

## Required Courses for the Chemical Engineering Degree

This program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>

Undergraduate Advising: [ech-advising@ucdavis.edu](mailto:ech-advising@ucdavis.edu)

To make an advising appointment, please visit: [appointments.ucdavis.edu](http://appointments.ucdavis.edu)

*Note: Curriculum and course offerings are subject to change. You must fulfill the degree requirements stated in the catalog of the year you graduate or the year immediately prior. For additional detail on courses, please visit the course supplement located at <https://ucdavis.pubs.curricUNET.com/Catalog/ech>*

### Writing and General Education Requirements

#### Lower Division Composition (4 units)

Select **ONE** of the following courses:

<input type="checkbox"/>	UWP 1, 1V, or 1Y	Expository Writing
<input type="checkbox"/>	ENL 3	Introduction to Literature
<input type="checkbox"/>	COM 1	Bks of West Civ /Ancient World
<input type="checkbox"/>	COM 2	Bks of West Civ/MidAge-Enligh.
<input type="checkbox"/>	COM 3	Bks of West Civ/Modern Crisis
<input type="checkbox"/>	COM 4	Bks of Contemporary World
<input type="checkbox"/>	NAS 5	Intro to Native American Lit.

*Courses must be completed with a C- or better. A 4 or 5 on your AP English exam will also satisfy this requirement*

#### Upper Division Composition (0 or 4 units)

Select **ONE** of the following courses:

<input type="checkbox"/>	UWP 102E or 102F	Writing in the Disciplines
<input type="checkbox"/>	UWP 104A, 104E, or 104T	Writing in the Professions

*Course must be completed with a C- or better. This requirement can also be satisfied by passing the [Upper Division Composition Exam](#).*

### General Education Requirement

This requirement is partially satisfied with coursework completed for the Chemical Engineering degree. A detailed GE checklist can be found [here](#).

### Lower Division Major Requirements

#### Math, Physics, Chemistry and Biology (56-57 units)

Course	Description	Units	Quarter Offered			Prerequisites	
<input type="checkbox"/>	MAT 21A	Calculus	4	F	W	S	Two years of high school algebra, plane geometry, plane trigonometry, and analytical geometry, and satisfying the <a href="#">Mathematics Placement Requirement</a>
<input type="checkbox"/>	MAT 21B	Calculus	4	F	W	S	C- or better in MAT 21A or C- or better in MAT 21AH
<input type="checkbox"/>	MAT 21C	Calculus	4	F	W	S	C- or better in MAT 21B or C- or better in MAT 21BH
<input type="checkbox"/>	MAT 21D	Vector Analysis	4	F	W	S	C- or better in MAT 21C or C- or better in MAT 21CH
<input type="checkbox"/>	MAT 22A	Linear Algebra	3	F	W	S	C- or better in MAT 21C or MAT 21CH; ENG 6, EME 5, ECH 60, or MAT 22AL ☺
<input type="checkbox"/>	MAT 22B	Differential Equations	3	F	W	S	C- or better in MAT 22A or MAT 67
<input type="checkbox"/>	PHY 9A	Classical Physics	5	F		S	MAT 21B or ☺
<input type="checkbox"/>	PHY 9B	Classical Physics	5	F	W		PHY 9A; MAT 21C; MAT 21D ☺
<input type="checkbox"/>	PHY 9C	Classical Physics	5		W	S	PHY 9B; MAT 21D; MAT 22A ☺
<input type="checkbox"/>	CHE 2A	General Chemistry	5	F	W		24+ on <a href="#">Chemistry Placement Exam</a>
<input type="checkbox"/>	CHE 2B	General Chemistry	5		W	S	C- or better in CHE 2A or 2AH
<input type="checkbox"/>	CHE 2C	General Chemistry	5	F		S	C- or better in CHE 2B or 2BH
<input type="checkbox"/>	BIS 2A or BIT 1Y	Introductory Biology Intro to Biotechnology	5 4	F	W	S	None

#### Engineering (12 units)

<input type="checkbox"/>	ECH 5	BioChem/Materials Analysis	3		W		MAT 21A, MAT 21B ☺
<input type="checkbox"/>	ECH 60	Computational Methods	4			S	MAT 21C
<input type="checkbox"/>	ECH 51	Material Balances	4	F			C- or better in MAT 21C; MAT21D ☺
<input type="checkbox"/>	ECH 80	Chemical Engineering Professionalism (SS GE3 credit)	1	F			None

**Engineering Continued...Choose ONE of the following (4 units)**

ENG 45 or ENG 45Y	Properties of Materials	4	F	W	S SS	C- or better in all of the following: MAT 21C, CHE 2A, PHY 9A; ENG 45Y is an online course only offered in Summer Session (same prerequisites as ENG 45)
ENG 17	Circuits I	4	F		S	MAT 21C (C- or better recommended)
ENG 35	Statics	4	F	W	S	C- or better in PHY 9A or PHY 9HA; C- or better in MAT 21D ☺

## Upper Division Major Requirements

### Chemistry (16 units)

Course	Description	Units	Quarter Offered			Prerequisites
CHE 128A	Organic Chemistry	3	F	W		C or better in CHE 2C or CHE 2CH
CHE 129A	Organic Chemistry	2	F	W		C or better in CHE 2C; CHE 128A ☺
CHE 128B	Organic Chemistry	3		W	S	CHE 128A or ☞
CHE 110A	Quantum Mechanics	4	F		S	PHY 9C or PHY 9HC; CHE 2C or CHE 2CH; Completion of MAT 21D, MAT 22A, MAT 22AL, and PHY 9C or PHY 9HC strongly recommended
CHE 110B	Atoms and Molecules	4	F	W		CHE 110A

### Engineering core courses (56 units)

Course	Description	Units	Quarter Offered			Prerequisites
ECH 140	Mathematical Methods	4	F			MAT 22B; ECH 60, ENG 6, or equivalent
ECH 141	Fluid Mechanics	4		W		C- or better in ECH 51; ECH 140
ECH 142	Heat Transfer	4			S	ECH 141
ECH 143	Mass Transfer	4			S	ECH 141
ECH 145A	Chemical Engineering Thermodynamics Lab	3		W		ECH 152A, ECH 152B ☺
ECH 145B	Chemical Engineering Transport Lab	3			S	ECH 141, ECH 145A
ECH 148A	Chemical Kinetics and Reaction Engineering	3	F			ECH 143, ECH 152B
ECH 148B	Chemical Kinetics and Reaction Engineering	4		W		ECH 148A
ECH 152A	Thermodynamics	3	F			ECH 60, ENG, or equivalent. No credit given for students who have completed ENG 105
ECH 152B	Thermodynamics	4		W		ECH 152A
ECH 155	Chemical Engineering Kinetics and Reactor Design Lab	4		W	S	ECH 145B, ECH 148A, ECH 148B ☺, ECH 157☺; satisfaction of the upper division English composition requirement ☺
ECH 157	Process Dynamics	4	F			ECH 140
ECH 158A	Process Economics and Green Design (SS GE3 credit)	4	F			ECH 142, ECH 143
ECH 158B	Separations and Unit Operations	4		W		ECH 158A
ECH 158C	Plant Design Project (SS GE3 credit)	4			S	ECH 158B or ECH 161C

### Chemical Engineering Electives (8 units)

\*Any upper division courses in the areas of Chemistry (CHE), Chemical Engineering (ECH) or Materials Science and Engineering (EMS). You may receive elective credit up to a maximum of 4 units for any combination of CHE, ECH, and EMS courses numbered 190C, 192, 198, and 199.

Courses may also be selected from the following:

Course	Description	Units	Quarter Offered			Prerequisites
BIS 102	Struc-Func Biomolecules	3	F	W	S	BIS 1A or 2A; CHE 8B, CHE 118B, or CHE 128B
FST 100A	Food Chemistry	4	F			CHE 8B or CHE 118B; BIS 2A recommended
FST 102A	Malting and Brewing Science	4	F			(BIS 102 and 103) or BIS 105; senior standing recommended
FST 102B	Practical Malting and Brewing	4		W		FST 102A and CHE 2C
FPS 150	Polymer Synthesis and React.	3			S	CHE 128B or CHE 8B; CHE 107A

Other upper division courses in engineering or science will be considered on an individual basis by submitting a [Request for a Course Substitution](#) and consulting with your major advisor.

☺ May be taken concurrently

☞ May be taken with consent of instructor

Revised: 08/2019