Chemical Engineering

The purpose of the Department of Chemical Engineering of the Bahaâ€™i Institute for Higher Education (BIHE) is to educate Chemical Engineers through an outstanding undergraduate degree program and train chemical engineers with excellent technical and leadership skills, integrity, and social responsibility in order to serve the citizens of Iran and the world.

Chemical engineers study, design and operate processes to convert raw materials to useful finished products to provide food, drinking water, fossil-based and alternative energy, polymers, electronic materials, pharmaceuticals, minerals, fertilizers, and textiles. Chemical engineers must achieve this task economically, safely and with minimum impact on the environment in an ecologically sustainable manner.

The program is offered through a blended mode of delivery, enjoying both in-person classes and online education. Here is a brief review of the structure of the program:

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Chemical engineering involves basic science courses such as mathematics, calculus, physics, inorganic and organic chemistry, statistics, statics and dynamics, materials science, strength of materials, and biology.

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Courses specific to chemical engineering include heat and mass transfer, fluid mechanics, energy and mass balance, unit operations involving the operation of distillation columns, absorption columns, liquid-liquid extraction, crystallization, evaporation, drying, design of chemical reactors ranging from batch to continuous stirred tank, fixed-bed and fluidized-bed reactors. Instrumentation and fundamental and applied process dynamics and control are also covered.

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The principles of process design are covered in a course followed by a capstone design course that often includes the simulation of an entire chemical, biochemical or a petrochemical plant, safety and hazard and operability analysis, and economic and profitability analysis. In addition, there are a series of applied engineering courses such as wastewater treatment, petroleum refining and upgrading, polymer processing, mineral processing and pharmaceutical engineering that in most chemical engineering schools are considered as technical elective courses. Courses in engineering ethics, the role of engineers in society, and humanities are considered as non-technical electives.

Students are awarded B.Sc. in Chemical Engineering by accomplishing 131 credits with leading skills in promoting the process and design of chemical plants and technologies and to instil the responsibility for applying engineering methods to present a sustainable and environmental friendly approach in the design and services to the society.