Pursuing Engineering Physics at Ohio State
The most important preparation for a major in engineering physics is strong high school science and math. Students should have had some calculus or be prepared to begin calculus upon arrival.

Students may directly enroll as pre-engineering students; however, selection is competitive. Factors used to determine eligibility to directly enroll include ACT/SAT scores (emphasis on math), strong college prep curriculum (emphasis on math, science and rigorous courses), and class rank or GPA. The middle 50% of directly enrolled pre-majors for autumn 2014 had an ACT score range of 28–32 and 96 percent were in the top 25% of their high school classes. Students not eligible to directly enroll in engineering may enroll in Science, Technology and Environment Exploration (see exploration.osu.edu).

The Department of Physics wants to become involved with students as soon as they know that they intend to become engineering physics majors, which can be as early as their first arrival at Ohio State. Those who intend to major in engineering physics or are interested in exploring that option should visit the Undergraduate Studies Office, Department of Physics, room 1040 Physics Research Building, or call the vice chair for Undergraduate Studies, 614-292-8523.

Program Educational Objectives
Alumni of the engineering physics program will:
1. Use their engineering foundation and their understanding of the fundamental areas of physics (classical mechanics, electromagnetism and quantum mechanics), experimental physics, data reduction, error analysis and computing to succeed in:
   • Technical careers in industry, academia or government
   • Careers involving engineering or scientific practice, research and development, management, or service
   • Nontechnical careers in areas such as law, medicine, business, public policy, secondary education, service industries, etc.

2. Effectively communicate opportunities and solutions to technical and nontechnical communities.
3. Use lifelong learning skills to take advantage of professional development opportunities in their disciplines and develop new knowledge and skills and pursue areas of expertise or interests.

The Student Outcomes supporting our Educational Objectives can be found at go.osu.edu/engphysics_outcomes.

Physics Requirements
There are two different options for obtaining a physics degree at Ohio State: a Bachelor of Science in Physics (through the College of Arts and Sciences) or a Bachelor of Science in Engineering Physics (through the College of Engineering). Within each option there is a set of standard college requirements plus math and physics requirements that are roughly the same for both options. A student who is interested in studying physics should consider carefully which program to choose. The courses of study are very similar and prepare students for a variety of outcomes including graduate school (in physics, astronomy, math, or engineering), professional school, and employment as engineers, programmers, teachers, technicians and scientists. Students interested in finding more information should consult the physics major series sheet at majors.osu.edu.

Students in the engineering physics major choose which area (or concentration) of engineering on which they want to focus. Students are required to take at least 30 credit hours of technical electives in the engineering concentration of their choice. Students are required to take at least 12 hours of special electives (courses not already required) from among physics, math or engineering courses at the 2000 level or above. Students are also required to complete 24 hours of engineering electives as part of their concentrations.

Engineering concentrations for engineering physics majors:
• Aeronautical and astronomical engineering
• Chemical and biomolecular engineering
• Computer and information science
• Electrical and computer engineering
• Industrial and systems engineering
• Materials science and engineering
• Mechanical engineering
• Nuclear engineering

Co-Curricular Opportunities
The Department of Physics encourages all of its students to become involved in research with a faculty member on one of many active research programs. This is an excellent opportunity to apply the tools of physics to explore new ideas or to enhance existing work, learn more about the research experience and possibly begin building a professional network. Students interested in research should contact a member of the physics faculty or visit the physics department website for more information.

For more information, check these websites:

Engineering Physics:
physics.osu.edu/engineering-physics-program
College of Engineering: engineering.osu.edu
Ohio State: osu.edu
Admissions: undergrad.osu.edu
Multicultural Center: multiculturalcenter.osu.edu
First Year Experience: fye.osu.edu
Curriculum Sample
This is a sample list of classes that a student will take to pursue a degree in engineering physics. Since university students need more than specific education in a narrow field, they also will take classes to complete General Education (GE) requirements. Because GE courses come from a variety of academic areas of study, this course work helps students develop fundamental skills essential to collegiate success and allows them to tailor these courses toward their interests. Note: This sample represents one of several possible paths to a degree in engineering physics. Consult physics.osu.edu/engineering-physics-program for details on each specific track.

Freshmen Year:
Engineering survey 1
Introductory Engineering 4
Calculus and Analytic Geometry I and II 10
Introductory Physics I and II 10
Computer Programming 2
GE courses 6
Total hours 33

Sophomore Year:
Calculus and Analytic Geometry III 5
Linear Algebra and Differential Equations 3
Intermediate Mechanics I and II 8
Physics Seminar 1
Methods in Exploratory Physics 3
Engineering electives 6
GE courses 6
Total hours 32

Junior Year:
Electricity and Magnetism I 4
Quantum Mechanics I 4
Engineering electives 9
Physics electives 4
Special electives 6
GE courses 6
Total hours 33

Senior Year:
Engineering Physics Capstone I and II 6
Advanced Senior Lab 3
Engineering electives 9
Special electives 6
GE courses 6
Total hours 30

Well-qualified students are encouraged to start the Honors version of the introductory physics sequence autumn of their first year.

Honors & Scholars Programs
The Honors program begins with the Honors sequence in the autumn and is recommended for well-qualified entering freshmen. The Honors program culminates in research experience in a faculty member’s area of specialization.

Career Prospects in Physics
Due to both the theoretical and applied nature of the engineering physics program, our graduates develop a wide-range of technical skills which are very marketable to employers. Graduates of the engineering physics program are well-rounded in the sciences and engineering and this allows them to choose from several different career paths after they graduate. About 40 percent go to graduate school for physics or engineering to earn advanced degrees. Half of our graduates begin full-time employment in industry or government research. Others choose to pursue advanced degrees in other fields or go in to teaching or military service.

Recent graduates in engineering physics have been employed at starting salaries ranging from $45,000 to $65,000 at Johns Hopkins Applied Physics Laboratory, NASA, Lockheed Martin, Microsoft, Apple, Brookhaven National Laboratory, Westinghouse, Honda, JPMorgan Chase and more.

More About Engineering Physics
Distinguished faculty and staff in the Department of Physics:
- OSU Distinguished Undergraduate Research Mentor Award (2007, 2008)
- National Science Foundation Young investigator awards, Sloan Research Fellows, American Association for the Advancement of Science (AAAS) Fellows, and American Physical Society (APS) Fellows.
- Distinguished Scholar Award (2007)
- Faculty Award for Distinguished Service (2008)
- OSU Distinguished Staff Award (2009)

Distinguished students:
- 12 Goldwater Scholarship recipients and 11 National Science Foundation (NSF) Fellowship recipients in the past 10 years
- 2008 Rhodes Scholar
- Two 2009 Gates-Cambridge Scholarship Finalists
- 1st, 2nd, 3rd and 4th place winners of the Denman Research Forum
- 2011, 2015 Churchill Scholars
- 2010, 2013 Fulbright Scholars

Recent graduates of the physics program have gone on to study physics, engineering, and astronomy at top universities such as Cambridge, Harvard, Stanford, University of Pennsylvania, Princeton, University of Oxford, University of Hawaii and University of Chicago.

Revised July 2015. Information subject to change. For the most up-to-date information on the engineering physics major, visit physics.osu.edu/engineering-physics-program.

Contact information: