

**PHYS 1610 ENGINEERING PHYSICS II**  
**FALL 2012**

**Thermodynamics, Electricity, Magnetism, and Optics**

The student is expected to attend every class, and will be held responsible for all work covered in the course. Students are expected to work every assigned problem **as a minimum**. Failure to complete the assigned work will negatively affect class participation grade.

**Course Description:** This is the second of a two-semester introductory, engineering physics sequence. Topics include: Electric Charges, Forces and Fields, Gauss's law, Electric Potential, Potential and Field, Current and Resistance, Fundamental Circuits, Magnetic Fields, Electromagnetic Induction, Ray Optics, Wave Optics, Modern Optics and Matter Waves, A Macroscopic Description of Matter, Work, Heat, and the 1<sup>st</sup> Law of Thermodynamics, The Micro/Macro Connection, Heat Engines and Refrigerators. The course has both a lecture and a required laboratory component.

**AIM:** To build a good foundation in the principles of Optics, Electricity and Magnetism and Thermodynamics in order to understand how these principles are applied in the world around us.

**TEXTBOOK:** *Physics for Scientists and Engineers with Modern Physics – 2<sup>nd</sup> Ed*, R D Knight

**INSTRUCTOR:** Dr. Teck G. Lee  
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**CLASSROOM:** PKH 236 (Parker Hall)

**CLASS PERIODS:** Tuesday, Thursday  
9:30 – 10:45 am.

**OFFICE HOURS:** Tuesday and Thursday (or by appointment)  
1:30 – 2:30 pm

**HOME WORK:** Approximately 3 hours/week Homework is electronically processed via an internet website: <http://www.masteringphysics.com/>  
Course ID: **MPLEE1610F12TR**  
**Having problem with homework, get help from your TAs first before coming to see me.**

**LAB:** All students will download the labs and/or activities from the Physics Webpage. **Students will be required to print the appropriate procedure and/or data sheets prior to coming to the lab. TAs will be instructed not to allow students to print the procedures and/or data sheets using the lab printers.** The list of Labs and Activities are posted on-line at the Physics Webpage:<http://www.auburn.edu/academic/cosam/departments/physics/intro-courses/ugrad-lab/>

**TESTS & EXAM:** **Three in-class 1 hour tests (multiple choice questions)** and one comprehensive final exam (2.5 hours) will be given. Textbook and notebooks are not allowed in the exams. Formula information sheet will be provided. A calculator may be used. There will be no make-up tests & exam except for the most extraordinary circumstances (e.g., documented illness or death). ***Make-up test must be completed within 10 days from the class test.*** The tests & exam will be based on problems related to (but often with important differences) homework problems and problems discussed in class. The intent of the test & exam problems will be to test your understanding of physics principles and to test your ability to apply these principles to practice. To do well on the tests & exams, you should do the reading assignments before class, pay attention to lectures, and personally work all of the homework problems when they are assigned.

**LATE WORK:** 10% grade reduction for late reports and homework. After 1 week from the due date the instructor has the right to refuse to accept them. Let your instructor know as soon as possible about extenuating circumstances.

**GRADING:**

- 10% Lab
- 10% Recitation
- 20% Homework
- 30% Tests (3 one-hour tests)
- 30% Final Examination
- 5% Clicker (Extra credit for class attendance)

Scale: A 85 – 100%  
B 70 – 84%  
C 55 – 69%  
D 45 – 54%  
F < 45%

**POLICIES:**

- No extra work for extra credit.
- AU policies on CHEATING AND CLASSROOM BEHAVIOR at outlined in the Tiger Cub will be enforced.
- Any error on the test score must be corrected within two weeks after the test.
- Uphold the Auburn University Oath of Honor (<http://www.auburn.edu/tigercub/oath.html>).
- Follow AU policies on Student Academic Honesty (<http://www.auburn.edu/academic/provost/ahc.html>).

**CONTINGENCY PLAN:**

If normal class and/or lab activities are disrupted due to illness, emergency, or crisis situation (such as H1N1 flu outbreak), the syllabus and other course plans and assignments may be modified to allow completion of the course. If this happens, an addendum to your syllabus and/or course assignments will replace the original materials.

**SYLLABUS AND TENTATIVE SCHEDULE (subject to modification)**  
**Tue, Thu – FALL 2012**

Aug 16	Introduction	
	Chapter 26	Electric Charges and Forces
Aug 21 – 23	Chapter 27	Electric Field
Aug 28 – 30	Chapter 28	Gauss's Law
Sept 4	Chapter 29	Electric Potential
Sept 6 – 11	Chapter 30	Potential and Field
Sept 13	Chapter 31	Current and Resistance
Sept 18	<b>Test #1*</b>	
Sept 20	Chapter 32	Fundamental of Circuits
Sept 25 – 27	Chapter 33	Magnetic Field
Oct 2 – 4	Chapter 34	Electromagnetic Induction
Oct 9	Chapter 23	Ray Optics
Oct 11	<b>Test #2*</b>	
Oct 16 – 18	Chapter 22	Wave Optics
Oct 23 – 27	Chapter 25	Modern Optics and Matter Waves
Oct 31 – Nov 1	Chapter 16	A Macroscopic Description of Matter
Nov 6 – 8	Chapter 17	Work, Heat, and the 1 <sup>st</sup> Law of Thermodynamics
Nov 13	Chapter 18	The Micro/Macro Connection
Nov 15	<b>Test #3*</b>	
Nov 20	Chapter 19	Heat Engines and Refrigerators
Nov 21 – 25	<i>Thanksgiving Break</i>	
Dec 27	Review	
Dec 3	<b>FINAL EXAMINATION</b>	8:00 – 10:30 am

**\*Exact dates for tests will be announced**

