EENG 4010/5940  Introduction to Photonics and Optical Engineering

Instructor:  Shuping Wang
Office:  NTDP F130
Phone:  940-369-8895
Email:  shuping@unt.edu

Fall 2022
Time:  (TuTh) 2:30pm - 3:50pm
Meeting Place:  NTDP B190
Office Hours:  (TuTh) 4:00pm - 5:30pm

GA: Himani Gandhi
Email: HimaniGandhi@my.unt.edu
Office hours: by appointment

Course Number, Title, Credit Hours
EENG 4010-007, Topics in Electrical Engineering, 3 hours.
EENG 5940-007, Advanced Topics in Electrical 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
Knowledge of differential equations, EENG 3410 or equivalent is very helpful.

Textbooks

Reference Texts

Attendance
Attendance is expected. Research has shown that students who attend class are more likely to be successful. To encourage your attendance, punctuality, and learning, I will provide pop-up quizzes of the previous lecture’s material at the beginning of class. You will have the ability to earn up to 5 bonus points toward your overall grade over the semester by attending the lectures. The pop-up quizzes will be administered sharply at 2:30 pm and will last for about 5 minutes. Plan to arrive on time because you must be present when class begins to take the quiz.
Homework
Homework will be assigned to help understanding and reinforce the materials covered in lecture. The HW is graded based on completion. HW solution will be posted after due date.
  o Homework needs to be uploaded to Canvas at the due date/time.
  o Homework turned in late will be penalized 50%. No homework accepted after 24 hours.
  o Students have one week to contest any grade once grade posted.

Exams
There will be two exams (this includes the final exam), each worth 100 points. Exams will be based on text readings, handouts, class exercises, and class lectures and discussions. Students are responsible for all text material, regardless of whether we review the text material in class or not.

Missed Exams
There are no make-up Tests. If you cannot take the midterm exam for any reason, the weight of the midterm will be put onto the final, so that the final is worth 70% of your grade. Make-up exam accommodations for the Final Exam will only be made if you have a documented university excused absence (refer to UNT Policy 06.039).

Grading Elements and Weights
Pop-up quiz (Attendance bonus) 5%
Midterm Examination 35%
Final Examination 35%
Homework (Undergraduate) 30%
Homework + Lab (Graduate) 10% + 20%

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 short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very 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 accommodation 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 admonishment 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
o Introduction, Wave Motion (8/30, 9/1, 9/6)
o Electromagnetic Theory, Photons, and Light (9/8, 9/13)
o The Propagation of Light – Reflection and Refraction (9/15)
o The Propagation of Light – Electromagnetic Approach (9/20, 9/22)
o Geometrical Optics - Lenses, Mirrors, Prisms (9/27, 9/29, 10/4, 10/6)
o More on Geometrical Optics - Thick Lenses/Lens Systems, Aberations (10/11, 10/13)
o Midterm Exam 10/18/2022, 3:30pm
o The Superposition of Wave/Interference (10/20, 10/25, 10/27, 11/1)
o Polarization (11/3, 11/8, 11/10)
o Lasers (11/15, 11/17, 11/22)
o Review 12/6/2022
o Final Exam Tuesday, 12/13/2022, 1:30pm – 3:30pm