PHY 3400

*Light, Color, and Holography*

Fall 2006 - Section 3255

_Instructor:_

Prof. Steve Hagen  
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Office hours: To be announced

_Textbook (required):_

Light and Color  
R. Daniel Overheim, David L. Wagner  
ISBN: 0-471-08348-8  
Hardcover, 288 pages

_Note:_ Used copies are available online for less than $40. See for example [http://www.bestbookbuys.com](http://www.bestbookbuys.com)

_Class Meetings:_

Monday, Wednesday, Friday  
8:30 – 9:20 am (2nd period)  
Room NPB 1002 (New Physics Building)

_Goals:_

PHY 3400 provides a basic introduction to the physics of light, including its fundamental nature (what is light?), how we perceive and describe color, geometrical optics, optical phenomena in nature, and instruments that exploit optical principles. There are no formal prerequisites, but a working knowledge of basic algebra and trigonometry is required.

The course will emphasize the understanding of basic physical principles through real examples and experiments, always with the goal of being able to solve problems and understand nature.

_Topics covered:_

History and nature of light (waves, particles, polarization, energy)
Color (primary colors, lighting, paints, color printing)
Vision and the eye (Color perception, theories of human vision)
Optics (reflection, refraction, lenses, mirrors, cameras, microscopes, etc.)
Interference and diffraction (including gratings, soap bubbles, limits on vision)
Natural optical phenomena (rainbows, blue skies, and such natural phenomena)
Lasers and holography

Website:

The class website will be maintained on the UF WebCT server. This allows us to post confidential student grade information, homework and exam solutions, etc. without violating either student privacy or copyright law. The Instructor will assume that all students regularly visit the WebCT site and read the announcements and other information posted there. Since all policies & procedures outlined in this syllabus are subject to change, you should consider the website to be the definitive source of current information about policies and procedures. To access the site, go to http://lss.at.ufl.edu and look for WebCT Vista Log In. Use your Gatorlink ID to log in.

Final Exam:

There will be a two-hour, comprehensive final examination.
Thursday December 14, 2006, 5:30 – 7:30 pm (exam group 14E)

Grading Policy:

These details will be announced later. Most likely, student grades will be based on a combination of in-class writing assignments, homework, and a final examination.

Attendance:

Regular class attendance is definitely expected. Mastery of the course material will require each student to make a sustained and consistent investment of effort throughout the semester. Class attendance is part of that effort.

A student who stops participating in the class – i.e. who ceases attending class, doing homework, communicating with the instructor, taking quizzes/exams – should drop the course, because otherwise a failing grade is certain. No special end-of-semester arrangements (such as make-up work, late-drop petitions, incomplete grades, signatures on various forms, etc.) will be provided to any student who simply disappeared for a substantial portion of the semester. Such accommodations are only available to students who have participated in class and kept in regular contact with the instructor during the term.

Registration status:

Unfortunately the instructor cannot approve requests to audit PHY3400. Every student must register formally and take the class for credit. Classwork of students who are not registered will not be graded.
Incomplete grades:

UF policy is designed to discourage instructors from giving incomplete grades. Per this policy, a student may request a grade of Incomplete only if (a) an unusual hardship prevents the student from completing the course, and (b) the student carries a passing grade average at the time the request is made, and (c) the student shows diligence and responsibility in making the request in a timely fashion once the unusual hardship arises. The request certainly cannot be made after the final examination. The Instructor adheres blindly and rigidly to this policy.

Make-ups:

The Instructor believes that make-ups are intrinsically unfair. This unfairness can be mitigated (but not eliminated) by keeping the number of make-ups to an absolute minimum. A make-up for a missed exam will be granted only in the most dire situation. (A student who lacks diligence in contacting the instructor once this dire situation arises is unlikely to be granted the make-up.) There will be no makeups for missed quizzes. Some students may nevertheless suffer from a severe personal or family emergency that forces them to miss an in-class activity or quiz: Therefore, the two lowest quiz scores will be dropped when final grades are calculated.

Professional behavior:

Students are expected to show respect for themselves, their colleagues, and their institution by behaving professionally in the classroom. This means that habitual lateness, disruption and distraction (entering and leaving during lecture, etc.), use of cell phones, and other rudeness is unacceptable.

Students with Disabilities:

Students who will require a classroom accomodation for a disability must contact the Dean of Students Office and request proper documentation. Upon bringing that documentation to the Instructor, the student will be given the appropriate accomodations. No accommodations are available to students who lack this documentation.

It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accomodations when needed. The instructor will not remind the student to schedule accomodations prior to each quiz or exam. If you require extra time for in-class work, you must initiate this request at least seven days before the exam or quiz.

Academic Honesty:

All students are expected to hold themselves to a high standard of academic honesty. It is normal and reasonable for students in a physics course to work together on ungraded homework: however, students must work alone on all graded assignments (tests, quizzes, exams). Giving or receiving any unauthorized assistance during such an assignment will be treated as a deliberate violation of the UF Academic Honesty policy. This will result in a failing grade in Phy3400. Partial or total plagiarism on any written assignment is considered to be an especially flagrant form of dishonesty.