Physics in the Arts
Physics 109 – Spring 2007

Class location: 2241 Chamberlin Hall.
Class times: Tuesdays and Thursdays 12:05 pm and 1:20 p.m.
Exam location: 2241 Chamberlin Hall
Lab location: 3124 Chamberlin Hall

Instructors:
Karsten Heeger <heeger@physics.wisc.edu> office hours are held
Baha Balantekin <baha@physics.wisc.edu> in 3124 Chamberlin Hall
Yoshi Hirai <yhirai@wisc.edu> Times TBA
Brianna Schuyler <bschuyler@wisc.edu>
Mike Anderson <mbanderson@wisc.edu>
Vikram Adhikarla <adhikarla@wisc.edu>

Textbook and Lab Instructions:
The Lab instructions can be purchased at the University Bookstore. The book
Physics in the Arts, by P.U.P.A Gilbert and W. Haeberli is also available at the
University Bookstore. You should also purchase a bound quadrilled (slim)
notebook for the laboratory. A simple calculator that displays square-roots is
helpful for homework and lab.

Prerequisites:
There are no prerequisites. Homework and lab work require that you can do
simple computations, including fractions and very elementary high school
algebra. Some of you will be out of practice: don't freak out, we will help, but do
overcome your embarrassment and ask questions when you have trouble.

Homework:
Homework will be assigned on the web page on Thursday and is due in class the
following Tuesday. Turn in the homework problems even if you get only partial
answers. You can receive help from us on your homework.

Labs:
All labs meet in Room 3124 Chamberlin. Come to the section to which you were
assigned. Record lab notes in a bound notebook. Keep the notebook on the
shelves in the lab. It is essential that you attend all the labs. Attendance will be
taken. If you are forced to miss a lab, arrange with your TA to make up that lab
the same week or the following week. Photography and Musical Instruments
Labs must be made up the same week. An unexcused failure to do each lab
results in the loss of 1/2 grade point per lab (i.e. BC to C).

Grades and Exams:
Based on exams and labs. Exams: Some questions will be closely patterned
after assigned homework problems. Some questions cover the work performed
in the lab. **Labs:** The evaluation of your lab work will be based primarily on lab attendance and the effort you make in the laboratory. To complete each experiment is of secondary importance. You are encouraged to deviate from the written lab instructions if you have ideas of your own which you would like to follow. Your instructor will grade your lab notebook and lab work.

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**Exams:**
There will be 3 exams during the semester, at class time, and no final exam. Under no circumstances can make-up exams be given. Exam dates, times and location are:
- **February 27th, 2007** 12:05 pm or 1:20 pm in 2241 Chamberlin Hall
- **March 27th, 2007** 12:05 pm or 1:20 pm in 2241 Chamberlin Hall
- **May 8th, 2007** 12:05 pm or 1:20 pm in 2241 Chamberlin Hall

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**Schedule of the Labs:**

<table>
<thead>
<tr>
<th>Week #</th>
<th>Begin on</th>
<th>LAB EXPERIMENT</th>
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<tbody>
<tr>
<td>1</td>
<td>22-Jan</td>
<td>Classes meet, NO LAB</td>
</tr>
<tr>
<td>2</td>
<td>29-Jan</td>
<td>Principles of loudspeaker, microphone,…</td>
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<tr>
<td>3</td>
<td>5-Feb</td>
<td>Oscilloscope and oscillator, hearing</td>
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<td>4</td>
<td>12-Feb</td>
<td>Harmonic oscillator, resonance</td>
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<td>5</td>
<td>19-Feb</td>
<td>Strings</td>
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<td>6</td>
<td>26-Feb</td>
<td>Pipes</td>
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<tr>
<td>7</td>
<td>5-Mar</td>
<td>Sound Analysis</td>
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<tr>
<td>8</td>
<td>12-Mar</td>
<td>Musical Scales</td>
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<tr>
<td>9</td>
<td>19-Mar</td>
<td>Musical Instruments</td>
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<tr>
<td>10</td>
<td>26-Mar</td>
<td>Reflection and Refraction</td>
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<td>11</td>
<td>2-Apr</td>
<td>Spring Break, NO LAB</td>
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<tr>
<td>12</td>
<td>9-Apr</td>
<td>Lenses</td>
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<td>13</td>
<td>16-Apr</td>
<td>Photography</td>
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<td>14</td>
<td>23-Apr</td>
<td>Additive Color Mixing</td>
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<td>15</td>
<td>30-Apr</td>
<td>Subtractive Color Mixing</td>
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<td>16</td>
<td>7-May</td>
<td>Exam, NO LAB</td>
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