

Monday and Wednesday
2:00 – 3:15 p.m.
Instructor: Prof. Andre Adler
Office: Silver Center 903A
Office Phone: (212)-998-7802
E-mail: andre.adler@nyu.edu
Office Hour: See Blackboard

Lab Section	Day	Time
2	Wednesday	5:00 – 6:40 p.m.
3	Thursday	9:00 – 10:40 a.m.
4	Thursday	11:00 – 12:40 p.m.
5	Thursday	1:00 – 2:40 p.m.
6	Thursday	3:00 – 4:40 p.m.
7	Thursday	5:00 – 6:40 p.m.
8	Friday	9:00 – 10:40 a.m.
9	Friday	11:00 – 12:40 p.m.

Course Description

What is light? What is color? While it is hard to answer these questions many characteristics and properties of light and color, optics, the anatomy of the eye, the physiology of the retinal pathways and perception are understood. While the function of the eye is to produce a high quality image on the retina, the job of the neural tissue at the back of the eye is not image transmission to the brain, but image processing into information a person can use to navigate through their environment. We will discuss some everyday devices that use or create light, including CD's, DVD's and lasers. There will be laboratory projects on optics, a cow's eye dissection, and color mixing and classification.

There will be one midterm exam and a **cumulative** final exam. Questions from the exams will be based on the lectures, readings and homework problems. **You will also need to bring a calculator and a ruler with centimeter markings to all exams.**

Course texts

1. *Vision and Art: The Biology of Seeing*, Margaret Livingstone, Harry N. Abrams Inc.
2. *Hyperphysics: Light and Vision*, URL: <http://hyperphysics.phy-astr.gsu.edu/hbase/ligcon.html> - this material can be found online by going to the Blackboard course website.
3. *Exploration of Light and Color: Laboratory Manual*, 2005.
4. *Personal Response System Transmitter*. This item will be used for class participation and extra credit. Purchase is optional.

Lectures

Lectures are to help you learn the material, clarify what you are responsible for and to help you succeed on exams. Questions handed out each lecture and will form the basis of what you are responsible for from our twice-weekly meetings. Some of these questions are answered in your books, but all will be discussed in class.

Examination Schedule and Course Grade

Midterm examination:	25%	Wednesday, March 8, 2:00 – 3:15 pm
Laboratory:	40%	
Final examination:	35%	Monday, May 8, 2:00 - 3:50 pm

Extra Credit: Personal Response System (PRS)

In order to promote interaction in lecture you will use your personal response system transmitter to respond to a series of questions each lecture. The results of each question are collected by a computer and displayed on a large screen for all to see. This will gauge the classes understanding of important

topics. Also, you will receive 1/8 of a point for each question answered correctly. With about 3 questions asked per lecture, and about 24 lectures where we use the system during the semester, this means that you can add a maximum of around 9 points (depending on the number of questions asked over the course of the semester) to your grade for the course above that contributed by your lab grade, midterm and final examinations. Since this is extra credit, it cannot be made up for any reason, medical, personal or technical.

Laboratory Sessions

These weekly sessions are an important part of the course. You must be registered for one lab section. You will have to submit a lab report for each experiment performed. The lab report has to include answers to all questions and any data you may have collected. The lab report will be due in lab *one week* after the experiment has been performed. **The laboratory sessions will be held in Silver 203 and will begin the week of January 23.**

Attendance The lab instructor will deduct points from your lab grade for arriving late or leaving early.

Absence Policy Excused absences will only be given in the case of illness (with a doctor's note) or observation of a religious holiday. You must notify your lab instructor in advance in writing if you miss a lab due to religious reasons. All other absences will be considered unexcused and will result in a lab grade of zero. **You cannot make up a lab by attending a laboratory session that you are not registered for.**

Late Assignments Late assignments will be penalized for each day late (excluding weekends). If you wish to submit a late lab report you must do so only at your laboratory instructor's office.

Lab Instructors Each lab instructor will hold a weekly office hour where you can discuss lecture and laboratory material. Office location and office hour schedule will be announced in lab. A list of the lab instructors can be found on Blackboard.

Worksheets

Worksheets will be given out in some lectures. They are to help you understand the material and to prepare you for course examinations, though they will not be graded.

Missed Exams

There are no make-up exams for students who miss the mid-term exam. If you miss an exam because of illness, you must contact Dr. Adler by phone or email **before** the start of the exam and follow up with a doctor's note. If you miss an examination, for a valid reason (illness, injury or family emergency), your grade will be based on the following allocations:

Laboratory:	40%
Final examination (cumulative):	60%

Final Exam A make-up for the final examination will be given under exceptional circumstances, which must be discussed with Dr. Adler before the examination. A doctor's note must be provided in the case of illness. In this case a grade of incomplete will be assigned and **the make-up will be scheduled at the beginning of the Fall 2006 semester.** Please avoid making travel plans before the date of the final exam. No alternative date for the final examination will be offered before the end of the Spring 2006 semester.

Religious Holidays If you will be absent for a religious holiday during the semester, you must inform

your lab instructor and Dr. Adler in advance.

Class Web Site

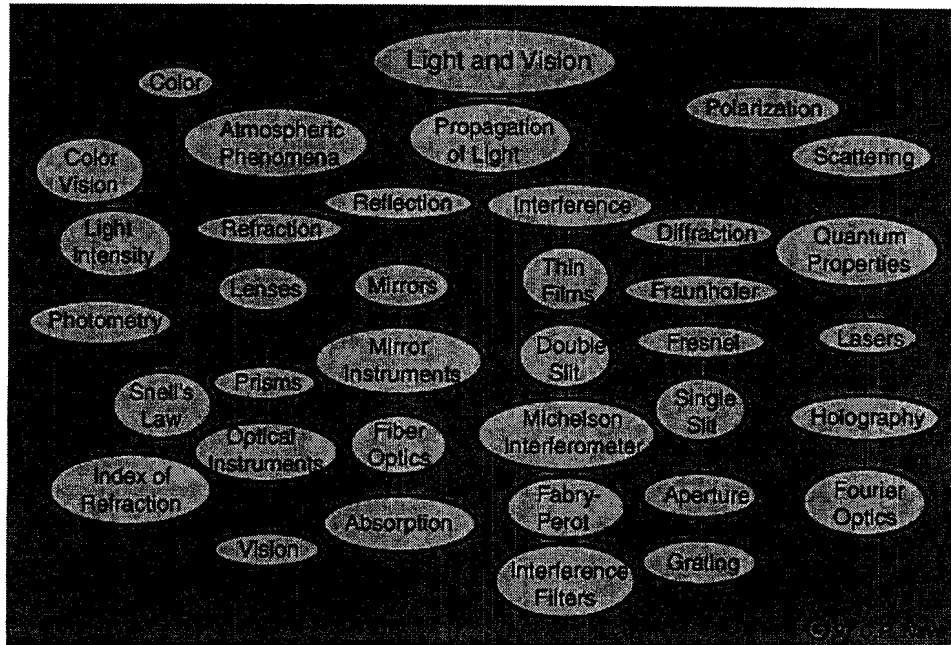
A Blackboard web site for this class exists and is accessible through your *NYUHome* account or by going to <http://classes.nyu.edu> and logging on using your netID and the same password as that of your NYU email account. You must have an active NYU email account to access the site.

Weekly Schedule of Topics, Readings and Laboratories

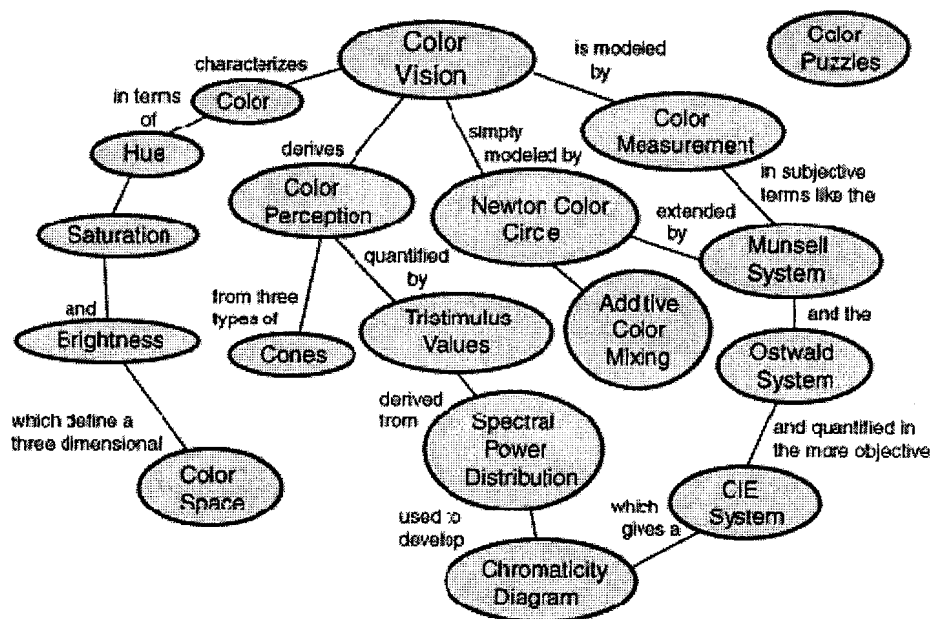
<i>Date</i>	<i>Lecture Topic</i>	<i>Reading from Livingstone</i>	<i>Weekly Lab</i>
W Jan. 18	Introduction; Electromagnetic Nature of Light		
M Jan. 23	Law of Reflection Refraction from Flat Surfaces		Mathematics Review
W Jan. 25	Refraction, Dispersion and Rainbows		
M Jan. 30	Refraction from Curved Surfaces		Reflection and Refraction
W Feb. 1	Converging Lenses		
M Feb. 6	Diverging Lenses; Thin Lenses		Refraction and Dispersion
W Feb. 8	Optics of the Eye		
M Feb. 13	Accommodation; Nearsightedness and Farsightedness; Laser Eye Surgery		Geometrical Optics
W Feb. 15	Optics of Cameras		
M Feb. 20	<i>Presidents Day</i>		Young's Experiment
W Feb. 22	The Wave Nature of Light: Interference and Diffraction; CD's, DVD's and Blu-Ray Disks	Ch. 1	
M Feb. 27	The Particle Nature of Light, The Laser		Review for Midterm
W Mar. 1	Photoreceptors and Trichromacy	Ch. 2	
M Mar. 6	Spectral Colors, Color Deficiencies	Ch. 2	Digital Photography
W Mar. 8	Midterm Examination		
M Mar. 20	Luminance and Night Vision	Ch. 3	Bovine Eye Dissection
W Mar. 22	Receptive Fields and Center-Surround Structure	Ch. 4	
M Mar. 27	More on Center-Surround Structure	Ch. 4	Polarization
W Mar. 29	Visual Acuity and Spatial Resolution	Ch. 5	
M Apr. 3	Color Mixing	Ch. 11	Island of the Colorblind
W Apr. 5	Color Appearance and Color Classification	Ch. 6	
M Apr. 10	Color Opponency	Ch. 6	Color Contrast
W Apr. 12	Contrast Effects	Ch. 6	
M Apr. 17	Perspective, Shading and Chiaroscuro	Ch. 7, 8	Color Mixing
W Apr. 19	Stereopsis	Ch. 9	
M Apr. 24	Illusions of Motion	Ch. 10	Review for Final
W Apr. 26	Television and Computer Graphics	Ch. 12	
M May 1	Review for the Final Exam		
Final Exam: Monday, May 8, 2:00 - 3:50 pm			

Name	Email Address	Teaching Schedule
Ting He	ting.he@physics.nyu.edu	Wednesday, 5 to 6:40
Ian Harnarine	iankh@nyu.edu	Thursday, 9 to 10:40 Thursday, 11 to 12:40
Irakli Odisharia	irakli.odisharia@physics.nyu.edu	Thursday, 1 to 2:40 Thursday, 3 to 4:40
Adi Zolotov	adi.zolotov@physics.nyu.edu	Thursday, 5 to 6:40 Friday, 9 to 10:40
Evan Ayala	evan.mathtutor@gmail.com	Friday, 11 to 12:40

The Hyperphysics: Light and Vision Portal at <http://hyperphysics.phy-astr.gsu.edu/hbase/ligcon.html>



As an example, if you click on “Color Vision” (shown above near the left top of the figure) you will see the following:





Academic Guidelines for Students

Morse Academic Plan, College of Arts and Science

To help foster common academic expectations among students and instructors, the following guidelines for MAP courses are offered to students. While these represent minimum expectations across the curriculum, individual faculty members may set additional course requirements. Students should therefore consult the course syllabus for details of policies in each class.

Attendance

Inasmuch as students have voluntarily sought admission to the University, they are expected to attend all class meetings, including all lectures and all meetings of associated recitation, workshop, or laboratory sections. Students may be excused for documented medical or personal emergency and will receive reasonable accommodation for the observance of religious holidays. In these cases, they should contact their instructors in advance or, in cases of emergency, as soon as is practicable. Students are responsible for making up any material or assignments they miss.

Classroom Decorum

The classroom is a space for free and open inquiry and for the critical evaluation of ideas, and it should be free of personal prejudice. Students and instructors alike have an obligation to all members of the class to create an educational atmosphere of mutual trust and respect in which differences of opinion can be subjected to deliberate and reasonable examination without animus.

As a matter of courtesy to their fellow students and instructors, students should arrive at class promptly, prepared and ready to participate. Students are reminded particularly to shut off all cellular telephones and pagers and, except in cases of emergency, to remain in the classroom for the duration of the lecture or section meeting. If it is necessary to leave or enter a room once class has begun, students should do so quietly and with as little disruption as possible. Under University policy, disruptive classroom behavior may be subject to faculty review and disciplinary sanction.

Completion of Assignments

Students are expected to submit course work on time and to retain copies of their work until a final grade has been received for the course. Instructors are not obliged to accept late work and may assign a failing or reduced grade to such assignments.

Students who encounter sudden and incapacitating illness or an other comparably grave circumstance that prevents them from completing the final examination or assignment in a course may request a temporary mark of Incomplete from the course instructor. To receive an Incomplete, students must have completed all other requirements for the course, including satisfactory attendance, and there must be a strong likelihood they will pass the course when all work is completed.

Questions and Concerns

Up-to-date course information is available on the MAP website: www.nyu.edu/cas/map. Questions, concerns, comments, and feedback may be directed to the following members of the MAP staff, located in 903 Silver Center, 212-998-8119. Complaints will remain confidential.

MAP Director:	Dr. Eliot Borenstein	morse.plan@nyu.edu
Foundations of Contemporary Culture:	Dr. Vincent Renzi	map.fcc@nyu.edu
Foundations of Scientific Inquiry:	Dr. Trace Jordan	map.fsi@nyu.edu
MAP Administration:	Mike Summers	morse.plan@nyu.edu



Statement on Academic Integrity

Morse Academic Plan, College of Arts and Science

As a student at New York University, you have been admitted to a community of scholars who value free and open inquiry. Our work depends on honest assessment of ideas and their sources; and we expect you, as a member of our community, likewise to maintain the highest integrity in your academic work. Because of the central importance of these values to our intellectual life together, those who fail to maintain them will be subject to severe sanction, which may include dismissal from the University.

Plagiarism consists in presenting ideas and words without acknowledging their source and is an offense against academic integrity. Any of the following acts constitutes a crime of plagiarism.

- Using a phrase, sentence, or passage from another person's work without quotation marks and attribution of the source.
- Paraphrasing words or ideas from another's work without attribution.
- Reporting as your own research or knowledge any data or facts gathered or reported by another person.
- Submitting in your own name papers or reports completed by another.
- Submitting your own original work toward requirements in more than one class without the prior permission of the instructors.

Other offenses against academic integrity include the following.

- Collaborating with other students on assignments without the express permission of the instructor.
- Giving your work to another student to submit as his or her own.
- Copying answers from other students during examinations.
- Using notes or other sources to answer exam questions without the instructor's permission.
- Secreting or destroying library or reference materials.
- Submitting as your own work a paper or results of research that you have purchased from a commercial firm or another person.

Particular emphasis is placed on the use of papers and other materials to be found on the World-Wide Web, whether purchased or freely available. In addition to having access to the same search engines as students, faculty also have at their disposal a number of special websites devoted to detecting plagiarism from the web.

Plagiarism and other cases of academic fraud are matters of fact, not intention. It is therefore crucial that you be diligent in assuring the integrity of your work.

- Use quotation marks to set off words that are not your own.
- Learn to use proper forms of attribution for source materials.
- Do your own original work in each class, without collaboration, unless otherwise instructed.
- Don't use published sources, the work of others, or material from the web without attribution.
- For further information, consult the Bulletin of the College of Arts and Science, the CAS Academic Handbook, and the Student's Guide to NYU.