

Optics and Photonics Minor (Non-Teaching)

The undergraduate non-teaching minor in Optics and Photonics provides a core set of knowledge and skills necessary to participate in the rapidly growing opportunities in optical science and engineering. Requirements include courses in optics, electrical engineering and physics, as well as electives chosen to match the interests and needs of each student.

Students pursuing the BS in Electrical Engineering can earn the Optics and Photonics Minor within the 125 credits required for the major by careful selection of electives and by completing an optics-related capstone design project.

Students pursuing the BS in Physics Professional Option or the BS in Physics Interdisciplinary Option can earn the Optics and Photonics Minor with no extra credits by carefully selecting physics electives, by taking EELE 482 as one of their university or declared area electives, and by completing optics-related research (PHSX 490R and PHSX 499R) as their required senior project.

Required core courses for minor (12 credits):

EELE 334	Electromagnetic Theory I	3
or PHSX 423	Electricity and Magnetism I	
EELE 432	Applied Electromagnetics	3
or PHSX 425	Electricity and Magnetism II	
EELE 482	Electro-Optical Systems	3
PHSX 427	Advanced Optics	3
or PHSX 437	Laser Applications	
Optics electives (choose at least 9 credits):		9
CHMY 371	Physical Chemistry-Quantum Chemistry and Spectroscopy I	
EELE 408	Photovoltaic Systems	
EELE 448	Optical Communications Systems	
EELE 481	Optical Design	
EELE 484	Laser Engineering	
EELE 488R	Electrical Engineering Design I ³	
EELE 489R	Electrical Engr Design II ³	
EELE 490R	Undergraduate Research ¹	
EELE 492	Independent Study ²	
PHSX 427	Advanced Optics	
PHSX 437	Laser Applications	
PHSX 444	Advanced Physics Lab	
PHSX 490R	Undergraduate Research ¹	
PHSX 492	Independent Study ²	
PHSX 494	Seminar/Workshop ¹	
PHSX 499R	Senior Capstone Seminar ¹	

Total Credits **21**

¹ A maximum of four (4) credits (total) of these classes may be used if the topic is directly related to optics, on approval by academic advisor and research advisor/instructor.

² A maximum of three (3) credits (total) of these classes may be used if the topic is directly related to optics, on approval by academic advisor and research advisor/instructor.

³ EELE488R and EELE489R must involve projects directly related to optics and be approved by academic advisor and ECE optics faculty.

* Note: The following 500-level classes can be taken as electives in the Optics and Photonics minor by seniors with a cumulative grade-point average ≥ 3.25 (by petition to the Registrar) and provided all prerequisites are met.

- MTSI 503 Electrical, Optical and Magnetic properties of materials
- EELE 538 Adv Top Electromagnet & Optics
- EELE 581 Fourier Optics/Imaging Theory
- EELE 582 Optical Design
- EELE 583 Remote Sensing Systems
- PHSX 515 Advanced Topics In Physics (if topic is directly optics related)
- PHSX 531 Nonlinear Optics/Laser Spectroscopy
- CHMY 527 Analytic Optical Spectroscopy
- CHMY 557 Quantum Mechanics
- CHMY 560 Symmetry, Orbitals, and Spectroscopy