Syllabus PHY 232 – Fall 2007

• Course website: [http://www.nscl.msu.edu/~zegers/phy232.html](http://www.nscl.msu.edu/~zegers/phy232.html)

• Instructor
  Remco G.T. Zegers (Tue/Thu 6:10-7:30) – please call me Remco
  Office W109, Cyclotron Building
  Phone: 517-333-6473
  email: zegers@nscl.msu.edu
  Office hours: place BPS 1248 (Helproom) on Thursday from 4:30-5:30 pm or by appointment.

If you can’t make it to the office hours and need to contact the instructor, send an email and, if necessary, make an appointment. When sending an email, make sure to use your msu email, since email sent from yahoo/gmail etc often get blocked by SPAM filters.

• Teaching Assistants:
  o David Lincoln
  o Daniel Schindel
  o Colby Hollek

• Course description: Electricity and magnetism; optics; atomic, nuclear, and particle physics. Algebra-based.

• Textbook: College Physics, Volume 2: PHY232 by Serway & Faughn. This is a soft cover edition especially made for MSU. Using editions 5,6 or 7 which come in hardcover, either as one thick book (i.e. also including the PHY231 chapters) or as two books (one containing the chapters for PHY231 and the other for PHY232), is perfectly fine as well.

• Prerequisites: PHY 231 or PHY 231B or PHY 181B or PHY 183 or PHY 183B or LBS 271 or PHY 193H or PHY 231C

• Not open to students with credits in: PHY 184 or PHY 184B or PHY 232B or LBS 272 or PHY 182B

Course material and exam/homework/quiz information.

• Readings
  o To prepare yourself most efficiently, it is strongly encouraged to read the relevant chapters of the textbook before coming to class (see calendar). Moreover, the lecture notes will be posted before class, without solutions to the problems. Full lecture notes will be posted after a chapter has been finished.

• Helproom
  o The Strosacker Physics Learning Center (BPS 1248) will be available to work with other students on the homework. TAs will be present to answer questions.
- Helproom hours: Mon 2-3 pm, Tue 2-3 pm, Thu 9am-1pm and 2-9pm and Friday 11am-6pm. The first week will have a reduced schedule.

- Homework
  - There will be 11 homework assignments, due usually on Friday evening at Midnight, unless announced otherwise (see schedule below). Homework set 0 is a practice set and is not graded. The homework sets are distributed through the LON-CAPA online system (http://msu.lon-capa.org). When logging in using your MSU pilot username and password, please make sure to enable ‘Cookies’ and ‘Java-script’ in your browser. After logging in, navigate to the PHY232 class and locate the folder ‘Homework sets’.
  - Homework sets will be open for answering about two weeks before the set is due. Note that the deadline for submitting your homework is very strict. Make sure not to wait until the last moment to do your homework and to have access to a reliable internet connection.
  - If you are not able to do a homework set for a good reason (e.g. sickness), contact your instructor so that the deadline can be extended.
  - Communicating inside & outside LON-CAPA: It is strongly encouraged to work together, if you feel it is beneficial for your understanding of the material. Besides meeting in for example the helproom, there is also a communication tool available in LON-CAPA, reachable using the ‘post discussion’ link under each problem. You can post questions or respond to other peoples’ questions. You can post comments anonymously if you wish (Course instructors will however always be able to see your name.) Working together can be very helpful, but simply copying homework assignments will, in general, be very detrimental to your overall score, since you might not be able to do many of the exam problems.

- Quizzes
  - Multiple-choice quizzes for extra credit will be given randomly in class during the semester. You will need a HITC clicker to participate in these quizzes.
  - It is strictly forbidden to bring clickers of fellow students who are not present during the lecture.
  - You have to enter your clicker ID number in Lon-Capa before midnight, Friday 7 September).

- Exam information:
  - There will be two midterm exams during regular class hours. The exams will be closed book, but you may use one (double-sided) 8 1/2x11” sheet of hand-written notes and equations. Exams may contain material from the textbook, lectures, homework and quizzes.
There will be one 2-hour final exam at a place and time to be announced. 3 8 1/2x11" sheets of hand-written notes may be brought into the exam. The final exam is cumulative (i.e. covers all material).

exams will consist of three parts:

- about 20% of the questions will be questions about definitions and basic facts.
- about 35% of the questions will be conceptual (i.e. not requiring complex calculations).
- about 45% of the questions will be numerical questions.

Students must work individually and people observed exchanging information before all exams are handed in will be given a zero.

You will need a calculator, a #2 pencil and your student ID when taking an exam.

Make-ups: Attendance of a make-up exam requires approval from the instructor and evidence of a serious conflict (e.g. Doctor, Dean, Coach etc) must be provided before the exam date. As a rule, make-up exams are scheduled BEFORE the regular exam dates.

Grading criteria
Grades are assigned based on homework, exams and quizzes as follows:

- **Homework:** 15% of the grade. The homework is graded on 90% of the homework problems (i.e. you can miss 10% of the problems and still get the full credit for the homework)
- **Midterm exams** (3): 25% each.
- **Final exam:** 35%
- **Quizzes:** For up to 5% extra credit, graded based on 80% of the quizzes given. If you score more than 80% on the quizzes, your extra credit will exceed 5%. **Test your clicker before each lecture and contact the lecturer in case of a malfunction.**

**Grading Scale:** The course will be graded according to the grading scale in the table below. The requirements for a given grade may be lowered, but will not be raised.

<table>
<thead>
<tr>
<th>Grade Awarded</th>
<th>4.0</th>
<th>3.5</th>
<th>3.0</th>
<th>2.5</th>
<th>2.0</th>
<th>1.5</th>
<th>1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Average</td>
<td>92%</td>
<td>84%</td>
<td>76%</td>
<td>68%</td>
<td>60%</td>
<td>52%</td>
<td>44%</td>
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</tbody>
</table>

- **Honors option:** Honors options will not be available in Fall 2007 for this course
**Calendar (Tentative)**

<table>
<thead>
<tr>
<th>Week</th>
<th>Week of</th>
<th>Topic</th>
<th>Chapter</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/27</td>
<td>electric forces &amp; fields</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9/3</td>
<td>electrical energy and capacitance</td>
<td>16</td>
<td>Set 1 – Ch.15</td>
</tr>
<tr>
<td>3</td>
<td>9/10</td>
<td>current and resistance</td>
<td>17</td>
<td>Set 2 – Ch.16</td>
</tr>
<tr>
<td>4</td>
<td>9/17</td>
<td>DC circuits</td>
<td>18</td>
<td>Set 3 – Ch.17</td>
</tr>
<tr>
<td></td>
<td>9/20</td>
<td><strong>End of tuition refund</strong></td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>9/24</td>
<td>Magnetism</td>
<td>19</td>
<td>Set 4 – Ch.18</td>
</tr>
<tr>
<td>6</td>
<td>10/1</td>
<td>Review (Tue) + Midterm I (Thu)</td>
<td></td>
<td>No homework</td>
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<tr>
<td>6</td>
<td>10/8</td>
<td>induced voltages and inductance</td>
<td>20</td>
<td>Set 5 – Ch.19</td>
</tr>
<tr>
<td>7</td>
<td>10/15</td>
<td>AC circuits and EM waves</td>
<td>21</td>
<td>Set 6 – Ch.20</td>
</tr>
<tr>
<td>8</td>
<td>10/22</td>
<td>reflection and Refraction of light</td>
<td>22</td>
<td>Set 7 – Ch.21</td>
</tr>
<tr>
<td>10</td>
<td>10/29</td>
<td>Optics</td>
<td>23</td>
<td>Set 8 – Ch.22/23</td>
</tr>
<tr>
<td>11</td>
<td>11/5</td>
<td>Review (Tue) + Midterm II (Thu)</td>
<td></td>
<td>No homework</td>
</tr>
<tr>
<td>12</td>
<td>11/12</td>
<td>Wave optics + optical instruments</td>
<td>24/25</td>
<td>Set 9 – Ch.24/25</td>
</tr>
<tr>
<td>13</td>
<td>11/19</td>
<td>Relativity (Thu. Holiday)</td>
<td>26</td>
<td>No homework</td>
</tr>
<tr>
<td>14</td>
<td>11/26</td>
<td>Quantum + Atomic Physics</td>
<td>27</td>
<td>Set 10 – Ch.26/27</td>
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<tr>
<td>15</td>
<td>12/3</td>
<td>nuclear physics + review (Thu)</td>
<td>29</td>
<td>Set 11 – Ch.28/29</td>
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<tr>
<td>16</td>
<td>TBA</td>
<td>Final exam</td>
<td>All</td>
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- *homework is due on Friday’s at midnight, unless announced otherwise*
- **homework set 8 is due Tuesday 6 November**
- ***homework set 9 is due Tuesday 20 November***
- Midterm I: chapters 15,16,17,18
- Midterm II: chapters 19,20,21,22,23