## CHEMICAL FOCUS AREA:
Chemical Process Engineering

**Department of Chemical and Biochemical Engineering**

### General Education (19 sh)
- ALL RHET:1101 Rhetoric
- ALL Be Creative
- ALL Approved Gen Ed Course
- ALL Approved Gen Ed Course

### Math & Basic Science Core (24 sh)
- F/S MATH:1550 Math I: Single Variable Calculus (P: ALEKS score ≥ 75 or MPT Level 3 score ≥ 9)
- ALL MATH:1560 Math II: Multivariable Calculus (P: MATH:1550)
- ALL MATH:1570 Math I: Matrix Algebra (P: MATH:1550)
- ALL CBE:3200 Appl Stat Chem & Natural Resource Engr
- ALL STAT:1510 Biostatistics
- ALL CHEM:1110 Principles of Chemistry I (P: ALEKS score ≥ 55 or MPT Level 3 score ≥ 9)
- ALL PHYS:1611 Introductory Physics I / Lab (C: MATH:1550)

### Engineering Core (7 sh)
- F ENGR:1000 Engineering Success for First-Year Students (First semester standing)
- F ENGR:1100 Intro to Engineering Problem Solving
- F/S ENGR:1300 Intro to Engineering Computing (C: MATH:1550)

### Electives: Advanced Chemistry / Science (6 sh)
- Advanced Chemistry or Biochemistry Course
- Advanced Science Course

### Required: 12 s.h. from the following list 12 sh
- 3000-level or higher Science, Math and/or Engineering Courses
- Additional 3000-level Science, Math and/or Engineering Courses
  (Recommended: MATH:4820 Optimization Techniques; note that this course requires MATH:3800 Elementary Numerical Analysis as a pre-req)

### Total Semester Hours Requirements: 134

### ChemE Requirements (53 sh)
- ALL CHEM:1110 Principles of Chemistry I with a minimum grade of C-
- ALL CHEM:2110 Organic Chemistry I with a minimum grade of C-
- ALL CHEM:2220 Organic Chemistry II for Majors (P: CHEM:2110 or CHEM:2200 with a minimum grade of C-)
- ALL CHEM:2240 Organic Chemistry III for Majors (P: CHEM:2110 or CHEM:2200 with a minimum grade of C-)
- ALL CHEM:2410 Organic Chemistry Laboratory (P: CHEM:2110 & CHEM:2200; both with a minimum grade of C; C: CHEM:2220 or CHEM:2240)
- ALL ENGR:2130 Thermodynamics (P: CHEM:1110 & PHYS:1511; C: MATH:1560)
- ALL* ENGR:2720 Materials Science (P: CHEM:1110; C: MATH:1550)
- F CBE:2110 Computational Tools for Chemical Engineers (P: MATH:1550; C: MATH:1550)
- F/S CBE:2105 Process Calculations (P: MATH:1550)
- S CBE:3105 CM Thermodynamics (P: ENGR:2130; C: CBE:2200)
- S CBE:3109 Fluid Flow (C: CBE:2155)
- F CBE:3113 Heat & Mass Transfer (P: MATH:2560 & CBE:2105; R: CBE:3320)
- F CBE:3117 Separations (P: CBE:2105 & CCE:3353; C: CBE:3113)
- F/S CBE:3120 Chemical Reaction Engineering (P: MATH:2560; C: CBE:3200; R: CBE:3113)
- F CBE:3125 Chemical Process Safety (P: CBE:3105 & CBE:3200; C: CBE:3113)
- S CBE:3150 Thermodynamics / Transport Laboratory (P: CCE:3350 & CCE:2113)
- F CBE:3155 Chemical Reaction Engineering / Separation Lab (P: CBE:3117; C: CBE:3200; R: Statistics Elective)
- S CBE:3205 Introduction Biochemical Engineering Laboratory (P: CBE:2105; C: CME:3109; R: CBE:3120)
- F CBE:4105 Process Dynamics & Control (P: MATH:2560; C: CBE:3200; R: CBE:3113)

### ChemE Capstone Design Courses (5 sh)
- F CBE:4105 Chemical Engineering Process Design I (P: CBE:3100; C: CBE:3113; & C: CBE:3200 & CBE:3225)
- S CBE:4110 Chemical Engineering Process Design II (P: CBE:4105; R: CBE:4105 & CBE:3220)

### ChemE Departmental Seminars (5 sh)
- S CBE:1000 CBE Departmental Seminar
- F/S CBE:3000 CBE Professional Seminar (1 sh #4) (P: CBE:2105)
- S CBE:4195 Senior Enriching Activities Seminar (C: CBE:4105)

- Additional 3000-level Science, Math and/or Engineering Courses
- Recommended: MATH:4820 Optimization Techniques; note that this course requires MATH:3800 Elementary Numerical Analysis as a pre-req