Quiz 2	10
Midterm	15
Final Exam	25
Homework	15
Reading Quizzes	15
In-Class Work	10
<b>Expected Total</b>	<b>100</b>

The goal is to find out what was not clear to you from the reading, so that in class we can focus group discussion on points people do not understand. In preparation for the reading quiz, you should also review the **online study materials** pertaining to the relevant reading assignment, including taking the **Mastery Quiz**, for which answers are provided. A short online **pre-class survey** should be taken before taking the first reading quiz. A reading quiz

should only take a few minutes if you have read the material carefully. You may take each reading quiz twice, and will be assigned the highest score of your two attempts. Of course, there is no point taking the quiz and guessing at the answers prior to reading the assignment. Collaboration is not allowed on the reading quizzes.

**IN-CLASS WORK:** This work is communicated with the personal response system. Your participation will be given credit towards your final grade.

**HOMEWORK:** The problems from the textbook will be assigned and submitted via [WebAssign](#), which will also provide instantaneous grading and feedback. Problems are due at their assigned times (see **Calendar** on **Webassign**). The assignments typically become available at the end of the lecture in which we finished discussing the material from the previous section. No late homework will be accepted.