Phys 121: General Physics II Sec. 121-001 Tuesday and Thursday 12:35-1:50, SCI 201. This is the second semester of algebra based physics for life science majors.

Prerequisites: Phys111; Concurrent registration in the lab part of the course (Phys 122) is required. Proof of completion of Phys 122 is also accepted.

Instructor: Dr. Jeanne Digel
email: digel@sfsu.edu
Office: HH 218, Office hours: Thursdays 11 am-12:30 pm

Course Objectives. To develop a basic understanding of physics and its role in nature and technology. In part II, we begin with the basics of electricity and magnetism and then move on to study electromagnetic radiation (e.g. radio waves, optical light and X-rays). Finally, we investigate atoms and their arrangement in the periodic table, atomic nuclei and the effects of radioactivity, and Einstein’s special theory of relativity.

Grading: The grade for the lecture course will be based on grades for the homeworks, exam, in-class work, and the final exam, divided as follows:

Homework: 20%
In-Class work: 10%
Two mid-terms: 20% each
Cumulative Final Exam: 30%

Homework: Homeworks will be posted on the class WebAssign site, and should be completed on-line. You will need to purchase a WebAssign access code. When you have your code you will be able to access the course site. An account has been set up for you. Your username and password are both set to your student number. Once you have logged in you will be able to change your password. While homework counts only 20% of the final course grade, if you cannot do the homeworks you will not be able to do any other parts of the course. Start early, and take advantage of all your resources including, office hours, e-mail, and help sessions. Working with other students to solve the homework is recommended and beneficial. Using another student’s work is plagiarism.

In-Class Work: Approximately once a week a problem will be handed out to be completed in class in small groups. The goal is to improve problem solving skills. The problems will come on a page with room for 3 or 4 names, and only that many students may claim credit for that page. The pages will be collected during the same class period that they are handed out. No late work or make-ups will be accepted. The in class problems will be graded based on the following:
• A clear and accurate diagram of the problem.
• The correct equations are chosen to solve the problem.
• Algebra is done correctly using appropriate symbols for the variables (numbers should only go in at the end.
• Correct numerical answer is reached.
Exams: There are two mid-terms scheduled for the first week of March and the first full week of April. These exams will only be offered on the assigned dates. Make-ups will not be offered.

Final Exam: A cumulative final exam will be given Thursday, May 20th at 10:45 am. This exam will contain equal parts materials covered for the first two exams and material covered since the second mid-term.

Dropping and Withdrawal: You may drop yourself from the course at any time up to February 5th. Withdrawal after this date is permitted only for "serious and compelling reasons." If you withdraw from the lecture course, you will usually have to withdraw from the lab as well. See the Physics and Astronomy Department policy on withdrawal at http://physics.sfsu.edu under Department Policies.

Plagiarism: Representing work done by others as your own work is expressly forbidden. See the Physics and Astronomy Department policy on plagiarism at http://physics.sfsu.edu under Department Policies.

Accessibility: Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu).

Be on Time! There are more than enough distractions already in a class of 150 students without having to add a steady stream of stragglers. If there is persistent tardiness I will begin giving pop quizzes at 12:35 sharp, which will become part of your mid-term grades.

Tentative Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Reading Chapter</th>
<th>Lab (PHYS 122)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Electric Charge, Coulomb’s Law, Electric Fields</td>
<td>19-1, 2, 3, 4,</td>
<td>Registration</td>
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<td>2</td>
<td>Gauss’s Law, Electric Potential, Electric Potential Energy, Potential of Point Charges</td>
<td>19-5, 6, 20-1, 2, 3</td>
<td>Computer Analysis</td>
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<td>3</td>
<td>Equipotential Surfaces, Capacitors, Energy Storage, Electric Current</td>
<td>20-4, 5, 6</td>
<td>Electrostatics</td>
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<td>4</td>
<td>Ohm’s Law, Energy and Power in Circuits, Resistors is series and parallel</td>
<td>20-5, 6, 21-1, 2, 3, 4</td>
<td>Oscilloscope</td>
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<td>5</td>
<td>Kirchoff’s Rules, Capacitors in Circuits, Magnetic Fields and Force on moving charges, Right Hand Rule</td>
<td>21-5, 6, 7, 22-1, 2, 3, 4</td>
<td>Ohm’s Law</td>
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<td>6</td>
<td><strong>First Exam</strong>, Force on Current Carrying wire/loop, Combined Electric and Magnetic Fields</td>
<td>22-4, 4, 6</td>
<td>Kirchoff’s Law</td>
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<td>7</td>
<td>Induced EMF, Magnetic Flux, Induction, Lenz’s Law,</td>
<td>23-1, 2, 3, 4</td>
<td>RC Circuits</td>
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<td>8</td>
<td>Mechanical Work and Electrical Energy, Generators and Motors, Electromagnetic Waves, the Spectrum</td>
<td>23-5, 6, 25-1, 2, 3</td>
<td>Magnetism</td>
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<td>9</td>
<td><strong>Spring Break</strong></td>
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<td>10</td>
<td>Energy and Momentum in Waves Polarization</td>
<td>25-4, 5</td>
<td>e/m of Electrons</td>
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<td>11</td>
<td><strong>Second Exam</strong>, Reflection, Plane and Spherical Mirrors, Ray Tracing</td>
<td>26 1, 2, 3, 4,</td>
<td>Polarization of Light</td>
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<td>12</td>
<td>Refraction of Light, Lenses, Thin-Lens equation, Dispersion, Lenses in Combination</td>
<td>26 5, 6, 7, 8, 27-1, 2, 3</td>
<td>Lenses</td>
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<td>13</td>
<td>Superposition, Interference, and Diffraction</td>
<td>28 (all)</td>
<td>Interference</td>
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<td>14</td>
<td>Relativity, Blackbody Radiation and Photons,</td>
<td>29-1, 2, 3, 30-1,2,3</td>
<td>Spectrometry</td>
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<td>15</td>
<td>The Atom, The Hydrogen atom Spectrum and Electron Orbitals, Radioactivity</td>
<td>31-1, 2, 3, 4, 5, 32-1, 2, 3</td>
<td>Radioactivity</td>
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<td>16</td>
<td>Catch up week</td>
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<td>Lab Final</td>
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<td><strong>Finals</strong></td>
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<td>January</td>
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- Class starts: 24 January
- Last drop/add day: 5 February
- 19 Campus Furlough day: 14 February
- Last day to request CR/NC: 25 March
- Final Exam: 10:45 am 23 May
- Withdrawal deadline: 24 April
- Grades due: June 2nd