# M.S. in Optics and Photonics Plan A

The M.S. Degree in Optics and Photonics is an interdisciplinary, cooperative program managed by the Optics Program Committee on behalf of the three participating departments: Physics, Electrical and Computer Engineering, and Chemistry and Biochemistry. Students apply directly to the Optics and Photonics Graduate Program and are admitted through one of the participating departments, selected based on advisor affiliation and student interest.

The Optics and Photonics degree is distinct from the other graduate degrees offered by the participating departments because it requires interdisciplinary coursework involving at least two of the departments. The interdisciplinary program of study allows students to emphasize optics theory and applications in more depth than is possible through degrees in the traditional disciplines. Each optics student will be mentored by a graduate advisor from the faculty of one of the three participating departments, and a graduate supervisory committee made up of faculty from at least two of the three departments in the cooperative program.

The M.S. Plan A requires completion of an acceptable research-based Thesis describing independent research performed by the student with guidance from the advisor and graduate supervisory committee. The Thesis involves considerable effort on the part of the student, and must generate results that are of sufficient quality and significance to be reported in a national or international conference paper or presentation. The Master's Thesis often serves as the basis for a peer-reviewed manuscript for an archival journal or book chapter.

More information on the admission requirements, application process, and degree requirements can be found at: M.S. in Optics and Photonics (http://www.physics.montana.edu/grad/opticsMS.html)

Choose two key courses (one PHSX and one EELE): 6
- PHSX 427 Advanced Optics
- PHSX 437 Laser Applications
- EELE 482 Electro-Optical Systems
- EELE 484 Laser Engineering

Choose one specialty course: 3
- EELE 581 Fourier Optics/Imaging Theory
- EELE 582 Optical Design
- PHSX 531 Nonlinear Optics/Laser Spectroscopy
- CHMY 527 Analytic Optical Spectroscopy
- CHMY 560 Symmetry, Orbitals, and Spectroscopy

Optics electives (choose at least 6 credits): 6
- EELE 432 Applied Electromagnetics
- EELE 482 Electro-Optical Systems
- EELE 484 Laser Engineering
- EELE 538 Adv Top Electromagnet & Optics
- EELE 581 Fourier Optics/Imaging Theory
- EELE 582 Optical Design
- EELE 583 Remote Sensing Systems
- PHSX 427 Advanced Optics
- PHSX 437 Laser Applications
- PHSX 507 Quantum Mechanics II
- PHSX 515 Advanced Topics In Physics
- PHSX 516 Experimental Physics (Fall - Optics)
- PHSX 520 Electromagnetic Theory II
- PHSX 531 Nonlinear Optics/Laser Spectroscopy
- CHMY 421 Advanced Instrument Analysis
- CHMY 527 Analytic Optical Spectroscopy
- CHMY 557 Quantum Mechanics
- CHMY 560 Symmetry, Orbitals, and Spectroscopy
- CHMY 564 Adv Quantum Chemistry
- EELE/PHSX/CHMY/ 591 Special Topics
- EELE/PHSX/CHMY/ 592 Independent Study
- OPTI 594 Optics Seminar

Technical electives (choose at least 5 credits): 5
- ECE, Physics, Math, Chemistry, Business, etc. (400-level or above)

Master’s Thesis (EELE/PHSX/CHMY/ 590) 10

Total Credits 30

Note: At least 20 credits must be at the 500 level.

1 A maximum of three (3) credits total among these courses is allowed if the subject is directly related to optics, upon approval by the academic advisor and research advisor/instructor.
2 A maximum of two (2) credits total of optics seminars is allowed.
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Adobe Garamond Pro.

The editor may contact Leepfrog for a draft with the correct fonts in place.