

CHEMICAL FOCUS AREA: Biochemical Engineering

Department of Chemical and Biochemical Engineering

General Education (19 sh) sh

ALL	RHET:1030 Rhetoric	4
F/S	Diversity & Inclusion	3
ALL	Be Creative	3
ALL	Approved Gen Ed Course	3
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Math & Basic Science Core (24 sh) sh

F/S	MATH:1550 Math I: Single Variable Calculus (P: ALEKS score \geq 75 or MPT Level 3 score \geq 9)	4
ALL	MATH 1560 Math II: Multivariable Calculus (P: MATH:1550)	4
ALL	MATH:2550 Math III: Matrix Algebra (P: MATH:1550)	2
ALL	MATH:2560 Math IV: Differential Equations (P: MATH:1560 & MATH:2550)	3
ALL	CBE:3020 Appl Stat Chem & Natural Resource Engr	3 OR
ALL	STAT:2020 Probability & Stats for Engr & Phys Sci (P: MATH:1560)	3 OR
ALL	STAT:3510 Biostatistics	3
ALL	CHEM:1110 Principles of Chemistry I (P: ALEKS score \geq 55 or MPT Level 3 score \geq 9)	4
ALL	PHYS:1611 Introductory Physics I / Lab (C: MATH:1550)	4

Engineering Core (7 sh) sh

F	ENGR:1000 Engineering Success for First-Year Students (First semester standing)	1
F	ENGR:1100 Intro to Engineering Problem Solving	3
F/S	ENGR:1300 Intro to Engineering Computing (C: MATH:1550)	3

ChemE Requirements (53 sh) sh

ALL	CHEM:1120 Principles of Chemistry II (P: CHEM:1110 with a minimum grade of C-)	4
ALL	CHEM:2210 Organic Chemistry I (P: CHEM:1120 with a minimum grade of C-)	3 OR
F	CHEM:2230 Organic Chemistry I for Majors (P: CHEM:1120 with a minimum grade of C-)	3
ALL	CHEM:2220 Organic Chemistry II (P: CHEM:2210 or CHEM:2230 with a minimum grade of C-)	3
S	CHEM:2240 Organic Chemistry II for Majors (P: CHEM:2210 or CHEM:2230 with a minimum grade of C-)	3 OR

ALL	CHEM:2410 Organic Chemistry Laboratory (P: CHEM:1120 & (CHEM:2210 or CHEM:2230), both with a minimum grade of C-; C: CHEM:2220 or CHEM:2240)	3
S	CHEM:2420 Organic Chemistry Lab for Majors (P: CHEM:1120 & (CHEM:2210 or CHEM:2230), both with a minimum grade of C-; C: CHEM:2220 or CHEM:2240)	3 OR

ALL	ENGR:2130 Thermodynamics (P: CHEM:1110 & PHYS:1611; C: MATH:1560)	3
ALL*	ENGR:2720 Materials Science (P: CHEM:1110; C: MATH:1550)	3
F	CBE:2110 Computational Tools for Chemical Engineers (P: MATH:1550; C: MATH:1560)	2
F/S	CBE:2105 Process Calculations (P: MATH:1550)	3
S	CBE:3105 ChE Thermodynamics (P: ENGR:2130; C: CBE:2105)	3
S	CBE:3109 Fluid Flow (C: CBE:2105)	2
F	CBE:3113 Heat & Mass Transfer (P: MATH:2560 & CBE:2105; R: CBE:3109)	3
F	CBE:3117 Separations (P: CBE:2105 & CBE:3105; C: CBE:3113)	3
F/S	CBE:3120 Chemical Reaction Engineering (P: MATH:2560; C: CBE:3105; R: CBE:3113)	3
F	CBE:3125 Chemical Process Safety (P: CBE:2105 & CBE:3109; C: CBE:3113)	3
S	CBE:3150 Thermodynamics / Transport Laboratory (P: CBE:3105 & CBE:3113)	3
F	CBE:3155 Chemical Reaction Engineering / Separation Lab (P: CBE:3117; C: CBE:3120; R: Statistics Elective)	3
S	CBE:3205 Introduction Biochemical Engineering (P: CBE:2105; C: CME:3109; R: CBE:3120)	3
F	CBE:4105 Process Dynamics & Control (P: MATH:2560, CBE:2105, & CBE:3109; C: CBE:3120)	3

ChemE Capstone Design Courses (5 sh) sh

F	CBE:4109 Chemical Engineering Process Design I (P: CBE:3109, CBE:3113, & CBE:3117; C: CBE:3120 & CBE:3125)	2
S	CBE:4110 Chemical Engineering Process Design II (P: CBE:4109; R: CBE:4105 & CBE:3205)	3

ChemE Departmental Seminars (5 sh) sh

S	CBE:1000 CBE Departmental Seminar	1
F/S	CBE:3000 CBE Professional Seminar (1 sh x4); (P: CBE:2105)	4
S	CBE:4195 Senior Enriching Activities Seminar (C: CBE:4110)	0

Required: Biochemical (3 sh) sh

S (even)	CBE:5210 Bioseparations	3
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Electives: Advanced Chemistry / Science (6 sh) sh

	Advanced Chemistry or Biochemistry Course	3
	(Recommended: BIOC:3110)	3
	Advanced Science Course	

Electives: Biochemical (12 sh) sh

Electives: Engineering		
ALL	CBE:3998 Individual Investigations (usually research)	1-3
W/SU	CHEM:4850 Upstream Biotechnology Processes	2
ALL	CBE:5199 Contemporary Topics (biochemical eng. topics)	1
F/S	CBE:5875 Perspectives in Biocatalysis (see MyUI for requirements)	1
F	BME:5430 Biotransport (P: BME:2500)	3
ALL	BME:2400 Cell Biology for Engineers (P: BIOL:1411; C: BIOS:4120 or STAT:3510)	3

Electives: Science

F/S	BIOC:3120 Biochemistry and Molecular Biology I (P: two semesters of general chemistry & S	3
F/S	BIOC:3130 Biochemistry and Molecular Biology II (P: BIOC:3120 w/min C-)	3
S	BIOC:3140 Experimental Biochemistry (P: BIOC:3120 w/min C-)	2
ALL	BIOL:1411 Foundations of Biology (P: CHEM:1110 w/min C- or CHEM:1070 w/min A-)	4
ALL	BIOL:1412 Diversity Form & Function (P: BIOL:1411)	4
F/S	MICR:2157 General Microbiology (P: BIOL:1411 & CHEM:1110)	3
F/S	MICR:2158 General Microbiology Laboratory	2
3000-level or higher Advanced Biological Sciences, Biochemistry, Chemistry, and/or Microbiology courses.		

Total Semester Hours Requirements: 134