

BS Engineering Sciences

All engineering sciences students take the core classes, and then pick one “track” to complete.

...please see our suggested freshman- and/or sophomore-year start schedules for the Physics BS degree if you'd like suggestions for how to pace yourself through various physics and math courses. Feel free to reach out to your advisor and/or the physics Director of Undergraduate Studies too!

Core classes

- PHYS 151 & 152
- CHEM 150/150L
- MATH 111, 112, 211, 212
- PHYS 212: Computational modeling for scientists & engineers
- PHYS 220: Math methods for scientists & engineers
- PHYS 222: Fundamentals of engineering design

Engineering physics track

PHYS 253: Modern Physics
PHYS 234: Digital electronics
PHYS 361: Classical mechanics
PHYS 365: Electricity & magnetism
PHYS 421: Thermo & stat physics
PHYS 461: Quantum mechanics
PHYS 444W: Advanced lab

1 elective from:

MATH 315 (numerical analysis)
MATH 345 (math modeling)
MATH 351 (partial dif. eq.)
MATH 361 (prob and stats)
PHYS 422 (applied solid state phys)
PHYS 432 (optics)
PHYS 525 (solid state physics)
PHYS 564 (polymer physics)
PHYS 528 (continuum mechanics)
PHYS 495 or 499 (research†)

† must be 4 research credits as a single course in a single semester

Materials science track

Two semesters of Reactivity lectures & labs:
CHEM 202, 202L, 203, and 203L

AND

Two semesters of Quantum Mechanics lectures & labs:
Taken either in the Chemistry Department:
CHEM 205, 205L, 333, and (335L or 330L)
...be careful with CHEM pre-reqs for those

Or taken in the Physics Department:
PHYS 253, 421, and 444W

AND

2 Electives from:

CHEM 340 (biochemistry)
CHEM 350 (inorganic chemistry)
PHYS 422 (applied solid state phys)
PHYS 461 (quantum)
CHEM 571 (biomolecular chemistry)
CHEM 572 (adv. biophysical chem)
PHYS 525 (solid state physics)
PHYS 528 (continuum mechanics)
PHYS 554 (molecular biophysics)
PHYS 564 (polymer physics)
PHYS 562 (soft condensed matter)
PHYS 552 (biomacromolecules)

1 elective may be Phys or Chem 495 or 499 (research†)

Geoscience track

ENVS 120 or 130

ENVS 131 or ENVS OX 131Q: Intro Env. Studies

ENVS 331: Earth Systems Science

PHYS 253: Modern Physics

PHYS 421: Thermo & Stat Physics

5 electives, including at least one with lab (marked *), from:

ENVS 222* (Evolution of the Earth w/ Lab)
ENVS 229* (Atmosp. Science) / GEOL OX 115*
ENVS 230* (Fund. Geo.) / GEOL OX 141*
ENVS 235 (Env. Geo.)
ENVS 239 (Physical Oceanography)
ENVS 250* (Cartography)
GEOL OX 250* (Mineral Resources)
ENVS 270 (Env. Data Science)
ENVS 326 (Climate Change & Society)
ENVS 328 (Intro Atmos Chem)
ENVS 330 (Climatology)
ENVS 347 (Landscapes & Geomorphology)
(counts as * if taken with ENVS 347L)
ENVS 348* (Sust. Water Res.)
ENVS 365 (Urban Geography)
CS 170* (Intro to Computer Science)
PHYS 528 (Continuum Mechanics)

Notes: The ENVS OX editions of 222*, 229*, 230* are equally acceptable
1 elective may be 399, 494, 498, or 499 (research†)