

# CHEMICAL ENGINEERING (MS, PHD)

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Study and research programs leading to the degrees of Doctor of Philosophy (Ph.D.) and Master of Science (M.S) in chemical engineering are offered. Areas of specialization include: environmental engineering, biochemical engineering, polymer science and engineering, process simulation, catalysis and reaction engineering, nanomaterials and nanotechnology, microelectronics, and membrane technology.

## Requirements for the Plan A M.S. Degree

Students must complete 30 credits of coursework and research, composed of three core courses: CHEG 5301 Chemical Engineering Thermodynamics I, CHEG 5315 Transfer Operations I, and CHEG 5321 Reaction Kinetics I, as well as nine credits of GRAD 5950 Master's Thesis Research, and 12 additional credits of advanced coursework and training. Up to six credits of graduate level coursework can be transferred, subject to approval of the graduate committee. The student must assemble a thesis committee and complete a plan of study. There is a publication/product requirement. Students should register for the seminar series each semester it is offered.

## Requirements for the Plan B M.S. Degree

Students must complete 30 coursework credits, composed of three core courses in thermodynamics, kinetics and mass transport and three credits of an independent study project with one of our faculty members. Since Plan B does not include a thesis, a Plan B student must defend their project orally. There is no language requirement.

## Requirements for the Ph.D. Degree

Ph.D. candidates with B.S. degrees must complete coursework in three core subjects: CHEG 5301 Chemical Engineering Thermodynamics I, CHEG 5315 Transfer Operations I, CHEG 5321 Reaction Kinetics I, as well as 21 additional credits in advanced coursework and training, for a total of 30 coursework credits. An additional 15 credits of research bring the normal total to 45 credits. Additional coursework may be required for students with non-traditional Chemical Engineering backgrounds. For students with M.S. degrees, the coursework credits are reduced to 15 credits composed of nine credits from the three core courses and six additional credits of advanced coursework and training. Students must pass an oral qualifying exam taken after the first semester of graduate study. The oral exam involves the presentation and analysis of a paper from the literature assigned by the faculty. The student must assemble a dissertation committee and complete a plan of study. A Dissertation Prospectus should be given before the end of the 5th semester of study. In addition, the student must complete a General Examination and written Ph.D. dissertation, which is defended orally. The Ph.D. dissertation must contain the results of original and independent research related to chemical engineering. There is a publication/product requirement subject to approval by the dissertation committee. The Ph.D. in Chemical Engineering does not have a related area or foreign language requirement. Students should register for the seminar series each semester it is offered.