

Admission

The minimum entry requirement to this program is a Bachelor’s degree in physics, engineering, or an appropriately related field. A minimum CGPA of 3.0/4.0 is required for MSEP and 3.2/4.0 for PHEP

Applicants are required to submit

- › General GRE (verbal plus quantitative) scores obtained within the previous two years of the application.
- › A statement outlining the background of the applicants and motivations, and goals (2 to 5 pages) for graduate studies
- › Three letters of recommendation.

All applicants whose native language is not English, and who were educated at schools where English was not the language of instruction in all disciplines, must also provide their official TOEFL scores.

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Students participating in the Incoherent Scatter Radar workshop in Sodankylä, Finland in July 2016.

Ph.D. Program – Core Courses

Course	Title
EP 701	Analytical Techniques in Engineering Physics
EP 702	Theoretical Mechanics and Astrodynamics
EP 703	Electrodynamics of Space Environment
EP 704	Stochastic Systems in Engineering Physics

For more details, please visit
erau.edu/epphd

The program requires 45 hours beyond a master’s degree. Additional 30 hours are required for students with a Bachelor’s degree. The program requirements include:

- › 12 Credit hours in core courses
- › 6 Credit hours of electives (minimum)
- › 27 Credit hours of dissertation (minimum)
- › The successful completion of a two-day written qualification examination
- › The successful presentation of a dissertation research proposal
- › The successful completion of a written dissertation
- › The successful oral defense of the dissertation



A sodium Lidar operating at the Andes Lidar Observatory in Chile, measuring upper atmosphere temperature and wind.

Career Outlook

Students of the Masters and Doctorate Engineering Physics programs graduate from Embry-Riddle with knowledge and experience desired by academia, government agencies and industry.

Recent graduates are pursuing careers at:

- › German Aerospace Center
- › Honeywell
- › Johns Hopkins University
- › Lockheed Martin
- › Orbital ATK
- › Raytheon
- › Samford University
- › SpaceX

M.S. Program – Core Courses

Course	Title
EP 501	Numerical Methods for Engineers & Scientists
EP 505	Spacecraft Dynamics & Control
EP 509	Advanced Space Physics
EP 600	Experimental Methods in Space Science
EP 605	Spacecraft Power & Thermal Design

Option	Core	Electives	Thesis	Total
Thesis	15	6	9	30
Non-Thesis	15	15	0	30

For more details, please visit
erau.edu/epms

The curriculum consists of 15 credits of required coursework, with an additional 15 credits of electives and/or thesis research.

The core courses emphasize the heavily technical nature of the space sciences and require an undergraduate degree in Physics, Engineering, or a related field for preparation.

Apply Now: daytonabeach.erau.edu/apply

FOR MORE INFORMATION, CONTACT

Dr. Alan Liu

Chair, Graduate Committee | Department of Physical Sciences

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Tuition waiver and Teaching/Research Assistantship are available to all Ph.D. students and well qualified M.S. students.

EMBRY-RIDDLE
Aeronautical University

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Aeronautical University

COLLEGE OF ARTS & SCIENCES
Daytona Beach, Florida

DEPARTMENT OF
PHYSICAL SCIENCES

M.S. | PH.D. IN

Engineering
Physics

The graduate program in Engineering Physics provides students the opportunity to pursue advanced degrees involving both engineering and physics. The program emphasizes scientific instrumentation, applied optics, remote sensing, spacecraft subsystems, dynamics and control, numerical modeling, and their applications to a wide variety of research areas. These include the measurement, theory and modeling of the upper atmosphere and near Earth space plasma environment, astrophysics of the sun and stars, planetary sciences, orbital stability and dynamics, spacecraft instrumentation and in situ measurements, and the design and implementation of electro-optical remote sensing systems and astronomical instrumentation.

The Ph.D. Program

From fundamental scientific research to applications in engineering, the Ph.D. program in Engineering Physics (PHEP) puts candidates at the forefront of space research. A typical Ph.D. candidate may become involved in a broad range of theoretical, numerical, and experimental research projects, many of which are externally funded by NSF, NASA and other federal agencies. Faculty mentors work side-by-side with students in a supportive and collaborative research setting. PHEP serves as an excellent launching point for careers in academia, private industry and government laboratories.

The title “Engineering Physics” encompasses many disciplines, but few other academic institutions concentrate on space systems like Embry-Riddle.

The M.S. Program

The Master of Science in Engineering Physics (MSEP) program at Embry-Riddle provides students advanced training in space-related physics and engineering skills, and the opportunity to work with faculty who are at the forefront of scientific research. The MSEP program is equally well-suited to students that have recently earned their undergraduate degrees and those who already have professional experience.

The Embry-Riddle Advantage:

The graduate programs in Engineering Physics foster close student-faculty interactions, collaboration and creative thinking. Our nationally and internationally renowned faculty have a strong record of research, extramural funding, and publication in top-tier journals. About a dozen advanced laboratories allow students to have hands-on experience in building and testing scientific instrumentation.

Research Areas

- › Aeronomy/Upper Atmosphere Physics
- › Astronomy/Astrophysics
- › Astronomical Instrumentation
- › Dynamics & Control Theory
- › Robotics & Autonomous Systems
- › Space & Plasma Physics
- › Space & Upper Atmosphere Remote Sensing
- › Spacecraft Instrumentation/ Systems Engineering

Facilities

Embry-Riddle has built world-class facilities for students and faculty to engage in learning and research opportunities. There are over a dozen labs dedicated to students in the Physical Sciences department.

- › Astrophysics & Controls Lab
- › Atmospheric Physics Research Laboratory
- › Center for Space & Atmospheric Research
- › Laboratory for Exosphere and Near-Space Environment Studies
- › Laboratory of Electro-Optics Systems
- › Nanomaterial Lab
- › Space Plasma Chamber
- › Space Physics Research Lab
- › Space & Atmospheric Instrumentation Lab
- › 1-Meter telescope *(largest research telescope in Florida)*
- › Dedicated student projects labs
- › Remote access to three telescopes *(Arizona, Chile and Spain as being a member of the Southeastern Association for Research in Astronomy, and to the Andes Lidar Observatory in Chile for upper atmosphere remote sensing)*



SARA Lab, Canary Islands (SARA-JKT)



Five student instruments have flown as piggy-back payloads on NASA sounding rockets for atmospheric research.



A student conducts research with the Space Plasma Chamber

20+

Physical Sciences Department
Faculty Members are Engaged in
Federally-Funded Research

Distinguished Faculty

The Department of Physical Sciences is home to more than 20 faculty members engaged in research who are nationally and internationally renowned experts in their respective fields. The Department has had two Embry-Riddle Outstanding Teacher Awardees and three Embry-Riddle Outstanding Researcher Awardees. It is also home to six National Science Foundation CAREER Awardees, which NSF describes as “the Foundation’s most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.”

Faculty and students have flown satellites and launched suborbital rockets and high-altitude balloons to study Earth’s atmosphere. The department also has the largest research-grade telescope in the southeastern U.S.



Visit us online.
For more information about the Engineering Physics programs, visit:
erau.edu/epphd or
erau.edu/epms

Distinctions

- › 6 National Science Foundation CAREER Awardees
- › 12 Atmospheric and space physicists
- › 6 Astronomers/astrophysicists
- › 3 Dynamics and control theorists
- › 3 Chemists
- › 3 Physics laboratory managers
- › 3 Physics textbook authors
- › 3 Embry-Riddle Outstanding Teacher Awardees
- › 4 Embry-Riddle Outstanding Researcher Awardees



According to the U.S. Bureau of Labor Statistics Physicists earned a median salary of \$110,110.

*U.S. Bureau of Labor Statistics / May 2013