Chemical and Petroleum

Engineering Department

Email: info@sharif.edu

Website: http://che.sharif.edu/

Address: Chemical and Petroleum Engineering Department, Sharif University of Technology, P.O. Box: 11155-9465, Tehran, Iran.

Telephone number: +98 21 6616 5401

Chemical engineering concerns the design, scale-up, and operation of chemical processes, and understanding and design of technologically useful materials. Petroleum engineering works on the design and development of optimized methods for producing oil and gas from deposits below the Earth's surface (hydrocarbon reservoirs). Exploration, drilling, reservoir and production engineering are the major fields of the upstream sector of the oil and gas industry. The Chemical & Petroleum Engineering Department provides the best to prepare and educate each student to be a leader and problem-solver for industry, academia, or the public sector.

Undergraduate Course Structure

Chemical Engineering

1st year	2nd year	3rd year	4th year
• Math. (I), (II) • Physics (I), (II) • Chemistry (I), (II) • Computer Programming • Mass and Energy Balance	• Diff. Equations • Organic Chemistry • Fluid Mechanics (I), (II) • Chemical Eng. Thermodynamics (I), (II) • Heat Transfer I • Statics and Mechanics of Materials • Chemical Eng. Physical Chemistry • Eng. Math	• Applied Heat Transfer • Mass Transfer Operations • Analytical Chemistry • Numerical Analysis • Principles of Electrical Engineering • Kinetics and Reactor Design • Unit Operations I • Applied Math. in Chemical Eng.	• Unit Operations II • Process Control • Process Design and Economics • BSc project

Petroleum Engineering

1st year	2nd year	3rd year	4th year
• Math. (I), (II) • Physics (I), (II) • Chemistry I • Computer Programming • Petroleum Chemistry • General Geology • Mass and Energy Balance	• Diff. Equations • Chemical Eng. Thermodynamics (I), (II) • Statics and Mechanics of Materials • Structural Geology • Eng. Math • Transport Phenomena I • Petroleum Geology	• Numerical Analysis • Reservoir Engineering (I), (II) • Principles of Electrical Engineering • Transport Phenomena II • Drilling Engineering I • Well Logging • Production Engineering I	• Well Testing • Drilling Engineering II • Production Engineering II • Geophysics • Reservoir Simulation • Reservoir Management • BSc project

Graduate Program

The department offers a comprehensive program for both M.Sc. and Ph.D. degrees in advanced areas of chemical and petroleum engineering. All M.Sc. students must complete a minimum of 31 units, which include a research project of 6 units as their thesis. Ph.D. students are required to complete a minimum of 15 semester credits beyond the M.Sc. degree. Candidates must pass the qualifying exam and prepare a comprehensive Ph.D. thesis.

Graduate Research Fields

Chemical Engineering

- Biochemical Engineering and Biotechnology
- Biomedical Engineering
- Environmental Engineering
- Food Industry Engineering
- Petroleum Engineering
- Polymer Engineering
- Process Control and Simulation
- Process Design
- Thermo-kinetics, Catalyst, and Reactor Design
- Transport Phenomena and Separation Processes

Petroleum Engineering

- Reservoir Engineering
- Production Engineering
- Drilling Engineering
- Exploration Engineering (future plan)

Career Opportunities Chemical Engineering

Chemical Engineers may use their expertise in a wide range of industrial plants. Wherever a chemical process is taking place on a large scale, a Chemical Engineer needs to be present to oversee the process. Design and development of such processes and plants is also their duty. Nowadays and with all the new technologies, Chemical Engineers are needed more and more in multidisciplinary fields like Biomedical Engineering and Nanotechnology.

Career Opportunities Petroleum Engineering

Exploration by earth scientists and petroleum engineers is the oil and gas industry's main subsurface discipline, which focuses on maximizing the economic recovery of hydrocarbons from subsurface reservoirs. The combined efforts of geologists and petroleum engineers throughout the life of a hydrocarbon accumulation determine the way in which a reservoir is developed and depleted. This, of course, has important economic implications.