**CHEMICAL Engineering program**

**Doctor of Philosophy (Ph.D.) Degree**

**DEGREE INFORMATION**

**Program Admission Deadlines:**

**Fall:** February 15

**Spring:**  October 15

**Summer:**  February 15

**Minimum Total Hours:** 60 post-master’s

90 post-bachelor’s

**Program Level:** Doctoral

**CIP Code:** 14.0701

**Dept. Code:** ECH

**Program (Major/College):** ECH EN

**Approved:** 1981

**CONTACT INFORMATION**

**College:** Engineering

**Department:** Chemical & Biomedical Engineering

**Contact Information:** [www.grad.usf.edu](http://www.grad.usf.edu/)

**PROGRAM INFORMATION**

Contact Program for Information

**Accreditation:**

Accredited by the Commission on Colleges of the Southern Association of College and Schools.

**Major Research Areas:**

The Chemical & Biomedical Engineering faculty research and development interests cover a broad range of areas in reacting systems, thermodynamics, transport phenomena, systems engineering and characterization, all fundamental as well as applied in biomedical, materials including microelectronic, and environmental domains. Strong collaboration with the College of Medicine, Center of Microelectronic Research, as well as, Departments of Biology, Chemistry, Industrial Engineering, Civil Engineering, Mechanical Engineering, Electrical Engineering, and Computer Science and Engineering makes most programs in Chemical Engineering truly interdisciplinary.

The Department offers core courses in thermodynamics, transport phenomena, reacting systems, math, and process analysis and modeling. A rich variety of electives are available regularly within the department as well as the University. Chemical & Biomedical Engineering research facilities include modern laboratories for polymer synthesis and characterization, supercritical fluid technology, life sciences, process control, instrumentation, computer aided process design, and phase behavior.

**ADMISSION INFORMATION**

Must meet University requirements (see Graduate Admissions) as well as requirements listed below.

**Program Admission Requirements**

* GRE required with preferred scores: Verbal >50% percentile, Quantitative >75% percentile and Analytical Writing >4.0
* An undergraduate Bachelor’s degree or equivalent in Chemical Engineering.
* TOEFL 550 (paper-based total) for international students or 213 (computer-based total);
* Three (3) letters of reference.
* Statement of Research Interests.

**DEGREE PROGRAM REQUIREMENTS**

Total Minimum hours:

For students with an *approved* master’s degree 60 hours minimum post-master’s

For students without a master’s degree 90 hours minimum post-bachelor’s

Structured Coursework requirements – 45 hours

Electives – 25 hours

Dissertation hours – 20 hours minimum ( 30 hours maximum)

Requires an undergraduate degree in Chemical Engineering. Complete Background courses in Chemical Engineering as needed.

**Structured Coursework Requirements (45 hours):**

ECH 6105 Advanced Thermodynamics I OR 3

ECH 6107 Molecular Thermodynamics

ECH 6285 Advanced Transport 3

ECH 6840 Math Methods 3

ECH 6515 Advanced Reaction Engineering OR 3

ECH 6506 Chemical Engineering Kinetics

ECH 6412 Processes Analysis and Modeling 3

ECH6931 Graduate Seminar courses (1 hour each; at least three) 3

Other Courses 27

(The exact distribution of these hours will be determined by the student, graduate advisor, and the supervisory committee to provide the student with a stimulating educational experience)

**Electives (25 hours)**

**Qualifying Examination**

Qualifying Examination preferably to be completed by the end of the second year of study. The dissertation committee will evaluate a written dissertation proposal and an oral defense. Poor performance on the qualifying exam based on the judgment of the Committee may result in the student failing the exam. If a student does not pass on the first attempt, he/she may request in writing to repeat the exam. Students who fail the Qualifying Examination the second time will be dismissed by the Program.

**Dissertation – 20 hours minimum**

ECH 7980 Dissertation

**Additional Requirements**

Publication in a refereed journal with the student as the first and primary author. At least 1 is required with the expectation that most Ph.D. students will have 3 or more. The publication must be based on your Dissertation research. Presentation at a conference or publication in a proceeding (even if refereed) is not sufficient.

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**COURSES**

 See [http://ugs.usf.edu/course-inventory](http://www.ugs.usf.edu/sab/sabs.cfm)