

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 in order of increasing number of required courses are

- BA in physics
- BA with Distinguished Major course sequence
- BS in physics / BA 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 BA with Distinguished Major course sequence, BS, and BA in astronomy-physics are designed for graduate study in physics/science/engineering or for those planning to enter a job in a scientific/technical field.

The minimum requirements for the basic BA degree for an engineering student are:

Required course:	Regular Engineering School substitute course:
MATH 1310 Calculus I	APMA 1090 Single Variable Calculus I ¹
MATH 1320 Calculus II	APMA 1110 Single Variable Calculus II
MATH 2310 Calculus III	APMA 2120 Multivariable Calculus
MATH 3255 Diff. Eq.	APMA 2130 Applied Differential Equations
PHYS 1425 General Physics I	
PHYS 1429 G. P. I workshop	
PHYS 2415 General Physics II	Electrical and Computer Engineering Students can
PHYS 2419 G. P. II workshop	substitute PHYS 2415, 2419 with ECE3209
	(Electromagnetic Fields), but may not substitute an
	elective.

(The courses listed so far are required for most engineering students)

PHYS 2620 Introductory Physics IV: Modern Physics

Four electives

¹ This course can be waived

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 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 any Physics Department major advisor to discuss this option.

Students majoring in Engineering Science may use physics as their “secondary technical minor” and make physics a major instead of a minor if they so choose. The Engineering Science degree minor already requires PHYS 1425, 1429, 2415, 2419, 2620 and any 3000-level course. The BA degree only requires three more electives in physics.

A year of chemistry can be used as a substitute for one elective. ECE 2660 (Electronics I) and ECE 3660 (Electronics II) together can be used as a substitute for one elective. A physics advisor may also allow substituting an elective with a different course from another department which could be taught as a 3xxx level physics course. The advisor will seek approval if warranted. In no case can more than one elective be substituted. The possibility to substitute electives is planned to be abolished for major declarations after fall 2015.