

CIVIL ENGINEERING & ENVIRONMENTAL ENGINEERING DOUBLE MAJOR REQUIREMENTS 2020-2021

LOWER DIVISION

Course	Title	Units	Otr(s) Offered	Prerequisites & Enrollment Restrictions
MAT 21A*	Calculus <i>D</i>	4	F W S	2 yrs high school algebra, plane trig, plane & analysis. Geometry & placement by exam
MAT 21B*	Calculus <i>D</i>	4	F W S	MAT 21A w/ C- or better
MAT 21C*	Calculus <i>D</i>	4	F W S	MAT 21B w/ C- or better
MAT 21D*	Vector Analysis <i>D</i>	4	F W S	MAT 21C w/ C- or better
MAT 22A*	Linear Algebra	3	F W S	MAT 21C w/ C- or better, Matlab (or MAT 22AL concurrently)
MAT 22B*	Differential Equations	3	F W S	MAT 22A w/ C- or better
PHY 9A*	Classical Physics <i>LD</i>	5	F S	MAT 21B
PHY 9B*	Classical Physics <i>LD</i>	5	F W	PHY 9A, MAT 21C; MAT 21D (MBTC)
PHY 9C	Classical Physics <i>LD</i>	5	W S	PHY 9B, MAT 21D; MAT 22A (MBTC)
CHE 2A*	General Chemistry <i>LD</i>	5	F W	Placement by exam score
CHE 2B*	General Chemistry <i>LD</i>	5	W S	CHE 2A w/ C- or better
CHE 8A	Organic Chemistry-Brief	2	F S	CHE 2B w/ C- or better or CHE 2BH C- or better
ENG 35*	Statics <i>D</i>	4	F W S	MAT 21D (MBTC); PHY 9A all with C- or better; <i>Pass 1 Engineering only</i>
ECI 3 (SS)	Civil Infrastructure and Society <i>L</i>	4	F	MAT 21A (MBTC) [First yr./Soph course - or replace with 4 units of ECI Elective]
ECI 16	Spatial Data Analysis <i>L</i>	2	W	Restricted to Civil and Bio Sys Eng majors
ECI 40 (AH)	Intro to Env. Engineering	4	F	CHE 2B; <i>Pass 1 Engineering only</i>

GEL elective: (5 units required)				
GEL 50-50L	Physical Geology & Lab	3/2	F W S	High school phys & chem; reduced unit credit if GEL 1 completed

PROGRAMMING requirement: select 1 of the following courses (4 units required)

ENG 6	Engineering Problem Solving (Matlab) <i>D</i>	4	F W S	MAT 21A with C- or better; MAT 21B with C- or better (MBTC)
ECS 32A	Programming & Prob Solving (Python) <i>D</i>	4	F W S	No credit if took ECS 10, ECS 30 or higher

COMMUNICATION requirement: select 1 of the following courses (4 units required)

ENG 3 (SS)	Intro to Engineering Design <i>L</i>	4	F W S	Completion of Entry Level Writing Req.
CMN 1 (AH, SS & OL/WE)	Intro to Public Speaking <i>D</i>	4	F W S	
CMN 3 (SS & WE)	Interpersonal Commun. Competence <i>D</i>	4	F W S	CMN 3Y or 3V will not satisfy communication requirement

LOWER DIVISION ENGLISH COMPOSITION requirement: select 1 of the following courses (4 units required) (may not simultaneously fulfill GE topical breadth)

UWP 1, 1V, or 1Y	Expository Writing <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)
ENL 3 (English)	Introduction to Literature <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)
COM 1 (Comp Lit)	Bks of West. Cul: Ancient World <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)
COM 2	Bks of West. Cul: Mid Ages-Enlight <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)
COM 3	Bks of West. Cul: Modern Crisis <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)
COM 4	Bks of the Contemporary World <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)
NAS 5 (Native Amer Std)	Intro to Native American Literature <i>D</i>	4	F W S	Compl. of Entry Level Writing Req.	(pass with C- or better)

GENERAL EDUCATION (GE) requirement: ~8-25 additional units for Civil Engineering majors

GE req. & worksheets can be found at: <https://cee.engineering.ucdavis.edu/undergraduate/majors-minors/civil-engineering> GE may be taken anytime. Complete by graduation.

Minimum Requirements for College of Engineering Change of Major or Double Major:** Please consult with an advisor if you want to change majors

1. Registered student & completed at least 1 quarter at UCD (12 units)	2. Have fewer than 135 cumulative units (excluding AP units)
3. Be in good academic standing and meet minimum progress	4. Receive a letter grade for all courses that satisfy engineering degree requirements
5. a) Complete at least the following five courses: MAT 21A, B, C, PHY 9A, and CHE 2A, and b) have a GPA of 2.00 or better in all completed MAT, PHY, BIS, and CHE courses required for your intended major, and receive a C- or better in each of these courses	
6. Have no grade lower than a C- in any completed engineering course required for your intended major(s) taken at UC Davis	7. Have a 2.00 UC GPA in completed engineering courses
8. Have completed all transfer admission coursework and GPA requirements (3.2 GPA from previous institution(s) for coursework below). See https://www.ucdavis.edu/admissions/transfer/major-requirements-college-engineering for details. For transfer students who have not completed all transfer admission requirements at their previous institution, they must earn a 2.0 GPA or higher in these remaining courses at UC Davis, and receive a C- or better in each of these 17 courses: MAT 21A, B, C, D, MAT 22A, B, CHE 2A, B, C (2C completed prior to Fall '19) or 8A, PHY 9A, B, C, ENG 35, GEL 50 & 50L, Select 1: ENG 6, ECS 30, 32A, Select 1: ENG 3, CMN 1, 3, Select 1: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5.	

**Requirements subject to change. See <http://engineering.ucdavis.edu/undergraduate/advising/> for current requirements.

MINIMUM 2.00 UC GPA and MINIMUM 2.00 ENGINEERING GPA required to receive degree certification.

First-Year Seminar offerings: <http://fys.ucdavis.edu/student/index.html>

First Year (0-44.9 units)				<u>Example Schedule</u>	Sophomore (45-89.9 units)				
Fall		Winter		Fall		Winter		Spring	
MAT 21A	4	MAT 21B	4	MAT 21D	4	MAT 22A (22A Lab)3(1)		MAT 22B	3
CHE 2A	5	CHE 2B	5	PHY 9B	5	GEL 50/50L	5	ENG 35	4
ECI 3	4	ENL Comp	4	CHE 8A	2	PHY 9C	5	GE Elective	4
	13	GE Elective	4	ENG 6 or ECS 32A	4	ECI 16	2	CMN 1/3 or ENG 3	4
			17		15		15-16		15

(MBTC) = Course may be taken concurrently L = Course has a Lab D = Course has a Discussion

GENERAL EDUCATION: AH = Arts & Humanities SS = Social Science OL = Oral Skills WE = Additional Writing Experience

* = C- or better grade in this course is a prerequisite for most engineering coursework (both lower and upper division). It is always an instructor's option to drop students without the posted prerequisites for their course. Engineering instructors will exercise this option frequently.

**CIVIL ENGINEERING & ENVIRONMENTAL ENGINEERING DOUBLE MAJOR REQUIREMENTS 2019-2020
UPPER DIVISION**

<i>Course</i>	<i>Title</i>	<i>Units</i>	<i>Qtr(s) Offered</i>	<i>Prerequisites & Enrollment Restrictions</i>	<i>Notes</i>
ECI 100*	Fluid Mechanics for Civil/Env Eng. <i>L</i>	4	F W	ENG 35, MAT 22B, PHY 9B all with C- or better; <i>Pass 1 ECIV/ENV only</i>	
ENG 104*	Mechanics of Materials	4	F W S	ENG 35, MAT 22B both with C- or better Do not take 104L concurrently	
ENG 104L	Mechanics of Materials Lab	1	W S	ENG 104 Can not take lab concurrently with ENG 104	
ENG 106 <i>(SS & SL)</i>	Engineering Economics	3	W	Upper division standing in Engineering	
ECI 114 <i>(QL)</i>	Probabilistic Sys. Analy. for Civ. Engrs.	4	F W	MAT 21C w/ C- or better; <i>Pass 1 ECIV/ENV only</i>	
ENG 105 <i>(VL)</i>	Thermodynamics <i>D</i>	4	F W S	MAT 22B, PHY 9B all with a C- or better	
ECI 115	Computer Methods in Civil Eng <i>L</i>	4	F W	ENG 6 or ECS 30 or ECS 32A w/ C- or better; MAT 22B C- or better	
ECI 123 <i>(SS, ACGH & DD)</i>	Urban Systems and Sustainability	4	S	Upper Division Standing; <i>Pass 1 ECIV/ENV only</i>	

ENVIRONMENTAL breadth & depth requirements

ECI 140A*	Env. Analysis of Aqueous Sys. <i>L</i>	4	F	CHE 2B w/ C- or better; ECI 40 (MBTC); <i>Pass 1 open to env. engineering</i>
ECI 140B*	Chem. Principles for Env. Eng.	4	F W	CHE 2B w/ C- or better
ECI 140C*	Bio. Principles for Env. Eng.	4	W	ECI 140B w/ C- or better; ECI 40
ECI 140D*	Water & Wastewater Treatment Sys. Design <i>L</i>	4	W S	ECI 140B, ECI 140C both w/ C- or better; ECI 40
ECI 149	Air Pollution <i>LD</i>	4	F	MAT 21D & 22B; CHE 2B & ECI 100 or ENG 103 both w/ C- or better

WATER RESOURCE breadth & depth requirement

ECI 141*-141L	Engineering Hydraulics & Lab	3/1	F S	ECI 100 or ENG 103 w/ C- or better; <i>Pass 1 ECIV/ENV only</i>
ECI 144	Groundwater Systems Design	4	W	ECI 141

WATER RESOURCES depth requirements: Select 1 of the following courses.

(d) = depth course					
(d) ECI 142	Engineering Hydrology	4	F	ECI 141 (MBTC); <i>engineering only</i>	
(d) ECI 145	Hydraulic Structure Design <i>LD</i>	4	not offered 20-21	ECI 141 w/ C- or better	
(d) ECI 146	Water Resources Simulation <i>D</i>	4	S	ECI 141 w/C- or better	
(d) ECI 155 <i>(SS)</i>	Water Resources Engrg. Planning	4	S	ENG 106 or ECN 1A; ECI 114	

**GEOTECHNICAL and/or STRUCTURES and/or TRANSPORTATION breadth requirements: Please select one of the three options-
1. [ECI 130 & 171/171L] OR 2. [130 & (161 or 163 or 165)] OR 3. [171/171L & (161 or 163 or 165)]**

		(b) = breadth course		(b/d) = breadth or depth course	
(b) ECI 130	Structural Analysis	4	W S	ENG 104 w/ C- or better; MAT 22A	
(b/d) ECI 161	Transportation System Operations <i>D</i>	4	W S	MAT 21C & PHY 9A both w/ C- or better	
(b) ECI 163 <i>(SS)</i>	Energy/Env. Aspects of Trans.	4	F	offered Fall '20 – even years only	
(b) ECI 165 <i>(SS)</i>	Transportation Policy	3	not offered 19-20	offered Fall '19 – odd years only	
(b) ECI 171*-171L	Soil Mechanics & Lab	4/1	W S	ECI 100 or ENG 103 (MBTC); ENG 104 w/ C- or better; 171L concurrently	

Senior Design Experience (SDE) Requirement: (8 units required) courses must be taken consecutively & must be in final year of study

ECI 193A <i>(WE)</i>	ECI Senior Design <i>L</i>	4	W	(ECI 140D) or (ECI 171/ 171L) or (ECI 132 or ECI 135) or (ECI 161 or 163) or (ECI 141/141L); one other ECI Depth course, all w/ C- or better, & graduating w/in 1 yr
ECI 193B <i>(OL)</i>	ECI Senior Design <i>L</i>	4	S	ECI 193A – In Progress Grading for ECI 193A&B – final grades posted in Spring

CIVIL & ENVIRONMENTAL ENGINEERING (ECI) ELECTIVE requirement: 4 units required → or 8¹ units required if ECI 3 is not completed

→ECI Electives are additional upper division, letter-graded ECI courses not already used towards satisfying other ECI requirements. If both ENG 102 and 105 are completed, then four units will be considered towards the ECI electives.

May also include up to 6 units of the following:

→ ECI 198 ²	Group Study (with Faculty)	1-5	F W S	Upper division standing
→ ECI 199 ²	Research (with Faculty)	1-5	F W S	Upper division standing

¹A maximum of 4 upper division units outside of Civil & Environmental Engineering may be considered on a petition basis. Please consult with an undergraduate staff advisor.

²Unit credit might be possible when working on a group project (ECI 198) or with a professor in the department on a research project (ECI 199). ECI 198 may be awarded to students involved with competition teams or other group projects. Students are encouraged to ask professors about research possibilities available to undergraduates. An ECI 198/199 form must be completed (including the portion filled in and signed by the professor) and returned by the student to the advisor to receive a CRN#. The form is available on our website: <http://cee.engr.ucdavis.edu/forms/>.

(MBTC) = Course may be taken concurrently *L* = Course has a Lab *D* = Course has a Discussion

GENERAL EDUCATION: *SS*=Social Science *ACGH*= American Cultures, Governance & History *DD*=Domestic Diversity
VL= Visual Literacy *QL*= Quantitative Literacy *WE*= Writing Experience *SL*= Scientific Literacy *OL* = Oral Literacy

* = C- or better grade in this course is a prerequisite for most engineering coursework (both lower and upper division). It is always an instructor's option to drop students without the posted prerequisites for their course. Engineering instructors will exercise this option frequently.

UPPER DIVISION ENGLISH COMPOSITION requirement: satisfy by Exam (0 units) - or take ONE of the UWP courses listed below (4 units)

English Composition Exam (given 4th Saturday of each quarter – no more than 2 chances to pass the exam – low pass rate in recent offerings)

Exam details at: <http://writing.ucdavis.edu/compexam>

UWP 101	Advanced Composition <i>D</i>	4	F	W	S	One course: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5; Upper div. standing (pass with C- or better)
UWP 102E	Writing in the Disciplines: <u>Engineering</u> <i>D</i>	4	F	W	S	One course: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5; Upper div. standing (pass with C- or better)
UWP 102G	Writing in the Disciplines: <u>Environmental</u> <i>D</i>	4	F	W	S	One course: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5; Upper div. standing (pass with C- or better)
UWP 104A	Writing in the Professions: <u>Business</u> <i>D</i>	4	F	W	S	One course: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5; Upper div. standing (pass with C- or better)
UWP 104E	Writing in the Professions: <u>Science</u> <i>D</i>	4	F	W	S	One course: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5; Upper div. standing (pass with C- or better)
UWP 104T	Writing in the Professions: <u>Technical</u> <i>D</i>	4	F	W	S	One course: UWP 1, 1V, 1Y, ENL 3, COM 1, 2, 3, 4, NAS 5; Upper div. standing (pass with C- or better)

Junior (90-134.9 units)

Example Schedule

Senior (135 or more units)

Fall			Winter			Spring		
ECI 100	4		ENG 105	4		ECI 140D	4	
ENG 105	4		ECI 140C	4		ECI 123	4	
ECI 140A	4		ENG 106	3		Geo/Stru/Trans breadth	3-5	
ECI 140B	4		ENG 104L	1		Upper Div Comp	4	
	16		ECI 115	4			15-17	
				16				

URE=Unrestrictive Elective

Close to Graduation? Two separate websites to visit – one for degree certification/diploma and one to participate in a ceremony:

1. Graduation Online Application (apply qtr. before completing coursework): <http://registrar.ucdavis.edu/graduation>

2. Participate in Commencement (June or December ceremony): <http://commencement.ucdavis.edu/registration.html>

MINIMUM 2.00 UC GPA and MINIMUM 2.00 ENGINEERING GPA required to receive degree certification.

Academic Advisor Contact Information & Useful Websites:

Civil & Environmental Engineering Program Advisor & Peer Advisor: civiladvising@ucdavis.edu, 2009 Ghausi Hall

College of Engineering Undergraduate Education Office, 1050 Kemper Hall Main phone number: 752-1979 Engineering Peer Advisors: 752-0553

<i>Civil & Environmental Engineering</i> https://cee.engineering.ucdavis.edu/	<i>OASIS Student Advising:</i> http://oasis.ucdavis.edu
<i>College of Engineering:</i> http://engineering.ucdavis.edu	<i>Advising Appointment System:</i> https://appointments.ucdavis.edu/
<i>Office of the Registrar (Online Catalog & more):</i> http://registrar.ucdavis.edu	<i>Schedule Builder:</i> http://sisweb.ucdavis.edu/
<i>Class Search Tool:</i> http://classes.ucdavis.edu	<i>Equivalent courses at Community Colleges:</i> http://www.assist.org
<i>Summer Sessions:</i> http://summer-sessions.ucdavis.edu	<i>Internship & Career Center:</i> http://icc.ucdavis.edu
<i>Undergrad Research Center:</i> http://undergraduateresearch.ucdavis.edu	<i>EIT/FE Exam</i> http://ncees.org/engineering/fe/
<i>Study Abroad:</i> http://studyabroad.ucdavis.edu/	<i>My Degree:</i> https://mvdegree.ucdavis.edu

Academic Standing is determined by **grade point average (GPA)** from both the most recent quarter **and** the cumulative/UC GPA at the end of Fall, Winter and Spring Quarter; as well as units completed toward **Minimum Progress (MP)** (must complete 12 units per quarter). **Good Standing** = GPA of 2.00 or above (quarterly and cumulatively) and satisfaction of MP.

Academic Probation (AP) = GPA less than 2.00, but not less than 1.50, for the quarter, and/or GPA less than 2.00 for all courses taken within UC, and/or MP less than 12 units per quarter.

Subject to Disqualification (SD) = GPA less than 1.50 for the quarter, and/or GPA less than 1.50 for all courses taken within UC, and/or MP less than 12 units per quarter.

Course Repeat Policy - Students may repeat one time for credit a course in which they received a D+, D, D-, F or NP. The second (i.e. repeat) grade replaces the first grade in the GPA, for a maximum of 16 units (course must be repeated at UC Davis). After 16 units, both grades remain in the GPA. Both grades remain on the transcript for all repeated coursework. Repeating the same course more than once requires approval via a Multiple Repeat Petition, available on [OASIS](#).

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