UNDERGRADUATE

MINOR IN

PENN STATE ENGINEERING

PENNSTATE

Chemical Engineering

For more information, contact:

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Chemical engineers are involved in a wide range of high technology industries that produce new pharmaceuticals and high-value chemicals, manufacture microelectronic devices, develop high-performance plastics and alternative fuels, purify therapeutic proteins, and design artificial organs. Chemical engineering is unique in its focus on the processes involved in making new products, including the chemical/biological reactions and the complex physical transformations and purifications. As such, chemical engineering draws heavily on the basic sciences, with a particular emphasis on physical chemistry, organic chemistry, molecular biology, and physics.

The minor in chemical engineering is ideal for students who are interested in chemistry, have strong quantitative/mathematical skills, and who want to learn how to use this background to solve technologically significant problems. The minor covers the fundamental principles of material and energy balances, thermodynamics, heat and mass transfer, fluid mechanics, and chemical reaction engineering. The required courses will help students develop strong problem-solving skills, while providing a broad exposure to the full range of applications and opportunities available for chemical engineers.

CAREER OPPORTUNITIES

Chemical engineers work throughout the chemical, pharmaceutical, food, biotechnology, consumer products, and microelectronics industries. Specific opportunities for students with a minor in chemical engineering include product development, marketing, technical sales, business development, and technical consulting. The strong foundation in quantitative logical thinking and problem-solving also provides an outstanding foundation for careers in business, law, and medicine.

PROGRAM REQUIREMENTS (21 credits)

- CH E 210 Introduction to Material Balances (3)
- CH E 220 Introduction to Chemical Engineering Thermodynamics (3)
- CH E 320 Phase and Chemical Equilibria (3)
- CH E 330 Process Fluid Mechanics (3)
- CH E 350 Process Heat Transfer (3)
- CH E 410 Mass Transfer Operations (3)
- CH E 430 Chemical Reaction Engineering (3)

NOTE: It may be possible to substitute courses from other engineering disciplines to satisfy the requirements in thermodynamics, fluid mechanics, and/or heat transfer. Students should discuss possible substitutions with the undergraduate program coordinator in chemical engineering before pursuing the minor.

ADMISSION REQUIREMENTS

Applicants wishing to enroll in the chemical engineering minor must meet prerequisite requirements for each course. Students need to pay particular attention to requirements in mathematics, chemistry, and physics.