

PHYSICS 114 – GENERAL PHYSICS – SUMMER II 2010

Welcome to Physics 114, General Physics. This is the second part of a two-semester, calculus based physics survey course. Topics include:

- Electricity
- Magnetism
- Optics

An understanding of basic calculus and Physics 113 topics are assumed.

In this class, I hope to show how many everyday physical phenomena can be explained by a relatively small number of fundamental concepts, and by guiding you in the scientific method, encourage analytical and logical reasoning. To that end, I will try to make the class as interactive as possible by posing concept questions and conducting demos and discussions.

The class will consist of lectures, labs, daily homework and reading assignments and tests.

Lectures and Text

Lectures will be held Monday-Friday, 8:30 – 10:30 AM, in Olin 101. The first meeting will be on Wednesday, July 7 at 1:00 PM in Olin 101.

Attendance is not mandatory but strongly encouraged. Due to the fast paced nature of summer classes, falling behind in class work can be harder to compensate.

Text is Physics for Scientists and Engineers, 8th ed., vol. 2, by Serway and Jewett, Brooks/Cole Publishing
Lecture notes and a class schedule will be posted online at: <http://www.wfu.edu/~ucerkb/Phy114.html>. The web site also has general class information and links to other useful web sites.

Here is the detailed list of topics to be covered:

- Electric Fields
- Gauss's Law
- Electric Potential
- Capacitance
- Current and Resistance
- Direct Current Circuits
- Magnetic Fields
- Sources of the Magnetic Field
- Faraday's Law
- Inductance
- Alternating Current Circuits
- Electromagnetic Waves
- The Nature of Light and Geometric Optics
- Image Formation
- Interference
- Diffraction and Polarization

Homework

Daily homework assignments will be given and graded online using WebAssign. You can login through www.webassign.net using:

- User name: Your Wake Forest username
- Institution: wfu
- Password: Your existing WebAssign password or if new to the site, your WFU student ID number.

Your user license is included in the purchase of a new textbook from the bookstore. If not, licenses can be purchased from the bookstore or from the WebAssign web site.

Do not be discouraged if some of the homework questions seem hard or complicated. They are meant to be like that to show all levels of a concept. I encourage group work and collaboration (but not outright copying) and you are welcome to ask me any questions you might have.

In addition to the homework assignments, you are expected to read the next day's chapter and come to class with at least some familiarity with the day's subject matter.

Tutorials and Office Hours

Regularly scheduled tutorial sessions will be announced to provide an opportunity for discussing homework problems and concepts.

I will hold regular office hours daily, 1:30 – 2:30 PM (Olin 305D). These are only the times I will definitely be in my office but you are welcome to stop by any other time I am available.

Laboratory

There will be a total of 12 labs. The topics are:

1. Static Electricity
2. The Electric Field
3. Circuitry and Meters
4. Ohm's Law
5. Capacitors
6. Oscilloscopes and Electrocardiograms
7. Diodes and Transistors
8. Electromagnetic Induction
9. Properties of Microwaves
10. Photons and Electrons
11. Refraction of Light by Glass and
Converging and Diverging Lenses
12. Radioactivity

With the current enrollment in the class, there will be a single lab section that meets MWF, 10:40 – 12:45, starting from Monday, July 12.

You will be working in small groups of two or three people and will be expected to write a summary report at the end of each lab. Laboratory attendance is mandatory. You are allowed one excused absence. Lab manuals can be purchased from the bookstore.

Tests and Grading

There will be three midterm tests and a final exam. The final will be held on Tuesday, August 10, at 9 AM. Your final grade will be calculated using the following weighting:

- 3 midterms: %15 each
- Homework Assignment average: %10
- Laboratory average: %15
- Final: %30