# CHEMICAL ENGINEERING (PHD)

Study and research programs leading to the degree of Doctor of Philosophy (Ph.D.) 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.

## Location

- Storrs Campus

## Modality

- In Person

## Requirements

### 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.

## Learning Objectives

1. Knowledge: Demonstrate appropriate breadth and depth of disciplinary knowledge and comprehension of the major topics, theories, and issues of the discipline, including demonstration of specialized knowledge of a sub-field sufficient to carry out substantive independent research or creative pursuits.
2. Research/applied skills: Use disciplinary methods and techniques ethically and professionally to apply knowledge, critically analyze, and, as appropriate to the degree, create new knowledge or achieve advanced creative accomplishments.
3. Communication: Communicate proficiently and effectively to a specialist or non-specialist audience, verbally and in writing, a structured, coherent academic presentation, representation, or argument that cogently summarizes their research or creative pursuit, relevant literature, and its significance at the level appropriate to discipline.