PHYS 112 Color and Images

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PHY 112

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Office Hours: by appointment.

Text: Seeing the Light by Falk, Brill and Stork

Core Course: This course may be used in partial fulfillment of your Core Science requirement. This course is part of the Xavier Core Curriculum, which aims to develop people of learning and reflection, integrity and achievement, in solidarity for and with others. It addresses the following core learning objectives at the intermediate level:

Students recognize and cogently discuss significant questions in the natural sciences.
Students evaluate problems using quantitative methods and arguments.
Students examine the interconnections between humans and the natural environment.

The scientific method has resulted in historically unprecedented changes in our world. In this course you will learn how science proceeds, and practice the scientific method yourself in a weekly laboratory experience. You will learn the qualities of a good hypothesis or model, how to assess its validity, the significance of a scientific theory, and the elusiveness of “proof.” On completing the course, you will be better able to understand and evaluate scientific or pseudoscientific claims that have direct impacts on your personal and professional life.

Course Content: This is an introduction to light, light sources, image generation with color, and interference effects. No previous knowledge of physics is assumed, although familiarity with high school algebra is expected.

Homework: Written homework will be assigned regularly. Ordinarily, homework is due the class period after it is assigned.

Research Paper: A research paper of at least five full double-spaced pages is part of the grade for this course. The paper should report on the history or development of a concept, idea, person or technology in the field of light or vision. Multiple sources should be used and properly referenced. A minimum of three non-internet sources must be included. Sources should be scientific, peer reviewed and respected. (No papers on LASIK surgery or color blindness, please.)

Grading: Semester grades will be based on:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Paper</td>
<td>100</td>
</tr>
<tr>
<td>3 Tests</td>
<td>100 each</td>
</tr>
<tr>
<td>Homework</td>
<td>~50</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
</tbody>
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Grades will be assigned on the following scale:

- 87-89 B+
- 77-79 C+
- 67-69 D+
- 93-100 A
- 83-86 B73-76 C63-66 D
- 90-92 A-
- 80-82 B- 70-72 C- 60-62 D-
**Tests:** If an exam is missed and a legitimate written excuse is provided, a make-up exam may be given. There will be at most one make-up exam per student.

**Class Attendance:** Attendance is expected for all classes. Please bring your text, a ruler and a calculator to lecture.

**Courtesy:** Please refrain from leaving the classroom during the class period unless you have a medical emergency. Please leave your cell phones turned off during class.