Syllabus for PHY 213 Fall 2009
General Physics II

Lecture: T R 9:30–10:50, CP 153
Instructor: Christopher B. Crawford
CP 373, 257-2504, crawford@pa.uky.edu
Office hours: M 2:00-3:00 pm, R 11:00-12:00 in MI King Library, Room 310
Homepage: http://www.pa.uky.edu/~crawford/phy213

Course Description

Physics 213 is designed to provide the student with an introduction to electricity, magnetism, optics, and modern physics in a non-calculus framework. The objective are for each student to develop (1) a conceptual understanding of the basic principles; and (2) a flexible, logical problem solving methodology applicable, not only to this course, but to the greater academic and career challenges ahead.

This intensive 5 hour course builds on the classical concepts developed in PHY 211: vectors, forces, fields, and conservation of energy. The course begins with a survey of basic laws of electricity and then analyzes some basic electrical devices. It continues with magnetism and explores several electromagnetic devices. Electromagnetic phenomena (optics) are investigated using principles from both sides of the wave-particle duality. The last phase of the course introduces aspects of modern physics, including some special relativity, quantum mechanics, and general topics in atomic, nuclear, and particle physics. See the schedule below for sections covered in the text.

Grading

Three keys to success in this or any course are: a) reading the assigned text ahead of class, b) actively participating in class, and c) working through significant problem sets. The grading system is set up encourage each of these.

QUIZES – Quiz questions will be given randomly during lecture using the Turning Point student response system. For class participation, you must purchase a TurningPoint RF clicker. The clickers are bundled with the textbooks in the bookstore. If you have already purchased your textbook, you can buy just the clicker at the bookstore. Make sure you purchase the right clicker! You must then register your clicker before the second day of class. There will be no make-up quizzes for students who miss class.

RECITATION – Regular quizzes will be given by your recitation instructor during recitation.

HOMEWORK – Weekly homework will be assigned/submitted through the WebAssign online homework system. The homework will be assigned each Tuesday morning, and will be due the
following Monday at 11:59 PM, as listed in the course schedule. Every student must register with
the online homework service WebAssign. Vouchers for WebAssign access are bundled with new
textbook purchases at campus area bookstores, or students can purchase WebAssign access using
a personal credit card at the website https://www.webassign.net/student.html . Use your UK
“Active Directory ID” as your login name. The lowest two homework scores will be dropped, but
extensions will not be granted.

LAB – Refer to the Laboratory syllabus for more information.

EXAMS – Three 75 minute exams and a 2-hour cumulative final exam will be administered as
scheduled below. These exams will cover the assigned reading, lecture material, lecture quizzes,
recitation homework and quizzes, and topics from laboratory. Students may prepare and bring a
single-sided $8\frac{1}{2} \times 11''$ reference sheet for each 1-hour exam and for a double-sided sheet for the final
exam.

MAKEUP EXAMS – Students who are forced to miss an exam due to unavoidable circumstances
(illness, death in the family, athletic tournament, etc.) must contact their recitation instructor. The
recitation instructor will determine if the absence is to be excused in accordance with University
Senate Rules on excused absences. Students with an excused absence will be allowed to take a
makeup exam. No more than one makeup exam will be approved for any student except in unusual
and very well documented cases.

EXAM DISCREPANCIES – Students with exam discrepancies should record, specifically, those
items they would like considered for re-evaluation and return their exam to the recitation instructor
before leaving the classroom. All other students can retain their exams. No consideration will be
given to exam discrepancies submitted after the student has left the classroom.

DISABILITY – Students with a certified disability should provide this information to the instructor
no later than the last day for adding a class so that beneficial arrangements can be made (see
http://www.uky.edu/StudentAffairs/DisabilityResourceCenter).

CONDUCT – All students enrolled in PHY 211 are governed by the University’s Student Rights
and Responsibilities document, available online at http://www.uky.edu/StudentAffairs/Code/ . In
particular, Part II Sec. 5.2.4.2 relates to excused absences, and Secs. 6.3.0B4.11 relate to cheating
and plagiarism. Students are strongly cautioned that instances of cheating and/or plagiarism will
be investigated fully and that penalties can be severe. (For a definition and discussion of plagiarism,
see: http://www.uky.edu/Ombud/Plagiarism.pdf .)

Grades will be assigned as follows:

<table>
<thead>
<tr>
<th>Grade Breakdown</th>
<th>Letter Grade</th>
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</thead>
<tbody>
<tr>
<td>midterm exams</td>
<td>A (90–100%)</td>
</tr>
<tr>
<td>final exam</td>
<td>B (80–89%)</td>
</tr>
<tr>
<td>lecture quizzes</td>
<td>C (70–79%)</td>
</tr>
<tr>
<td>recitation quizzes</td>
<td>D (60–69%)</td>
</tr>
<tr>
<td>homework</td>
<td>E (00–59%)</td>
</tr>
<tr>
<td>laboratory</td>
<td>TOTAL 800</td>
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</tbody>
</table>
Resources

• Physics Resource Room

The Resource Room is located in Room 310J of the M. I. King Science Library. It is staffed by Physics and Astronomy graduate students, who are available to assist you with your physics homework and questions. Staff are generally available between 10:00am and 5:30pm, but consult the schedule posted in the Resource Room for exact hours. The Resource Room is a free service of the Department of Physics & Astronomy.

• Science Library

You may find that other textbooks may provide you with a different perspective if you have difficulty understanding something in the course textbook.

• Fellow students

You are encouraged to collaborate on homework problems and general study. On recitation quizzes and exams, you must show only your own work and not consult with others.

• The Study

Academic Enhancement is dedicated to improving all students overall academic experience at the University of Kentucky. The Study, located on the 3rd floor of the Complex Commons Building on south campus, is home to Academic Enhancement. The Study offers a welcoming environment for students to come early in the semester and as often as they like to access any of our popular programs including: Peer Tutoring Program, Individual Academic Consultations, Guided Study Groups, Study Smarter Seminars. See http://www.uky.edu/UGS/study/ for more information.

• UK Disability Resource Center, http://www.uky.edu/StudentAffairs/DisabilityResourceCenter, 2 Alumni Gym, 859-257-2754 (Voice and TTD)

• UK Counseling and Testing Center, http://www.uky.edu/StudentAffairs/Counseling, 201 Frazee Hall, 859-257-8701


• UK Writing Center, http://www.uky.edu/AS/English/wc/, WTY Library, T.D. Clark Study, 5th Floor, West Wing, (859) 257-1368

• Violence, Intervention and Prevention Center, http://www.uky.edu/StudentAffairs/VIPCenter/, 106 Frazee Hall, 859-257-3574 or -3564

• The Students of Concern (SOC) Committee, Dean of Students Office, (859) 257-3754

Course evaluation

Course Evaluations are an important (and mandatory!) component of our Department’s instructional program. An on-line course evaluation system was developed to allow each student ample
time to evaluate each component of the course and instructor, thus providing the Department with meaningful numerical scores and detailed commentary while minimizing the loss of instructional time in the classroom. The evaluation window for Fall 2009 will open on Wednesday, 18 November 2009 and close on Wednesday, 9 December 2009. To access the system during this time, simply go the Department of Physics Web page at http://www.pa.uky.edu and click on the link for Course Evaluations; then follow the instructions. You will need to use your student ID# to log into the system, and this will also allow us to monitor who has filled out evaluations. However, when you log-in you will be assigned a random number that will keep all your comments and scores anonymous.

**Schedule**

<table>
<thead>
<tr>
<th>Mon.</th>
<th>Recitation</th>
<th>Tues. Lecture</th>
<th>Text</th>
<th>Thurs. Lecture</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/31</td>
<td>Introduction</td>
<td>9/1 Electric Charge</td>
<td>15.1-3</td>
<td>8/27 Introduction</td>
<td>none</td>
</tr>
<tr>
<td>9/07</td>
<td>Labor Day</td>
<td>9/8 Gauss’ Law, HW1</td>
<td>15.7-9</td>
<td>9/3 Electric Fields</td>
<td>15.4-6</td>
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<tr>
<td>9/14</td>
<td>Q1 HW2</td>
<td>9/15 Capacitance</td>
<td>16.6-10</td>
<td>9/10 Electric Potential</td>
<td>16.1-4</td>
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<tr>
<td>9/21</td>
<td>Q2 HW3</td>
<td>9/22 Circuits</td>
<td>18.1-3.5</td>
<td>9/17 Electric Current</td>
<td>17.1-7</td>
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<tr>
<td>9/28</td>
<td>Q3 HW4</td>
<td>9/29 Magnets</td>
<td>19.1-5</td>
<td>9/24 Exam 1</td>
<td>15-18</td>
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<tr>
<td>10/5</td>
<td>Q4 HW5</td>
<td>10/6 Faraday’s Law</td>
<td>20.1-4</td>
<td>10/1 Ampere’s Law</td>
<td>19.6-10</td>
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<td>10/12</td>
<td>Q5 HW6</td>
<td>10/13 Alternating Current</td>
<td>21.1-7</td>
<td>10/8 Inductance</td>
<td>20.5-8</td>
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<tr>
<td>10/19</td>
<td>HW7</td>
<td>10/20 Exam 2</td>
<td>19–21</td>
<td>10/15 E&amp;M Waves</td>
<td>21.8-12</td>
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<tr>
<td>10/26</td>
<td>Q6 HW8</td>
<td>10/27 Mirrors</td>
<td>23.1-3</td>
<td>10/22 Refraction</td>
<td>22.1-7</td>
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<tr>
<td>11/2</td>
<td>Q7 HW9</td>
<td>11/03 Interference</td>
<td>24.1-4</td>
<td>10/29 Lenses</td>
<td>23.4-7</td>
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<tr>
<td>11/9</td>
<td>Q8 HW10</td>
<td>11/10 Optical Instruments</td>
<td>25.1-7</td>
<td>11/5 Diffraction</td>
<td>24.6-9</td>
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<tr>
<td>11/23</td>
<td>Q10 HW12</td>
<td>11/24 Quantum Mechanics</td>
<td>27.1-5</td>
<td>11/19 (E = mc^2)</td>
<td>26.5-7</td>
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<tr>
<td>11/30</td>
<td>Q11</td>
<td>12/01 Duality</td>
<td>27.6-8</td>
<td>11/26 Thanksgiving</td>
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<tr>
<td>12/7</td>
<td>Q12 HW13</td>
<td>12/08 Nuclear Physics</td>
<td>29.1-4</td>
<td>12/03 Atomic Physics</td>
<td>28.1-5</td>
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<tr>
<td>12/15</td>
<td></td>
<td></td>
<td></td>
<td>12/10 Particle Physics</td>
<td>30.1-6</td>
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Important dates:

- **Aug 27**  First day of class
- **Sep 1**  Last day to add a class
- **Sep 7**  Labor Day — Academic Holiday
- **Sep 16**  Last day to drop a class without it appearing on the transcript
- **Sep 23**  Last day to withdraw from a class
- **Oct 19**  Midterm
- **Nov 18−Dec 9**  Course Evaluation Window
- **Nov 25−28**  Thanksgiving — Academic Holidays
- **Dec 10**  Last day of class
- **Dec 15**  Final examination