

CHEMICAL ENGINEERING

**Program of Study**

The Department of Chemical Engineering and Biological Engineering has well-established programs at both undergraduate (B.S.) and graduate (M.S./PhD.) levels. External research support totals about \$1.5 million annually of which about \$1 million comes directly from industrial sources. Research projects cover a wide area of chemical engineering and include both fundamental and applied topics. The Department has established a close working relationship with industry, which supports sponsored research programs in Paper Surface Science a consortia of participating companies. New initiatives involve the concept of biorefineries that produce fuels and chemicals from renewable feedstocks. Other major research areas include bioprocessing pulping technology (including collaborative projects with Chemistry and Wood Science), advanced materials, catalysts, sensors and adsorption.

Research Facilities

Research facilities are housed in laboratories that occupy over 60,000 square feet. Three types of laboratory facilities are provided: basic analytical facilities, general pilot plant facilities, and specific project units. In addition, the Department has excellent capability in maintaining sophisticated equipment and exceptional capability in designing and constructing experimental apparatus. There are state-of-the-art units for basic studies utilizing chemical analysis, surface analysis, rheological studies, and physical characterization of polymers and of pulp and paper, and mathematical modeling. The Department also has an environmental scanning electron microscope, a distributed control system with interfaces for on-line data acquisition, and other specialized equipment.

Financial Aid

The Chemical Engineering Department has assistantships to offer for qualified students on a competitive basis. Eligible students admitted to the School will be notified.

Applying

The initial screening of applicants is done by the department, while final determination of admissibility is made by the Graduate School of the University of Maine. Approximately 10 students are admitted each year. The deadline for fall admission is March 1. Application received after that date will be considered if space is available.

Correspondence

The Graduate School
5755 Stodder Hall Room 42
University of Maine
Orono, ME 04469-5755
207-581-3291
graduate@maine.edu

Dept. of Chemical Engineering
117 Jenness Hall
University of Maine
Orono, ME 04469-5737
207-581-2277
bousfld@maine.edu

Graduate Faculty

Douglas W. Bousfield, Ph.D. (California at Berkeley, 1986), University of Maine Pulp and Paper Foundation Professor. Fluid mechanics, rheology, numerical methods, coating processes, modeling of coating and absorption processes.

Albert Co, Ph.D. (Wisconsin, 1979), Associate Professor. Transport phenomena, fluid mechanics, polymeric fluid dynamics, rheology, applied numerical methods.

William J. DeSisto, Ph.D., (Brown, 1989), Assistant Professor. Advanced material, sensors.

Darrell Donahue, Ph.D. (North Carolina State Univ., 1992), Associate Professor and undergraduate program coordinator. Food engineering, process engineering, biosensors for liquid food systems, statistical process control, industrial simulation and control, quantitative risk assessment modeling.

Joseph M. Genco, Ph.D. (Ohio State, 1965), Calder Professor. Process engineering applied to pulp and paper technology and science.

John J. Hwalek, Ph.D. (Illinois, 1982), Associate Professor. Process information systems, heat transfer.

Paul J. Millard, Ph.D., (University of Maryland, 1984), Assistant Professor. Microbial biosensors, physiological genomics systems, fluorescence technology.

David J. Neivandt, Ph.D. (Melbourne, 1998), Assistant Professor. Conformation of interfacial species, surface spectroscopies/microscopies, binary polymer/surfactant solutions and lipid membrane structures.

Hemant P. Pendse, Ph.D. (Syracuse, 1980), Professor and Chair. Colloidal phenomena, paper manufacture, fluid particle systems, and instrument/sensor development.

Douglas M. Ruthven, Ph.D., Sc.D. (University of Cambridge, 1966, 1988), Professor. Fundamentals of adsorption and adsorption processes.

Adriaan Van Heiningen, Ph.D. (McGill, 1982), J. Larcom Ober Professor of Chemical Engineering. Chemical reaction engineering in wood pulping and pulp bleaching, char bed modeling, black liquor gasification and direct causticization with titanate, paper wetting and forest products refinery.

M. Clayton Wheeler, Ph.D. (Austin, 1997), Assistant Professor. Chemical Sensors, fundamental catalysis, surface science, and selective sensor materials.

Cooperating Faculty

Stephen M. Shaler, Ph.D. (Penn State, 1986), Professor of Wood Sciences. Composites, coating layer mechanical properties.

Barry S. Goodell, Ph.D. (Oregon State, 1983). Professor of Wood Science and Technology. Control of decay in wood, wood microbiology, wood preservation, wood biotechnology.

Barbara J. W. Cole, Ph.D. (Washington, 1986), Professor of Chemistry. Wood chemistry.

Associate Graduate Faculty

Nick Triantafillopollous, Ph.D. (IPST, 1988). Professor of Chemical Engineering. Fluid mechanics of coating systems, printing sciences, film formation.