Chemical & Biochemical Engineering

Second Elevator Pitch

Chemical engineering is where the scientific disciplines of chemistry, physics, and mathematics meet. Chemical engineers study and develop systems that transform materials into valuable substances or energy; transformations that are accomplished by chemical reactions and the refining of complex chemical systems.

Who excels in this discipline?

Successful chemical engineering students are those that understand the complicated interrelation of chemical kinetics, thermodynamics, and the theoretical and empirical relationships used in practicing chemistry. Their mastery of physics and the mathematical language enables them to design and control all aspects of dynamic chemical process systems.

Research

What are some of the most popular research areas for this discipline?

Renewable energy technology, materials research and development, biochemical systems and drug delivery, solid state materials and catalysis, and membrane/separation systems.

This discipline often seeks answers to...

...how the public may be better served through the responsible design and implementation of the many aspects of chemical engineering in modern life; including energy production, materials development, pharmaceuticals, microelectronics, and consumer products.

Answers

The future of this discipline includes...

...energy, materials, sensors, chemical production, and biotechnology.

What misconceptions do students often have about this discipline?

They often believe that it’s all work and no fun. In reality, the entire faculty share a strong desire to help students learn, and have a great time while learning.

Do students who graduate in this discipline often pursue graduate work (Masters, PhD, etc.)?

There is a healthy crop of graduates who advance to graduate school every year, and we send them to top-tier research universities. Many students choose to pursue MS degrees in chemical engineering in order to further their career in the process design or consulting fields. Students earning PhD degrees in chemical engineering open themselves up to a new world of cutting-edge research.

What minors are often paired with this major/degree? Why?

Biomedical Engineering and Energy Systems are two minors that complement the chemical engineering curriculum.

Different Than, Similar to

What degree(s) is this discipline often compared to?

Chemical engineering is most often compared to petroleum engineering. This is due to the historic connection between chemical engineers and downstream petroleum operations (refining, fuel enrichment, petrochemical production). While these industries remain strong employers of chemical engineering graduates, the chemical engineering discipline has expanded far beyond the petroleum industry over the last fifty years. Furthermore, a more flexible degree has protected our graduates to the volatility of the oil market to a great degree.

Why Should a Student Pursue this Degree? Why Should They Not?

A student should pursue this degree if they wish to learn about a multifaceted, flexible, and challenging field of study. They should not be primarily motivated by the fact that chemical engineering graduates are well compensated.

Above all, prospective chemical engineering students should know that the program of study is equally challenging and rewarding. We train our students to be creative thinkers that find unique ways to solve complex problems, and to communicate well with both others in the discipline and the public.

Answers provided by representatives of the respective department. Students are encouraged to connect with CASA or the Academic Department for more information.