Chemical Engineering at Ryerson University

Ryerson University offers an excellent graduate education in the heart of the vibrant city of Toronto, Ontario, Canada. Ryerson offers more than 100 undergraduate and graduate programs.

The Department of Chemical Engineering offers a versatile and unique program leading to a doctor of philosophy (PhD) degree, a master of applied science (MASc) degree or a master of engineering (MEng) degree. The course-based MEng degree can be completed through either full- or part-time study, while the research-intensive thesis-based MASc and PhD degrees are offered through full-time study.

KEY RESEARCH AREAS

Water/Wastewater and Food Treatment Technologies
- Use of rotating biological contactors and three-phase fluidized beds in treatment of industrial and municipal effluents
- Photo-oxidation and ozone technology applied to treatment of water and wastewater
- Advanced chemical oxidation and biological processes
- Fluid rheology in food processing
- Fundamental studies of adsorption and absorption of pollutants on solids and liquids
- Bio-adsorption of heavy metals and other contaminants
- Membrane process application in wastewater treatment, membrane fouling
- Biofuel ethanol: all processing steps to convert lignocellulosics into green ethanol
- Recombinant cellulases in transgenic plants
- Anaerobic digestion of agricultural food wastes
- Catalytic ozonation of wastewater

Polymer and Process Engineering
- Polymer rheology and application to processing techniques
- Kinetics of polymerization
- Nonlinear optical polymers
- Kinetics of phase transition and phase separation in polymer solutions
- Computer simulation of phase separation in polymer systems
- Computer simulation of complex fluids, condensed soft matter
- Process control and optimization: chemical reactors and infra-red/convective dryers
- Liquid crystalline and rod polymers
- Chemical reaction engineering: supercritical fluids, phase equilibria
- Biopolymers and biomaterials
- Interfacial rheology and surface chemistry
- Emulsion stabilization with colloidal particles
- Process modelling and simulation; Artificial Neural Networks (ANN) design
- Microfluidics and nanotechnology: synthesis of advanced materials
- Mixing of fluids with complex rheology
- Flow visualization (tomography and ultrasonic velocimetry)
- Computational fluid mixing
- Non-Newtonian fluid dynamics
- Microporous and mesoporous materials: growth, syntheses, characterizations and surface chemistry
- Optimal control of chemical processes
- Mass transfer in polymer-solvent systems
- Oil/gas processing and production: SAGD, VAPEX, Hybrid and SK-SAGS processes
- Utilization of waste product, fly ash characterizations and use, biofuel and energy from agricultural waste and industrial/forest by-products

FACULTY

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