PHY 212: General Physics II – Electricity, Magnetism, & Light
Spring 2012 Course Syllabus

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Introduction

In Physics 212 you will learn about three fascinating subjects:

• electricity
• magnetism
• and light

The phenomena encompassed by these subjects are ubiquitous in nature and are of fundamental importance for our everyday lives. They make possible conveniences of modern technology like wireless communication, various medical diagnostic techniques, light bulbs and electric power stations to name a few. 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.

The objectives of this course are: (1) To develop a basic understanding of the laws of electromagnetism; (2) To develop the ability to apply these new concepts, both qualitatively and quantitatively, to familiar and unfamiliar physical situations; and (3) To develop an appreciation for the essential role that electromagnetism plays both in our modern society and in the natural world at large.

This syllabus is posted at http://www.phy.syr.edu/~mlahaye/PHY212S12/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 and Wednesdays, 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, including assignments, announcements and grades, will be posted at Syracuse University’s blackboard website http://blackboard.syr.edu/.

**Web Page**  
Assignments will also be posted on the course web page (http://www.phy.syr.edu/~mlahaye/PHY212S12/).

**Mastering Physics (MP)**  
MP can be accessed at: http://www.pearsoncustom.com/ny/su_physics/.  
The course ID is: LAHAYEPHY212.  
Please see attached sheet for instructions on registering for and logging in to MP.

**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.htm. The clinic is staffed by the recitation instructors, who do not usually have separate office hours.

Textbooks and Mastering Physics Student Access Code


(ii) This textbook has a *Student Workbook* (ISBN 978-0-321-51629-9) that will also be used this semester. Available at SU Bookstore.

(iii) *Mastering Physics Student Access Code with e-book* (ISBN 978-0-321-64129-8). The student access code will enable you to log in to MP and complete the weekly, online Mastering Physics assignments as well as work through many helpful tutorials related to the material covered in the course.

(iv) The three items above can also be purchased bundled together at the SU Bookstore for a reduced price. Free-standing copies of each item may also be purchased at the Bookstore.

And you will need the accompanying Student Workbook (ISBN: 978-0-321-51628-2). If you took PHY 211 in the Fall 2011, you should already have a copy of these texts. However, the Vol. III textbook is also available as part of the custom e-book which comes with the Mastering Physics Student Access Code. As well, individual copies of both will be available in the SU Bookstore.

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. Under Topic, the number in parenthesis is the corresponding chapter in the text.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/17</td>
<td>Electric charges and electric forces (26)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/24</td>
<td>Electric fields (27)</td>
<td>Quiz 1: Tuesday, 1/24.</td>
</tr>
<tr>
<td>3</td>
<td>1/31</td>
<td>Gauss’ Law (28)</td>
<td>Quiz 2: Tuesday, 1/31.</td>
</tr>
<tr>
<td>4</td>
<td>2/7</td>
<td>Electric potential (29)</td>
<td>Quiz 3: Tuesday, 2/7.</td>
</tr>
<tr>
<td>5</td>
<td>2/14</td>
<td>Electric potential &amp; field (30).</td>
<td>Exam I: Tuesday, 2/14.</td>
</tr>
<tr>
<td>6</td>
<td>2/21</td>
<td>Electric potential &amp; field (30); electrical current (31).</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2/28</td>
<td>Electrical current (31); electric circuits (32)</td>
<td>Quiz 4: Tuesday, 2/28.</td>
</tr>
<tr>
<td>8</td>
<td>3/6</td>
<td>Electric circuits (32)</td>
<td>Exam II: Thursday, 3/8</td>
</tr>
<tr>
<td>9</td>
<td>3/13</td>
<td></td>
<td>Spring Break</td>
</tr>
<tr>
<td>10</td>
<td>3/20</td>
<td>Magnetic fields &amp; forces (33)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3/27</td>
<td>Magnetic fields &amp; forces (33); Induction &amp; Faraday’s law (34)</td>
<td>Quiz 5: Thursday, 3/29.</td>
</tr>
<tr>
<td>12</td>
<td>4/3</td>
<td>Induction &amp; Faraday’s law (34)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>4/17</td>
<td>Electromagnetic waves (35)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>5/1</td>
<td>Interference &amp; light.</td>
<td>Final Exam: Friday, May 4. Time: 5:15-7:15 pm. Location Stolkin Auditorium</td>
</tr>
</tbody>
</table>

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.

At the end of the semester your lowest two recitation grades will be dropped.

Assignment sheets will be posted on Blackboard and the course webpage generally at the beginning of
each week.

The first assignment is posted at http://www.phy.syr.edu/~mlahaye/PHY212S12/PHY212S12assign1.pdf.

**Mastering Physics Homework**

Generally each week there will be one Mastering Physics (MP) assignment which will be **due on**
**Wednesday and must be completed by 9pm.** Each week’s MP assignment will be specified in the
assignment sheet handed out at the beginning of the week. Mastering Physics is a web-based
homework assignment and grading system. You enter your solutions via the web. Feedback, assistance,
and tutorials are provided. The **course ID is LAHAYEPHY212.** You will need the access code provided
with the purchase of a new textbook to register. If you already have a text, you can purchase the access
code by itself from the SU bookstore or on-line. Instructions for registering and logging into MP are
provided on the sheet attached to the end of this syllabus.

**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
- Mastering Physics Homework: 5
- Quizzes (best 4 out of 6): 15
- Midterm Examinations (20 apiece, best 2 out of 3): 40
- Final Examination: 30

**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>Points</th>
</tr>
</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>
</tr>
<tr>
<td>B</td>
<td>70–74</td>
</tr>
<tr>
<td>B–</td>
<td>65–69</td>
</tr>
<tr>
<td>C+</td>
<td>60–64</td>
</tr>
<tr>
<td>C</td>
<td>55–59</td>
</tr>
<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>

**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.htm.

**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/.

**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.
Religious Observance Policy

SU’s religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances from the first day of class until the end of the second week of class. For more information on SU’s religious observance policy, please see http://supolicies.syr.edu/emp_ben/religious_observance.htm.
Student Registration Instructions

Your class will be using a custom-built online educational resource. Once you register, you will have easy access to all your materials with just a few clicks!

To register for your course, you will need:
- A Student Access Code (This code can be found on your Online Access card. Example: SIMPLE-FRILL-TONLE-WEIRS-CHOIR-FLEES)
- Your school’s zip code
- A valid email address

How to Register for and Access Mastering Physics

1) Enter the URL for your custom course into your web browser. The URL can be found on the Online Access card that came with your textbook. If you do not have an access code, you might be able to purchase access online. If there is an online purchase option, you will see a Buy or Purchase Access button.
2) Click Register.
3) Read the License Agreement and Privacy Policy and click I Accept.
4) Do you have a Pearson account?
   a. Select Yes if you already have a Pearson account
   b. Select No if you do NOT have a Pearson Account.
   c. Select Not Sure if you do not know if you have a Pearson Account.
5) Type in your Student Access Code in the fields provided and click Next.
6) Fill out the fields on the Account Information screen and click Next.
7) When successful, you will see a Confirmation & Summary page with your account information. This information will also be emailed to you – be sure to keep this email for future reference.
8) Click the Log In button on the Confirmation & Summary page to view your course.
9) You will then have the option of either clicking on the Mastering Physics link or on the link to the custom etext. Assignments will be found in the Mastering Physics link.

Important Note: Each time you access your course, you will need to log in

Need Help?
Assistance is available at
http://www.pearsoncustom.com/_global/productinfo/websites/_24_7/

Good luck in your course!