Physics C1401(001) – Exam Guide

Professor Frank Sciulli

GENERAL:

- Material covered will include concepts from lectures and Halliday, Resnick and Walker in the indicated chapters.
- There will be at least 3 questions on midterms, at least 6 problems on the final.
- Questions will be based on material emphasized in
  - Lectures
  - Problems in homework assignments
- Question Format:
  - Questions will have several parts; typically, the early parts of a problem will be easier. They will be similar to the homework problems and to those on the sample exam you are provided.
  - The exam will probably be challenging to even the best prepared students. Do not get upset if you cannot do it all.
  - It is a good idea to at least try the early parts of each problem.
  - The Sample Examination and solutions give a good idea of the exam format. It is suggested that you use this as a study tool by taking it in the same way you will take the real exam.

WHAT TO BRING:

- Bring your Columbia ID.
- Remember to bring a **calculator**
- The exam will be closed book, **but**
- You are allowed to bring along one 8½" x 11" note sheet with your name on top.
  - You may have written whatever you wish on **one side** of the note sheet for midterms, and **both sides** for the final.
  - The notes must be in your handwriting – No photocopies.
  - You may include anything you want on the note sheet (formulas, example problems, graphs, inspirational poetry…)
  - You must hand in your note sheet with your exam, so **put your name on it**
    - The note sheet will not be graded, but
    - Failure to hand in your note sheet will cost you points
- The exam will provide necessary
  - constants
  - unit conversions
-

WHAT TO DO AT THE EXAM:

- It is a good idea to arrive a few minutes early.
- Check at the third floor entry door or at the front desk for your assigned seat. You must sit in the seat assigned to you for the exam.
- The exam will be handed out along with blue books. All work must be done in the blue book. Make sure the requested information is on the front of your blue book and you have put your name on front and back. If you need an additional blue book, request it from a proctor.
- When you get the exam, **do not open it until the proctor tells you to.** Read the front page carefully and make sure you follow the instructions. This front page will be similar to that of the sample exam.
- If there are any questions, ask one of the proctors quietly.
- When the proctor indicates the time is up, close your blue book and the exam. Follow the directions of the proctor.

GENERAL ADVICE:

- **Studying for the Exam**
  - Do **all** the homework problems and understand the solutions.
  - Review your lecture notes.
  - Practice doing problems – try some unassigned problems in the text that are similar to those assigned.
  - Have a look at the "Questions" at the end of each chapter. If you find that you have problems with groups of them you should concentrate on understanding those areas.
  - Take the sample exam without looking at the solutions. Difficulties can point out areas of weakness, which you can correct if you have left yourself enough time to do so.
- **Exam-Taking Strategies**
  - Before beginning the exam read over all the problems.
  - Before doing a problem, read it carefully so you don't miss anything.
  - Start with the easiest problem.
  - Begin each problem on a fresh page in the blue book. If you intend to come back to the problem, leave some space. Clearly write at the top of the page the problem number and problem part so the grader knows which problem and part you are working on.
  - If you get stuck – don't waste time. Go on to another problem.
  - Write legibly. If the grader can't read your solution, he/she can't grade it.
  - Show your work. Without clear specifics indicating your approach, there can be no partial credit.
  - Draw neat and labeled pictures as appropriate. A sketch can indicate to the grader that you understand the concept of the problem even if you don't do the math correctly.
  - Solve problems algebraically before plugging in numbers.

- Check your answers for correct units and reasonable values. For algebraic answers, check that they make sense in limiting cases.
- **Don't worry if you can't do everything**. Grading will be on a curve. Typical physics exams have averages in the 50-60% range; very few (if any) students get everything right.

- **Time Budgeting**
  - Do not miss out on points by spending all your time on a limited set of problems.
  - For a 1-hour 15 minute exam with 3 questions a sample budget could be
    - 5 min Read over all problems and decide the order to do them.
    - 20 min Time to spend on a problem.
      When a problem's time is up, go to the next one.
    - 10 min Check over your work and revisit parts you couldn't do.
  - Use judgement with your time budget.
- **Partial Credit**. How to make sure you get it.
  - **Show your work.** You will not get credit if you simply write down the correct answer.
  - **Draw a diagram** of the problem, as appropriate, with a clearly specified coordinate system.
    - A well-drawn diagram will be worth some points, but it is mainly an essential starting point for solving the problem.
  - **Show clearly the relevant principles and the steps** that you have taken in attempting to solve the problem.
    - If the grader can't follow your reasoning you won't get much credit.
  - **Include units** in your answers.
    - Points will be taken off for answers without units.