EENG 4110/5110 Introduction to Photonics and Optical Engineering

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Spring 2026
Time: (TuTh) 2:30 pm - 3:50 pm
Meeting Place: NTDP E265
Office Hours: (We) 4:00 pm - 5:00 pm
(Th) 1:30 pm - 2:30 pm

Course Number, Title, Credit Hours

EENG 4110-001, EENG 5110-001
Introduction to Photonics and Optical Engineering, 3 hours.

General Description

The nature of light and its properties, basic geometrical and physical optics, optical system and design considerations.

Course Information

Prerequisites

Students are expected to have prior knowledge of differential equations, typically satisfied by EENG 3410 or an equivalent course.

Textbooks

1. J. Peatross and M. Ware, *Physics of Light and Optics*, 2015 edition, available at optics.byu.edu (required, free download).
2. Optics, Eugene Hecht, Pearson Education, 5th edition, ISBN: 9780133977226, 2017. (Recommended, the older edition is ok)

Reference Texts

1. Optics for Engineers, Charles A. DiMarzio, CRC Press, 1th edition, ISBN: 9781439807255, 2011.
2. Modern Optical Engineering, W. Smith, McGraw Hill, 4th edition, ISBN: 9780071593755, 2008.

Attendance

Attendance is mandatory. Lecture periods will be utilized to present the principles and theory of the course topics. Class participation and discussion are expected in these sessions. Lab sessions will provide students with hands-on learning that enables them to actively apply lecture concepts to real-world tasks, such as experimentation, data analysis, and problem-solving. By working collaboratively and independently, students build scientific reasoning, critical thinking, and practical skills in a supportive environment.

Homework and Lab Reports

Homework and labs will be assigned to help students understand and reinforce the lecture material.

- Homework/lab reports must be uploaded to Canvas at the due date/time.
- Homework/lab reports turned in late will be penalized 50%. No homework is accepted after 24 hours.
- Students have one week to contest any grade once the grade is posted.

Exams

There will be **two** exams, including a final exam, each worth 100 points. The exams will be based on textbook readings, handouts, exercises, lectures, and class discussions. Students are responsible for all these materials, regardless of whether they are reviewed in class.

Make-up Exams

Make-up exams will be granted only with a documented university-excused absence (see UNT Policy 06.039). Students must contact the instructor before the scheduled exam. Please note that make-up exams will not include the same questions as the original exam.

Grading Elements and Weights

Homework	20%
Midterm Exam	25%
Lab	30%
Final Exam	25%

A	≥ 90%
B	80 – 89%
C	70 – 79%
D	60 – 69%
F	≤ 59%

Student Evaluation of Instruction

The Student Perceptions of Teaching (SPOT) is a requirement for all organized classes at UNT. This brief survey will be made available to you at the end of the semester, providing you with a chance to comment on how this class is taught. I am interested in the feedback I receive from students, as I work to continually improve my teaching. I consider the SPOT to be an important part of your participation in this class.

UNT Policies

ODA Policy

UNT makes reasonable academic accommodations for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA

will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time; however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website (https://disability.unt.edu/).

Academic Integrity Policy

According to **UNT Policy 06.003**, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

Tentative Course Outline/Schedule

- Introduction, Wave Motion (1/13)
- Electromagnetic Theory, Photons, and Light (1/15)
- The Propagation of Light (1/20, 1/22, 1/27)
- **Lab 1** (1/29, 2/3)
- Geometrical Optics (2/5, 2/10, 2/12, 2/17)
- Fiberoptics (2/19, 2/24)
- **Lab 2** (2/26, 3/3)
- **Midterm Exam** (Tuesday, 3/5)
- The Superposition of Wave/Interference (3/17, 3/19, 3/24, 3/26)
- Diffraction (3/31, 4/2)
- **Lab 3** (4/7, 4/9)
- Polarization (4/14, 4/16, 4/21)
- **Lab 4** (4/23, 4/28)
- **Final Exam** Tuesday, 5/5/2026, 12:30 pm – 2:30pm