

PHOTONICS, PHD

Requirements for Students Matriculating in or before Academic Year

2024-2025. Learn more about Graduate College Academic Regulation 7.0 (<http://catalog.okstate.edu/graduate-college/#70>).

Total Hours: 60 (Beyond the Master's Degree)

Code	Title	Hours
Course Requirements ¹		
Select 3 hours from Electromagnetics:		3
PHYS 5313	Electromagnetic Theory	
ECEN 5613	Electromagnetic Theory	
PHYS 4813	Electromagnetic Radiation	
or PHYS 5110	Seminar	
Select 3 hours from Lasers:		3
PHYS 5163	Lasers	
ECEN 4843	Design of Lasers and Systems	
or ECEN 5080	Fundamental Topics	
Select 6 hours from Optics:		6
ECEN 4823	Design of Optical Systems	
or ECEN 5080	Fundamental Topics	
PHYS 5123	Geometrical Optics	
or ECEN 5803	Geometrical Optics	
PHYS 5303	Physical Optics	
or ECEN 5823	Physical Optics	
Select 3 hours from Quantum Mechanics:		3
PHYS 5613	Quantum Mechanics I	
PHYS 4513	Introductory Quantum Mechanics	
or PHYS 5110	Seminar	
Select 12 Hours from Advanced Topics (Optoelectronics, Spectroscopy, Quantum and Nonlinear Optics, Solid State, Photonics Systems, Electromagnetics, Bio/Nano Photonics, and Additional Laboratory Courses		12
ECEN 5853	Ultrafast Optoelectronics	
PHYS 5133	Laser Spectroscopy	
PHYS 6413	Nonlinear Optics	
PHYS 6423	Quantum Optics	
PHYS 5663	Solid State Physics I	
PHYS 6243	Semiconductors I	
PHYS 4263	Introduction to Solid State Physics	
or PHYS 5110	Seminar	
ECEN 5333	Semiconductor Devices	
ECEN 5833	Fiber-Optic Communication Systems	
PHYS 6713	Advanced Electromagnetic Radiation	
ECEN 5613	Electromagnetic Theory	
PHYS 4313	Molecular Biophysics ²	
or PHYS 5110	Seminar	
ECEN 5843	Microelectronic Fabrication	
Select at least one additional elective course.		3
Hours Subtotal		30
Dissertation ¹		
Thirty hours from:		30
PHYS 6000	Doctoral Dissertation Research	

Hours Subtotal	30
Total Hours	60

¹

Combined Coursework and Dissertation to total 60 hours beyond the Master's Degree and 72 hours beyond the Bachelor's Degree. Distribution of hours may be varied from above

²

For students pursuing the bio/nano photonics option, additional courses from departments other than ECEN and PHYS may be included.

Total Hours: 72 (Beyond the Bachelor's Degree)

Code	Title	Hours
Course Requirements ¹		
Select 3 hours from Electromagnetics:		3
PHYS 5313	Electromagnetic Theory	
ECEN 5613	Electromagnetic Theory	
PHYS 4813	Electromagnetic Radiation	
or PHYS 5110	Seminar	
Select 3 hours from Lasers:		3
PHYS 5163	Lasers	
ECEN 4843	Design of Lasers and Systems	
or ECEN 5080	Fundamental Topics	
Select 6 hours from Optics:		6
ECEN 4823	Design of Optical Systems	
or ECEN 5080	Fundamental Topics	
PHYS 5123	Geometrical Optics	
or ECEN 5803	Geometrical Optics	
PHYS 5303	Physical Optics	
or ECEN 5823	Physical Optics	
Select 3 hours from Quantum Mechanics:		3
PHYS 5613	Quantum Mechanics I	
PHYS 4513	Introductory Quantum Mechanics	
or PHYS 5110	Seminar	
Select 12 Hours from Advanced Topics (Optoelectronics, Spectroscopy, Quantum and Nonlinear Optics, Solid State, Photonics Systems, Electromagnetics, Bio/Nano Photonics, and Additional Laboratory Courses		12
ECEN 5853	Ultrafast Optoelectronics	
PHYS 5133	Laser Spectroscopy	
PHYS 6413	Nonlinear Optics	
PHYS 6423	Quantum Optics	
PHYS 5663	Solid State Physics I	
PHYS 6243	Semiconductors I	
PHYS 4263	Introduction to Solid State Physics	
or PHYS 5110	Seminar	
ECEN 5333	Semiconductor Devices	
ECEN 5833	Fiber-Optic Communication Systems	
PHYS 6713	Advanced Electromagnetic Radiation	
ECEN 5613	Electromagnetic Theory	
PHYS 4313	Molecular Biophysics ²	
or PHYS 5110	Seminar	
ECEN 5843	Microelectronic Fabrication	

Select at least one additional elective course.	3
Hours Subtotal	30
Dissertation ¹	
Forty-two hours from:	42
PHYS 6000 Doctoral Dissertation Research	
Hours Subtotal	42
Total Hours	72

1
Combined Coursework and Dissertation to total 60 hours beyond the Master’s Degree and 72 hours beyond the Bachelor’s Degree. Distribution of hours may be varied from above.

2
For students pursuing the bio/nano photonics option, additional courses from departments other than ECEN and PHYS may be included.

Graduate College Doctor of Philosophy (PhD) Requirements

Learn more about Graduate College 2024-2025 Doctor of Philosophy (PhD) Degree Program Requirements (<http://catalog.okstate.edu/graduate-college/>). Check the General Graduate College academic regulations for minimal GPA, language proficiency and other general requirements.