



# CHEMICAL ENGINEERING

## What is Chemical Engineering?

Chemical engineers work to innovate and improve lives. Western Chemical engineering students use a multiscale engineering approach to design commercial processes that sustainably transform raw materials, living cells and microorganisms into useful consumer products that everyone uses daily, such as plastics, polymers, medicines, food, fuels, fertilizers, cosmetics, and consumer goods.

Improve everyday living  
while protecting the environment



### **OPTIONS**

General Chemical Engineering

Biochemical and Environmental Engineering



### **CAREER POSSIBILITIES**

Biotechnology

Nanotechnology

Pharmaceutical and Biopharmaceutical

Water

Energy

Petrochemicals

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“ The work that I perform on a daily basis combines the microscopic tenets of science with the macroscopic principles of engineering. Dealing in the ever-accelerating and demanding domain of biotechnology requires not only a strong technical basis of the bioprocess being created, but a fully fleshed set of soft skills able to support, defend, and approve of your vision within any organization. My time at Western Engineering provided the framework to build my career successfully to what it is today. ”



## WESTERN'S CHEMICAL ENGINEERING

All Western Engineering students must complete a common first year. Courses include: Applied Mathematics — Calculus, Applied Mathematics — Linear Algebra, Business for Engineers, Chemistry, Computer Programming Fundamentals, Foundations of Engineering Practice, Physics, Properties of Materials and Statics. Upon completing first year, students may apply to the Chemical Engineering program.

### Chemical Engineering

The objective of the Chemical Engineering program is to teach students fundamental principles to design commercial processes to transform raw materials, living cells and microorganisms from the environment into useful consumer products at minimum cost in a safe way, and return spent products and by-products to the environment in an ecologically sustainable manner. In third year, students may select one of the following two options:

### General Chemical Engineering Option

This option explores traditional chemical engineering processes and applications. Through technical electives, students will have the opportunity to explore emerging topics in the field of catalysis, energy, water, materials, pharmaceuticals, polymers, oil processing, instrumentation and control.

### Biochemical and Environmental Engineering Option

This option provides students with a strong foundation in the fundamentals of biochemical and environmental processes. Students learn how to integrate engineering principles with knowledge of applied biology to design advanced biochemical systems for industrial environmental and biomedical applications. Through technical electives, students will have the opportunity to explore emerging topics in fields of biotechnology, biomedical engineering, bioenergy, biomaterials, bio-separation and environmental engineering.

All fourth-year students in the Chemical Engineering program have the option of investigating a focus area of their interest in greater depth by working in a research lab under the supervision of a faculty mentor, gaining practical skills while completing an original research project.

