Walters State Community College
Course Syllabus for PHYS 2120, “Physics 2”
2012 - 2013

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Dr. Eugene de Silva, NSCI 128, Phone 423-585-6890, E-Mail: eugene.desilva@ws.edu

Office Hrs: Posted outside instructor’s door
Dpt. Contact: (423) 585-6865 (Mrs. Sherry Woody), FAX: (423) 585-2762


Catalog Course Description: Thermodynamics, electricity and magnetism, optics, atomic and nuclear physics. (Prerequisite: MATH 1910 and PHYS2110; coreq: PHYS 2121 and MATH 1920) 3 hours lecture, 4 credits

Welcome!
Hello, and welcome to “Physics II.” This four-credit course continues your introduction to physics as an academic discipline. Additionally, it will contribute towards your Natural Science General Education Core Requirements. The class will be divided into four sections: Wave Mechanics – describing the propagation of oscillatory motion; 20th-Century Physics – introducing relativity, quantum mechanics, and atomic and nuclear physics; Electrostatics – the origins and nature of electric fields; and finally, Electromagnetism – the movement and flow of electrons.

Student Learning Outcomes
Here are your student learning outcomes; in other words, these are the things you should know how to do at the end of the semester.

1. Wave Mechanics
   a. Explain the basic qualitative and quantitative aspects of wave behavior.
   b. Calculate wavelengths, frequencies and Doppler shifts as appropriate to the generally accepted level of this course.
   c. Describe the phenomena of diffraction and refraction, as well as solve a variety of computational problems involving those concepts.
   d. Explain the effects and causes of standing waves; make appropriate calculations of such waves.

2. 20th-Century Physics
   a. Explain the concept of energy quantization and how it pertains to light and electron orbitals.
   b. Describe matter waves and explain the Uncertainty Principle.
   c. Describe the basic make-up of nuclei, and the types and origins of nuclear radiation; utilize the concept of half-life.
   d. Explain the “standard model” of particle physics.

3. Electrostatics
   a. Describe the origins of charge; utilize Coulomb’s law to calculate forces between charges.
   b. Explain the concept of electric field and its relationship to charges.
   c. Describe Gauss’ Law and its utility.
   d. Differentiate and utilize the relationship between electric field and electric potential.
4. **Electromagnetism**
   a. Describe how currents can lead to magnetic fields; calculate magnetic fields based on a limited number of simple current geometries.
   b. Explain the concept of flux in the context of Lenz’s law.
   c. Explain the fundamental cause of electromagnetic waves.
   d. Explain the notion of electric potential and how it can be used to calculate potential energy changes.

**Performance Indicators**

In order to issue you a grade for your learning, I have to have some indicators that give me a basis for judging what you’ve learned. There will be reading quizzes, tests, homework, a laboratory grade, and a final exam. The table below shows how the various “events” will be incorporated into your final grade.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>%</th>
<th>Details</th>
<th>If missed (excused)…</th>
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<tbody>
<tr>
<td>Tests</td>
<td>60</td>
<td>Covers conceptual and definitive aspects of recent material. Tests are not cumulative. All tests must be taken to pass the course.</td>
<td>Missed tests are handled on a case-by-case basis. Students should provide notice at least a week in advance; generally, tests will be made-up within a week of the original test date.</td>
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<tr>
<td>Practice Homework</td>
<td>0</td>
<td>A few practice problems will be assigned from the textbook and other sources. Solutions will be presented, and these problems may appear on tests.</td>
<td>Not applicable.</td>
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<tr>
<td>Homework Journal</td>
<td>7.5</td>
<td>One to three problems will be given each day. Solutions should be entered into your Journal, which will be turned-in at the time of the exam and given a score of 0-5, based on completion of assignments</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Pre-class Quizzes</td>
<td>7.5</td>
<td>Before each class, students should complete the online quiz over material they should know before coming to class. Grades will be assigned on completion of quizzes.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25</td>
<td>Comprehensive exam broadly covering all topics of course content.</td>
<td>Consultation with the department chair and the division dean will be required. Notice must be given two weeks in advance.</td>
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The following performance levels will be used for issuing grades.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum Percent</th>
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<tbody>
<tr>
<td>A</td>
<td>≥ 90</td>
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<tr>
<td>B</td>
<td>80</td>
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<tr>
<td>C</td>
<td>70</td>
</tr>
<tr>
<td>D</td>
<td>60</td>
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<tr>
<td>F</td>
<td>&lt; 60</td>
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If you feel that there has been an error in the grading of an individual test or assignment, please let me know within a week of getting it back; I will certainly correct any errors in grading, and I’m happy to consider giving additional credit where it is merited. If you are over-awarded credit, you may consider it a fortuitous gift of Chance; i.e., if you get five points, but only deserved two, I won’t take those extra three points away from you. After one week of being returned, all assigned scores are “locked-in” and will not be changed.

**Classroom Expectations**

My expectations for you are no different than you would have for yourself attending a concert: you would want to arrive on-time; you would want a good seat; you would want to pay close attention so you didn’t miss anything; you would expect others to allow you to enjoy the concert; in short, you would want to maximize your experience. So how do you maximize your experience in class? Be on time. Get a good seat. Pay close attention. Allow others to pay attention.

I also don’t expect any more or less from you than I do from myself:

1. **I’ll come to class ready.** You can too by reading the sections before class. I won’t be a textbook with lips, so you’ll need to keep up with the reading. **Always** start your reading by looking at the
pictures first and then reading the summary; this will give your brain a mental map of the
information that is coming in.
2. I won’t sleep through class. You should make sure you get plenty of rest. Studies show that a
lack of sleep leads to memory retention problems and a decrease in analytical thinking ability.
3. I’ll often have something to drink – and sometimes a snack, but I’ll always take care of my trash
and leave the room clean. If you want to bring a snack or drink, that’s fine; just make sure that
the next person to sit at your desk can’t tell.
4. I won’t talk about you behind your back. If I should do or say something that seems strange or
out-of-line, please come talk to me about it. (If you feel awkward talking to me about it, please
talk with Dr. Jeffrey Horner; he’ll keep your identity anonymous and relay your concern to me.)

Always bring your calculator.

I look forward to having a good semester with you. It will be a great adventure!

I reserve the right to make changes to this syllabus in the event that I might deem such necessary to
enhance the learning experience of all students.

Sean M. Cordry
Additional Important Information

- Students should attend the first day of class or contact the instructor prior to the first class. Failure to do this may result in being dropped from the class.
- Plagiarism, cheating, and other forms of academic dishonesty are prohibited.
- Students with disabilities must register with Student Support Services in the Student Services Building, Room U134 (phone 423-585-6892) if they need any special facilities, services, or consideration.
- Students in need of tutoring assistance are encouraged to contact the Office of Student Tutoring located in the Student Services Building, Room L107 at phone number 423-585-6920 or 423-798-7982 for the Greeneville Campus, 865-908-5494 for the Sevierville Campus, 423-851-4762 for the Claiborne Campus.
- Students receiving any type of financial aid or scholarship should contact the Financial Aid Office before making any changes to their schedule. Schedule changes without prior approval may result in loss of award for the current term and future terms.
- Students who have not paid fees on time and/or are not correctly registered for this class and whose names do not appear on official class rolls generated by the Admissions and Records Office will not be allowed to remain in class or receive credit for this course.
- Cellular phone use during classroom interaction is prohibited. Cellular phones must be turned to the non-audible mode until after class, at which time calls can be received or checked. (See the Walters State Catalog/Handbook)
- For information related to the cancellation of classes due to inclement weather, please check the college’s Web site at www.ws.edu or call the college’s student information line, 1-800-225-4770, option 1; InfoConnect, (423) 581-1233, option 1045; the Sevier County Campus, (865) 774-5800, option 7; or the Greeneville/Greene County Center for Higher Education, (423) 798-7940, option 4. Also, please monitor local TV and radio stations for weather-related announcements. For additional information on this policy see the college catalog.
- In the event of a pandemic or other college declared critical event that impacts the college’s ability to proceed with academic course activities as planned, the college reserves the right to alter this course plan. In the event of a pandemic or other event, please refer to the college’s home web page, www.ws.edu or call InfoConnect, (423) 581-1233 for further information.
- Regular class attendance is a student’s obligation. (See the Walters State Catalog/Student Handbook) If for some reason a student misses class, it is his or her responsibility to see the instructor regarding missed assignments and/or activities and to be prepared for the next class. Excessive absences may substantially lower the semester grade. The college requires the instructor to keep accurate records and to report when students are not attending class.
- The wearing of hats and caps in class is not allowed! Students will be asked to remove their hats and caps.

WSCC Catalog Notification Statement:
All students attending Walters State Community College, regardless of the time and location of the class, must abide by the rules and regulations outlined in the current Walters State Catalog/Student Handbook and the current “Walters State Timetable of Classes.” A copy of the Catalog/Handbook and the “Timetable of Classes” may be obtained from the Admissions Office on the Main campus or at any of our off-campus sites. You may also access the Catalog/Handbook on-line at the following web address: http://www.ws.edu/catalog.
Alternative Teaching Plan
In the event of a pandemic or other college declared critical event, the lead faculty member for this course will use eLearn to communicate with the students. If the lead faculty member is affected by this event, another member from the teaching team will assume instruction for the course. The course will continue utilizing an online format of instruction and testing.

ATTENTION: The Natural Science faculty members are concerned with proper academic advising of students in ALL Pre-Professional programs. It is our explicit desire to help you with any advising problems you may encounter.