APPLIED PHYSICS

- Master of Science in Applied Physics
  Concentrations: Materials and Condensed Matter or Photonics
- Post-Master’s Certificate in Applied Physics

COURSES

CORE COURSES

SELECT FOUR (AT LEAST THREE MUST BE FROM THE FIRST SIX)

615.441 Mathematical Methods for Physics and Engineering
615.442 Electromagnetics
615.451 Statistical Mechanics and Thermodynamics
615.453 Classical Mechanics
615.454 Quantum Mechanics
615.465 Modern Physics
615.471 Principles of Optics
615.480 Materials Science

ELECTIVES

SELECT SIX

615.421 Electric Power Principles
615.444 Fundamentals of Space Systems I
615.445 Fundamentals of Space Systems II
615.446 Physics of Magnetism
615.447 Fundamentals of Sensors
615.448 Alternate Energy Technology
615.462 Introduction to Astrophysics
615.481 Polymers
615.731 Photovoltaic and Solar Thermal Energy
615.746 Nanoelectronics: Physics and Devices
615.747 Sensors and Sensor Systems
615.748 Introduction to Relativity
615.751 Modern Optics
615.753 Plasma Physics
615.755 Space Physics
615.757 Solid-State Physics
615.758 Modern Topics in Applied Optics
615.760 Physics of Semiconductor Devices
615.761 Introduction to Oceanography
615.762 Applied Computational Electromagnetics
615.765 Chaos and Its Applications
615.769 Physics of Remote Sensing

615.772 Cosmology
615.775 Physics of Climate
615.778 Computer Optical Design
615.780 Optical Detectors and Applications
615.781 Quantum Information Processing
615.782 Optics and MATLAB
615.800 Applied Physics Project
615.802 Directed Studies in Applied Physics Conversion

COURSES BY CONCENTRATION

MATERIALS AND CONDENSED MATTER

FOUR CORE COURSES

615.441 Mathematical Methods for Physics and Engineering
615.442 Electromagnetics
615.451 Statistical Mechanics and Thermodynamics
615.480 Materials Science

ELECTIVES (SELECT AT LEAST FOUR)

510.604 Mechanical Properties of Materials*
510.606 Chemical and Biological Properties of Materials*
515.417 Nanomaterials
525.406 Electronic Materials
525.421 Introduction to Electronics and the Solid State I
615.446 Physics of Magnetism
615.447 Fundamentals of Sensors
615.481 Polymers
615.746 Nanoelectronics: Physics and Devices
615.747 Sensors and Sensor Systems
615.757 Solid-State Physics
615.760 Physics of Semiconductor Devices

615.800 Applied Physics Project and 615.802 Directed Studies in Applied Physics can also be used to allow the student to pursue specialized interests in Materials Science and Condensed Matter.

* 510.xxx courses are offered through the full-time Department of Materials Science & Engineering
PHOTONICS

**FOUR CORE COURSES (ONLY ONE 525.XXX COURSE IS REQUIRED)**
- 525.413 Fourier Techniques in Optics
- 525.425 Laser Fundamentals
- 525.491 Fundamentals of Photonics
- 615.441 Mathematical Methods for Physics and Engineering
- 615.454 Quantum Mechanics
- 615.471 Principles of Optics

**ELECTIVES (SELECT AT LEAST FOUR)**
- 525.413 Fourier Techniques in Optics
- 525.425 Laser Fundamentals
- 525.436 Optics and Photonics Laboratory
- 525.491 Fundamentals of Photonics
- 525.753 Laser Systems and Applications
- 525.756 Optical Propagation, Sensing, and Backgrounds
- 525.772 Fiber-Optic Communication Systems
- 525.792 Electro-Optical Systems
- 525.796 Introduction to High-Speed Electronics and Optoelectronics
- 525.797 Advanced Optics and Photonics Laboratory
- 615.751 Modern Optics
- 615.758 Modern Topics in Applied Optics
- 615.778 Computer Optical Design
- 615.780 Optical Detectors and Applications
- 615.781 Quantum Information Processing
- 615.782 Optics and MATLAB
- 615.800 Applied Physics Project and 615.802 Directed Studies in Applied Physics can also be used to allow the student to pursue specialized interests in Optics.

*Please refer to the course schedule ([ep.jhu.edu/schedule](http://ep.jhu.edu/schedule)) published each term for exact dates, times, locations, fees, and instructors.*