

Electrical Engineering: Lasers and Optical Engineering Concentration
Technical Electives
Degree Total: 8 credits

| Course Number | Course Title | Credits | Noted Prerequisites | Terms |
|------------------------|---|---------|---|-----------|
| ECE 312 | Linear System Analysis II | 3 | ECE311 with a C or higher | S |
| ECE 403/BIOM 403 | Intro to Optical Techniques in Biomedical Engineering | 3 | CHEM111; PH142 with a C or higher | S, Odd |
| ECE 415 | Semiconductor Physics and Junctions | 2 | MATH340 or MATH345 with a C or higher; PH142 with a C or higher | As Needed |
| ECE 430/MATH 430 | Fourier and Wavelet Analysis with Applications | 3 | MATH340 or MATH345 | S, Odd |
| ECE 48X | Experimental Courses in Topics of Lasers/Optics | 1-4 | Varies - check course for details. Verify experimental course approval with ECE Academic Advisor | F,S |
| ECE 495 ^{1,2} | Independent Study | 1-3 | | F,S,SU |
| ECE 503 | Ultrafast Optics | 3 | ECE342 | S, Odd |
| ECE 504 | Physical Optics | 3 | ECE342 with a C or higher | F, Odd |
| ECE 506 | Optical Interferometry and Laser Metrology | 3 | ECE342; ECE441 | F, Odd |
| ECE 507 | Plasma Physics and Applications | 3 | ECE342 | S, Odd |
| ECE 526/BIOM 526 | Biological Physics | 3 | MATH340 or MATH345; PH122 or PH142 | F, Odd |
| ECE 527B/BIOM 527B | Signals and Noise in Biosensors | 1 | PH142, MATH340 or MATH345 or concurrent registration | As Needed |
| ECE 527F/BIOM 527F | Biophotonic Sensors Using Refractive Index | 1 | ECE527E; PH142; MATH340 or MATH345 or concurrent registration | As Needed |
| ECE 544 | Silicon Photonics in Computing Systems | 3 | PH141; ECE303 with a C or higher or STAT303 with a C or higher | F |
| ECE 546 | Laser Fundamentals and Devices | 3 | ECE441 | S, Even |
| ECE 559/BIOM 559 | Machine Learning in Imaging and Spectroscopy | 3 | ECE312 with a C or higher or ECE457; ECE403 or BIOM403 or concurrent registration or ECE441 or concurrent registration or ECE504; ECE303 with a C or higher or STAT303 with a C or higher or ECE431 or BIOM431; CS150B with a C or higher or CS152 with a C or higher or CS163 with a C or higher or CS164 with a C or higher | F, Even |
| ECE 572 | Semiconductor Transistors | 1 | ECE331 with a C or higher; ECE415 or concurrent registration or ECE471B | As Needed |
| ECE 573 | Semiconductor Optoelectronics Laboratory | 3 | ECE415 | As Needed |
| ECE 574 | Optical Properties in Solids | 3 | ECE441 with a C or higher | S, Even |
| ECE 58X | Experimental Courses in Topics of Lasers/Optics | 1-4 | Varies - check course for details. Verify experimental course approval with ECE Academic Advisor | F,S |
| MATH 419 | Introduction to Complex Variables | 3 | MATH261 | F |
| PH 315 | Modern Physics Lab | 2 | PH314 or concurrent registration | S |
| PH 425 | Advanced Physics Laboratory | 2 | PH315; PH451 | S |
| PH 452 | Intro to Quantum Mechanics II | 3 | PH451 | S |
| PH 462 | Statistical Physics | 3 | MATH340; PH314; PH361 | F |

¹ A maximum of 3 credits of Independent Study may apply towards degree requirements. This includes credits awarded for ECE395 and ECE495 combined.

² Biomedical Engineering - Lasers & Optics (L&O) dual degree students may apply a maximum of 3 credits of independent study (ECE395 and ECE495) towards their L&O degree requirements.

Courses used to fulfill major and concentration requirements will not be counted as Technical Elective credits.