

Revolutions in Science: Light Syllabus

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Text: **Newton to Einstein: the Trail of Light** by Baierlein.
Lecture: MWF 10:20-11:20; Galileo 208
Lab: W 2:15-4:00 about every other week; Galileo 206
Course page: <http://physics.stmarys-ca.edu/>

Course Description: This course is specifically (and enthusiastically) designed for students who are majoring in the humanities and arts.

We will study some of the great “revolutions” in the history of scientific thinking about light. We will study Newton’s view of light as a particle, Huygen’s view of light as a wave, the problem of wave-particle duality, and modern physics including Einstein’s theory of relativity and some quantum physics.

The class meetings will consist of discussion, in-class exercises, and some lectures.

Course Goals: To understand and appreciate the nature of scientific thought. To understand how phenomena in nature are observed and studied, and how general rules are deduced from the observations. To examine social and ethical issues that arise from scientific inquiry. To learn more about light!

Attendance: Part of your grade is based on participation. You must be in class (and lab) in order to participate. You must also do the assigned reading and/or problems in time for the class discussion. Missing more than 4 lectures or 1 lab will adversely affect your grade. Exams cannot be made up without a pre-approved excuse.

Grading: The weighting of each category is shown below. Brief explanations of each category follow.

Homework and Labs	20%
Participation	15%
Paper/Project	20%
Midterm	15%
Final	30%

Homework: New assignments may be given in class each day in addition to the reading shown on the syllabus. All assignments are due at the *beginning* of lecture. No credit will be given for homework once solutions have been made available. If you miss class, it is your responsibility to see that you miss no assignments. Generally I’ll post them on the web; occasionally something won’t lend itself well to that medium.

In general, your grade on the homework will be based on “honest effort.” If you make a real attempt to do the homework, you should do well.

Lab: Each student will be graded on his or her demonstrated laboratory skills. This includes such things as: keeping a lab notebook, participation, and (to some extent) quality of results. Clarity of presentation, both written and oral, is important.

Participation: Each student is expected to participate in class. Ways in which you might participate are raising questions, attempting to answer questions raised by others, and explaining your own work, or your group’s work to the class.

Paper: One substantial paper will be due during the second half of the term. Additional information on this will follow.

Exams: There will be two exams given — one midterm and the final. The midterm is an hour long exam, and the final will be cumulative and last two hours.

Final: Monday, May 18, 11:30-1:30.