

Physics Undergraduate Degree Programs for Engineering Students

The Physics Department has multiple degree programs for undergraduates whose first major is in engineering, but who would like to double major in physics. The degree programs are

- BA in physics
- BS in physics / BS in astronomy-physics

The BA in physics is designed for students interested in physics and planning to enter other professional fields like engineering, business, education, law, and medicine. The BS, and BS in astronomy-physics are designed for graduate study in physics, other sciences, or in engineering, and for those planning to enter a job in a scientific/technical field.

The requirements for the BA degree with substitutions as usual for engineering students are:

Required course:

MATH 1320 Calculus II

MATH 2310 Calculus III

MATH 3255 Diff. Eq.

PHYS 1425 Intro. Phys. for Eng. I

PHYS 1429 Intro. Phys. I Workshop

PHYS 2415 Intro. Phys. for Eng. II

PHYS 2419 Intro. Phys. II Workshop

PHYS 2620 Modern Physics

PHYS 2720¹ Problems

Four electives

Regular Engineering School substitute course:

APMA 1110 Single Variable Calculus II

APMA 2120 Multivariable Calculus

APMA 2130 Applied Diff. Eq.

Electrical and Computer Engineering

Students can substitute PHYS 2415 and PHYS 2419 with ECE3209 (Electromagnetic Fields).

¹ This is a new requirement, for students in class of 2025 and beyond

Note that only the courses in the last three rows are in addition to what Engineering School requires anyway.

Electives can be chosen from PHYS 2660 (Fundamentals of Scientific Computing) and/or any other 3000-level courses. Courses that are offered regularly:

PHYS 3040	Physics of the Human Body	[3]
PHYS 3110	Widely Applied Physics	[3]
PHYS 3120	Applied Physics: Energy	[3]
PHYS 3150	Electronics	[3]
PHYS 3170	Intermediate Lab I	[3]
PHYS 3180	Intermediate Lab II	[3]
PHYS 3250	Applied Nuclear Physics	[3]
PHYS 3620	Introduction to Condensed Matter Physics	[3]
PHYS 3995	Research	[3]

The following regular classes can be chosen, although they are directed towards the more advanced physics majors:

PHYS 3210	Mechanics	[3]
PHYS 3310	Statistical Physics	[3]
PHYS 3420, 3430	Electricity and Magnetism I, II	[3, 3]
PHYS 3650, 3660	Quantum Mechanics I, II	[3, 3]

Interested engineering students should contact a Physics Department Major Advisor² to discuss this option.

² Major advisors: <http://www.phys.virginia.edu/Education/Programs/Advisors/>