

Ph.D. in Engineering Physics

Housed in the Department of Physical Sciences in the College of Arts & Sciences, the Ph.D. in Engineering Physics provides advanced education and research opportunities to exceptional students.

Students work in campus laboratories such as the Space and Atmospheric Instrumentation Lab, Engineering Physics Propulsion Lab, 1-meter Ritchey-Chrétien Reflecting Telescope, Space Physics Research Lab and the Laboratory for Exosphere and Near-Space Environment Studies (LENSES).

Research emphasizes the measurement, theory and modeling of the near-space, space-neutral and plasma environment; studies of the sun and stellar activity; orbital stability and dynamics; engineering spacecraft instrumentation and remote sensing measurements; and the design and implementation of electro-optical and radar systems.

Areas of research include:

- Aeronomy/Upper-Atmospheric Physics
- Dynamics and Control of Aerospace Systems
- Remote Sensing
- Space Physics
- Space Robotics/Autonomous Systems
- Space Weather
- Spacecraft Instrumentation
- Spacecraft Power and Thermal Control
- Spacecraft Systems Engineering

The department houses more than 20 faculty members, and assistantships and fellowships are available to well-qualified students.

Program-Level Learning Outcomes

Students will:

- Solve advanced space science and spacecraft engineering problems.
- Apply advanced spacecraft engineering core concepts.
- Exhibit mastery of scientific and engineering research techniques.
- Extend the knowledge base in space science and spacecraft engineering by conceiving, planning, producing, and communicating original research.

Daytona Beach Program Requirements

Core Requirements	12/15 *
Technical Electives	6/12 *
Dissertation	27/51 *
Total Credits	45/75 *

* With/Without previously earned M.S. in Engineering Physics

Program Details

The Ph.D. in Engineering Physics requires 45 credit hours beyond the master's degree (75 total credit hours beyond the bachelor's degree). Students who enter with only a bachelor's degree may earn the M.S. in Engineering Physics on the way to the Ph.D. by completing the first 30 credit hours as outlined below.

Earned Master's degree to Ph.D. Pathway (45 credit hours)

No credit hours from an outside Master's degree are counted toward the Ph.D. The program requirements include:

- 12 credit hours in core courses
- 6 credit hours of electives (minimum)
- 27 credit hours of dissertation (minimum)

Earned Bachelor's degree direct admission to the Ph.D. Pathway (75 Credit Hours)

Phase 1 - Students entering with a bachelor's degree will earn the M.S. in Engineering Physics degree en route to the Ph.D. by completing the following 30 credit hours:

- 12 credit hours of core courses
- ENGP 601 (3 credit hours)
- 6 credit hours of electives
- 9 credit hours of ENGP 800 (Dissertation Research)

Phase 2 – After earning the M.S., students will complete the remaining requirements for the Ph.D. (45 Credit Hours Beyond the M.S.)

- 6 credit hours of electives (minimum)
- 27 credit hours of EP 800 Dissertation Research (minimum)
- The combined total of electives and dissertation credit hours in Phase 2 must equal 45 credit hours

Additional Ph.D. Requirements (Both Pathways)

- Successful completion of a qualifying examination
- Successful presentation of a dissertation research proposal
- Successful completion of a written dissertation and oral defense

Core Requirements

ENGP 601	Experimental Methods in Space Science **	3
ENGP 701	Analytical Techniques in Engineering Physics	3
ENGP 702	Theoretical Mechanics and Astrodynamics	3
ENGP 703	Electrodynamics of Space Environment	3
ENGP 704	Stochastic Systems in Engineering Physics	3
Total Credits		12/15

** ENGP 601 is only required for students that have not previously earned the M.S. in Engineering Physics

Technical Electives

AERO/ASTR/CESC/CIVE/CPSC/DSCI/ELEC/ENGR/ENGP/ESCI/MATH/MECH/ PHYS/SFTW 500 level and above	6/12
Total Credits	6/12

Dissertation

ENGP 800	Dissertation	27/9
Total Credits		27/51

Suggested Plan of Study

Year One

Requirements	Credits
ENGP 701 - Analytical Techniques in Engineering Physics	3
ENGP 704 - Stochastic Systems in Engineering Physics	3
Semester Hours	6

Requirements	Credits
ENGP 702 - Theoretical Mechanics and Astrodynamics	3
ENGP 703 - Electrodynamics of Space Environment	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 12

Year Two

Requirements	Credits
Technical Elective	3
ENGP 800 - Dissertation	3
Semester Hours	6

Requirements	Credits
Technical Elective	3
ENGP 800 - Dissertation	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 12

Year Three

Requirements	Credits
ENGP 800 - Dissertation	6
Semester Hours	6

Requirements	Credits
ENGP 800 - Dissertation	6
Semester Hours	6

Total Credits

Total Hours for All Requirements: 12

Year Four

Requirements	Credits
ENGP 800 - Dissertation	6
Semester Hours	6

Requirements	Credits
ENGP 800 - Dissertation	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 9