# SYLLABUS
# PHY 2049 Physics for Engineers & Scientists II
Section 4, TR 4:30 – 5:45 p.m., MAP 359
Spring 2004

**Instructor**
Dr. Michael Johnson
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**Office hours**
M 10 a.m. – 12 p.m. in MAP 322
W 8:30 a.m. – 10:30 a.m. in MAP 322

**Textbook**
Halliday, Resnick and Walker, *Fundamentals of Physics*, 6th edition (Wiley), Chapters 22 – 37

**Description**
This course introduces Electricity and Magnetism. Starting from simple electric forces it builds to one of the most remarkable accomplishments of science, the unified field theory known as Electromagnetism. This is a very challenging subject, both conceptually and mathematically, and as a result will require you to invest considerable time in study and problem solving. The minimum mathematics required is a working knowledge of introductory calculus, including line, area, and volume integrals; mastery of vector algebra and trigonometry; and some vector calculus. You must also thoroughly understand the material from the prerequisite PHY 2048. The level of complexity of this course is well above that of PHY 2048 and material is covered at a fast pace. It is in fact the most difficult course many of you will ever take. It is therefore advisable to read the relevant material before each class, to attend all classes, and to keep current with the homework. If you fall behind it will be difficult if not impossible to catch up.

**Web page**
Information about the course will be available at http://www.physics.ucf.edu/~mdj/2049. Announcements will be posted here, so please check the course pages regularly.

**Homeworks**
Physics is a practical, problem-solving subject, and an important part of the course will be the homework assignments. These will be assigned every week. It is very important to work on these assignments. They are the primary means of learning the material, and will be the basis of the tests. You are welcome to discuss the problems with other students, but the final solution of each problem must be your own.

Homework assignments will be given through WebAssign. Students registered in this section must buy accounts from the campus bookstore. No hard copy solutions will be accepted.

**Exams**
There will be three midterm tests and a final exam. The midterms will cover all material up to the date of the test emphasizing new material. The final will be comprehensive. It is scheduled for Thursday, April 22, from 4 p.m. to 6:50 p.m. in the regular classroom.

**Grading**
The final grade will be computed as follows:

- 25% homework
- 45% midterms (15% each)
- 30% final exam

Plus and minus grades will not be given.

**Planned Schedule**
Deviations from the following are likely.

| Week | Dates | Chapter | Topic |
|---|---|---|---|
| 1 | Jan 6, 8 | 22, 23 | Electric charge and electric fields |
| 2 | Jan 13, 15 | 23, 24 | Electric fields and Gauss's law |
| 3 | Jan 20, 22 | 25 | Electric potential |
| 4 | Jan 27, 29 | 26 | Capacitance. **Exam #1** |
| 5 | Feb 3, 5 | 27 | Current and resistance |
| 6 | Feb 10, 12 | 28 | DC Circuits |
| 7 | Feb 17, 19 | 29 | Magnetic field |
| 8 | Feb 24, 26 | 30 | Magnetic field due to currents. **Exam #2** |
| 9 | Mar 2, 4 | 31 | Induction and inductance |
| | Mar 8-12 | Spring break | |
| 10 | Mar 16, 18 | 32 | AC circuits |
| 11 | Mar 23, 25 | 33 | AC circuits |
| 12 | Mar 30, Apr 1 | 34 | Electromagnetic waves. **Exam #3** |
| 13 | Apr 6, 8 | 35 | Optics |
| 14 | Apr 13, 15 | 36-37 | Optics |
| | Apr 22 | | **Final exam** |