<table>
<thead>
<tr>
<th>Course</th>
<th>BS Physics</th>
<th>BS Physics &amp; Astro.</th>
<th>BS Biophys.</th>
<th>BA Physics</th>
<th>BA Physics &amp; Astro.</th>
<th>BA Physics for Life Sci.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phys 116</strong>: Introductory Astronomy</td>
<td>F</td>
<td>yes</td>
<td>recommended</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 151</strong>: Phys. for Sci. and Eng. I</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 152</strong>: Phys. for Sci. and Eng. II</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 212</strong>: Comp. Modeling for Sci., Eng.</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 220</strong>: Math for Sci. and Eng.</td>
<td>F</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 253</strong>: Modern Physics</td>
<td>F</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 311</strong>: Astrophysics I</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>(one of these two)</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td><strong>Phys 312</strong>: Astrophysics II</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>(one of these two)</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td><strong>Phys 333</strong>: Phys. for Life Sciences (offered once/yr)</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 361</strong>: Classical Mechanics</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 365</strong>: Electricity and Magnetism</td>
<td>F</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 421</strong>: Thermo. and Stat. Physics</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 461</strong>: Quantum Mechanics</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 444W</strong>: Advanced Lab</td>
<td>F</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 434, 552, 554, 556</strong>: biophysics electives</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Phys 397R, 495R or 499R</strong>: 4 credits as 1 course</td>
<td>S</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

**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
- Must be at 300 level or higher: 1
- (one of these two): 2

**COURSES IN OTHER DEPARTMENTS**:  

<table>
<thead>
<tr>
<th>Course</th>
<th>BS Physics</th>
<th>BS Physics &amp; Astro.</th>
<th>BS Biophys.</th>
<th>BA Physics</th>
<th>BA Physics &amp; Astro.</th>
<th>BA Physics for Life Sci.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 141 w/lab or Chem 150 w/lab</td>
<td></td>
<td>(one of these two)</td>
<td></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Bio 141 w/lab</td>
<td></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Bio 142 w/lab</td>
<td></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>QTM 100</td>
<td></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Math 111: Calculus I</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Math 112: Calculus II</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Math 211: Multivariable Calculus</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Math 212: Differential Equations</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes (or 116)</td>
</tr>
</tbody>
</table>

*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