PHYSICS 2112
College of DuPage
Spring 2013

Instructor:
Dr Tom Carter
- Office: BIC 3624A (across from our classroom)
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- WWW: www.cod.edu/people/faculty/carter

Office Hours
- Posted on web page
- Other times can be easily scheduled by appointment.

Required Books
Physics for Scientists and Engineers by Tipler (Volume 2) eBook available
Real Time Physics (Module 3) by Sokoloff/Thorton

WWW Resources
- Class Homepage: www.cod.edu/people/faculty/carter/phys2112

Goals and Grading
The goal of this course is to able students to have a basic understanding of the physical concepts involved in electric and magnetic fields, basic elements of electrical AC and DC circuits, geometric optics and physical optics. A significant amount of emphasis will be placed on the basic concepts involved. Calculations and basic calculus will be used as a tool to study and learn those concepts. Detailed goals for this course are available on the course web page.

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
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<tbody>
<tr>
<td>Prelectures</td>
<td>27 @ 2pts each</td>
</tr>
<tr>
<td>Checkpoints</td>
<td>27 @ 2pts each</td>
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<tr>
<td>Post-Class Homework</td>
<td>28 @ 3pts each</td>
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<tr>
<td>Classroom Questions</td>
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<tr>
<td>Labs</td>
<td>12 @ 5pts each</td>
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<tr>
<td>Recitation Assignments</td>
<td>4 @ 5pts each</td>
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<tr>
<td>Weekly Exams</td>
<td>13 @ 10pts each</td>
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<tr>
<td>Exams</td>
<td>2 @ 100pts each</td>
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<tr>
<td>Final</td>
<td></td>
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<td>Total</td>
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100%-90%  A
89%-80%   B
79%-70%   C
69%-60%   D
0%-59%    F
The C (satisfactory) student will have a minimal understanding of the underlying concepts of this class and will be able to successfully repeat the calculations previously completed on homework. Scores for these students might be: Homework – 90%, Weekly Exams – 80%, Labs – 80%, Tests/Final – 50%.

The B (good) student will have a firm understanding of the underlying concepts of this class and will be able to extend those concepts to calculations involving new simple situations. Scores for these students might be: Homework – 95%, Weekly Exams – 90%, Labs – 90%, Mid-Term/Final – 65%.

The A (outstanding) student will have a full understanding of the underlying concepts of this class and will be able to extend those concepts to calculations involving new, unique and difficult situations. Scores for these students might be: Homework – 95%, Weekly Exams – 95%, Labs – 95%, Mid-Term/Final – 85%.

The above grading scale is fixed and will not be curved. Students should be able to calculate their current course grade at any time. I reserve the right to increase the final course grade by one letter based on unusual performance on hourly exams or the final.

The ability to complete your homework (with help) and then repeat those calculations (on your own) is considered the minimum required to pass this course. If you are not completing at least 90% of your homework assignments and your weekly quizzes with an average of at least 80%, please come and see me for assistance.

**Extra Credit:** Students can receive extra credit throughout the year, by attending either

- one of several evening talks at local science institutions in the area, or
- one of a number of student success workshops offered by the college.

An extra credit score allows you to replace your lowest score on any assignment with a perfect one. Only one extra credit score is allowed per term and they may not be applied to Tests. Details and a schedule of possible events are available on the course web page.

**Tutoring/Homework**

The majority of the homework assigned in this class will be completed online although additional problems may be assigned from time to time. The homework assignments can be accessed via the class homepage.

There will be two different types of homework assigned every week.

**Prelectures/checkpoints:** These assignments are due *before* we discuss a topic in class. They are meant to allow us to use our in-class lecture time most productively by ensuring that you have a basic understanding of each topic and that I understand where the class is the most confused.

**Post-Chapter Homework:** These problems will review the key concepts from each chapter and will normally be due the Thursday *after* we discuss a topic in class.
Help with your Homework:  *I do not consider it cheating for people to do their homework together.* You may work on homework in groups. It is your responsibility to learn the material reviewed in the homework and you may use any method you like to learn that material. Students should note, though, that each student has a unique set of homework problems, so you can not just copy your classmates’ answers.

There are numerous places for students to get help:

1) stop in to see me during my normally scheduled office hours,
2) make an appointment to see me at almost any time,
3) online (each post-chapter problem has help comments built in),
4) come to the weekly group tutoring sessions,
5) work together with a classmate,
6) form a Google Group,
7) join the Engineering Club,
8) get *free tutoring* from the Academic Support Center (942-3941),
9) get help from any other COD physics faculty member who are around campus from 7:30 am until 10pm every weekday, or

**Weekly Exam Questions**

There will be a weekly exam the last fifteen or twenty minutes on the day each post-chapter homework assignment is due. The exam will either be one of the homework problems from the assignment due that day or an example we worked in class that week. In either case, the parameters will be changed, some intermediate questions may be asked. All calculations will need to be neatly shown with answers circled. *Successful completion of the majority of these questions should be considered the minimum requirement for passing this course*

**Classroom Questions**

The classroom period will normally be 15 to 20 minutes of lecture by the instructor followed by a review question to be answered by the students electronically. If the answer is not clear to the majority of the students, students will briefly discuss the topic amongst themselves and re-answer the question. Points will be awarded for correct answers using the following scale:

<table>
<thead>
<tr>
<th>Percentage of Answers Correct</th>
<th>Points</th>
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<tbody>
<tr>
<td>2/3 or more</td>
<td>60</td>
</tr>
<tr>
<td>less than 2/3</td>
<td>(60*(fraction correct)*3/2)</td>
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A bonus “question” will be answered during the first two minutes of every class. So if you (a) show up to class on time and (b) answer the questions correctly *after* the discussion, you’ll get all of these points.

**Reference Texts**

The required text for this class is both complete and inexpensive. For students who would like additional reference material or would like to read about each topic from
a slightly different point of view, four additional standard texts are on 24-hour reserve at
the circulation desk at the COD library. The texts are described in a bit more detail on
the course web site.

In addition, the notes for the UIUC version of this class (Physics 211) are posted
on our class web page. You will find they cover the same topics as we do pretty much
week for week. You may like their explanations better than mine.

Tests
- The tests during the term may be either multiple choice or questions where you
  must show your calculations. The questions will probably include graphical, short
  answer or conceptual questions. One of these problems may be a problem
  selected from the weekly quizzes. Material from the lab may also be on the test.
- For questions where you have to show your calculations, it is the responsibility of
  the student to show any work or calculations in a neat and orderly fashion. If the
  logic of any calculations is not obvious, full credit will not be given. The final
  answer for any calculation must be circled and obvious.
- When doing calculations, you may only put the calculation for one problem on
  each side of a paper. Please do not put the calculations for more than one
  problem on a side.
- Please do not wear a baseball cap or any other billed hat during your exam.
- If you wish to ask a question during the exam, please just ask it from your seat.
  Once the exam begins, you should not stand up except to turn in your exam.
- You may not use a cell phone in any manner during the exam.
- You must return both the answer to the questions and the original question sheet
  in order to receive credit. The question sheet should be stapled to the back of
  your answer sheets.
- Tests must be taken on the day and time scheduled. There are no exceptions.
- Students who need to take the test in unique conditions due to medical conditions
  should make arrangements with the student services office and discuss the
  arrangements with me the week prior to the test.
- Students are responsible for bringing the calculator they wish to use to the exam.
  Students who are unable to complete any required numerical calculations for
  whatever reason may complete the question in a clear algebraic way for partial
  credit.
- In the case of extreme medical or personal emergencies, students may use their
  final exam score to replace a missed exam. Students are advised not to causally
  miss a normal exam in order to take this option since it will mean that
  approximately 25% of their grade will depend on a single exam.

Final Exam
- The final exam will be all multiple choice and will cover all the topics from the
term, including in lab.

Labs
The purpose of the labs is not to merely confirm what we learned in class.
Although both the lab and the class will cover the same topics, you can think of the lab
as an almost completely independent way of learning the material. For most students, some concepts will be clearer in lab, some will be clearer in lecture.

**Lab Manual** You will need your lab manual during every single lab period including the first one. You must record your information *in the lab manual*.

**Pre-lab Preparation** Every lab includes some “Pre-lab Preparation” sheets which must be completed before you begin the lab. Students who arrive at lab without the pre-lab questions correctly completed or who arrive to lab more than five minutes late will be allowed to complete the lab for half credit.

**In-lab Questions and Graphs:** You must complete all questions on the lab sheets while you are in the lab room. Please slow down and think about your results and the questions you’re being asked. You should assume that you will be in lab the full three hour period.

**Post-lab Homework** Each lab has a set homework questions. These are probably the most important part of the lab. These questions are related activities you completed in lab and you should take the time to try to make that connection.

**Lab Due Date** Lab sheets and lab homework are due by the end of the student’s next regularly scheduled lab period. Lab reports turned in after this time will not be corrected and will receive, at most, half credit.

You must complete that lab assigned on the week assigned during the period assigned and all labs must be completed with a lab partner. If you cannot complete the lab during your assigned period for whatever reason, it is your responsibility to arrange for a lab partner and to complete the lab during one of the other lab periods that week.

**Lab Grading**
- 2 points for attending lab period with pre-lab questions completed and turning in lab sheets
- 3 points for getting the post-lab questions correct.

**Misc.**

**Pagers, Cell Phones** - If your pager or cell phone is heard to go off in class, you’ll receive a 0 on that week’s quiz.

**Cheating** - Anyone caught cheating on a quiz or test will receive 0 points for that exam and all exams that follow it.

**Sleeping in class** – Students sleeping during class will be asked to leave the classroom for the rest of that period.
**Test/Quiz Makeups** - All quizzes and tests must be taken on the scheduled date. There will be no makeups.

**Information on Class Web Page** - Students are responsible for checking the class web page for information including the scheduling of labs and tests.

**Orderliness** – It is the responsibility of the student to turn in all tests, quizzes and homework problems sets with calculations shown in a neat and orderly fashion. If the logic of any calculations full credit will not be given. The final answer for any calculation must be circled and obvious.

**Unannounced 10-point exams** – I reserve the right to give up to four 10-point exams per term without prior notice. As with all other exams and quizzes, there will be no makeups available.

**Incomplete Policy** - A grade of INCOMPLETE may be granted in extreme medical or personal situations during the final three weeks of the term for those students who have remained active in the class and who have a total score of 70% or higher at that point. Contact the instructor for details.

**Laptops** – No laptop computers may be in use at any time during the class period. Student wishing to take notes using a computer may use tablet or iPad-like computer with a writeable horizontal screen.

**Weekly Quizzes** – The number of weekly quizzes may vary slightly due to unforeseen schedule changes. If the number drops below the number counted, I will slightly alter the grading scheme appropriately.

**Checkpoint Questions** – Answers to the checkpoint questions should be reasonable and display student effort in order to receive credit. Answers such as “I just guessed” are not acceptable for credit.

**Turning in material** – Students required to turn in all material (e.g. quizzes, labs) at the designated time and place. Material turned in at other times (e.g. handed to the instructor in the hall) may not be included for full credit.

**Lab Manuals** – Due to copyright issues, all students must complete their labs using a published version of the lab manual. No xeroxed copies may be used in lab except when published versions of the labs are not available. Students are expected to come to each lab session with the required pre-lab manual complete. This includes the first lab of the term.