72

PHOTONICS, PHD

Requirements for Students Matriculating in or before Academic Year 2023-2024. 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

Course Requirement Select 3 hours from PHYS 5313 ECEN 5613 PHYS 4813 Select 3 hours from PHYS 5163 ECEN 4843 Select 6 hours from ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from	Electromagnetics: Electromagnetic Theory Electromagnetic Theory Electromagnetic Radiation Lasers: Lasers Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	3 6
PHYS 5313 ECEN 5613 PHYS 4813 Select 3 hours from PHYS 5163 ECEN 4843 Select 6 hours from ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from ECEN 5823	Electromagnetic Theory Electromagnetic Theory Electromagnetic Radiation Lasers: Lasers Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	3
ECEN 5613 PHYS 4813 Select 3 hours from PHYS 5163 ECEN 4843 Select 6 hours from ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from	Electromagnetic Theory Electromagnetic Radiation Lasers: Lasers Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Physical Optics Output O	6
PHYS 4813 Select 3 hours from PHYS 5163 ECEN 4843 Select 6 hours from ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from	Electromagnetic Radiation Lasers: Lasers Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	6
Select 3 hours from PHYS 5163 ECEN 4843 Select 6 hours from ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from	Lasers: Lasers Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	6
PHYS 5163 ECEN 4843 Select 6 hours from ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from	Lasers Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	6
ECEN 4843 Select 6 hours from 6 ECEN 4823 PHYS 3213 PHYS 5123 or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from 6	Design of Lasers and Systems Optics: Design of Optical Systems Optics Geometrical Optics Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	
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or ECEN 5803 PHYS 5303 or ECEN 5823 Select 3 hours from	Geometrical Optics Physical Optics Physical Optics Quantum Mechanics:	
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or ECEN 5823 Select 3 hours from	Physical Optics Quantum Mechanics:	
Select 3 hours from	Quantum Mechanics:	
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PH13 3013	Quantum Mechanics I	
PHYS 4513	Introductory Quantum Mechanics	
Additional Laborator	•	
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	
ECEN 5333	Semiconductor Devices	
ECEN 5833	Fiber-Optic Communication Systems	
PHYS 6713	Advanced Electromagnetic Radiation	
ECEN 5613	Electromagnetic Theory	
PHYS 4313	Molecular Biophysics ²	
PHYS/ECEN 68X0	Photonics Lab courses: Topics Vary (Lab)	
ECEN 5843	Microelectronic Fabrication	
Select at least one a	dditional 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.

2

Total Hours

Hours

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)

Course Requirements Select 3 hours from Electromagnetics: PHYS 5313 Electromagnetic Theory ECEN 5613 Electromagnetic Theory PHYS 4813 Electromagnetic Radiation Select 3 hours from Lasers: 3 PHYS 5163 Lasers ECEN 4843 Design of Lasers and Systems Select 6 hours from Optics: 6 ECEN 4823 Design of Optical Systems PHYS 3213 Optics PHYS 5123 Geometrical Optics or ECEN 5803 Geometrical Optics Or ECEN 5803 Physical Optics Or ECEN 5823 Physical Optics Or ECEN 5823 Physical Optics Select 3 hours from Quantum Mechanics I PHYS 5613 Quantum Mechanics I PHYS 4513 Introductory Quantum Mechanics Select 12 Hours from Advanced Topics (Optoelectronics, 12 Spectroscopy, Quantum and Nonlinear Optics, Solid State, Photonics Systems, Electromagnetics, Bio/Nano Photonics, and Additional Laboratory Courses ECEN 5853 Ultrafast Optoelectronics PHYS 5133 Laser Spectroscopy PHYS 6413 Nonlinear Optics PHYS 6423 Quantum Optics PHYS 6423 Quantum Optics PHYS 6423 Semiconductors I PHYS 6424 Semiconductors I PHYS 6425 Introduction to Solid State Physics ECEN 5833 Fiber-Optic Communication Systems PHYS 6713 Advanced Electromagnetic Radiation ECEN 5613 Electromagnetic Theory PHYS 6413 Molecular Biophysics PHYS 6713 Advanced Electromagnetic Radiation ECEN 5613 Electromagnetic Theory PHYS 6413 Molecular Biophysics PHYS 6713 Advanced Electromagnetic Radiation ECEN 5843 Microelectronic Fabrication Select at least one additional elective course. 3 Hours Subtotal 30 Dissertation Forty-two hours from: 42	Code	Title	Hours	
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	PHYS 6000	Doctoral Dissertation Research		
Hours Subtotal 42			42	

1

Combined Coursework and Dissertation to total 60 hours beyond the Master's Degree and 72 hours beyond the Bachelor's Degree.

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 2023-2024 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.