VANDERBILT
School *of* Engineering

Chemical Engineering Curriculum (2023-2024 Catalog Year)
125 hours (minimum)

1. Mathematics (14 hours)

MATH 1300	Accelerated Single-Variable Calculus I (4 hours) F/S
MATH 1301	Accelerated Single-Variable Calculus II (4 hours) F/S
MATH 2300	Multivariable Calculus (3 hours) F/S
MATH 2420	Methods of Ordinary Differential Equations (3 hours) F/S

2. Basic Science (27 hours)

CHEM 1601+1601L	General Chemistry I and Laboratory (4 hours) F/S
CHEM 1602+1602L	General Chemistry II and Laboratory (4 hours) F
CHEM 2221+2221L	Organic Chemistry and Laboratory (4 hours) F/S
CHEM 2222+2222L	Organic Chemistry and Laboratory (4 hours) F/S
PHYS 1601 + 1601L	General Physics I and Laboratory (4 hours) F/S
PHYS 1602+ 1602L	General Physics II and Laboratory (4 hours) F/S
CHBE 2150 **or**	Molecular and Cell Biology for Engineers (3 hours) F
BSCI 1510	Introduction to Biological Sciences (3 hours) F

3. Engineering Fundamentals (6 hours)

ES 1401-1403	Introduction to Engineering (3 hours) F
CS 1100 **or** 1101 **or** 1103	Introductory Programming (3 hours) F/S

4. Liberal Arts Core (18 hours)

5. Chemical & Biomolecular Engineering (39 hours)

CHBE 2100	Chemical Process Principles (3 hours) F/S
CHBE 2150	Molecular and Cell Biology for Engineers (3 hours) F
CHBE 2200	Chemical Engineering Thermodynamics (3 hours) F/S
CHBE 2250	Modeling and Simulation in Chemical Engineering (3 hours) S
CHBE 2900W	Technical Communications for Chemical Engineers (1 hour) S
CHBE 3200	Phase Equilibria and Stage-Based Separations (3 hours) F
CHBE 3250	Chemical Reaction Engineering (3 hours) S
CHBE 3300	Fluid Mechanics and Heat Transfer (3 hours) F
CHBE 3350	Mass Transfer and Rate-Based Separations (3 hours) S
CHBE 3600	Chemical Process Control (3 hours) F
CHBE 3900W	Chemical Engineering Laboratory I (3 hours) S
CHBE 4900W	Chemical Engineering Laboratory II (3 hours) F
CHBE 4950W	Chemical Engineering Process and Product Design (4 hours) F
CHBE 4951W	Chemical Engineering Design Projects (3 hours) S
CHBE 4959	Senior Engineering Design Seminar (1 hour) F

7. Chemical and Biomolecular Engineering Electives (6 hours)

6 hours selected from CHBE courses numbered 4000 and above and ENVE 4625.

6. Statistics (3 hours)

One of DS 2100, BME 2400, CE 3300, or MATH 2810.

8. Technical Electives (6 hours)

To be selected from: a) courses numbered 2000 or above in BME, CHBE, CE, CS, ECE, ENVE, ME, MSE, NANO, and SC, except BME 2860, and ME 2220; b) courses numbered 1500 or above in the College of Arts and Science listed in the mathematics and natural sciences (MNS) AXLE distribution category; and c) ENGM 3000, 3010, 3300, 3650, 3700, 4500. At least 3 hours must be selected from BSCI 2201, 2520; CHEM 3300, 3310; ENVE 4600 or CHBE courses numbered 4000 and above.

9. Open Electives (6 hours)

Courses excluded from the listings in the Liberal Arts Core may be taken as open electives.

Notes: No more than 6 total hours of CHBE 3860 and 3861 may be applied toward degree requirements.

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Chemical Engineering Prerequisites and Corequisites (2023-2024 Catalog Year)

1. Mathematics (14 hours)

MATH 1300	None.
MATH 1301	MATH 1300 or MATH 1201
MATH 2300	MATH 1301
MATH 2420	MATH 2300 or MATH 2310 or MATH 2501

2. Basic Science (24 hours)

CHEM 1601+1601L	None.
CHEM 1602+1602L	CHEM 1601, CHEM 1601L
CHEM 2221+2221L	CHEM 1602, CHEM 1602L
CHEM 2222+2222L	CHEM 2211 or CHEM 2221; Prerequisite or corequisite: CHEM 2212 or CHEM 2222
PHYS 1601 + 1601L	Prerequisite or corequisite: MATH 1200 or MATH 1300
PHYS 1602+ 1602L	Prerequisite or corequisite: MATH 1201 or MATH 1301

3. Engineering Fundamentals (6 hours)

ES 1401-1403	None.
CS 1100 **or** 1101 **or** 1103	None.

4. Liberal Arts Core (18 hours)

5. Chemical & Biomolecular Engineering (39 hours)

CHBE 2100	MATH 1301. Corequisite: CHEM 1602
CHBE 2200	Corequisite: MATH 2300
CHBE 2250	CHBE 2100. Corequisites: CHBE 2200; MATH 2420; CS 1100 or CS 1101 or CS 1103 or CS 1104
CHBE 2900W	Corequisite: CHBE 2200
CHBE 3200	CHBE 2100; 2200 and CHBE 2250 or BME 2301
CHBE 3250	CHBE 3200
CHBE 3300	PHYS 1601; MATH 2420
CHBE 3350	CHBE 3300
CHBE 3600	CHBE 2250; MATH 2400 or MATH 2420
CHBE 3900W	CHBE 2100; CHBE 2250; CHBE 2900W; CHBE 3300; Corequisite: CHBE 3350
CHBE 4900W	CHBE 3900W or BME 3900W or CHEM 3315; Corequisite: CHBE 4950W
CHBE 4950W	CHBE 3200; CHBE 3250; CHBE 3350; Corequisites: CHBE 4900W; CHBE 4959
CHBE 4951W	CHBE 4950W
CHBE 4959	Corequisite: CHBE 4950W

6. Science electives (6 hours)

Check individual course listings in catalog for requisites.

7. Chemical and Biomolecular Engineering Electives (6 hours)

Check individual course listings in catalog for requisites.

8. Technical Electives (6 hours)

Check individual course listings in catalog for requisites.

9. Open Electives (6 hours)

Courses excluded from the listings in the Liberal Arts Core may be taken as open electives.