

Co-op Program

CHEMICAL ENGINEERING



This program prepares engineers with a global vision of industrial development. From early on, students gain real-world professional experience through practical integration projects. Thus they acquire and hone skills in communication, teamwork, information research, experiment planning and data analysis. They also acquire the necessary knowledge to be successful in their early work terms (analysis techniques, instrumentation and information technology).

With a strong focus on industrial chemical process design, this program also gives solid training in mathematics, thermodynamics, transfer phenomena, economic analysis, project management, risk management and sustainable development. It puts emphasis on the skills needed for process and equipment design, synthesis and operation for the purposes of chemical transformations on an industrial scale. These future engineers will become a valuable addition to consulting firms and research centers.

WHAT OUR STUDENTS CAN DO FOR YOU

Design

- Programming (Excel, MATLAB)
- Design and sizing of equipment
- Design of control systems
- Process optimization
- Mass and energy balance

Environment / Health & Safety

- Treatment of industrial effluents
- Management of hazardous materials
- Environmental compliance monitoring
- Risk analysis

Production

- Sampling and operational monitoring
- Process analysis and continuous improvement
- Write procedure protocols
- Training and supervision of operators and technicians
- Investigate and resolve production issues
- Energy efficiency and performance of equipment

Management

- Plan, organize, supervise, control and follow up projects
- Search for providers, call for tenders and bid follow-up
- Feasibility study
- Economic evaluation and calculation of processes

Research and Development

- Process simulation (Aspen, HYSYS)
- Product development
- Materials characterization
- Pilot unit operation
- Test bench installation
- Testing and data acquisition
- Results analysis and interpretation



KNOWLEDGE AND SKILLS

Term	Description
S-1	Introduction to chemical engineering Systematic principles of process engineering; chemical analysis techniques; health, security and risk management in engineering; computer environment; analysis and modeling of electrical devices; communication in engineering; teamwork; integration project I.
S-2	Fundamentals and measuring techniques Mass and energy balance; linear algebra; differential and integral calculus; formulating, analyzing and interpreting mathematical models; instrumentation; experiment planning; organic chemistry for industrial applications; integration project II (lab).
S-3	Fluid transport and exchange Momentum, energy and mass transfer; thermodynamics and chemical equilibrium; differential equations; designing, drafting and reading technical drawings; balance of forces and dynamic behavior.
S-4	Basic units in a chemical process Unit operations; design of equipment for the industry; further studies in momentum, mass and energy transfer; reaction mechanisms and kinetics; materials engineering; integration project III.
S-5	Industrial unit operation Matter transfer; separation procedures; thermokinetic operations in chemical engineering (practical work and experimental setting); process regulation; economic analysis in engineering; inorganic chemistry.
S-6	Process design in the chemical industry Chemical hazard identification, evaluation and control; unit operations lab, pilot units; chemical industry processes; project management; environmental aspects of process engineering.
S-7	Integration of process design skills – 1 Integrate all aspects related to the implementation, modification and operation of a large-scale chemical industrial installation.
S-8	Integration of process design skills – 2 Integrate all aspects related to the implementation, modification and operation of a large-scale chemical industrial installation; sustainable development; engineer's rights.

ORGANIZATION OF STUDY (S) AND WORK TERM (W)

1st year			2nd year			3rd year			4th year			5th year
FALL	WIN	SUM	FALL	WIN	SUM	FALL	WIN	SUM	FALL	WIN	SUM	FALL
S-1	S-2	W-1	S-3	W-2	S-4	W-3	S-5	S-6	W-4	S-7	W-5	S-8