PHYSICS MS

Degree Requirements

The following requirements are in addition to, or further elaborate upon, those requirements outlined in The Graduate School Policy Guide (https://catalogs.northwestern.edu/tgs/academic-policies-procedures/).

Master's

Physics is a broad subject, ranging from pondering the origins of the universe to designing better electronic memory devices.

Young students and junior researchers from around the world are welcome to obtain a solid basis in the fundamentals of physics and to pursue their particular interests and professional goals at Northwestern.

The master's program in Physics is designed to meet the needs of individuals who have the interest and skills needed to learn physics but who will not spend several years in graduate school earning a doctorate. Students are meant to complete the requirements within four quarters, starting with basic "core" courses in classical mechanics, electrodynamics, quantum mechanics and statistical physics, followed by a number of elective courses drawn from many departments at Northwestern.

The keyword for the program is flexibility - students should be empowered to study what is most relevant to their goals.

For inquiries, please contact the Director of the master's program, Andrew Geraci.

Within the master's program, there are two paths to completion, called "Standard" and "Broad." They share the same core requirement.

Standard Path:

- Five core courses (see below)
- Four elective courses (see below)
- Master's Thesis
  - Either an in-depth reading project, or a research project, supervised by an appropriate faculty member, similar to PHYSICS 499-0 Independent Study
  - Thesis to be presented for evaluation
  - Should be completed by end of summer quarter

Broad Path:

- Five core courses (see below)
- Seven elective courses (see below)

The Standard Path to the master's degree should be completed within one calendar year; the nine courses would be taken during the winter, fall and spring quarters and the master's thesis would be written during the summer. The Broad Path would be completed typically in 15 months; nine courses would be taken during the winter, fall and spring quarters, and the additional three courses would be taken in the fall quarter of the second year.

Core Courses: To be completed in fall & winter quarters

Course	Title
PHYSICS 411-0	Classical Mechanics (fall)
PHYSICS 412-1	Quantum Mech (fall)
PHYSICS 412-2	Quantum Mechanics (winter)
PHYSICS 414-1	Electrodynamics (winter)
PHYSICS 416-0	Introduction to Statistical Mechanics (winter)

Elective Courses: At least four from this list, during spring and fall quarters.

Course	Title
PHYSICS 411-1	Methods of Theoretical Physics
PHYSICS 412-2	Quantum Mechanics
PHYSICS 412-3	Quantum Mechanics
PHYSICS 414-2	Electrodynamics
PHYSICS 420-0	Statistical Physics
PHYSICS 422-1 & PHYSICS 422-2 & PHYSICS 422-3	Condensed-Matter Physics and Condensed-Matter Physics and Condensed-Matter Physics
PHYSICS 424-1 & PHYSICS 424-2	Particle Physics and Particle Physics
PHYSICS 426-0	Nonlinear Optics
PHYSICS 430-0	Nonlinear Dynamics & Chaos
PHYSICS 432-1 & PHYSICS 432-2	Many-Body Theory and Many-Body Theory
PHYSICS 434-0	Quantum Fluids, Solids, and Gases
PHYSICS 435-0	Soft Matter Physics
PHYSICS 436-0	Mesoscopic and Nanometer Scale Physics
PHYSICS 445-1 & PHYSICS 445-2	General Relativity and General Relativity
ASTRON 421-0	Observational Astrophysics
ASTRON 425-0	Stellar Astrophysics
ASTRON 429-0	Extragalactic Astrophysics and Cosmology
ASTRON 443-0	Stellar Structure and Evolution
ASTRON 448-0	Interstellar Matter and Star Formation
ASTRON 449-0	Stellar Dynamics