



Jones Hall

# Chemical Engineering

The chemical engineer designs large-scale chemical processes that convert raw materials into useful products using environmentally responsible methods.

Chemical engineers are continuously developing new products and processes to satisfy the demands of a consumer-oriented society and also play a central role in developing "green" energy for the future.

In response to the nation's increasing concern for the environmental quality of air and water, chemical engineers are uniquely equipped to address these problems and have made numerous contributions toward their solution.

## Employment Opportunities

As a chemical engineering graduate, you will find employment opportunities in the following areas:

- Alternative Energy Production
- Biological Engineering
- Biomedical Engineering
- Environmental Engineering
- Manufacturing
- Marketing & Purchasing
- Pharmaceutical Manufacture
- Plant Operations
- Process & Project Engineering
- Research & Development
- Technical Management
- Technical Sales & Services

Graduates with specialized training can pursue careers in biochemical and biomedical engineering, patent or technical law, process instrumentation and control, electronic material processing, environmental protection including air and water pollution control, hazardous waste management, chemical engineering education, and medicine.

Through the Office of Career Services, chemical engineers graduating from YSU typically have the opportunity to interview on campus with numerous prospective employ-

ers. Annual starting salaries generally meet or exceed the national average for graduating chemical engineers.

## Degree Options

Students majoring in chemical engineering earn the Bachelor of Engineering (BE) degree. The curriculum may easily be modified for students whose career objectives lie in environmental, polymer, biochemical, or biomedical engineering.

Upon receipt of the baccalaureate degree, students are prepared for study at the graduate level in engineering or for employment in the aforementioned professions.

## Accreditation

The chemical engineering program of the William Rayen College of Engineering and Technology is nationally accredited by the Accreditation Board for Engineering and Technology (ABET) and the American Institute of Chemical Engineers (AIChE).

## Facilities

Moser Hall is home to the chemical engineering program and houses classrooms, laboratories, research and development rooms, and high-tech computer facilities. The program maintains laboratories for undergraduate instruction and student and faculty research. The program has available personal computers, printers, and plotters, as well as computers connected directly to YSU's mainframe computer. Software for chemical engineering includes ChemCAD, Matlab, and MathCad.

## Faculty

YSU maintains a faculty-student ratio of 1:19, among the best of state-affiliated universities in Ohio. The program retains its tradition as a small school in maintaining close contact between its students and faculty.

The chemical engineering program is staffed by teaching professionals. All full-time faculty have doctoral degrees in chemical engineering. Senior professors serve as aca-

ademic advisors and are involved in all phases of instruction from freshman to graduate courses.

The faculty strives to keep abreast of developments in their specialty areas through continuous study and research as well as through consulting and other interaction with industry and society.

### Professional and Honorary Societies

Chemical engineering students in good standing are encouraged to acquire membership and participate in student chapters of the American Institute of Chemical Engineers, the Society of Women Engineers, and the American Chemical Society. Outstanding chemical engineering students may be elected to campus chapters of Omega Chi Epsilon (chemical engineering honorary society), Tau Beta Pi (national engineering honorary society) and Phi Kappa Phi (honorary society for all disciplines).

### Chemical Engineering Educational Objectives at YSU

- Graduates are adequately prepared to succeed in chemical process engineering positions in all industries that employ chemical engineers.
- Graduates are adequately prepared to excel in graduate study in all chemical engineering programs.
- Graduates have a strong foundation in chemistry, math, computer applications, and physics and can readily apply these skills to chemical engineering problem solving.
- Graduates have a strong foundation in molecular thermodynamics, reaction engineering, transport phenomena, process control, and plant design and can apply this knowledge to assess the technoeconomic feasibility of new and novel processes.
- Graduates understand and respect chemical substances and processes of significant danger to health and the environment, and are able to incorporate adequate safeguards in process design and procedures.
- Graduates are able to make order of magnitude estimates of the outcomes of given processes and the effects of changes in process variables.
- Graduates can give professional quality presentations and are exemplary in their oral and written communications.

- Graduates can work well on multidisciplinary teams.
- Graduates are capable of accessing information from printed and electronic media.
- Graduates appreciate lifelong learning and keep abreast of new knowledge as it pertains to chemical engineering or chemistry in general.

### Curriculum Overview

Coursework toward the Bachelor of Engineering degree with a major in chemical engineering:

#### First Year

Engineering Concepts  
Engineering Computing  
General Chemistry 1, 2 and Labs  
Calculus 1, 2

#### Second Year

General Physics 1, 2  
Organic Chemistry 1, 2 and Labs  
Applied Engineering 1  
Chemical Engr Principles 1, 2  
Calculus 3  
Differential Equations

#### Third Year

Applied Engineering 2  
Chem Engr. Thermo 1, 2  
Transport Lab 1  
Transport Phenomena  
Trans 2/Unit Ops 1  
Chemical Engr Elective  
Physical Chemistry 1, 2 and Labs

#### Fourth Year

Unit Ops Lab 1  
Unit Operations 2 and Lab  
Chem Reactor Design 1, 2  
Process Dynamics and Lab  
Process & Plant Design 1, 2  
Chem Engr Elective

**For more information about this program, go to**

<http://www.eng.yzu.edu/~cheqr>



To obtain the Undergraduate Admissions and Financial Aid Application and/or a copy of the current Undergraduate Bulletin, please contact the Office of Admissions at:

Telephone: (877) 468-6978 330-941-2000 TDD: 330-941-1564 Fax: 330-941-3674 E-mail: [enroll@ysu.edu](mailto:enroll@ysu.edu)

The Office of Admissions is open Monday and Thursday, 8:00 a.m. to 6:00 p.m., and Tuesday, Wednesday, and Friday, 8 a.m. to 5 p.m. The Office is also open every other Saturday from 9 a.m. to noon, except on holiday weekends and during term breaks