Physics 152: Principles of Physics II
MWF 8:10-9:10 HSC116
R 7:40-10:40 HSC104 or R 2:00-5:00 HSC104

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Office hours—MW 10:30-11:30, T 11:00-12:30, etc.
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Text: *Understanding Physics*, Cummings, Laws, Redish, and Cooney, Wiley 2004. The initial plan is to discuss topics from chapters 16-18 and 22-37, to be modified as appropriate through the semester.

Physics is not just a set of definitions and equations to be memorized. The most important thing in physics is the argument—here's the explanation, with as much evidence as we can provide, for why things happen the way they do. Often that argument has at least some mathematical basis.

Outcomes: Students will be able to

A. Describe concepts of physics;
B. Apply concepts of physics in devising and analyzing laboratory experiments;
C. Select appropriate approaches for problem-solving based on concepts of physics; and
D. Use correct mathematical methods to solve problems

in topic areas of

1. Electric fields, forces, and potentials;
2. DC electric circuits;
3. Magnetic fields and forces;
4. Oscillations and waves; and
5. Light and optics.

Assessment: Students will be evaluated through

1. Short essays on conceptual topics/questions;
2. Solutions to assigned homework problems;
3. Performance on in-class quizzes;
4. Completion of laboratory problem-solving, data collection, and analysis; and
5. Regular exams.

Grading:

1. Short concept essays	5%	A	90-100
2. Homework solutions	10%	B	80-90
3. Quizzes	10%	C	70-80
4. Lab	15%	D	60-70
5. Exams	60%	F	<60

Assignment details:

Short concept essays and homework problems will be assigned for each chapter. Essay answers should be written in complete sentences and should include sketches where appropriate. Keep in mind that homework solutions should be more than just a string of equations. The general idea is well-expressed in Dr. Armstead's PHY151 syllabus: "The logic of your solution should begin with a clear statement of the basic principle(s) and flow from complete sentences and clear diagrams. Each step should follow clearly from the one before."

Quizzes will be frequent. You should expect two varieties of quizzes. Type 1 is a concepts quiz; for such quizzes, you will be provided with the question(s) ahead of time. Type 2 is a problem-solving quiz; such quizzes will be unannounced and open book. Students may replace up to three quiz grades with perfect scores by attending physics journal club talks, one replacement per talk (Thursdays 12:40 beginning TBA in March).

Labs occur weekly. Most weeks there will be some written work to turn in.

Ideally I'd like to have five exams, one for each of the "topic areas" described under the list of outcomes above. Depending on our progress through the semester, that may well become four exams and a cumulative final instead. You will be provided with an equation sheet as the back page of each exam.

Students are encouraged to meet with me about essay and homework assignments to obtain guidance. Students should feel free to consult with each other on essay and homework assignments. Students should not feel free to copy work from each other or to allow one member of a work group to do all the heavy lifting. If you work with others, indicate as much on your turned-in assignment. Students are not permitted to consult other print/internet sources to find solutions and/or "check" their work. Submitting others' work as your own is a violation of Westminster College's Academic Integrity Policy and will, if discovered, lead to a letter to the Dean and a failing grade for the course.

Classtime: Most classes will begin with a short summary of the key ideas/approaches from that day's reading. We'll take questions about that material then proceed to a quiz (if there is one). The remainder of the class will be devoted to problem-solving. See me outside of class for additional questions and/or guidance in problem-solving.