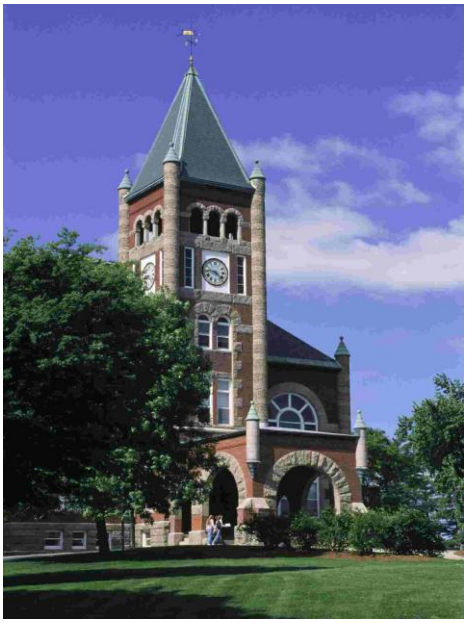

UNIVERSITY *of* NEW HAMPSHIRE

CHEMICAL ENGINEERING

GRADUATE STUDIES AND RESEARCH

Department Summary

The Department of Chemical Engineering at the University of New Hampshire offers BS, MS, and PhD degrees in Chemical Engineering. Our undergraduate enrollment is approximately 160 students and graduate enrollment is approximately 10 students (8 in the MS Chemical Engineering program and 2 in the PhD program). All of our graduate students are fully supported by teaching or research assistantships. All the courses in the department are taught by full-time faculty, and many of our undergraduates are engaged in research and summer internships. At the MS and PhD level, research areas include biomedical engineering, biochemical engineering, electrochemical engineering, environmental engineering, tissue engineering, air pollution control, interfacial flows, nanomaterials, fuel cells, and biofuels. The department has received endowments in excess of $1,000,000 from our graduates. The funding provides support for scholarships, program enhancements, and special projects.

Faculty

Dale P. Barkey, Professor
Ph.D. University of California at Berkeley
Research interests: Electrochemical Engineering, Electrodeposition, Anodizing, Micro- and Nano-Fabrication

Russell T. Carr, Professor
Ph.D. University of Rochester
Research interests: Biomedical Engineering, Blood rheology in microvessel networks, Cell Adhesion, Non-linear dynamics

Ihab H. Farag, Professor
Sc.D. Massachussetts Institute of Technology
Research interests: Environmental Engineering, Pollution Prevention, Biofuels

Nivedita R. Gupta, Associate Professor
Ph.D. Pennsylvania State University
Research interests: Interfacial Flows, Microfluidics, Viscoelastic Flows, Computational Fluid Dynamics

Virendra K. Mathur, Professor
Ph.D. University of Missouri at Rolla
Research interests: PEM & Solid Oxide Fuel Cells, Air Pollution Control by Non-Thermal Plasma Technique, Heat Transfer in Cryogenic Systems under High Vacuum, High Pressure Reactions in Coal Utilization

Qing Song, Assistant Professor
Ph.D. CUNY, The Levich Institute
Research interests: Tissue Engineering, Micro-Interfacial Science and Engineering

Xiaowei Teng, Assistant Professor
Ph.D. University of Rochester
Research interests: Catalysis, Nanomaterials, Fuel Cells

Palligarnai T. Vasudevan, Professor and Chair
Ph.D. Clarkson University
Research interests: Biochemical Engineering, Biocatalysis, Heterogeneous Catalysis

Facilities

The chemical engineering department has recently moved to a new building which provides state of the art facilities for teaching and research. In addition to the instructional laboratories for unit operations, process dynamics and control, biochemical engineering, and biomedical engineering, the Department also maintains a chemical engineering computer cluster which provides our students with commercial software packages for chemical engineering computation and process design. The research activities of faculty are carried out in the following research laboratories:

- Electrochemical Engineering
- Biochemical Engineering
- Biomedical Engineering
- Tissue Engineering
- Air Pollution Control and Fuel Cells
- Nanomaterials
- Interfacial Phenomena
- Biofuels

Degrees Offered

The Department of Chemical Engineering offers the M.S. degree and the Ph.D. degree in Chemical Engineering.

M.S. Admission Requirements
An applicant is expected to have completed a baccalaureate degree in chemical engineering. Students with good undergraduate records but with deficiencies in certain areas may be admitted on condition that they complete specified courses without credit to make up for their deficiencies. Applicants must submit current scores (within 5 years) from the general test of the GRE. International students are required to submit TOEFL test scores.

M.S. Degree Requirements
A minimum of 30 credits, which must include Advanced Fluid Mechanics (CHE 913), Heat Transfer (CHE 915), Diffusive Mass Transfer (CHE 916), Advanced Chemical Engineering Thermodynamics (CHE 923), and Advanced Chemical Engineering Kinetics (CHE 932), is required for the Master of Science in chemical engineering. These five core courses constitute 15 credits. The remaining 9 course credits can be made up of electives offered by the department or by the college. Students take electives after consulting with their advisor. A thesis is required, for which a minimum of 6 credits will be allowed, unless the candidate is specifically exempted by the faculty because of previous research experience.

Ph.D. Admission Requirements
Students admitted to the Ph.D. program normally hold Master's degree in chemical engineering. Exceptional students with baccalaureate degree in chemical engineering are eligible for admission to the program. To be admitted, students must present evidence that they have a strong foundation in chemical engineering. Applicants must submit current scores (within 5 years) from the general test of the GRE. International students are required to submit TOEFL test scores.

Ph.D. Degree Requirements
Following entrance into the program, the Ph.D. student’s advisor advises the student in outlining his/her program and may specify individual coursework requirements in addition to the required core courses. The core courses are fluid dynamics, mass transfer, heat transfer, thermodynamics and reaction kinetics. The core courses requirement can be waived only in special cases with permission from the department faculty. Each doctoral student must complete 50 course credit hours or 15 courses (whichever comes first) beyond the bachelor's degree. At least 8 of the courses must be at the 900 level. The graduate coordinator also conducts an

annual in-depth review of the student's progress and, following completion of the student's coursework (the five core courses), administers the written qualifying examination in each of the core courses. All coursework including electives should normally be completed by the end of the second year of full-time graduate study and must be completed before the student can be advanced to candidacy. The student must prepare a research proposal, which is different from his/her Ph.D. dissertation research, and defend the proposal in an oral examination before a committee. Upon the successful completion of the oral qualifying examination, the student is advanced to candidacy and, upon the recommendation of the graduate coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student's progress, supervises and approves the doctoral dissertation, and administers the final dissertation defense. There is no language requirement.

Graduate Courses

In addition to the required courses, four elective courses are offered every year based on student interest and faculty availability. The following graduate level courses have been offered in the last few years:

801. Introduction to Polymer Engineering
805. Natural and Synthetic Fossil Fuels
809. Fundamentals of Air Pollution and Its Control
812. Introduction to Nuclear Engineering
822. Introduction to Microfluidics
844. Corrosion
851. Process Simulation and Optimization
852. Process Dynamics and Control
861. Biochemical Engineering
862. Biomedical Engineering
872. Physicochemical Processes for Water and Air Quality Control
913. Advanced Fluid Mechanics
915. Heat Transfer
916. Diffusive Mass Transfer
923. Advanced Chemical Engineering Thermodynamics
932. Advanced Chemical Engineering Kinetics
996. Graduate Independent Study
899. Master's Thesis
999. Doctoral Research

Contact Information

For additional information about the Department, please contact:

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Email:. CHE.Dept@unh.edu
Web: http://www.unh.edu/chemical-engineering

To obtain the graduate application or more information about the application process, visit the Graduate School website at http://www.gradschool.unh.edu