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 General Physics I
- PHYS 1429 G. P. I workshop
- PHYS 2415 General Physics II
- PHYS 2419 G. P. II workshop
- PHYS 2620 Modern Physics

**Regular Engineering School substitute course:**
- APMA 1110 Single Variable Calculus II
- APMA 2120 Multivariable Calculus
- APMA 2130 Applied Differential Equations
- Electrical and Computer Engineering Students can substitute PHYS 2415 and PHYS 2419 with ECE3209 (Electromagnetic Fields).

Four electives

Note that only the courses in the last two 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 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 Advisor\(^1\) to discuss this option.

\(^1\) Major advisors: http://www.phys.virginia.edu/Education/Programs/Advisors/