Master of Science in Physics with Concentration in Space Physics

The two-year M.S. in Physics with a concentration in Space Physics program provides students with a strong foundation in physics with an intensive focus on space physics. Graduate study in space physics at the Master's level prepares graduates for continued and specialized study toward the doctorate program in space-related fields as well as for challenges they will confront in space industrial and government settings.

Admission Requirements

An applicant for admission should have an undergraduate degree in physics or engineering physics or a related area (e.g. astronomy/astrophysics, planetary sciences, geophysics). The general GRE test is required. The GRE subject test in physics is recommended.

Degree Requirements

All degree-seeking graduate students must satisfy the relevant Graduate School requirements, pass a qualifying examination based on undergraduate physics courses at the 400 level, successfully complete a 500-level laboratory, and demonstrate or develop knowledge of computer programming.

The Master's degree is conferred on students who have completed a *minimum* of 30 semester credit hours of graduate study. Of these 30 credits, at least 21 must be in physics/geophysics, at most 3 may be for individual study or other informal courses, and at most 9 may be numbered between 450 and 499. A Master's thesis or supervised project is optional.

Master's degree students must successfully complete the following 5 physics core courses:

Course Number	Course Title	Credits
PHYS 495/511	Mathematical Methods of Physics I	3
PHYS 551	Classical Mechanics	3
PHYS 554 /(454)	Quantum Mechanics I (Intermediate Modern Physics I)	3
PHYS 561/(461)	Electromagnetic Theory I (Intermediate E & M I)	3
PHYS 584/(480)	Statistical Mechanics (Thermodynamics)	3

In addition, all physics MS students with a concentration in space physics must complete the following two specialization courses:

Course Number	Course Title	Credits
PHYS 520	Special Topics: Plasma Physics	3
PHYS 493/(593)	Experimental Nuclear Physics I	3

Also, physics MS students with a concentration in space physics must take a minimum of three elective courses in their specialization from the list below:

Course Number	Course Title	Credits
PHYS 491/(591)	High Energy Physics I	3
PHYS 576/(476)	Advanced Computational Physics I (Computational Physics)	3
GPHY 540	Physics of the Earth and Planetary Interiors	3
ASTR 535	Observational Techniques I	3
ASTR 575	Computational Astrophysics	3
ASTR 620	Planetary Science I	3
ASTR 698	Special Topics: Solar Physics and Space Weather	3
ME 533	Computational and Theoretical Fluid Mechanics	3
ME 552	Introduction to Physical Gas-dynamics	3
ME 554	Introduction to Plasma-dynamics and Space Weather	3
EE 460	Space System Mission and Analysis	3

The Physics Department Head and the Graduate Advising Committee must approve course substitutions.

A written qualifying examination is required in the first or second semester of residence to diagnose any deficiencies in undergraduate preparation. Any deficiencies must be removed before a degree will be granted, as evidenced by written examination.

Before the M.S. degree is granted, the student must pass a final oral examination administered by a committee of three or more members of the graduate faculty selected by the student and his/her advisor and including at least one member from outside the physics department. The oral examination emphasis is on the fundamentals of physics, space physics and computation. In the event a thesis is presented, the examination will also cover subject matter related to the thesis.