PHY 212: General Physics II – Electricity, Magnetism, & Light
Spring 2011 Course Syllabus

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Introduction
In Physics 212 you will learn about three fascinating subjects:

• electricity
• magnetism
• and light

The importance of the phenomena encompassed by these subjects cannot be exaggerated. They make possible conveniences of modern technology like wireless communication, microwave ovens, light bulbs and electric power stations. Moreover, they include many things that we might take for granted like the sunlight that heats our planet, the chemical bonds that hold us together, and the signals that beat our hearts.

Given such importance, what is perhaps most remarkable about the phenomena of electricity, magnetism and light is that they are consequences of a single thing: electric charge. This fundamental property of matter is the source of the electric and magnetic forces and the electromagnetic radiation that dominate our lives. During the semester, you will start to explore the nature of electric charge. You will learn some of the basic rules and concepts that we use to describe the behavior of charge and account for a wide range of electric and magnetic phenomena. From these studies, you will develop a solid foundation from which to begin to understand the electromagnetic world in which we live.

This syllabus is posted at http://www.phy.syr.edu/~mlahaye/PHY212S11/Syllabus.pdf.
Course Details

Instructors  
Matthew LaHaye, Assistant Professor of Physics. e-mail: mlahaye@syr.edu. Telephone: 315-443-2564. Office and hours: 209 Physics Bldg.. Mondays, 4:00-5:00 PM; you can also drop by at your convenience, or make a specific appointment.

Lecture times  
Tuesdays & Thursdays, 12:30 – 1:50 PM, Stolkin Auditorium, First floor of the Physics Bldg.

Credits  
3

Prerequisites:  
(i) PHY 211/221 (General Physics I), (ii) MAT 285 or MAT 295 (Calculus I).

Co-requisites  
(i) PHY 222 (General Physics II Laboratory) (ii) MAT 286 or MAT 296 (Calculus II).

Recitation  
Your recitation section will meet for 55 minutes each Wednesday and Friday, generally in room 104N of the Physics Bldg..

Getting forms signed  
To add or drop this course, or to change recitation or laboratory sections, please contact Diane Sanderson. E-mail: dbsander@syr.edu. Room 111 or 201 of the Physics Bldg.

Blackboard  
Course information is being posted at Syracuse University’s blackboard website http://blackboard.syr.edu/

Physics clinic  
A physics clinic is operated in room 104S of the Physics Bldg.. You can drop by to get help with physics problems. The clinic hours are posted here: http://www.phy.syr.edu/courses/clinic_schedule/clinicscheduleSpring_2011.pdf. The clinic is staffed by the recitation instructors, who do not usually have separate office hours.

Textbooks and Clickers

(i)  

(ii)  
This textbook has a *Student Workbook* (ISBN 978-0-321-51629-9) that will also be used this semester; the two volumes have been bundled together at the SU Bookstore. Free-standing copies of the *Student Workbook* may also be purchased at the Bookstore.

(iii)  
*i>clicker*. The lecturer will be asking "clicker questions" this semester. If you took PHY 211 last semester, you should already have a clicker. There is a rebate coupon included with the textbook bundle if you need to purchase a clicker.
Calendar (including quiz and exam dates)
The Date indicated in the table is the date of the Tuesday lecture in each week. The lecture topics on this calendar are provisional, and may change during the semester.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/18</td>
<td>Electric charges and electric forces (26)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/25</td>
<td>Electric fields (27)</td>
<td>Quiz 1: Tuesday, 1/25.</td>
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<tr>
<td>3</td>
<td>2/1</td>
<td>Gauss’ Law (28)</td>
<td>Quiz 2: Tuesday, 2/1.</td>
</tr>
<tr>
<td>4</td>
<td>2/8</td>
<td>Electric potential (29)</td>
<td>Quiz 3: Tuesday, 2/8.</td>
</tr>
<tr>
<td>5</td>
<td>2/15</td>
<td>Electric potential &amp; field (30).</td>
<td>Exam I: Tuesday, 2/15.</td>
</tr>
<tr>
<td>6</td>
<td>2/22</td>
<td>Electric potential &amp; field (30); electrical current (31).</td>
<td></td>
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<tr>
<td>7</td>
<td>3/1</td>
<td>Electrical current (31); electric circuits (32)</td>
<td>Quiz 4: Tuesday, 3/1.</td>
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<tr>
<td>8</td>
<td>3/8</td>
<td>Electric circuits (32)</td>
<td>Exam II: Thursday, 3/10</td>
</tr>
<tr>
<td>9</td>
<td>3/15</td>
<td>Spring Break</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>3/22</td>
<td>Magnetic fields &amp; forces (33)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3/29</td>
<td>Magnetic fields &amp; forces (33); Induction &amp; Faraday’s law (34)</td>
<td>Quiz 5: Thursday, 3/31.</td>
</tr>
<tr>
<td>12</td>
<td>4/5</td>
<td>Induction &amp; Faraday’s law (34)</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>4/12</td>
<td>Electromagnetic waves (35)</td>
<td>Exam III: Tuesday 4/12.</td>
</tr>
<tr>
<td>14</td>
<td>4/19</td>
<td>Electromagnetic waves (35)</td>
<td>April 22: Good Friday; no recitation.</td>
</tr>
<tr>
<td>16</td>
<td>5/3</td>
<td>The Light Show.</td>
<td></td>
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<tr>
<td>17</td>
<td>5/10</td>
<td>Final Exam: Tuesday, May 10</td>
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<td></td>
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<td>Time: 8:00 – 10:00 am</td>
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<td></td>
<td></td>
<td>Location: Stolkin Auditorium</td>
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Assignments, exams, and grading

Assignment sheets and recitation
For each meeting of your recitation section there will be a corresponding homework assignment that includes readings and problems for you to solve. You should pester anybody you can to get help in understanding the text, the lectures, and the problems. The physics clinic is one place where you should get a friendly response. At the recitation section meetings, you will have a chance to review the problem solutions with other students before presenting them to the whole section. Your recitation grade will be based upon the following: your attendance, your efforts to complete the homework assignment before each recitation, and your participation in the discussion of the assigned problems. Bottom line: show up to recitation prepared.

The first assignment sheet is posted here:


Quizzes
There will be a 15-minute written quiz given at many Tuesday lectures as indicated in the course calendar. There are two types of problems on the quizzes. Half or more will be based on the homework assignments. The remainder will be problems based on topics discussed in lecture or in the assigned textbook reading.

The quizzes are closed book. Please bring a calculator. The quizzes will be graded by your recitation instructor and returned to you during your recitation section meeting.

There are no makeup quizzes. To allow for illness or family emergencies, the two lowest quiz grades will be dropped before computing your final quiz grade. If you miss more than two quizzes entirely due to illness or family emergencies, please consult the professor.

Examinations
Three midterm examinations and one final examination will be given in this course. The dates and times are listed on the course calendar.

The midterm examinations occupy an entire lecture period of 80 minutes. Lists of examination seating assignments will be posted near the entrances prior to each examination; please sit in your assigned seat for the exam. The midterm examinations are closed book. However, you may bring a single sheet (8.5x11 inches, of A4) of handwritten notes (no Xeroxes, etc.) to each examination. You can write on both sides of your sheet. The notes should be turned in with your exam. Please bring a calculator to the examinations.

There are no makeup midterm examinations; if you are ill, or if you have a family emergency, the examination which you miss will be dropped in computing your grade. For students who take all three examinations, the lowest of your three examinations scores will be dropped before your grade is computed. If you miss two exams entirely due to illness or family emergencies, please consult the professor.
The final examination is cumulative and covers all the material in the course. You will be allowed four (4) sheets of handwritten notes on the final examination, which is otherwise closed book; one possibility is to re-use your sheets of notes from the earlier examinations.

**Grading**

The distribution of points used in determining your final grade is:

- Recitation participation: 10
- Quizzes (best 4 out of 6): 20
- Midterm Examinations (20 apiece, best 2 out of 3): 40
- Final Examination & i>clicker questions: 30. If your i>clicker average is greater than your final exam score, then you will receive an i>clicker grade of up to 5 points and the final exam will be worth 25 grade points. Otherwise your final exam will be worth 30 points.

**Grading scale**

Your grade in this course is **not based on how well other students are doing**. It is possible for every student in the class to get an "A". Admittedly, this has never happened (yet). Your course grade will be based on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>85-100</td>
</tr>
<tr>
<td>A–</td>
<td>80-84</td>
</tr>
<tr>
<td>B+</td>
<td>75-79</td>
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<tr>
<td>B</td>
<td>70-74</td>
</tr>
<tr>
<td>B–</td>
<td>65-69</td>
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<tr>
<td>C+</td>
<td>60-64</td>
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<tr>
<td>C</td>
<td>55-59</td>
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<tr>
<td>C–</td>
<td>50-54</td>
</tr>
<tr>
<td>D</td>
<td>40-49</td>
</tr>
<tr>
<td>F</td>
<td>0-39</td>
</tr>
</tbody>
</table>

**i>clicker registration**

Please register your i>clicker at the manufacturer's website [http://www.iclicker.com/registration/](http://www.iclicker.com/registration/). The form there asks for your "Student ID"; please enter your SU netid username that is used for @syr.edu e-mail, Blackboard, etc.. For example, Prof. LaHaye's SU username is "mlahaye".

Do not register using your student ID number. If you previously registered using the ID number, please re-register your clicker.

**Laboratory**

PHY 222 is the laboratory component of PHY 212, but it is taught independently of PHY 212. The syllabus and schedule for PHY 222 is posted here: [http://www.phy.syr.edu/courses/PHY222%20.11Spring.pdf](http://www.phy.syr.edu/courses/PHY222%20.11Spring.pdf).

**Disability accommodation**

Students who are in need of disability-related academic accommodations must register with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498. Students with authorized disability-related accommodations should provide a current Accommodation Authorization Letter from ODS to the instructor and review those accommodations with the instructor. Accommodations, such as exam administration, are not provided retroactively; therefore, planning for accommodations as early as possible is necessary. For further information, see the ODS website, Office of Disability Services [http://disabilityservices.syr.edu/](http://disabilityservices.syr.edu/).
Academic integrity
The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see http://academicintegrity.syr.edu.