

## **BS Engineering Sciences**

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

### **Core classes**

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

<sup>\*\*</sup> See footnote on previous page

### **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†)

### **Materials science track**

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

#### **+ Either PATH 1 or PATH 2:**

PATH 1: **CHEM 205, 205L**, plus an **additional 6+ credits** of chemistry (or physics) courses at the 300+ -level related to quantum mechanics and/or physical chemistry

PATH 2: **PHYS 253, 421, and 444W/445W**

#### **+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†)

#### **§Recommended and pre-approved courses for the additional 6 credits in PATH 1 are CHEM 333, 335L, and CHEM 334.**

However, relevant special topics courses and labs (listed as CHEM 370 and CHEM371L) may be eligible *pending prior DUS approval*. PHYS 445W can also count towards the 6 additional credits.

### **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†)*

†must be 3 or more research credits as a single course in a single semester