INSTRUCTOR  
Joseph Sottile, 234A MMRB or 585 FPAT, 257- 4616, jsottile@ieee.org

MEETING TIMES  
MWF 1:00 – 1:50 p.m., 207 RGAN

TEXTBOOK  

GOALS  
Develop an understanding of magnetic circuits and the operation of transformers and rotating electric machines.

PREREQUISITES  
EE 221 with a C or better; PHY 232

TOPICS  
1. Introduction
2. Sinusoidal Steady-State Analysis
3. Magnetic Circuits
4. Transformers  
   a. Construction and operating principles
   b. Single-phase transformers
   c. Three-phase transformers
5. DC Machines  
   a. Construction and operating principles
   b. Generators
   c. Motors
6. Induction Motors  
   a. Construction and operating principles
   b. Equivalent circuit representation
   c. Performance
7. Synchronous Machines  
   a. Construction and operating principles
   b. Equivalent circuit representation
   c. Wound rotor machines
   d. Salient-pole machines
8. Energy Conversion

OUTCOMES  
Students completing the course should achieve the following competencies:

1. Analyze and design simple linear and nonlinear magnetic circuits, and to include the effects of leakage and saturation.
2. Develop equivalent circuits of coupled electromagnetic circuits, in particular power transformers.
3. Calculate the performance characteristics of power transformers from their equivalent circuits.
4. Develop the equivalent circuits of dc, induction, and synchronous machines and evaluate performance.
5. Formulate tests to determine the equivalent circuit parameters of electric machines (e.g., transformers and rotating machines).
**HOMEWORK**  
Homework assignments will be given during the lecture periods. The assignments are due at the beginning of class on the due date.

**EXAMS**  
All exams will be closed-book, closed-notes exams. You are not permitted to store formulas, problems solutions, etc. on a programmable calculator. If you are caught violating this rule, there will be a minimum penalty of receiving an "E" in the course.

**GRADING**  
Grading is based on three midterm exams, a final comprehensive exam, and homework. The tentative exam schedule and weights are listed below.

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<th>Exam</th>
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<tr>
<td>Exam 1</td>
<td>Wednesday, September 24</td>
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<td>Exam 2</td>
<td>Wednesday, October 22</td>
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<td>Exam 3</td>
<td>Wednesday, November 19</td>
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<td>Final Exam</td>
<td>Tuesday, Dec. 16 at 8:00 a.m.</td>
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**Grades:**
- A = 90 - 100%
- B = 80 - 89.9%
- C = 70 - 79.9%
- D = 60 - 69.9%
- E = below 60%

**Office Hours:** MWF: 2:00 - 3:00 p.m., TR: 11:00 a.m. - 12:00 p.m.

Because my posted office hours may conflict with your schedule, or otherwise be inconvenient, I have provided my class schedule to help you make arrangements for meeting at times other than office hours. Generally, I will be available anytime except one hour before each class. However, it is best to call or e-mail me to make sure I'll be in my office.

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The text website has a link to an errata document that lists errors in the textbook. Most of the errors are typographical; however, it is very important that you correct the errors in your textbook. The text website also has a link to additional problems (and solutions) that you may find useful.

Course website: [http://www.engr.uky.edu/~jsottile/](http://www.engr.uky.edu/~jsottile/) (Can also go to the ECE homepage to >Faculty and Staff>Joseph Sottile>Personal Page (Click on link to EE 415G.)

The course website is for your convenience. It will have links to homework assignments and due dates, tentative exam dates, and any other information relevant to the course. Although I try to maintain the website regularly, there may be times in which the assignments will not be posted immediately. Therefore, it is very important to come to class to receive homework assignments and other information.