

Chemistry and Engineering Science

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Engineering Science

The engineering science major seeks to prepare students for the rapidly evolving world of today. Unlike most engineering programs, this major is intentionally designed to give students a breadth of competence in the key areas common to all engineering specialties without sacrificing opportunities to explore the wide variety of experiences a liberal arts setting can afford.

The program is built on a solid foundation in mathematics, physics, and chemistry. Technical course work focuses on common professional practice and developing problem-solving skills in the context of broad areas of engineering analysis.

Program goals:

- Students will master fundamental scientific and technical content and skills.
- Students will acquire an understanding of the ethical, global, and societal dimensions of the profession.
- Students will develop skills in communication, critical thinking, team building, and self-training.

Major in Engineering Science

22½ course credits:

CH 113 Principles of Chemistry I
CS 120 Introduction to Computers and Programming
MA 214 Statistical Methods or MA 313 Mathematical Probability and Statistics
MA 250 Applied Calculus
MA 251 Foundational Differential Calculus (½)
MA 252 Foundational Integral Calculus (½)
PHY 203 Classical Physics I
ES 103 Introduction to Engineering
ES 204 Electrical Circuits
ES 205 Structural Statics
ES 206 Thermal Science
ES 230 Engineering Economic Analysis
ES 303 Structural Analysis
ES 304 Fluid Mechanics
ES 305 Electronics and Digital Systems
ES 310 Dynamics
ES 320 Engineering Materials
ES 350 Engineering Design Methods
ES 360 Preliminary Design Project (½)
ES 402 Engineering Seminar (½)
ES 460 Senior Design Project (½)
Four Math and Science Electives
One course credit must be from
BI 151 Biology I
CH 114 Principles of Chemistry II
PHY 204 Classical Physics II

Three course credits from

Any BI excluding BI 120, BI 130, BI 131
Any CH excluding CH 130
Any MA excluding MA 90, MA 106, MA 107, MA 110, MA 212, MA 312
Any PHY at 200 level or above

By completing the engineering science major, students have met the requirements for OCAC/ILAC.

DEPARTMENT RECOMMENDATIONS

Students planning to pursue a master's degree in engineering should take MA 255 Multivariable Calculus, MA 401 Differential Equations, and PHY 204 Classical Physics II as well as additional advanced mathematics and science courses relevant to the area of specialization sought. Students planning to enter industry directly should take additional courses in economics, business administration, and/or writing. All engineering science majors are strongly encouraged to develop proficiency in a second language at least equivalent to one year of college-level study.

Minor in Engineering Science

10 course credits:

MA 250 Applied Calculus
MA 251 Foundational Differential Calculus (½)
MA 251 Foundational Differential Calculus (½)
PHY 203 Classical Physics I
PHY 204 Classical Physics II
CH 113 Principles of Chemistry I
CH 114 Principles of Chemistry II
ES 103 Introduction to Engineering
Three course credits from
CS 120 Introduction to Computers and Programming
ES 204 Electrical Circuits
ES 205 Structural Statics
ES 206 Thermal Science
ES 303 Structural Analysis
ES 304 Fluid Mechanics
ES 305 Electronics and Digital Systems