

Required courses for physics majors (On next page: BS Engineering Sciences!)		BS Physics	BS Physics & Astro.	BS Biophys.	BA Physics	BA Physics & Astro.	BA Physics for Life Sci.
Phys 116: Introductory Astronomy			recommended			yes	
Phys 151*: Phys. for Sci. and Eng. I	F	yes	yes	yes	yes	yes	yes
Phys 152*: Phys. for Sci. and Eng. II	S	yes	yes	yes	yes	yes	yes
Phys 212: Comp. Modeling for Sci., Eng.	S	yes	yes	yes	yes	yes	yes
Phys 220: Math for Sci. and Eng.	F	yes	yes	yes	yes	yes	yes
Phys 253: Modern Physics	F	yes	yes	yes	yes	yes	yes
Phys 311: Astrophysics I	S		yes			<i>(one of these two)</i>	yes
Phys 312: Astrophysics II	S		yes				
Phys 333: Phys. for Life Sciences (offered once/yr)							
Phys 361: Classical Mechanics	S	yes	yes	yes	<i>(one of these four)</i>	<i>(one of these four)</i>	yes
Phys 365: Electricity and Magnetism	F	yes	yes	yes			
Phys 421: Thermo. and Stat. Physics	S	yes	yes	yes			
Phys 461: Quantum Mechanics	S	yes	yes	yes			
Phys 444W: Advanced Lab	F	yes	yes	yes	yes	yes	yes
Phys 434, 552, 554, 556: biophysics electives				2			
Phys 397R, 495R or 499R: 4 credits as 1 course				yes			
ADDITIONAL PHYSICS ELECTIVES: (One elective may be four credits of 397R, 495R, or 499R, as a single course)							
must be at 200 level or higher		1			2		
must be at 300 level or higher		1					1
COURSES IN OTHER DEPARTMENTS:							
Chem 141 w/lab or Chem 150 w/lab				<i>(one of these two)</i>			yes
Bio 141 w/lab							yes
Bio 142 w/lab							yes
QTM 100							yes
Math 111: Calculus I		yes	yes	yes	yes	yes	yes
Math 112: Calculus II		yes	yes	yes	yes	yes	yes (or 116)
Math 211: Multivariable Calculus		yes	yes	yes	yes	yes	
Math 212: Differential Equations		yes	yes	yes			

*With permission of the Director of Undergraduate Studies, Phys 141/142 may replace Phys 151/152

BS Engineering Sciences

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

Core classes

- PHYS 151 & 152
- CHEM 141/141L or 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 432 (optics)
- Phys 525 (solid state physics)
- Phys 564 (polymer physics)
- Phys 528 (continuum mechanics)
- Phys 495 or 499 (research†)

Materials science track

Either **Organic chemistry 1 & 2 (and labs)**
or **Chem 202 and 203 (and labs)**

Either **P-Chem 1 & 2 (and labs)**
or **Chem 205/205L + 6 credits p-chem tagged courses**
or **Phys 253, 421, & 444W**

2 electives from:

- Chem 301 (biochem)
- Phys 461 (quantum)
- Chem 571 (biomolecular chemistry)
- Chem 572 (adv. biophysical chem)
- Phys 525 (solid state)
- 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 131: Intro Environmental Studies

ENVS 331: Earth Systems Science

CS 170: Intro to Computer Science I

PHYS 421: Thermo & Stat Physics

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

- 230* (Fund. Geo.) / GEOL OX 141*
- 235 (Env. Geo.)
- 229* (Meteorology) / GEOL OX 115*
- 250 (Cartography)
- GEOL OX 250* (Mineral Resources)
- 325 (Energy & Climate Change)
- 328 (Intro Atmos Chem)
- 330 (Climatology)
- 346* (Geo. Origins of Landscapes)
- 348* (Sust. Water Res.)
- 328 (Intro. to Atmos. Chem.)
- PHYS 528 (continuum mechanics)

1 elective may be 399, 494, 498, or 499 (research†)

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