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 :

https://optics.montana.edu/Optics_photonics_MS.html

and at:

M. S. in Optics and Photonics (https://www.montana.edu/academics/optics-photonics-graduate/)

Choose two key courses:		6
PHSX 427	Advanced Optics	
PHSX 437	Laser Applications	
EELE 482	Electro-Optical Systems	
EELE 584	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 408	Photovoltaic Systems	
EELE 432	Applied Electromagnetics	
EELE 482	Electro-Optical Systems	
EELE 505	MEMS Sensors and Actuators	
EELE 538	Adv Top Electromagnet & Optics	
EELE 548	Optical Communications Systems	
EELE 581	Fourier Optics/Imaging Theory	
EELE 582	Optical Design	
EELE 583	Remote Sensing Systems	
EELE 584	Laser Engineering	
PHSX 427	Advanced Optics	
PHSX 437	Laser Applications	
PHSX 461	Quantum Mechanics I (for non-physics students)	
PHSX 507	Quantum Mechanics II	
PHSX 515	Advanced Topics In Physics [1]	
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	
MTSI 501	Material Structure and Bonding	
MTSI 503	Optical, Electronic, and Magnetic Properties of Materials	
MTSI 551	Adv Materials Characterization	
EELE/PHSX/CHMY/ 591 Special Topics [1]		
EELE/PHSX/CHMY/ 592 Independent Study [1]		
OPTI 594 Optics Seminar [2]		
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.