PHYSICS 2424  
Spring 1998  
Unit 3  
DC Circuits and Magnetism

Reading:    
Sections 19.0 - 19.9  
Sections 20.0 - 20.5, 20.7 - 20.9, 20.11 - 20.13

Homework:  
Chapter 19 - Questions 3,6,8  
Problems 2,7,15,28,32,34,45,71  
Chapter 20 - Questions 12,16,20  
Problems 1,8,17,31,33,35,46,53

Dates:  
•  Reading Quiz (Chapter 19) ........................ Monday, February 8, 8:00 a.m.*  
•  Reading Quiz (Chapter 20) ....................... Friday, February 12, 8:00 a.m.  
•  Homework Due ............................... Tuesday, February 23  
•  Quiz ...................................... Tuesday, February 23  

* This date is different than the due date in the syllabus.

Homework may be turned in during class on Tuesday, or placed in the box outside of my office before 5:00 p.m. Unit 4 will actually begin on Friday, February 19, so it would be a good idea to try to complete Unit 3 homework before then.

Reading questions are to be submitted directly from the World Wide Web using the form available at http://www.nhn.ou.edu/~strauss/phys2424. If you try to submit answers to the reading questions on the web, but the answers are rejected, please e-mail me at mgstrauss@ou.edu and describe the problem in detail.

READING QUESTIONS FOR CHAPTER 19:  
1. What does it mean for electronic components (resistors, capacitors, batteries, etc.) to be placed in series and in parallel?  2. If resistors are placed in series what electrical quantity (e.g. voltage, current, resistance, etc.) is the same for the two resistors?  3. What about when placed in parallel?  4. How does the current coming in one side of a resistor compare with the current going out the other side?  5. When using ohm’s law (V=IR) and considering a single resistor, what value of voltage, current, and resistance do you use?  6. What is an emf?  7. What fundamental law of physics is responsible for Kirchhoff’s junction rule? Why?  8. What fundamental law of physics is responsible for Kirchhoff’s loop rule? Why?  9. When batteries are placed in series how are their voltages combined?  10. If capacitors are placed in series what electrical value is the same for the two capacitors?  11. What about when placed in parallel?  12. Does direct current (dc) flow through a capacitor in the steady state? Why or why not?  13. What does a capacitor do when it is placed in a circuit attached to a dc battery?  14. What is the purpose of a three pronged electrical plug?

READING QUESTIONS FOR CHAPTER 20:  
1. What is the definition of a north pole and a south pole?  2. Which magnetic pole points generally toward the geographic north pole of the earth?  3. How are magnetic fields produced?  4. Describe some differences between magnetic fields and electric fields.  5. What SI units are used for magnetism?  6. Explain how the right hand rule is used to find the direction of the magnetic field.  7. Explain how a different right hand rule is used to find the direction of the force on a particle in a magnetic field.  8. What does the magnetic field produced from a straight wire carrying a current look like?  9. What are three necessary requirements for an object to feel a force in a magnetic field?  10. What possible paths will a charged particle follow when placed in a uniform magnetic field?  11. What is Ampère’s law used for?  12. Why does a loop of wire in a magnetic field feel a torque?  13. How does a mass spectrometer work?  14. Describe ferromagnetism?