**PHYSICS: OPTICS AND PHOTONICS, MS**

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](http://catalog.okstate.edu/graduate-college/#70)).

## Thesis Option

Total Hours: 30

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 5453</td>
<td>Mathematical Methods for Physicists</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 5613</td>
<td>Quantum Mechanics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9 hours of Photonics core courses from the following with advisor approval:

- PHYS 5123 Geometrical Optics
- PHYS 5163 Lasers
- PHYS 5303 Physical Optics
- ECEN 4843 Design of Lasers and Systems
- ECEN 5833 Fiber-Optic Communication Systems

**Hours Subtotal**: 15

### Electives

Select 9 hours from the two groups of electives with a minimum of one course and a maximum of two from Group I. Courses at the graduate level from other departments may be substituted for electives in Group II with Physics Department permission, but alternate courses must have a strong connection to optics and photonics.

**Group I**

- PHYS 4813 Electromagnetic Radiation
- PHYS 5313 Electromagnetic Theory
- PHYS 6713 Advanced Electromagnetic Radiation
- ECEN 5613 Electromagnetic Theory

**Group II**

- PHYS 5133 Laser Spectroscopy
- PHYS 5663 Solid State Physics I
- PHYS 6313 Quantum Mechanics II
- PHYS 6413 Nonlinear Optics
- PHYS 6423 Quantum Optics
- ECEN 4823 Design of Optical Systems
- ECEN 5843 Microelectronic Fabrication
- ECEN 5853 Ultrafast Optoelectronics
- ECEN 5793 Digital Image Processing

**Hours Subtotal**: 9

### Additional Electives

Select 6 hours of advanced courses at the graduate level.

**Hours Subtotal**: 6

### Report

Students must complete a two-credit hour report.

**Hours Subtotal**: 2

**Total Hours**: 30

## Non-Thesis Option

Total Hours: 32

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 5453</td>
<td>Mathematical Methods for Physicists</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 5613</td>
<td>Quantum Mechanics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9 hours of Photonics core courses from the following with advisor approval:

- PHYS 5123 Geometrical Optics
- PHYS 5163 Lasers
- PHYS 5303 Physical Optics
- ECEN 4843 Design of Lasers and Systems
- ECEN 5833 Fiber-Optic Communication Systems

**Hours Subtotal**: 9

### Electives

Select 9 hours from the two groups of electives with a minimum of one course and a maximum of two from Group I. Courses at the graduate level from other departments may be substituted for electives in Group II with Physics Department permission, but alternate courses must have a strong connection to optics and photonics.

**Group I**

- PHYS 4813 Electromagnetic Radiation
- PHYS 5313 Electromagnetic Theory
- PHYS 6713 Advanced Electromagnetic Radiation
- ECEN 5613 Electromagnetic Theory

**Group II**

- PHYS 5133 Laser Spectroscopy
- PHYS 5663 Solid State Physics I
- PHYS 6313 Quantum Mechanics II
- PHYS 6413 Nonlinear Optics
- PHYS 6423 Quantum Optics
- ECEN 4823 Design of Optical Systems
- ECEN 5843 Microelectronic Fabrication
- ECEN 5853 Ultrafast Optoelectronics
- ECEN 5793 Digital Image Processing

**Hours Subtotal**: 9

### Additional Electives

Select 6 hours of advanced courses at the graduate level.

**Hours Subtotal**: 6

### Report

Students must complete a two-credit hour report.

**Hours Subtotal**: 2

**Total Hours**: 32

## Graduate College Master's Program Requirements

Learn more about Graduate College 2023-2024 Master's Degree Program Requirements ([http://catalog.okstate.edu/graduate-college/](http://catalog.okstate.edu/graduate-college/)). Check the General Graduate College academic regulations for minimal GPA, language proficiency and other general requirements.