

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: 161/171, 162/172 , 231, 232/271 and two 300 level courses. Approval must be obtained from the Math Dept.

- 3) Statistics Elective - There are four options for meeting the Statistics Requirement

AP Statistics (from High School)
MATH 2xx – Statistics for Engineers

MATH 243 - Statistics
MATH 343 and MATH 344 (see advanced Math Electives)

- 4) 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