

Major: Chemical Engineering (ChemE)

Accredited by ABET (see inside front cover.)

Offered by: **School of Chemical and Biomolecular Engineering**

120 Olin Hall, 255-8656, www.cheme.cornell.edu

Program objectives

Our objectives are designed to meet the needs of our constituents: our students, our graduates, the employers of our graduates, the graduate study programs that our graduates enter, the chemical engineering professional community, and society in general.

Objective 1. To teach our students to analyze and design chemical processes that span molecular to macroscopic scales.

Objective 2. To teach our students interpersonal skills necessary in a professional environment.

Objective 3. To provide a liberal education in humanities and history.

Objective 4. To create scholars and professionals.

Engineering Distributions

ENGRD 219 Mass and Energy Balances (required)

CHEM 389 Physical Chemistry I (recommended)¹

Required Major Courses

CHEM 251 Introduction to Experimental Organic Chemistry

CHEM 290 Introductory Physical Chemistry Laboratory

CHEM 357 Organic Chemistry for the Life Sciences²

CHEM 391 Physical Chemistry II

CHEME 301 Nonresident Lectures

CHEME 313 Chemical Engineering Thermodynamics

CHEME 323 Fluid Mechanics

CHEME 324 Heat and Mass Transfer

CHEME 332 Analysis of Separation Processes

CHEME 372 Introduction to Process Dynamics and Control

CHEME 390 Reaction Kinetics and Reactor Design

CHEME 432 Chemical Engineering Laboratory

CHEME 462 Chemical Process Design

Electives

Two advanced chemical engineering electives (CHEME 401, 402, 470, 472, 480, 481, 484, 543, 564, 640, 644, 656, or 661)

Three Major-approved electives, one of which is the advanced science elective³ and another the biology elective⁴

¹CHEM 389 is required by the major, and it is recommended that this course be counted as an engineering distribution course.

²Premed students need 8 credits of organic chemistry.

³Advanced science electives include: A&EP: any course \geq 333; BIOBM 330, 331, 332, 333; CHEME 401, 402, 470, 480, 481, 520, 543, 564, 640, 644, 656, 661, 675; CHEM: any course \geq 301 except 389, CEE 451, 654; FOOD 417; MS&E 206, 305, 306, 521, 524, 531, 541; BIOMI 290; PHYS: any course \geq 300; T&AM 310, 311.

⁴The biology requirement may be satisfied by BIOG 110 (engineering version) if completed before semester 5 or by BIOBM 330 thereafter.

Chemical Engineering Major Checklist

	<i>Min.</i> <i>Credit Hours</i>	<i>✓ When Done</i>
MATH 191	4	n
MATH 192	4	n
MATH 293	4	n
MATH 294	4	n
CHEM 207 (or 211 or 215)	4	n
CHEM 208 (or 216)	4	n
PHYS 112 (or 116)	4	n
PHYS 213 (or 217)	4	n
COM S 100	4	n
Intro. to Engr. (ENGRI 1XX)	3	n
Engr. Dist. 1: ENGRD 219	3	n
Engr. Dist. 2: CHEM 389 (rec.)**	3	n
First-Year Writing Seminar 1†	3	n
First-Year Writing Seminar 2	3	n
Liberal Studies Distribution—6 courses (18-credit minimum)‡		
Lib. Studies 1		n
Lib. Studies 2		n
Lib. Studies 3		n
Lib. Studies 4		n
Lib. Studies 5		n
Lib. Studies 6		n
Approved Elective (2 courses; 6-credit minimum)		
Approved Elective		
Physical Education (2 semesters) and swim test		n
Required Major Courses (52-credit minimum)‡		
CHEM 301	1	n
CHEM 313	4	n
CHEM 323	3	n
CHEM 324	3	n
CHEM 332	3	n
CHEM 372	1	n
CHEM 390	3	n
CHEM 432†	4	n
CHEM 462	4	n
Advanced CHEM Elective	3	n
Advanced CHEM Elective	3	n
Courses outside the Major:		
CHEM 251	2	n
CHEM 290	2	n
CHEM 357	3	n
CHEM 391	4	n
Advanced Science Elective	3	n
Biology Elective	3	n
Major-Approved Elective	3	n
Total Required Credits	127 min.	_____
Additional Elective Courses (0 credits min., no max.)		n

**If CHEM 389 is taken as an engineering distribution, the fourth credit may apply as an approved elective credit.

†In addition to the first-year writing seminars, a technical writing course must be taken as an engineering distribution, liberal studies, approved elective, or major course (CHEME 432 satisfies this requirement).

‡Approved courses must be chosen from at least three of the following six groups: (1) Cultural Analysis (CA), (2) Historical Analysis (HA), (3) Literature and the Arts (LA), (4) Knowledge, Cognition, and Moral Reasoning (KCM), (5) Social and Behavioral Analysis (SBA), (6) Foreign Languages (not literature courses). At least two courses must be from the first three groups (CA, HA, LA). At least two of the six courses must be at 200-level or higher.

#The required 9 credits of major program courses outside the major consist of courses in chemistry.

Students who want a biomolecular focus should use the following courses as electives: BIOG 110 (engineering version; ENGR 101 supplement required) as an approved elective, BIOBM 330 as an applied science elective, CHEME 401 and CHEME 402 as advanced chemical engineering electives, and CHEME 543 or CHEME 481 as a major-approved elective.