Joseph A. Musser, Ph.D.
Professor, Department of Physics, Engineering and Astronomy
Office: 207P STEM Building, (936) 468-2015, musserja@sfasu.edu,
Student/Office Hours: MW 9:30-10:30, M 1:30-3:30, T 8:30-10:30 or by appointment
Class lecture: M 6:00 p.m.-9:00 p.m. in STEM 305
Co-requisite 441Lab: W 12:00-2:50 p.m.

Course Description: This course examines the fundamentals of physical and geometrical optics including polarization and diffraction. Grade is recorded for both lecture and laboratory. Prerequisite C or better in PHY333, MTH33

Textbooks: Introduction to Optics, Pedrotti, Pedrotti, and Pedrotti, 3rd Edition. The PHY 441 lab manual will be provided.

Course Requirements: Homework, 2 class exams, and a comprehensive final exam
The co-requisite, PHY441L, has weekly labs, which may include a recitation and a final exam. Labs will meet beginning January 22nd.

Course Calendar: A more detailed calendar follows on the next page.
As this is my first time to teach this course the calendar is subject to change.
Feb. 17th Exam I Chapters 1-5
Apr. 30th Exam II Chapters 6-13 & review questions
May 6th, 4:15-6:45pm Final Exam Chapters 16,17,19,24,26, 28, comprehensive

Grading Policy: The laboratory and lecture grades will be combined to form a single grade for both PHY441 and PHY441L.
Lab Portion 25 % 90-100 % A
Exam I 18 % 80-89 % B
Exam II 18 % 70-79 % C
Final Exam 25 % 60-69 % D
Homework & Quizzes 14 % < 60 % F

Attendance Policy: If you are going to miss class for a university excused absence you should notify the instructor in advance. It is your responsibility to make arrangements to make up any missed work. If you are sick it is your responsibility to abide by university guidelines in dealing with your absence. The final grade of any student with four or more hours of unexcused absences (in lectures and/or labs) will be dropped one letter grade. It is the responsibility of the student to provide documentation of any excused absence to Dr. Musser within one week of the absence. Failure to provide the documentation within one week of the absence will result in the absence being considered unexcused.
**Program Learning Outcomes:** Objectives 1, 2, and 3 will be assessed in Optics this semester.

Objective 1, Problem Solving. The student will demonstrate proficiency in physics by developing problem solving skills.
Objective 2, Laboratory Skill. The student will develop good experimental technique.
Objective 3, Written Communications. The student will develop effective written communication skills.

**General Education Core Curriculum:** This course is not part of the core curriculum.

**Student Learning Outcomes:** By the end of the course, a successful student will be able to:
1. Geometrical Optics - Apply the laws of reflection and refraction to plane and spherical surfaces, and discuss the principles of various optical instruments.

Topics by Chapter
Chapter 1, Nature of Light
Chapter 2, Geometrical Optics
Chapter 3, Optical Instrumentation
Chapter 4, Wave Equations
Chapter 5, Superposition of Waves
Chapter 6, Properties of Lasers
Chapter 7, Interference of Light
Chapter 8, Optical Interferometry
Chapter 9, Coherence
Chapter 10, Fiber Optics
Chapter 11, Fraunhofer Diffraction
Chapter 12, The Diffraction Grating
Chapter 13, Fresnel Diffraction
Chapter 14, Matrix Treatment of Polarization
Chapter 15, Production of Polarized Light
Chapter 16, Holography
Chapter 17, Optical Detectors and Displays
Chapter 18, Matrix Methods in Paraxial Optics
Chapter 19, Optics of the Eye
Chapter 20, Aberration Theory
Chapter 21, Fourier Optics
Chapter 22, Theory of Multilayer Films
Chapter 23, Fresnel Equations
Chapter 24, Nonlinear Optics and the Modulation of Light
Chapter 26, Laser Operation
Chapter 28, Selected Modern Applications
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Ch 11-13
Ch 14 & 15
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Ch 24
Ch 28
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Ch 24
Ch 25
Ch 26
Ch 27
Ch 28
Ch 29
Ch 30
Ch 31
Ex 1
Ex 2
Academic Integrity (A-9.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades Semester Grades Policy (A-54)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

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Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.