

B. PHD CORE COURSE REQUIREMENTS: PRIOR TO FALL 2022

[Jump back to TOC]

For students entering the Ph.D. program **before Fall 2022**, 8 core courses are required; OPTI 541A is not required for students who completed OPTI 544 or OPTI 511R prior to Spring 2023.

Group I: Select **2 courses** from the following (3 units each):

- OPTI 503A: Mathematical Methods for Optics and Photonics
- OPTI 508: Probability and Statistics in Optics
- OPTI 512R: Linear Systems, Fourier Transforms
- OPTI 570: Quantum Mechanics
- OPTI 604: Mathematical Methods for Optics

Group II: Select **1 course per numbered topic**:

1. **Electromagnetic Waves**
 - OPTI 501: Electromagnetic Waves
2. **Geometrical Optics**
 - OPTI 502: Optical Design and Instrumentation
3. **Quantum Optics**
 - OPTI 511R: Optical Physics and Lasers (prerequisite: OPTI 501)
 - OPTI 544: Foundations of Quantum Optics (prerequisite: OPTI 570)
4. **Physical Optics**
 - OPTI 505R: Diffraction and Interferometry (prerequisites: OPTI 501, OPTI 512R, or OPTI 604; OPTI 570 will partially satisfy the prereq for Ph.D. students)
5. **Solid-State Optics** (not on qualifying exam)
 - OPTI 507: Solid-State Optics (prerequisite: OPTI 511R, OPTI 570, or PHYS 371)
 - OPTI 537: Imaging Physics and Devices (prerequisites: OPTI 501 and OPTI 536)

Group III: Select **1 course** from this list.

1. **Photonics**
 - OPTI 510R: Photonics (prerequisite: OPTI 501)
 - OPTI 595B: Information in a Photon
2. **Image Science**
 - OPTI 536: Introduction to Image Science
3. **Applied Optics**
 - OPTI 503: Optical Design and Instrumentation II (prerequisite: OPTI 502)
 - OPTI 506: Radiometry, Sources and Detectors
4. **Optical Physics**
 - OPTI 600G: Laser Beams and Resonators
 - OPTI 541B&C: Laser Systems, Applications, Ultrafast Optics
 - OPTI 549: Atom Optics

