

Required Courses for Chemical Engineering Degree – 2017-18

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

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To make advising appointments, please visit: 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 <http://catalog.ucdavis.edu/index.html>

Writing and General Education Requirements

Lower Division Composition (4 units)

Select ONE of the following courses:

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

Course must be completed with a C- or better.

Upper Division Composition (0 or 4 units)

Select ONE of the following courses:

UWP 102E or 102F	Writing in the Disciplines
UWP 104A, 104E, or 104T	Writing in the Professions

Course must be completed with a C- or better.

Alternatively, you may satisfy the upper division English requirement by passing the Upper Division Composition Exam

General Education Requirement: This requirement will vary depending on the year you entered UC Davis. Please refer to your [specific GE Requirements](#)

Lower Division Major Requirements

Math, Physics, Chemistry and Biology (57 units)

Course Number	Description	Units	Qrt Offered	Prerequisites
MAT 21A	Calculus	4	F W S	Score of 35 or more on Mathematics Placement test
MAT 21B	Calculus	4	F W S	MAT 21A or 21AH
MAT 21C	Calculus	4	F W S	MAT 21B or 21BH
MAT 21D	Vector Analysis	4	F W S	MAT 21C or 21CH
MAT 22A	Linear Algebra	3	F W S	9 units of college math; ENG 6, or MAT 22AL [Ⓢ] , or experience on MATLAB
MAT 22B	Differential Equations	3	F W S	MAT 22A or MAT 67 with a C- or above
PHY 9A	Classical Physics	5	F W S	MAT 21B
PHY 9B	Classical Physics	5	F W S	PHY 9A, MAT 21C, MAT 21D [Ⓢ]
PHY 9C	Classical Physics	5	F W S	PHY 9B, MAT 21D, MAT 22A [Ⓢ]
CHE 2A	General Chemistry	5	F W S	Score of 24 or more on Chemistry Placement test
CHE 2B	General Chemistry	5	F W S	C- or better in CHE 2A or 2AH
CHE 2C	General Chemistry	5	F W S	C- or better in CHE 2B or 2BH
BIS 2A or BIT 1Y	Introductory Biology	5	F W S	None
BIT 1Y	Intro to Biotechnology	4	F W S	None

Engineering (16 units)

ECH 5	BioChem/Materials Analysis	3	F W S	MAT 21A, MAT 21B [Ⓢ]
ECH 60	Computational Methods	4	F W S	MAT 21C
ECH 51	Material Balances	4	F W S	C- or better in MAT 21C; MAT21D [Ⓢ]
ECH 80	Chemical Engineering Professionalism (SS GE3 credit)	4	F W S	None

Engineering Continued...Choose one of the following (4 units)

ENG 45 or ENG 45Y	Properties of Materials	4	F W S	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 W S	MAT 22A (C- or better recommended); MAT 22B [Ⓢ] (C- or better recommended); PHY 9C or PHY 9HD [Ⓢ]
ENG 35	Statics	4	F W S	C- or better in PHY 9A; C- or better in MAT 21D [Ⓢ]

Upper Division Major Requirements

Chemistry (16 units)

Course Number	Description	Units	Qrt Offered		Prerequisites
CHE 128A	Organic Chemistry	3	F	W	C or better in CHE 2C
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 ☐, 129A recommended
CHE 110A	Quantum Mechanics	4	F	S	CHE 2C, MAT 21C, 1 yr college physics
CHE 110B	Atoms and Molecules	4	F	W	CHE 110A

Engineering core courses (56 units)

Course Number	Description	Units	Qrt Offered		Prerequisites
ECH 140	Mathematical Methods	4	F		MAT 22B; ECH 60 or equivalent
ECH 141	Fluid Mechanics	4		W	ECH 140, ECH 51
ECH 142	Heat Transfer	4		S	C- or better in ECH 51; ECH 141
ECH 143	Mass Transfer	4		S	C- or better in ECH 51; 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 No credit given for students who have taken ECH 146
ECH 148B	Chemical Kinetics and Reaction Engineering	4		W	ECH 148A No credit given for students who have taken ECH 146
ECH 152A	Thermodynamics	3	F		ECH 60 ☉
ECH 152B	Thermodynamics	4		W	ECH 152A, no credit given for students who have taken ENG 105
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 & Materials Science Electives (8 units)

*Any upper division courses in the areas of Chemistry (CHE), Chemical Engineering (ECH) or Materials Science and Engineering (EMS).

Course	Units

Or courses may also be selected from the following:

Course Number	Description	Units	Qrt Offered		Prerequisites
BIS 102	Struc-Func Biomolecules	3	F	W S	BIS 1A or 2A; CHE 8B or CHE 118B or CHE 128B
FST 100A	Food Chemistry	4	F		CHE 8B; BIS 2A recommended
FST 102A	Malting and Brewing Science	4	F		BIS 102, 103; senior standing recommended
FST 102B	Practical Malting and Brewing	4		W	FST 102A and analytical experience beyond Chemistry 2C, such as Viticulture and Enology 123, Food Science and Technology 103, 123L, Molecular and Cellular Biology 120L
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.

*You may receive elective credit up to a maximum of 4 units for any combination of engineering courses numbered 190C, 192, 198, and 199.

☉ May be taken concurrently

☐ May be taken with consent of instructor

Revised: 7/31/17

Notes: