

## Elective Options for BSE Program

See the Model Program Sheet of your concentration or your advisor for specific elective requirements.

- 1) The Basic Science elective can be any appropriate course in the major program of concentration in Chemistry, Geology, and Physics. The typically\*\* selected basic science courses are the following:

### FALL

BIOL 111 - Biological Science  
BIOL 115 - Human Biology & Lab  
BIOL 141 - Cell Biology and Genetics  
CHEM 201 - Quantitative Analysis  
CHEM 253 - Fundamentals of Organic Chemistry  
CHEM 261 - Organic Chemistry  
GEOL 120 - Earth Systems  
GEOL 151 - Introduction to Geology  
PHYS 345 – Electromagnetism (alternate years)

### SPRING

ASTR 211 – Planetary & Stellar Astronomy (alt. years)  
ASTR 212 - Galactic Astr. & Cosmology (alt. years)  
BIOL 111 - Biological Science  
BIOL 115 - Human Biology & Lab  
BIOL 141 - Cell Biology and Genetics  
CHEM 262 - Organic Chemistry  
GEOL 151 - Introduction to Geology  
GEOL 152 - Historical Geology  
PHYS 134 - Matter, Space & Energy  
PHYS 246 - Waves, Optics & Optical Technology  
PHYS 306 - Intro to Quantum Mechanics

\*\*Chemical concentration students have an advanced chemistry elective. It can be met by one of the following: Chem. 201, 318, 323, 325, 330 or Biology 141.

- 2) The advanced mathematics course chosen must have at least Math 162 as a prerequisite. Recommended courses:

### FALL

MATH 312 – Logic, Computability & Complexity  
MATH 333 - Partial Differential Equations  
MATH 343 - Probability and Statistics

### SPRING

MATH 335 - Numerical Analysis (odd years)  
MATH 344 - Mathematical Statistics (need 343)  
MATH 355 - Advanced Linear Algebra (odd years)  
MATH 365 - Complex Variables

For students wishing to obtain a mathematics minor the following mathematics courses are required: 161, 162, 231, 232 and two 300 level courses. Approval must be obtained from the Math Dept.

- 3) Courses **suggested** for the Engineering Elective are the following (min. 3 cr. hr. course). Consult the catalog for prerequisites that may be needed for these courses:

### Electrical & Computer Engineering Concentration:

#### FALL

ENGR 303 - Chem Engr Fund. & Thermo.  
ENGR 305 - Mechanics of Materials  
ENGR 306 - Environmental Engineering  
ENGR 315 - Control Systems  
ENGR 319 - Intro to Thermal/Fluid Sciences

#### SPRING

ENGR 308 - Environmental Engineering Design  
ENGR 314 - Vibrations  
ENGR 318 - Soil Mech. & Foundation Design (odd years)  
ENGR 334 - Dynamics of Machinery  
ENGR 342 - Process Control

### Civil & Environmental Engineering Concentration:

#### FALL

ENGR 220 - Intro to Computer Architecture  
ENGR 303 - Chem Engr Fund. & Thermo.  
ENGR 307 - Network Analysis  
ENGR 315 - Control Systems  
ENGR 321 - Hydraulic Engineering Design  
ENGR 327 - Structural Design

#### SPRING

ENGR 304 - Digital Systems  
ENGR 308 - Environmental Engineering Design  
ENGR 314 - Vibrations  
ENGR 318 - Soil Mech. & Foundation Design (odd years)  
ENGR 322 - Machine Design  
ENGR 328 - Intermediate. Thermal Fluid Sciences  
ENGR 334 - Dynamics of Machinery  
ENGR 338 - Traffic Engineering (even yrs)  
ENGR 342 - Process Control

### Mechanical Engineering Concentration:

#### FALL

ENGR 220 - Intro to Computer Architecture  
ENGR 303 - Chem Engr Fund. & Thermo.  
ENGR 306 - Environmental Engineering  
ENGR 307 - Network Analysis  
ENGR 315 - Control Systems

#### SPRING

ENGR 304 - Digital Systems  
ENGR 308 - Environmental Engineering Design  
ENGR 314 - Vibrations  
ENGR 318 - Soil Mech. & Foundation Design (odd years)  
ENGR 320 - Hydraulic Engineering  
ENGR 326 - Structural Analysis  
ENGR 342 - Process Control