Green Sheet PHYS258
Spring 2010, Department of Physics, San Jose State University

Time	Monday	Tuesday	Wednesday	Thursday	Friday
15:00-16:00	**Office SCI 264**		**Office SCI 264**		
17:30-18:45	**PHYS 258 SCI 242**		**PHYS 258 SCI 242**		
Computers with MATLAB installed are in SCI 242 and available whenever there is no class scheduled in the room. Get your access code from me on the second day of the class.					

Lecturer: Dr. Nayer Eradat Office: Science 264 Phone: 408 924 5258
email: Nayer.Eradat@sjsu.edu Website: www.erbion.com/Phys258_2010

Faculty Web Page and MYSJSU Messaging (Optional)

1. Copies of the course materials such as the syllabus, major assignment handouts, etc. may be found on my faculty home page from http://www.physics.sjsu.edu/ click on faculty and staff and then on adjunct faculty or directly on the course website http://www.erbion.com/Phys53_2010.htm .
2. I will regularly update the website and send announcements to the email address you have provided at registration. You are responsible for regularly (twice a week) checking with the messaging system through MySJSU.

Contact: The best way to contact me is email or coming to the office hours

Course Description:

This is an advanced course in optics for Physics, mechanical/electrical engineering graduate students or senior undergraduates. Topics discussed include (but not limited to) Fourier optics, diffraction theory, imaging and image enhancement, holography and information processing. There will be some flexibility in seminar topics depending on fabric of the class.

Prerequisites: PHYS158, MATH 133A

Learning Objectives:

Will be discussed on Jan 27th first day of the class

Text: Txt: Fourier Optics 4th edition by Joseph W. Goodman

References: Ref1: Optics 4th edition by Eugene Hecht

Ref2: Theory and problems of optics; Schaum's outline series by Eugene Hecht

Ref3: Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light (7th Edition) by Max Born and Emil Wolf (Hardcover - Oct 13, 1999)

Ref4: Introduction to Optics by Frank L. Pedrotti , Leno M. Pedrotti, and Leno S. Pedrotti

Lecture: The lectures will meet on Mondays and Wednesdays during the semester. The lectures are designed to discuss the course material, to work examples, and to answer the questions you may have. There will be occasional demonstrations during some lectures that are designed to help you with better understanding of the physical concepts or to make you curious. The lectures are interactive. Problem solving is a big part of the course and it is imbedded in the lectures. Students are expected to get involved in discussions during the class. So it is crucial to read the suggested material before each lecture for active participation in the class and learning the material.

Exams: There will be one midterm and a final exam. Exams will be open book from the material covered in the class. Basic knowledge of the PHYS158 material and mathematical requirements is assumed. There might be take-home assignments as part of the exams.

Homework: Homework problem sets and projects will be assigned and collected according to the course calendar on the course website (subject to change as the course progresses).

Grading: Your grade will be determined by your performance on homework, projects, and exams. Plus and minus grading will be used. The letter grades will be roughly assigned based on the following list A: 90s, B: 80s, C: 70s, D: 60s, F: 50s and below.

Grading Summary

Category	Contribution	Number Dropped
Midterm Test	30%	0
Final Exam (comprehensive)	30%	0
Home Work	30%	0
Seminar or Project	10%	0

Accessing Some of the HW problems may require computer use. If you do not have a computer with web access readily available to you, there are a number of options on campus, including computers in the department and library. All computers in room 242 have MATLAB installed that will be used for problem solving. An access code will be provided on the second day of the class.

Disabilities: Campus policy in compliance with the Americans with Disabilities Act: "If you need course adaptation or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible or see me during the office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability".

Academic Integrity Statement:

From the Office of Student Conduct and Ethical Development: "Your own commitment to learning, as evidenced by your enrolment at San Jose State University, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The policy on academic integrity can be found at http://sa.sjsu.edu/student _conduct.

Date	Day	Quiz	Reading	HW Assigned	HW Due
Week 1					
Jan 27	W		L1: Introduction and class organization Why Fourier Optics?	Review* MATLAB Tutorial 2	
Week 2					
Feb 1	M		L2: Wave motion Ref1-2 or Ref2-1	HW1: Light review problems 1-19in the L1	
Feb 3	W		L3 : Review of Electromagnetic waves Ref1-3 or Ref2-2		
Week 3					
Feb 8	M		L4: Superposition of waves Ref1-7		
Feb 10	W		L5:Anharmonic periodic waves (Fourier series) Ref1-7.3 Ref2-8	HW2: RV2-1,2, ... there will be more	HW1
Week 4					
Feb 15	M		L6: Nonperiodic waves (Fourier integrals) Ref1-7.4 Ref2-8		
Feb 17	W		L7 : Huygens-Fresnel Principle Ref1-10, Txt-3	HW3	HW2
Week 5					
Feb 22	M		L8 : Fraunhofer Diffraction Ref1-10, Txt-4		
Feb 24	W			HW	
Week 6					
Mar 1	M		L9 : Fraunhofer Diffraction II Ref1-10, Txt-4		
Mar 3	W		L10: Fresnel Diffraction	HW	
Week 7					
Mar 8	M		L12 : Fresnel Diffraction Ref1-10, Txt-4		
Mar 10	W		L13: Kirchhoff's Scalar Diffraction Theory Txt-3, Ref-10	HW	
Week 8					
Mar 15	M		L 14: Introduction to Fourier optics Txt-2, Ref1-11		
Mar 17	W				
Week 9					
Mar 22	M		No class		
Mar 24	W		Midterm	HW	
Week 10 Spring Bake No class					
Week 11					
Apr 5	M		Wave optics analysis of Coherent optical systems Txt-5, Ref1-12		
Apr 7	W			HW	
Week 12					
Apr 12	M				
Apr 14	W			HW	
Week 13					
Apr 19	M		Frequency analysis of optical imaging systems Txt-6		
Apr 21	W			HW	
Week 14					
Apr 26	M				
Apr 28	W			HW	
Week 15					
May 3	M				
May 5	W		Wavefront modulation Txt-7 (if time permits)	HW	
Week 16					
May 10	M				
May 12	W			HW	
Week 17					
May 17	M		Last day of class		
May 119	W			HW	
Week 18					
May 24			**Final due**		

* http://www.mathworks.com/academia/student_center/tutorials/launchpad.html

Optics (4th Edition) by Eugene Hecht (**Hardcover** - Aug 2, 2001)

Buy new: ~~$120.00~~ **$100.80** Used & new from $59.49

Get it by **Thursday, Jan. 25**, if you order in the next **3 hours and 33 minutes**.

Schaum's Outline of Optics by Eugene Hecht (**Paperback** - Nov 1, 1974)

Buy new: ~~$17.95~~ **$12.21** Used & new from $10.23

Get it by **Thursday, Jan. 25**, if you order in the next **3 hours and 33 minutes**.

Excerpt - page 1: "... Chapter 1 Wave Motion 1.1 INTRODUC;TION **Optics** is the study of light or, more broadly, the study ..."

Introduction to Fourier Optics by Joseph W. Goodman (**Hardcover** - Dec 10, 2004)

Buy new: ~~$98.50~~ **$83.72** Used & new from $60.00

Get it by **Thursday, Jan. 25**, if you order in the next **3 hours and 33 minutes**.

ntroduction to Optics (3rd Edition) by Frank L Pedrotti, Leno M Pedrotti, and Leno S Pedrotti (**Hardcover** - April 7, 2006)

Buy new: ~~$121.20~~ **$100.60** Used & new from $95.00

Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light (7th Edition) by Max Born and Emil Wolf (**Hardcover** - Oct 13, 1999)

Buy new: ~~$80.00~~ **$56.00** Used & new from $50.00

Get it by **Thursday, Jan. 25**, if you order in the next **3 hours and 33 minutes**.

Introduction to Modern Optics by Grant R. Fowles (**Paperback** - Jun 1, 1989)

Buy new: ~~$16.95~~ **$11.53** Used & new from $8.94

Get it by **Thursday, Jan. 25**, if you order in the next **3 hours and 33 minutes**.