Chemical and Biochemical Engineering

Interim Chair
• Jun Wang

Undergraduate major: chemical engineering (BSE)
Graduate degrees: MS in chemical and biochemical engineering; PhD in chemical and biochemical engineering
Faculty: https://engineering.uiowa.edu/cbe/cbe-people
Website: https://engineering.uiowa.edu/cbe

Chemical and biochemical engineers combine engineering principles with knowledge of mathematics and specific sciences—chemistry, the biological sciences, and physics—to develop and operate processes that convert raw materials into products that benefit society. For example, biochemical engineers might develop and operate processes to convert switchgrass into biofuels or to mass produce an antibiotic.

Chemical and biochemical engineers engage in a wide variety of activities that benefit the global community. Chemical engineering has served as a foundational discipline for many industries and applications, including the development of fuel cells, solar energy, and bio-renewable fuels (e.g., biodiesel or ethanol); pharmaceutical manufacturing, rechargeable batteries, and new materials; and green technologies for decarbonation and combating global climate change through air pollution control and precision agriculture.

Chemical engineering distinguishes itself from other engineering professions with its reliance on chemical reactions and physicochemical transformations to produce a wide variety of important materials and products. Biochemical engineers are involved in a wide variety of industrial biocatalytic, fermentation, and cell culture processes that generate products ranging from the high fructose corn syrup in soft drinks to recombinant human insulin.

As part of their training, chemical and biochemical engineers learn ethical design and a respect for the larger issues in any design, such as community health, employee safety, and the global implications of the design. The University of Iowa's curriculum emphasizes chemical process safety and environmentally conscious chemical engineering design.