• Course Outline & Objectives:
PHY 2054C is the second of two-semester sequence in introductory physics offered primarily for students majoring in information technology, the biological science and pre-health professions. Emphasis is placed on understanding major principles, and mathematics is used to clarify concepts. Students should have a good working knowledge of algebra and trigonometry.

• Course Text & related materials:
- Text: College Physics: Vol-II (Chapter 17 - 30), Eighth Edition (required)
  Authors: Young & Geller.
  Publisher: Pearson, Addition Wesley.
- A MasteringPhysics is required as a component of the course to solve homework problems.

• Course Organization & expectation:
The course is quite intense and it will require you to invest considerable amount of time in studying and problem solving. The course will consist of a set of class lectures with demonstrations. Ideally, class time will be used to clarify the concepts that you have read in the text and to work out examples to show and help avoid common pitfalls. To obtain maximum benefit from this course you should read the materials before and after they are covered in class. It is very difficult to catch up if you fall behind. Experience has shown that problem solving done in class is helpful for everybody only if the majority of the students are familiar with the topic. Class attendance is very important since some of the quizzes, test questions will be drawn from the class lectures, demonstrations, and discussions. Thus, reading the material prior to class attendance is not only required but will be helpful to yourself, and also to the rest of the class.

• Homework:
Homework will be assigned, submitted and graded online through MasteringPhysics (www.masteringphysics.com). Several new assignments will be posted each week. Please drop by my office or see the teaching assistance if you are having difficulties in doing the homework.

• Quizzes:
In general the quizzes will not be announced in advance. Quizzes will be based on previously covered material up to and including the quiz day reading assignment and lecture. It is anticipated that 10 quizzes will be given during the semester. The best 8 scores will be used to compute your quiz grade. There will be NO MAKE UP Quizzes.

• Examinations:
There will be 2 mid-term exams and a comprehensive final exam in this course. All exam grades count toward your final grade. The comprehensive final will cover all the materials covered during the lectures.

• Methods of evaluation & Grades:
The final grade will be based upon Homework, in class Quizzes, two Midterms, and the comprehensive Final examination. Tests and quizzes will assess student’s grasp of physics concept and analytical problem solving skills, using basic concepts of algebra, trigonometry, and geometry. Students are expected to be proficient in basic mathematics. The final letter grade (including ± grades) will be determined based on the following proposed breakdown:
Homework (Mastering Physics)  | Quizzes  | 2 Midterms  | Comprehensive Final  
--- | --- | --- | --- 
20% | 20% | 40% | 20% 

**Final grades** will be given according to the following scale:

<table>
<thead>
<tr>
<th>A, A-</th>
<th>B+, B, &amp; B-</th>
<th>C+, C &amp; C-</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>85% and above</td>
<td>75-84%</td>
<td>60-74%</td>
<td>50-59%</td>
<td>less than 50%</td>
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</table>

**Policies:**

1. For missed work, please refer to the attached “PHYSICS DEPARTMENT MISSED WORK POLICY” disclosure.
2. Questions regarding returned quizzes or tests must be brought to the instructor’s attention within 6 days.
3. Picture ID is required in quizzes and tests.
4. As one or more quizzes will be dropped from the final grade, there will be no make-up quizzes!
5. Scientific calculators with trigonometric capabilities are allowed in quizzes and tests. However, calculators must not have any pre-programmed physics information.
6. Grades are not given out in response to e-mail or telephone calls.

**Important Dates:**

Classes begin: June 23  
Withdrawl Deadline: July 11  
Classes end: July 31

**Holidays:** Independence Day: July 04
## Tentative Syllabus and Schedule

### Week 1
- **June 23**
  - Chapter 17: Electric charge & Coulomb’s Law
  - Chapter 17: Electric field, potential
- **June 24**
  - Chapter 17: Electric filed lines, equipotential surfaces, dipole
  - Chapter 18: Potential energy, Capacitance, parallel plate capacitor
- **June 26**
  - Chapter 18: Capacitors in series & parallel
  - Chapter 18: Capacitors & Dielectrics

### Week 2
- **June 30**
  - Chapter 19: Electric current, Ohm’s law
  - Chapter 19: Resistors in series & parallel
- **July 01**
  - Chapter 19: Kirchhoff’s rule, Electric power
  - Chapter 20: Magnetism, magnetic field and forces
- **July 02**
  - Chapter 20: Charged particles in a magnetic field
  - Chapter 20: Torque on a current carrying wire
- **July 03**
  - **Test-I**
  - **Exam Review**

### Week 3
- **July 07**
  - Chapter 21: Electromagnetic induction, induced current
  - Chapter 21: Magnetic flux, Lenz’s & Faraday’s law
- **July 08**
  - Chapter 21: Self and mutual inductance, R-L, L-C circuits
  - Chapter 21: Transformer, magnetic field energy
- **July 09**
  - Chapter 22: Alternating current, inductance
  - Chapter 22: R-L, L-C, and R-L-C circuits
  - Chapter 22: Power in an AC circuit, Resonance
- **July 10**
  - Chapter 23: Electromagnetic Waves, spectrum
  - **Test-II**
  - **Exam Review**

### Week 4
- **July 14**
  - Chapter 23: Nature of light, Reflection, refraction
  - Chapter 23: Dispersion, polarization
- **July 15**
  - Chapter 24: Geometric Optics, reflection, refraction
  - Chapter 24: Plane & spherical Mirrors
  - Chapter 24: Lenses, images, magnification
- **July 16**
  - Chapter 25: Optical instruments, camera, projector
  - Chapter 25: The eye, magnifier, the microscope, telescope
  - Chapter 26: Interference & Diffraction, Exam Review
- **July 17**
  - **Test-II**
  - **Exam Review**

### Week 5
- **July 21**
  - Chapter 27: Einstein’s Special Theory of Relativity
  - Chapter 27: Speed of light, Lorentz transformation
  - Chapter 27: Nature of simultaneity and Relativity of space-time
- **July 22**
  - Chapter 27: Relativistic momentum and energy
  - Chapter 28: Photoelectric effect, energy levels of atoms
- **July 23**
  - Chapter 28: Neil Bohr’s hypothesis & Hydrogen atom
  - Chapter 28: Quantum Mechanics, Uncertainty principle
- **July 24**
  - Chapter 28: Application of quantum mechanics: LASER
  - **De Broglie & Matter wave, Compton Scattering**

### Week 6
- **July 28**
  - Chapter 29: Atomic structure, Periodic table
  - Chapter 29: Wave functions of atoms and molecules
  - Chapter 29: Ionic, covalent and hydrogen bonds
- **July 29**
  - Chapter 29: Energy bands: metals, semiconductors & insulators
  - Chapter 30: Nucleus of atom, fission and fusion
  - Chapter 30: Subatomic particles, Quarks and leptons
- **July 30**
  - Chapter 30: Matter and antimatter, positron, Comprehensive Final Exam Review

### July 31
- **Final Exam**
  - Covers Chapters 17 - 30