GEAR

General Engineering Academic Requirements

2023-2024

UC **SANTA BARBARA**

College of Engineering

2023-2024 Academic Calendar

Note: Dates subject to change without notice.

	Fall 2023	Winter 2024	Spring 2024
Quarter begins	September 24, 2023	January 8, 2024	April 1, 2024
New Student Convocation	September 25, 2023		
Pre–instruction Activities	September 25-27, 2023	January 8, 2024	April 1, 2024
First day of instruction	September 28, 2023	January 8, 2024	April 1, 2024
Last day of instruction	December 8, 2023	March 15, 2024	June 7, 2024
Final examinations	December 9-15, 2023	March 16-22, 2024	June 8-14, 2024
Quarter ends	December 15, 2023	March 22, 2023	June 14, 2024
Commencement			June 15-16, 2024

2023-2024 Campus Holidays Observed

Veterans Day: .... November 10, 2023
Thanksgiving: .... November 23-24, 2023
Christmas: .... December 25-26, 2023
New Year: .... December 29, 2023 - January 1, 2024
Martin Luther King, Jr. Day: .. January 15, 2024
Presidents' Day: .... February 19, 2024
Cesar Chavez Holiday: .... March 29, 2024
Memorial Day: .... May 27, 2024
Juneteenth: .... June 19, 2024
Independence Day: .... July 4, 2024
Labor Day: .... September 2, 2024

GEAR

General Engineering Academic Requirements

College of Engineering • University of California • Santa Barbara

Volume 14, Summer 2023

Requirements and policies in the GEAR are subject to
change each academic year.

Message from the Associate Dean

Glenn Beltz, Associate Dean
Photo by Emily Swindle

Welcome to the College of Engineering at UC Santa Barbara. There are many reasons we are one of the top engineering schools in the nation. We bring together an amazing faculty, the members of which are highly acclaimed in the scientific communities in which they work. UCSB professors are, in fact, among the most cited by their colleagues worldwide, a testament to the quality and creativity of their research. A high percentage of the faculty has been elected to the prestigious National Academy of Sciences and National Academy of Engineering. We have six Nobel Prize winners on this campus, five of whom are faculty in engineering and the sciences. We're also home to an amazing group of smart, accomplished, high-energy students. These more than 1,600 undergraduates, pursuing a variety of interests, contribute greatly to the quality of the learning environment as well as to the overall richness of campus life.

We have crafted courses that balance theory and applied science so our students are well prepared for successful careers in academia and in industry. Students especially interested in engineering and industry can take advantage of courses offered in Technology Management. Through coursework and "real world" experiences, the program gives our students insight into the world of technology from a business perspective. We want our students to understand what transforms a good technical idea into a good business idea. We want to give them a head start at attaining leadership positions in the technology business sector.

With a thriving interdisciplinary environment, our campus culture fosters creativity and discovery. A truly interdisciplinary culture allows all sorts of ideas to cross-fertilize and makes it easy for faculty to work effectively between disciplines to tackle big questions. Visiting scholars tell us they don't often see the kind of openness among departments and ease of collaboration that they find here.

As part of the prestigious and well-established University of California system, we have the resources as well as the breadth and depth of talent to pursue new fields of scientific inquiry. We also bring an entrepreneurial attitude to our research, focusing on applications as much as discovery.

Our leading programs in areas as diverse as biotechnology, communications, computer security, materials, nanotechnology, networking, and photonic devices attest to the success of this approach.

At the core of this activity are our students, our central purpose. We encourage you to pursue every opportunity, both inside and outside the classroom, to enhance your education. We have a talented and wise faculty and staff, equipped with extensive knowledge and diverse experience, to help you make decisions about courses and other activities as you pursue your degree. We look forward to having you in our classes, laboratories, and offices as you discover where your interests lead you.

Glenn Beltz
Associate Dean for
Undergraduate Studies

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UC **SANTA BARBARA**

College of Engineering

The College of Engineering at UCSB is noted for its excellence in teaching, research, and service to the community. The college has an enrollment of approximately 1,600 undergraduate students and 790 graduate students with a full-time, permanent faculty of 129. This results in an excellent student to faculty ratio and a strong sense of community in the college.

Our modern laboratory facilities are available to undergraduate as well as graduate students. UCSB has an unusually high proportion of undergraduates who are actively involved in faculty-directed research and independent study projects.

The college offers the bachelor of science degree in five disciplines: chemical engineering, computer engineering, computer science, electrical engineering, and mechanical engineering. The undergraduate programs in chemical, computer, electrical, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

The curriculum for the bachelor of science degree is designed to be completed in four years. Completion of the four-year program provides students with the background to begin professional careers or to enter graduate programs in engineering or computer science, or professional schools of business, medicine, or law. Our curricula are specifically planned to retain both of these options and to assure that our graduates are equally well prepared to enter industry and graduate study. The college and the university offer a wide variety of career counseling and job placement services.

The Office of Undergraduate Studies in Harold Frank Hall, Room 1006, provides academic advising for all undergraduates in the college. Faculty and academic advisors for the individual majors are also provided by the respective departments. This publication contains detailed information about the various programs and schedules and is published yearly. It is available on the web at: https://engineering.ucsb.edu/gear.

Mission Statement

The mission of the College of Engineering is to provide its students a firm grounding in scientific and mathematical fundamentals; experience in analysis, synthesis, and design of engineering systems; and exposure to current engineering practice and cutting edge engineering research and technology. A spirit of entrepreneurship in education, scholarly activity and participation in engineering practice infuses UCSB's College of Engineering.

Special Academic Honors

Honors Program

The Honors Program in the College of Engineering is designed to enrich the educational opportunities of its best students. Students in the Honors Program will be encouraged to participate in early experiences in research and, in later years, in graduate level courses.

Participation in the Honors Program offers housing in Scholar's Halls located in several university-owned residence hall to eligible first-year students, as well as graduate student library privileges to all students in the program. Special lectures and tours may be offered throughout the academic year.

The College of Engineering invites approximately the top 10% of incoming freshmen into the Honors Program based on a comprehensive application review. (Please note: eligibility criteria are subject to change at any time.) Select transfer students will be invited to join the Program upon admission. Students who do not enter the College of Engineering with honors at the time of admission to UCSB may apply to join the program between first and second year after completing at least 36 letter-graded units with a cumulative GPA of 3.5 or higher, or between second and third year after completing at least 72 letter-graded units with a cumulative GPA of 3.5 or higher. Students may not join the Honors Program the summer between their junior and senior curriculum year.

Continued participation in the College Honors Program is dependent on maintaining a cumulative GPA of 3.5 or greater and active participation in both the academic and community service components of the Program.

To graduate as an Honors Program Scholar, students must complete 6.0 total Honors units during their junior and senior years; comprised of coursework from departmental 196, 197, 198, 199 courses, graduate level courses (numbered 200-299), or completing courses toward their engineering major through the UC Education Abroad Program with grades of B or higher. Students must also complete a total of 10 hours of community service for each year they are program members and maintain a 3.5 or higher cumulative GPA at the end of each spring quarter.

Notes: Capstone participation/courses do not apply to honors credit, nor do graduate courses taken to satisfy requirements for a graduate degree. Paid research positions cannot apply.

Dean's Honors

The College of Engineering gives public recognition to its outstanding undergraduate students by awarding Dean's Honors at the end of each regular academic term to students who have earned a 3.75 grade-point average for the quarter and have completed a program of 12 or more letter-graded units. Grades of Not Passed automatically disqualify students for eligibility for Dean's Honors. The award is noted quarterly on the student's permanent transcript.

Undergraduate Honors at Graduation

Graduating students of the College of Engineering who have achieved distinguished scholarship while at the university may qualify for Honors, High Honors, or Highest Honors at graduation.The grade-point thresholds for the honors categories are calculated based on the population of graduates from the preceding academic year. Grade-point averages are not rounded. A minimum of 60 letter-graded units must be completed in order to be eligible for honors. Students should consult the Office of the Registrar's website for specific GPA thresholds each year.

Tau Beta Pi

Tau Beta Pi is the nation's oldest and largest engineering honor society. Its purpose is to honor academic achievement in engineering. Election to membership is by invitation only. To be eligible for consideration, students must be in the top one-eighth of their junior class or the top one-fifth of the senior class. Graduate students and faculty also belong to this honor society. In addition to regular meetings on campus, the organization participates in regional and national activities and sponsors local events, such as tutoring and leadership training, to serve the campus and community.

Education Abroad Program (EAP)

Students are encouraged to broaden their academic experience by studying abroad for a year, or part of a year, under the auspices of the University of California Education Abroad Program. Visit these web sites for more information: eap.ucsb.edu and engineering.ucsb.edu/study-abroad.

Student Organizations

Student chapters of a number of engineering professional organizations are active on the UCSB campus. Students interested in any of these organizations may contact the Office of Undergraduate Studies of the College of Engineering for more information.

- American Indians in Science and Engineering Society
- American Institute of Chemical Engineers
- American Society of Mechanical Engineers
- Association for Computing Machinery
- Coders SB
- Data Science at UCSB
- Engineering Student Council
- Engineers Without Borders
- Entrepreneurs Association
- Game Development Club
- Institute of Electrical and Electronics Engineers
- Los Ingenieros (Mexican-American Engineering Society/Society of Hispanic Professional Engineers)
- Machine Shop Club
- National Society of Black Engineers
- Out in Science, Technology, Engineering, and Mathematics
- Phi Sigma Rho
- Photonics Society at UCSB
- Robotics Club
- SB Hacks
- Society for Advancement of Chicano and Native Americans in Science
- Society of Asian Scientists and Engineers
- Society of Automotive Engineers
- Society of Women Engineers
- Theta Tau
- Women in Computer Science
- Women in Science and Engineering
- Women in Software and Hardware

Change of Major and Change of College

Current UCSB students in a non-engineering major, as well as students wishing to change from one engineering major to another, are welcome to apply after the satisfactory completion of a pre-defined set of coursework. However, due to the current demand for engineering majors, students are cautioned that it is a very competitive process and not all applicants will be able to change their majors due to limited space availability. It is incumbent upon students to continue to make progress in a backup major while pursuing a new major in the College of Engineering, and to periodically consult academic advisors in both the desired major as well as the backup major regarding the viability of pursuing the change of major.

Students who enter UCSB as transfer students will not be able to change to or add an engineering major, if not initially accepted into one. Students who began as freshmen who plan to enter an engineering major or to change from one engineering major to another will be

expected to complete at least 30 units at UCSB before petitioning for a change of major. The College of Engineering will not approve students' change of major petitions (within the COE or from a different college at UCSB) after they have completed six regular quarters (not including summer), regardless of their expected total number of units accrued or total quarters completed at the time of graduation. Students may be in their last required change of major course(s) in their sixth quarter. Some majors require that students be accepted to their major before their sixth regular quarter. The college will not approve exceptions to the requirements listed here or on the individual major websites. Please see below for specific requirements and details for each major. Students who take a break from UCSB and complete courses at another institution will have those terms counted toward their completed quarters.

Notwithstanding any of the major-specific requirements described below, we caution that the capacity of any given program to accept new students changes, sometimes substantially, from year to year.

Chemical Engineering. Admission to the Chemical Engineering major is determined by a number of factors, including each student's academic performance and trajectory, as well as current enrollments in Chemical Engineering classes. Freshman should apply during the spring term of their freshman year, and may reapply during their sophomore year. Sophomores may only apply one time during the spring term of their sophomore year.

Applicants must have a 3.0 GPA or above, and satisfactorily complete the following courses or their equivalents: Math 3A, 3B, 4A; Chem 1A-1AL or 2A-2AC, 1B-1BL or 2B-2BC, and 1C-1CL or 2C-2CC. Freshman (first-year) applicants are required to take ChE 5 (may be taken concurrently at time of application). Sophomore (second-year) applicants are required to take ChE 5, 10, and 110AB (110B may be taken concurrently at time of application). Recommended courses include: ENGR 3 and Physics 7A-B; please note that the PHYS 7 series is a graduation requirement for Chemical Engineering, and those students intending to change majors must enroll in this sequence.

Computer Engineering. Students may petition to enter the Computer Engineering major once both of the following requirements are met:

1. An overall UCSB grade point average of at least 3.0.

2. Satisfactory completion <u>at UCSB</u>, with a grade point average of 3.0 or better, of any five classes, including at least two Electrical & Computer Engineering (ECE) classes and two Computer Science (CMPSC) classes, from the following: Math 4B, ECE 10A/10AL, 10B/10BL, 10C/10CL (ECE 10A/10AL, 10B/10BL, 10C/10CL each count as one course), ECE 15A, CMPSC 16, 24, 32, 40.

Acceptance into the major will be based on UC grade point averages, applicable courses completed, and space availability. All students considering changing into Computer Engineering are required to meet with the ECE Academic Advisor during their first year. It is highly recommended that the CE program curriculum is followed to be best prepared to switch into CE, concurrently keeping a backup major plan if the department is not able to accommodate your request to change into CE.

Computer Science. The application process is extremely competitive. A very limited number of change of major applications to Computer Science will be approved. Students may apply for consideration to the Computer Science major when the following requirements are met. No exceptions are made for these requirements and meeting these requirements does not guarantee admission to the Computer Science major:

1. A cumulative overall grade point average of at least 3.0;

2. Satisfactory completion of Computer Science 16, 24, and 40 with a cumulative GPA of 3.2 or higher; <u>First takes only</u>;

3. Satisfactory completion of Math 3A, 3B, 4A, and 4B with a cumulative GPA of 3.0 or higher; <u>First takes only</u>.

Denied change of major applications will not be reconsidered. More information can be found at https://cs.ucsb.edu/education/undergraduate/prospective-students. No exceptions are made for these requirements.

Electrical Engineering. Students may petition to enter the Electrical Engineering major once both of the following requirements are met:

1. An overall UCSB grade point average of at least 3.0.

2. Satisfactory completion at UCSB, with a grade point average of 3.0 or better, of at least five classes, including at least two mathematics classes, from the following: Math 4B, Math 6A, Math 6B, ECE 10A/10AL, 10B/10BL, 10C/10CL (ECE 10A/10AL, 10B/10BL, 10C/10CL each count as one course), ECE 15A. The calculation of the minimum GPA will be based on all classes completed from this list at the time of petitioning.

Acceptance into the major will be based on UC grade point averages, applicable courses completed, and space availability. All students considering changing into Electrical Engineering (EE) are required to meet with the ECE Academic Advisor during their first year. It is highly recommended that the EE program curriculum is followed to be best prepared to switch into EE, concurrently keeping a backup major plan if the department is not able to accommodate your request to change into EE.

Mechanical Engineering. Admission by change of major into Mechanical Engineering is both limited and competitive. Mechanical Engineering requires a minimum of eight core courses from the following list: Math 3A-B; Math 4A-B; Math 6A-B; Physics 7A-B; ENGR 3; Chemistry 1A-1B; ME 10; ME 14, 15, 17 (three of the eight courses must include ENGR 3, ME 14, and ME 17).

Acceptance into the major is based on core course grade point average, applicable courses completed, and space availability. Starting for freshmen fall 2021, ME will be allowing CSU and CCC grades to be included in the minimum eight courses that are calculated for the core GPA (these grades are not calculated into your official UCSB GPA). These grades must be submitted officially and be reflected in GOLD. Students are able to repeat courses as long as they follow the university guidelines for repeating courses.

All students considering changing into Mechanical Engineering must notify an ME Academic Advisor and report all core course grades after each quarter to update core course GPA calculation. It is highly recommended to follow the ME program as closely as possible to best be prepared to switch into ME; all while keeping a backup major in mind in the

likely chance the department is not able to accommodate your request to change into ME.

Degree Requirements

To be eligible for a bachelor of science degree from the College of Engineering, students must meet three sets of requirements: general university requirements, college general education requirements, and major degree requirements.

General University Requirements

All undergraduate students must satisfy university academic residency, UC Entry Level Writing Requirement, American History and Institutions, unit, and scholarship requirements. These requirements are described fully on page 11.

College General Education Requirements

All students must satisfy the general education requirements for the College of Engineering. These requirements are described on page 11.

Major Degree Requirements

Preparation for the major and major requirements for each program must be satisfied, including unit and GPA requirements. These appear in subsequent sections of this publication.

Minimal Progress Requirements

An undergraduate is required to enroll in a minimum of 12 units in each Fall, Winter, and Spring quarters to maintain the minimum cumulative progress as listed on the chart available at engineering.ucsb.edu/minimum-progress. The College of Engineering curricula for all five undergraduate majors are designed to be completed in four years; thus, students who follow the established pattern of courses outlined on their curriculum sheet should be in compliance with this policy. The declaration of a major by a student and its acceptance by the College evidences an obligation on the part of the student to faithfully perform the designated work to the best of their ability. Withdrawal from, or neglect of, any course entered on the study-list associated with said major, or a change in program without the formal permission of the associate dean of the College, renders the student liable for academic probation.

215–Unit and Quarter Enrollment Limitations

The college expects students to graduate within 12 regular quarters for students who are admitted as freshmen and 9 regular quarters for students admitted as junior transfers and with no more than 215 units. College credit earned before high school graduation does not count toward the 215-unit maximum. This includes credit for Advanced Placement and International Baccalaureate examinations, and also college or university credit earned while still in high school.

Students who are admitted as freshmen and remain continuously enrolled will be assessed after 12 regular quarters at UCSB, and transfer students admitted as juniors will be assessed after 9 regular quarters at UCSB. Summer session does not count as a regular quarter in this calculation but units earned in summer session do apply toward the 215-unit maximum.

With the exception of summer sessions, if students leave UCSB and earn a large number of units at one or more other academic institutions while they are away, the number of quarters allowed at UCSB will be reduced in proportion to the number of terms completed elsewhere.

College policy requires students to secure specific approval to continue enrollment beyond the quarter and unit limits noted above. Students who think they may exceed both the quarter limitations and 215 units may submit a Proposed Schedule for Graduation (Study Plan) for consideration by the Associate Dean for Undergraduate Studies, but they should understand that approval is granted in limited circumstances.

Five-Year B.S./M.S. Degree Programs

Five-Year B.S. / M.S. in Computer Science. A combined BS/MS Program in Computer Science provides an opportunity for outstanding undergraduates to earn both degrees in five years. Additional information about this program is available from the Computer Science graduate advisor. Interested students should make their interest known to the department early in their junior year. Advising and application materials are also available in the Department of Computer Science office.

Five-Year B.S. in Computer Engineering / M.S. in Computer Science
The Computer Engineering Program incorporates the design of computer hardware and software to meet the needs for various career applications. Students are trained to work with systems ranging from small integrated circuits to worldwide communications networks, from digital watches to supercomputers, and from single-line programs to operating systems. For more information on the program, please consult the Computer Engineering department.

Five-Year B.S. in Computer Engineering or Electrical Engineering / M.S. in Electrical and Computer Engineering.
A combined BS/MS Program in Computer Science provides an opportunity for outstanding undergraduates to earn both degrees in five years. Additional information about this program is available from the Electrical and Computer Engineering graduate advisor. Interested students should make their interest known to the department early in their junior year. Advising and application materials are also available in the Department of Electrical and Computer Engineering office.

Five-Year B.S. in Chemical Engineering, Electrical Engineering, or Mechanical Engineering / M.S. in Materials
A combined B.S. Engineering/M.S. Materials program provides an opportunity for outstanding undergraduates in Chemical, Electrical, or Mechanical engineering to earn both of these degrees in five years. This program enables students to develop all of the requisite knowledge in their core engineering disciplines and to complement this with a solid background in Materials. This combination provides highly desirable training from an industrial employment perspective and capitalizes on the strengths of our internationally renowned Materials department.

There is a five-year option for students who are pursuing a B.S. in Chemistry in the College of Letters and Science to complete an M.S. degree in Materials.

Interested students in their sophomore year should contact the Staff Graduate Advisor in the Materials Department for additional information.

Five-Year B.S. / M.S. in Mechanical Engineering. A combined B.S./M.S. program in Mechanical Engineering provides an opportunity for outstanding undergraduates to earn both degrees in five years. Additional information about this program is available from the Mechanical Engineering Undergrad Advising office. Interested students should contact the office fall quarter of their junior year. In addition to fulfilling undergraduate degree requirements, B.S./M.S. degree candidates must meet Graduate Division degree requirements, including university requirements for academic residence and units of coursework.

Undergraduate Certificate Program

The Technology Management Certificate

Department of Technology Management
Phelps Hall, Room 2219
(805) 893-2729
www.tmp.ucsb.edu

The Technology Management Certificate program provides students a solid foundation in business fundamentals and entrepreneurship as it applies to new technologies and technology-oriented companies. This certificate serves as an official recognition that the student has a solid grounding in fundamental business strategies and models, opportunity recognition and new venture creation and marketing.

The program also provides access to many professionals familiar with the demands of starting new businesses as well as running existing companies through its extra-curricular offerings.

College Board Advanced Placement Credit

Students who earn scores of 3, 4, or 5 on College Board Advanced Placement Examinations taken before high school graduation will receive 2, 4, or 8 units of credit toward graduation at UCSB for each such test completed with the required scores, provided official scores are submitted to the Office of Admissions.

Students should be advised that college courses taken before or after attending UC may duplicate AP, IB and/or A Level examinations. Additionally, exams may duplicate each other (for example, and AP or IB exam in the same subject area). If the student does duplicate an exam with another exam of the same subject content, and/or an exam with a college course, we will award credit only once.

Advanced Placement Exam with score of 3, 4, or 5	Units Awarded	General Ed. Course Credit	UCSB Course Equivalent *(You may not enroll in these courses for credit at UCSB)*
*2D Art and Design	8	none	none
*3D Art and Design	8	none	none
Art History	8	F: 1 course	Art History 1
Biology	8	none	EEMB 22, MCDB 20
*Calculus AB (or AB subscore of BC exam)	4	none	Mathematics 2A, 3A, 34A, or equivalent
*Calculus BC	8	none	Mathematics 2A, 2B, 3A, 3B, 34A, 34B, or equivalent
Chemistry	8	none	none
Chinese Language and Culture			
With score of 3	8	none	See department for level placement
Comparative Government and Politics	4	D: 1 course	none
+Computer Science A (through S17)	2 or 8	none	none
+Computer Science A (beginning S18)			
With score of 3	8	none	none
With score of 4 or 5	8	none	Computer Science 8
Computer Science Principles (effective S17 and S18)			
With score of 3	8	none	none
With score of 4 or 5	8	none	Computer Science 8
Computer Science Principles (beginning S19)			
With score of 3	8	none	none
With score of 4 or 5	8	none	Computer Science 4
*Drawing	8	none	Art 18
*English – Composition and Literature or Language and Composition			
With score of 3	8	Entry Level Writing	Writing 1, 1E
With score of 4	8	A1	Writing 1, 1E, 2, 2E, 2LK
With score of 5	8	A1, A2	Writing 1, 1E, 2, 2E, 2LK, 50, 50E
Environmental Science	4	none	Environmental Studies 2
European History	8	E: 1 course	none
French Language and Culture			
With score of 3	8	none	French 1-3
With score of 4	8	none	French 1-4
With score of 5	8	none	French 1-5
German Language and Culture			
With score of 3	8	none	German 1-3
With score of 4	8	none	German 1-4
With score of 5	8	none	German 1-5
Human Geography	4	D: 1 course	Geography 5
Italian Language and Culture			
With score of 3	8	none	Italian 1-3
With score of 4	8	none	Italian 1-5
With score of 5	8	none	Italian 1-6
Japanese Language & Culture			
With score of 3	8	none	See department for level placement
With score of 4	8	none	
With score of 5	8	none	
Latin	8	none	Latin 1-3
Macroeconomics	4	D: 1 course	none
Microeconomics	4	D: 1 course	none
Music Theory	8	F: 1 course	Music 11
*Physics 1 (effective S'15)	8	none	none
*Physics 2 (effective S'15)	8	none	none
*Physics – B (last offered S'14)	8	none	Physics 10
*Physics – C (Mechanics)	4	none	Physics 6A and 6AL
*Physics – C (Electricity and Magnetism)	4	none	Physics 6B and 6BL
Psychology	4	D: 1 course	Psychology 1
Spanish Language and Culture			
With score of 3	8	none	Spanish 1-3
With score of 4	8	none	Spanish 1-4
With score of 5	8	none	Spanish 1-5
Spanish Literature and Culture			
With score of 3	8	none	Spanish 1-4

Advanced Placement Exam with score of 3, 4, or 5	Units Awarded	General Ed. Course Credit	UCSB Course Equivalent *(You may not enroll in these courses for credit at UCSB)*
With score of 4	8	none	Spanish 1-5
With score of 5	8	none	Spanish 1-6
Statistics	4	none	Communication 87, PSTAT 5AA-ZZ, Psychology 5
United States Government and Politics	4	D: 1 course	Political Science 12
United States History	8	D: 1 course	none
World History: Modern	8	E: 1 course	none

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* A maximum of 8 units EACH in art studio, English, Mathematics, and Physics is allowed.
+ 8 units effective Spring 2018. Computer Science A exam is 2 units through Spring 2017.

Note: Information on this chart is subject to change. For updates go to: http://my.sa.ucsb.edu/catalog/current/UndergraduateEducation/APCreditandChart.aspx.

A Level Examination Credit

Students who earn grades of A, B, or C on UC-approved GCE and Hong Kong A Level examinations will receive 12 units of credit toward graduation at UCSB for each exam, provided that official grades are submitted to the Office of Admissions. Any general education credit or UCSB course equivalents listed in the chart below will be awarded only for Cambridge International A Level exams taken in 2013 or later, not for exams administered by any other agency. (Student may petition for GE or course credit for Cambridge International exams taken prior to 2013 or for exams administered by other agencies.)

Students should be advised that college courses taken before or after attending UC may duplicate AP, IB and/or A Level examinations. Additionally, exams may duplicate each other (for example, an AP or IB exam in the same subject area). If the student does duplicate an exam with another exam of the same subject content, and/or an exam with a college course, we will award credit only once.

A Level Exam With A Grade of A, B, or C	Units Awarded	General Ed. Credit	UCSB Course Equivalent - *(You may not enroll in these courses for credit at UCSB)*
Accounting	12		Economics 3A, 3B
Afrikaans	12		
Arabic	12		
Art and Design	12		
Biology	12		
Chemistry	12		
Chinese	12		
Classical Studies	12		
Computer Science *(effective 2020 only)*	12		Computer Science 16
Computer Science *(beginning 2021)*	12		Computer Science 8
Computing	12		Computer Science 16
Economics	12	Area D: 2 courses	Economics 1, 2
English – Language	12		
English – Literature	12		
French	12		
Geography	12		
German	12		
Hindi	12		
History	12		
Marathi	12		
Marine Science	12		
Mathematics *(effective 2013-2021)*	12		Mathematics 2A, 2B, 3A, 3B, 34A, 34B
Mathematics *(effective beginning 2022)*	12		Mathematics 2A, 3A, 34A
Mathematics - Further *(effective 2013-2019)*	12		Mathematics 4A
Mathematics - Further *(effective 2020-2021)*	12		Mathematics 4A, 4B
Mathematics – Further *(effective beginning 2022)*	12		Mathematics 2B, 3B, 34B, 4A
Music	12		
Physics	12		Physics 6A, 6AL, 6B, 6BL, 6C, 6CL
Portuguese	12		
Psychology	12	Area D: 1 course	Psychology 1, 3, 7
Putonghua	12		
Sociology	12		
Spanish	12		
Tamil	12		
Telugu	12		
Urdu	12		
Urdu – Pakistan only	12		

International Baccalaureate Higher Level Examinations

   Students who earn scores of 5, 6, or 7 on International Baccalaureate (IB) Higher Level (HL) Examinations taken before high school graduation will receive 8 units of credit toward graduation at UCSB for each such test completed with the required scores, provided official scores are submitted to the Office of Admissions. Students who complete the IB diploma with a score of 30 or above will receive 6 quarter units in addition to the units earned for individual Higher Level exams. The university does not grant credit for Standard Level (SL) exams. The application of this credit to the General Education requirements and course equivalents for these exams are listed below.

   Students should be advised that college courses taken before or after attending UC may duplicate AP, IB and/or A Level examinations. Additionally, exams may duplicate each other (for example, an AP or IB exam in the same subject area). If the student does duplicate an exam with another exam of the same subject content, and/or an exam with a college course, we will award credit only once.

INTERNATIONAL BACCALAUREATE INFORMATION

Exam with score of 5, 6, Or 7	Units	COE GE Credit	UCSB Equivalent Course(s)
Biology	8	none	EEMB 22, MCDB 20
Business Management	8	none	none
Chemistry	8	none	none
Computer Science	8	none	Computer Science 8
Dance	8	none	none
Economics	8	D: 2 courses	Economics 1, 2
English A: Literature or			
English A: Language And Literature			
Score Of 5	8	Entry Level Writing	Writing 1, 1E
Score Of 6	8	A1	Writing 1, 1E, 2, 2E, 2LK
Score Of 7	8	A1, A2,	Writing 1, 1E, 2, 2E, 2LK, 50, 50E
English B	8	none	none
Film	8	none	none
Geography	8	D: 1 course	none
Global Politics	8	D: 1 course	none
History	8	E: 1 course^	none
History of Africa	8	D: 1 course+	none
History of the Americas	8	D: 1 course	none
History of Asia And Oceania	8	D: 1 course	none
History of Europe and the Middle East	8	D: 1 course^	none
Languages Other Than English	8	none	See department for level placement
Mathematics, Analysis and Approaches *(S21 only)*	8	none	Mathematics 2A, 3A, 34A or equivalent
Mathematics, Analysis & Approaches (beginning S22)	8	none	Mathematics 2A, 2B, 3A, 3B, 34A, 34B, or equivalent
Mathematics *(last offered F20)*	8	none	Mathematics 2A, 2B, 3A, 3B, 34A, 34B, or equivalent
Mathematics, Further *(last offered S20)*	8	none	none
Music	8	F: 1 course	none
Philosophy	8	E: 1 course	none
Physics	8	none	Physics 10
Psychology	8	D: 1 course	none
Social & Cultural Anthropology	8	D: 1 course	Anthropology 2
Theater	8	F: 1 course	none
Visual Arts	8	F: 1 course	none

^ Course also satisfies the european traditions requirement
+ Course also satisfies the world cultures requirement
NOTE: UC will not award credit for the IB HL Mathematics: Applications and Interpretations exam.

General University Requirements

UC Entry Level Writing Requirement

All students entering the University of California must demonstrate an ability to write effectively by fulfilling the Entry Level Writing requirement. The requirement may be met in one of the following ways prior to admission:

1. score of 680 or higher on the SAT Writing exam;
2. score of 30 or higher on the ACT Combined English Language Arts (ELA) exam;
3. score of 3 or higher on the College Board Advanced Placement Examination in English Composition and Literature or English Language and Composition;
4. score of 5, 6, or 7 on the higher level English A International Baccalaureate Examination;
5. score of 6 or 7 on the standard level English A1 International Baccalaureate Examination;
6. passing the University of California systemwide Analytical Writing Placement Exam. UCSB will only accept AWPE results from students transferring from another UC Campus;
7. placing in Writing 2 via UCSB's Collaborative Writing Placement Exam (CWP), see below;
8. by earning a grade of C or higher in a transfer course satisfying GE Area A1.

Students who have not met the UC Entry Level Writing Requirement in one of the ways listed above will be required to take a placement exam.

Students who do not achieve an appropriate score on the placement exam to fulfill the Entry Level Writing Requirement must enroll in Writing 1, 1E, or Linguistics 12 within their first year at UCSB.

Visit the Writing Program's website (writing.ucsb.edu/academics) for placement exam information.

American History and Institutions Requirement

The American History and Institutions requirement is based on the principle that American students enrolled at an American university should have some knowledge of the history and government of their country. You may meet this requirement in any one of the following ways:

1. by achieving a score of 3 or higher on the College Board Advanced Placement Examination in American History or American Government and Politics; or
2. by passing a non-credit examination in American history or American institutions, offered in the Department of History during the first week of each quarter. Consult the department for further information; or
3. by achieving a score of 650 or higher on SAT II: Subject Test in American History; or
4. by completing one four-unit course from the following list of courses:

Anthropology 131
Art History 121A-B-C-E, 136H
Asian American Studies 1, 2
Black Studies 1, 6, 103, 137E, 169BR-CR
Chicano Studies 1A-B-C, 144, 168A-B, 174, 188C
Comparative Literature 133
English 133AA-ZZ, 134AA-ZZ, 137A-B, 191
Environmental Studies 173
Feminist Studies 155A, 159B-C
History 11A, 17A-B-C, 17AH-BH-CH, 105A, 142AL-S, 159B-C, 160A-B, 161A-B, 164C, 164IA-IB, 165, 166A-B-C-D-LB, 168A-B-C-D-N-M, 169M, 172A-B, 173T, 175A-B, 176A-B, 177, 178A-B, 179A-B
Military Science 27
Political Science 12, 115, 127, 151, 152 153, 155, 157, 158, 162, 165, 180, 185
Religious Studies 7, 14, 151A-B, 152
Sociology 144, 155A
Theater 180A-B

Courses used to fulfill the American History and Institutions requirement may also be applied to General Education or major requirements, or both where appropriate. Equivalent courses taken at other accredited colleges or universities, or in summer session may be acceptable. Students who transfer to UCSB from another campus of the University of California where the American History and Institutions Requirement has been considered satisfied will automatically fulfill the requirement at UCSB.

International students on a nonimmigrant visa may petition for a waiver of this requirement.

College of Engineering General Education Requirements

The aims of the General Education Program in the College of Engineering are to provide a body of knowledge of general intellectual value that will give the student a broad cultural base and to meet the objectives of the engineering profession. An appreciation and understanding of the humanities and social sciences are important in making engineers aware of their social responsibilities and enabling them to consider related factors in the decision-making process.

Students in the College of Engineering must complete the General Education requirements in order to qualify for graduation. Students are reminded that other degree requirements exist and that they are responsible for familiarizing themselves with all bachelor's degree requirements. Please see the GOLD system for General Education courses offered during a particular quarter.

It should be noted that for College of Engineering transfers who completed IGETC (Intersegmental General Education Transfer Curriculum), it may be used to substitute for entire UCSB College of Engineering General Education pattern (IGETC does not satisfy the American History and Institutions requirement).

Students who have questions about the General Education requirements should consult with the advisors in College of Engineering Office of Undergraduate Studies.

GENERAL SUBJECT AREA REQUIREMENTS

A total of 8 courses are required to satisfy the General Education requirements of the College of Engineering. All students must follow the pattern of distribution shown below:

I. Area A: English Reading and Composition
Two courses must be completed in this area and taken for letter grades. Writing 2 or 2E, and one course from Writing 50, 50E, 105CD, 105CW, 105M, 105PD, 105PS, 105S, 105SW, 107B, 107EP, 107G, 107J, 107L, 107M, 107T, 107WC, 109ED, 109ES, 109HP, or 109ST are required.

Chemical Engineering, Computer Engineering, Electrical Engineering, and Mechanical Engineering majors are strongly encouraged to take Writing 2E and 50E in their first year

at UCSB. Computer Science majors may take Writing 2E and 50E space permitting.

NOTE: Students must complete the UC Entry Level Writing Requirement before enrolling in courses that fulfill the Area A requirement of the General Education program. Please refer to page 11 of this publication or the UCSB General Catalog for a list of ways to satisfy the UC Entry Level Writing requirement.

II. Areas D, E, F, & G

At least 6 courses must be completed in these areas.

1. **Area D: Social Sciences.** A minimum of 2 courses must be completed in Area D. Objective: To apply perspectives, theories, and methods of social science research to understand what motivates, influences, and/or determines the behaviors of individuals, groups, and societies. Area D courses are based upon systematic studies of human behavior, which may include observation, experimentation, deductive reasoning, and quantitative analysis.

2. **Area E: Culture and Thought**. A minimum of 2 courses must be completed in Area E. Objective: To use specific methods and frameworks to develop perspectives and abilities that enable the study of culture and thought within specific contexts, and to recognize the role of human agency in defining, maintaining, and adapting cultures.

3. **Area F: The Arts.** A minimum of 1 course must be completed in Area F. Objective: To develop an appreciation of fine and performing arts, popular arts, and visual culture and to express relationships between arts and historical or cultural contexts.

4. **Area G: Literature.** A minimum of 1 course must be completed in Area G. Objective: To learn to analyze texts using methods appropriate to literary study and to situate analysis within contexts where texts circulate.

SPECIAL SUBJECT AREA REQUIREMENTS

In the process of fulfilling the General Education General Subject Areas D through G requirements, students must complete the following Special Subject Area requirements:

1. **Writing Requirement.** Objective: To study and practice with writing, reading, and critical analysis within specific disciplines. Students will demonstrate abilities by producing written work totaling at least 1,800 words that is independent of or in addition to written examinations. Assessment of written work must be a significant consideration in total assessment of student performance in the course. At least four designated General Education courses that meet the following criteria: (1) the courses require one to three papers totaling at least 1,800 words, exclusive of elements such as footnotes, equations, tables of contents, or references; (2) the required papers are independent of or in addition to written examinations; and (3) the paper(s) is a significant consideration in the assessment of student performance in the course. The writing requirement may be met only with designated UCSB courses approved by the Academic Senate.

    NOTES: ENGR 101 may be used as a writing requirement class, even by those students for whom ENGR 101 is required.
    New transfer students should consult with the College Undergraduate Studies Office regarding this requirement.

2. **Ethnicity Requirement.** Objective: To learn to identify and understand the philosophical, intellectual, historical, and/or cultural experiences of historically oppressed and excluded racial minorities in the United States. At least one course in this area is required.

3. **European Traditions or World Cultures Requirement.**

    European Traditions Objective: To learn to analyze early and/or modern European cultures and their significance in world affairs.

    World Cultures objective: To learn to identify, understand, and appreciate the history, thought, and practices of one or more culutres outside of the European Tradition.

    At least one course from either of these areas (European Traditions or World Cultures) is required.

Other Regulations:

*   A course listed in more than one general subject area can be applied to only one of these areas. (Example: Art History 6A cannot be applied to both Areas E and F.) However, a course can be applied towards a single general subject area and any special subject areas which that course fulfills. (Example: Asian American Studies 4 can be applied to the Writing and Ethnicity requirements in addition to the Area F requirement.)

*   Some courses taken to satisfy the General Education requirements may also be applied simultaneously to the American History and Institutions requirement. Such courses must be on the list of approved General Education courses and on the list of approved American History and Institutions courses.

*   Courses taken to fulfill a General Education requirement may be taken on a P/NP basis, if the course is offered with that grading option (refer to GOLD for the grading option for a particular course).

CHECKLIST OF GENERAL UNIVERSITY AND GENERAL EDUCATION REQUIREMENTS

GENERAL UNIVERSITY REQUIREMENTS

UC Entry Level Writing Requirement – (Must be fulfilled within three quarters of admission.)

Passed Exam _____ or Writing 1, 1E or Ling 12 _____ or transferred appropriate course _____

American History and Institutions* – (Refer to page 11 for the list of acceptable courses.)

One course _____ or Advanced Placement _____ or International waiver _____
 *This course may also apply to the General Education requirements, if appropriate.

GENERAL EDUCATION REQUIREMENTS
A course listed in more than one General Subject Area can be applied to only **one area.** Course total in Areas D, E, F, and G must be **at least 6.**

General Subject Areas
1. ***Area A: English Reading and Composition***

    Writing 2 or 2E and Writing 50, 50E, 105CD, 105CW, 105M, 105PD, 105PS, 105S, 105SW, 107B, 107EP, 107G, 107J, 107L, 107M, 107T, 107WC, 109ED, 109ES, 109HP, or 109ST

    _____   _____

2. ***Area D: Social Sciences*** (2 courses minimum)

    _____   _____

3. ***Area E: Culture and Thought***   (2 courses minimum)

    _____   _____

4. ***Area F: The Arts*** (1 course minimum)

    _____

5. ***Area G: Literature*** (1 course minimum)

    _____

Special Subject Areas
In the process of fulfilling the G.E. General Subject Area requirements, students must fulfill the following Special Subject Area requirements, as outlined on page 12. **Only approved courses can be used to fulfill these requirements.**

a. ***Writing Requirement – (4 courses)***
    _____   _____   _____   _____

b. ***Ethnicity Requirement – (1 course)*** _____

c. ***European Traditions or World Cultures Requirement – (1 course)*** _____

CHEMICAL ENGINEERING 2023-24

Units

PREPARATION FOR THE MAJOR — 75

CH E 5 3	
CH E 10 3	
CHEM 1A, 1B, 1C or 2A, 2B, 2C 9	
CHEM 1AL, 1BL, 1CL or 2AC, 2BC, 2CC 6	
CHEM 6AL-BL. 6	
CHEM 109A or AH, 109B or BH. 8	
ENGR 3. 3	
MATH 3A-B, 4A or 4AI, 4B or 4BI, 6A or 6AI, 6B 24	
PHYS 7A, 7B, 7C, 7L. 13	

UPPER DIVISION MAJOR — 81

CH E 107 3	
CH E 110A-B 6	
CH E 118 1	
CH E 120A-B-C. 10	
CH E 128 3	
CH E 132A-B-C. 10	
CH E 140A-B 6	
CH E 152A 4	
CH E 180A-B 6	
CH E 184A-B 6	
CHEM 113B-C 8	
MATRL 101 or MATRL 100C *^ 3	

*^ see note on next page

Technical Elective requirement. 15
Prior approval of the student's technical electives must be obtained from the undergraduate adviser.

At least 9 of the 15 units must be in the following departments in the College of Engineering: CH E, ECE, MATRL, ME
Approved Technical Elective Requirement classes:

CH E 102	CHEM 109C	MATRL 160
CH E 121	CHEM 115A,B,C	MATRL 185
CH E 124	CHEM 123	MCDB 101A,B
CH E 125	CHEM 126	MCDB 111
CH E 126	CHEM 142A,B,C	MCDB 126A,B,C
CH E 141	CHEM 145	MCDB 133
CH E 146	CHEM 147	MCDB 138
CH E 152B	CHEM 150	ME 110
CH E 154	ECE 130A,B,C	ME 112
CH E 160	ECE 183	ME 128
CH E 166	ENGR 101	ME 134
CH E 171	ENGR 103	ME 169
CH E 173	ENV S 105	ME 185
CH E 174	MATH 122A,B	PHYS 123A,B
CH E 196[1]	MATRL 100A,B	PHYS 127AL
CH E 198[1]	MATRL 135	PHYS 127BL

[1]Three units maximum from CH E 196 and CH E 198 combined; only for students with GPA of 3.0 or higher.

Technical electives taken:

> To satisfy major requirements, courses taken inside or outside the Department of Electrical and Computer Engineering, must be taken for a letter grade.

UNIVERSITY REQUIREMENTS

UC Entry Level Writing Requirement: English Composition Must be fulfilled within three quarters of matriculation

_____

American History and Institutions – (one 4-unit course, may be counted as G.E. if selected from approved list)

_____

GENERAL EDUCATION

General Subject Areas
Area A: English Reading & Comprehension – (2 courses required)

A-1: _____ **A-2**: _____

Area D: Social Science
(2 courses minimum)

_____   _____

Area E: Culture and Thought
(2 courses minimum)

_____   _____

Area F: The Arts   Area G: Literature
(1 course minimum)   (1 course minimum)

_____   _____

Special Subject Areas

Ethnicity (1 course):_____

European Traditions
or World Cultures (1 course):_____

Writing (4 courses required):

_____   _____

_____   _____

NON-MAJOR ELECTIVES

Free Electives taken:

_____

_____

_____

_____

_____

TOTAL UNITS REQUIRED FOR GRADUATION 187

CHEMICAL ENGINEERING 2023-24

This grid is intended to serve as a guide and should be adjusted for individual circumstances in consultation with academic advisors.
Course availability subject to change. Changes will be announced by the department.

FRESHMAN YEAR

FALL	units	WINTER	units	SPRING	units
CH E 5	3	CHEM 1B or 2B	3	CHEM 1C or 2C	3
CHEM 1A or 2A	3	CHEM 1BL or 2BC	2	CHEM 1CL or 2CC	2
CHEM 1AL or 2AC	2	MATH 3B	4	ENGR 3	3
MATH 3A	4	PHYS 7A	4	MATH 4A or 4AI	4
WRIT 1E or 2E	4	WRIT 2E or 50E	4	PHYS 7B	4
TOTAL	16		17		16

SOPHOMORE YEAR

FALL	units	WINTER	units	SPRING	units
CH E 10	3	CH E 107	3	CH E 110B	3
CHEM 109A or 109AH	4	CH E 110A	3	CH E 132A	4
MATH 4B or 4BI	4	CHEM 6AL	3	CHEM 6BL	3
PHYS 7L	1	PHYS 7C	4	MATH 6B	4
G.E.	4	MATH 6A or 6AI	4	CHEM 109B or 109BH	4
TOTAL	16		17		18

JUNIOR YEAR

FALL	units	WINTER	units	SPRING	units
CH E 120A	4	CH E 120B	3	CH E 118	1
CH E 128	3	CH E 132C	3	CH E 120C	3
CH E 132B	3	CHEM 113B	4	CH E 140A	3
G.E.	4	MATRL 101*^	3	CH E 180A	3
		Technical Elective	3	CHEM 113C	4
				Technical Elective	3
TOTAL	14		16		17

SENIOR YEAR

FALL	units	WINTER	units	SPRING	units
CH E 140B	3	CH E 180B	3	CH E 184B	3
CH E 152A	4	CH E 184A	3	G.E.	8
G.E.	4	G.E.	4	Technical Elective	3
Technical Elective	3	Technical Elective	3		
TOTAL	14		13		14

* If applying to the BS/MS Materials program, third year students must take the MATRL 100A in Fall, MATRL 100B in Winter, and MATRL 100C in Spring.

^Students may only count one course toward the major. (MATRL 101 OR MATRL 100C)

COMPUTER ENGINEERING 2023-24

Units

PREPARATION FOR THE MAJOR

CMPSC 16	4
CMPSC 24	4
CMPSC 32	4
CMPSC 40	5
ECE 1A-1B	2
ECE 5	4
ECE 10A, 10AL, 10B, 10BL, 10C, 10CL	15
ECE 15A	4
MATH 2A-B or 3A-B, 4A-B, 6A	20
PHYS 7A, 7B, 7C, 7D, 7L	16

UPPER DIVISION MAJOR — 68

CMPSC 130A	4
ECE 139 or PSTAT 120A	4
ECE 152A	5
ECE 154A	4
ENGR 101	3
CMPSC 189 A-B* / ECE 189+ A-B-C	8-12

* Prerequisite to CMPSC 189A is CMPSC 156
+ Prerequisite to ECE 189A is ECE 153B (offered twice per year)

Computer Engineering electives selected
 from the following list: 36-40

Prior approval of the student's departmental electives must be obtained from the student's faculty adviser.

Must include at least 2 sequences. See ECE Department student office for list of approved sequences.

CMPSC 130B	CMPSC 177	ECE 154B
CMPSC 138	CMPSC 178	ECE 157A-B
CMPSC 153A/	CMPSC 181/	ECE 160
ECE 153A	ECE 181	ECE 178
CMPSC 156	ECE 122A-B	ECE 179D,
CMPSC 160	ECE 123	179P
CMPSC 162	ECE130A-B-C	ECE 180
CMPSC 165A-B	ECE 133	ECE 194AA-
CMPSC 170	ECE 147A-B	194ZZ
CMPSC 171	ECE 149	(except 194R)
CMPSC 174A	ECE 150	
CMPSC 176A-B-C	ECE 153B	

Computer Engineering electives taken:_____
_____
_____
_____

To satisfy major requirements, courses taken inside or outside the Department of Electrical and Computer Engineering, must be taken for a letter grade.

UNIVERSITY REQUIREMENTS

UC Entry Level Writing Requirement: English Composition
Must be fulfilled within three quarters of matriculation

_____

American History and Institutions – (one 4-unit course, may be counted as G.E. if selected from approved list)

_____

GENERAL EDUCATION

General Subject Areas

Area A: English Reading & Comprehension – (2 courses required)

A-1: _____**A-2**: _____

Area D: Social Science
(2 courses minimum)

_____   _____

Area E: Culture and Thought
(2 courses minimum)

_____   _____

Area F: The Arts   Area G: Literature
(1 course minimum)   (1 course minimum)

_____   _____

Special Subject Areas

Ethnicity (1 course):_____

European Traditions
or World Cultures (1 course):_____

Writing (4 courses required):
_____   _____

_____   _____

NON-MAJOR ELECTIVES

Free Electives taken:
_____
_____
_____
_____
_____
_____

TOTAL UNITS REQUIRED FOR GRADUATION 191

COMPUTER ENGINEERING 2023-24

This grid is intended to serve as a guide and should be adjusted for individual circumstances in consultation with academic advisors.
Course availability subject to change. Changes will be announced by the department.

FRESHMAN YEAR

FALL	units	WINTER	units	SPRING	units
ECE 3 or CMPSC 8[1]	4	CMPSC 16	4	CMPSC 24	4
ECE 5[2]	4	ECE 1A	1	ECE 1B	1
MATH 3A	4	MATH 3B	4	MATH 4A	4
WRIT 1E or 2E	4	PHYS 7A	4	PHYS 7B	4
		WRIT 2E or 50E	4	WRIT 50E or G.E.	4
TOTAL	**16**		**17**		**17**

SOPHOMORE YEAR

FALL	units	WINTER	units	SPRING	units
ECE 10A	3	ECE 10B	3	ECE 10C	3
ECE 10AL	2	ECE10BL	2	ECE 10CL	2
MATH 4B	4	ECE 15A	4	ECE 139 or PSTAT 120A[4]	4
CMPSC 32[3]	4	PHYS 7C	4	ECE 152A	5
CMPSC 40[3]	5	MATH 6A	4	PHYS 7D	3
				PHYS 7L	1
TOTAL	**18**		**17**		**18**

JUNIOR YEAR

FALL	units	WINTER	units	SPRING	units
ECE 154A	4	CMPSC 130A	4	CMPEN Electives	8
CMPEN Electives	8	CMPEN Electives	8	G.E.	8
G.E.	4	G.E.	4		
TOTAL	**16**		**16**		**16**

SENIOR YEAR

FALL	units	WINTER	units	SPRING	units
ECE 189A[5]/ CMPSC 189A[6]	4	ECE 189B/ CMPSC 189B	4	ECE 189C or CMPEN Elective	4
CMPEN Electives	8	ENGR 101[7]	3	CMPEN Elective	4
G.E.	4	CMPEN Elective	4	G.E.	4
		G.E.	4		
TOTAL	**16**		**15**		**12**

[1] Students with no prior computer programming background should take either ECE 3 or CMPSC 8.
[2] ECE 5 is also offered in winter quarter.
[3] CMPSC 32 is also offered in spring quarter. CMPSC 40 is also offered in winter and spring quarters.
[4] PSTAT 120A is offered each quarter. ECE 139 is offered only in the spring quarter and is better suited for future upper division electives for the Computer Engineering major.
[5] ECE 153B is the prerequisite to ECE 189A. [6] CMPSC 156 is the prerequisite for CMPSC 189A.
[7] ENGR 101 may be taken any quarter of the senior year.

COMPUTER SCIENCE 2023-24

Units

PREPARATION FOR THE MAJOR	45
CMPSC 16	4
CMPSC 24	4
CMPSC 32	4
CMPSC 40	5
CMPSC 64	4
MATH 3A-B, 4A-B, 6A	20
PSTAT 120A	4

UPPER DIVISION MAJOR	71
CMPSC 111 or 140	4
CMPSC 130A-B	8
CMPSC 138	4
CMPSC 148 or 156 or 172	4
CMPSC 154	4
CMPSC 160 or 162	4
CMPSC 170	4
ENGR 101	3
PSTAT 120B	4
Major Field Electives	32

Eight courses selected from the following list (at least 8 units must be CMPSC courses).
Prior approval of the student's major field electives must be obtained from the faculty advisor.

CMPSC 111[1]	CMPSC 177	ECE 152A
CMPSC 140[1]	CMPSC 178	ECE 153B
CMPSC 148[2]	CMPSC 180	ECE160
CMPSC/ECE 153A	CMPSC/ECE 181	ECE 178
CMPSC 156[2]	CMPSC 184	MATH 108A-B
CMPSC 160[3]	CMPSC 185	MATH 119A-B
CMPSC 162[3]	CMPSC 189 A-B	MATH 124A-B
CMPSC 165A-B	CMPSC 190 AA-ZZ	PSTAT 122
CMPSC 171/ECE 151	CMPSC 192[4]	PSTAT 130
CMPSC 172[2]	CMPSC 196[4]	PSTAT 160A-B
CMPSC 174A-B	CMPSC 196B[5]	
CMPSC 176A-B-C	ECE 130A-B-C	

[1] CMPSC 111 or 140 can be used as an elective if not taken as a major course.
[2] CMPSC 148 or 156 or 172 can be used as an elective if not taken as a major course.
[3] CMPSC 160 or 162 can be used as an elective if not taken as a major course.
[4] Four units maximum from CMPSC 192 and 196 combined; only for students with GPA of 3.0 or higher.
[5] Only for students who have met the requirements. Please see department advisor for more information.

Major Field Electives taken:

_____

SCIENCE COURSES (See dept. for approved lists)

Science Electives - List A	8
Science Electives - List B	12

Science Electives taken:

_____

> To satisfy major requirements, courses taken inside or outside the Department of Computer Science, must be taken for a letter grade.

UNIVERSITY REQUIREMENTS

UC Entry Level Writing Requirement: English Composition Must be fulfilled within three quarters of matriculation

_____

American History and Institutions – (one 4-unit course, may be counted as G.E. if selected from approved list)

_____

GENERAL EDUCATION

General Subject Areas

Area A: English Reading & Comprehension – (2 courses required)

A-1: _____ **A-2**: _____

Area D: Social Science
(2 courses minimum)

_____   _____

Area E: Culture and Thought
(2 courses minimum)

_____   _____

Area F: The Arts   Area G: Literature
(1 course minimum)   (1 course minimum)

_____   _____

Special Subject Areas

Ethnicity (1 course):_____

European Traditions
or World Cultures (1 course):_____

Writing (4 courses required):

_____   _____

_____   _____

NON-MAJOR ELECTIVES

Free Electives taken:

_____

_____

_____

_____

_____

TOTAL UNITS REQUIRED FOR GRADUATION 184

COMPUTER SCIENCE 2023-24

This grid is intended to serve as a guide and should be adjusted for individual circumstances in consultation with academic advisors.
Course availability subject to change. Changes will be announced by the department.

FRESHMAN YEAR

FALL	units	WINTER	units	SPRING	units
G.E. Elective or CMPSC 8[1]	4	CMPSC 16[1]	4	CMPSC 24	4
MATH 3A	4	MATH 3B	4	MATH 4A	4
WRIT 1, 2, or G.E. Elective	4/5	Science Elective	4	Science Elective	4
G.E. Elective	4	WRIT 1, 2, or G.E. Elective	4/5	Science or Free Elective	4
TOTAL	**16/17**		**16/17**		**16**

SOPHOMORE YEAR

FALL	units	WINTER	units	SPRING	units
CMPSC 32	4	CMPSC 64	4	CMPSC 138	4
CMPSC 40	5	MATH 4B	4	MATH 6A	4
PSTAT 120A	4	WRIT 50	4	G.E.	4
Science Elective	4	CMPSC 130A	4	Science or Free Elective	4
TOTAL	**17**		**16**		**16**

JUNIOR YEAR

FALL	units	WINTER	units	SPRING	units
CMPSC 148 or 156 or 172	4	G.E.	4	CMPSC 154	4
CMPSC 130B	4	Field Elective	4	PSTAT 120B	4
CMPSC 111[3]	4	Free Elective	4	Field or Free Elective	4
Science or Free Elective	4	G.E.	4	G.E.	4
TOTAL	**16**		**16**		**16**

SENIOR YEAR

FALL	units	WINTER	units	SPRING	units
Field or Free Elective	4	CMPSC 170	4	Field or Free Elective	4
CMPSC 160[2]	4	Field Elective	4	Field or Free Elective	4
Field or Free Elective	4	ENGR 101[4]	3	G.E. or Free Elective	4
		Field or Free Elective	4		
TOTAL	**12**		**15**		**12**

[1] Consult Computer Science academic advisor for placement information.
[2] Or you may take CMPSC 162 to satisfy this requirement.
[3] Or you may take CMPSC 140 in winter quarter to satisfy this requirement.
[4] ENGR 101 may be taken any quarter of senior year.

ELECTRICAL ENGINEERING 2023-24

Units

PREPARATION FOR THE MAJOR

CHEM 1A, 1AL or 2A, 2AC or ECE 6 . . . . .5/4
CMPSC 9 or CMPSC 16 4
ECE 3 4
ECE 5 4
ECE 10A, 10AL, 10B, 10BL, 10C, 10CL 15
ECE 15A 4
MATH 2A-B or 3A-B, 4A-B, 6A-B 24
PHYS 7A, 7B, 7C, 7D, 7L 16
ECE 130A-B 8
ECE 139 4

UPPER DIVISION MAJOR   64

ECE 134 4
ECE 152A 5
ECE 153A or 153B* 4
ECE 188A-B-C 12
ENGR 101. 3
Departmental electives selected from
the following list: 36

If both ECE 153A and ECE 153B are taken, one may be used as a departmental elective and the other will be used as a required course.

Approval of the student's departmental electives must be obtained from the student's faculty adviser. The departmental electives must include an approved depth sequence corresponding to the students' chosen track, or another depth sequence of at least 4 courses that is approved by the students' faculty advisor. See the ECE Department Student Office for the list of courses in the different areas of specialization.

Approved Departmental Electives:

ECE 120A-B	ECE 145A-B-C	ECE 180
ECE 122A-B	ECE 146A-B	ECE 181
ECE 123	ECE 147A-B-C	ECE 183
ECE 125	ECE 148	ECE 192 or 196 (4 units combined max)
ECE 130C	ECE 149	
ECE 132	ECE 153A-B*	ECE 194 AA-ZZ (excluding ECE 194R)
ECE 133	ECE 154A-B	
ECE 135	ECE 157A-B	MATRL 100A, C
ECE 136A-B-C	ECE 158	MATRL 100B or MATRL 101
ECE 137A-B	ECE 160	
ECE 141A-B	ECE 162A-B-C	MATRL 162A-B
ECE 142	ECE 178	TMP 120, 122 (1 course max)
ECE 144	ECE 179D, P	

Departmental Electives taken:

_____
_____
_____
_____
_____

To satisfy major requirements, courses taken inside or outside the Department of Electrical and Computer Engineering, must be taken for a letter grade.

UNIVERSITY REQUIREMENTS

UC Entry Level Writing Requirement: English Composition Must be fulfilled within three quarters of matriculation

_____

American History and Institutions – (one 4-unit course, may be counted as G.E. if selected from approved list)

_____

GENERAL EDUCATION

General Subject Areas
Area A: English Reading & Comprehension – (2 courses required)

A-1: _____ **A-2**: _____

Area D: Social Science
(2 courses minimum)

_____   _____

Area E: Culture and Thought
(2 courses minimum)

_____   _____

Area F: The Arts   Area G: Literature
(1 course minimum)   (1 course minimum)

_____   _____

Special Subject Areas

Ethnicity (1 course):_____

European Traditions
or World Cultures (1 course):_____

Writing (4 courses required):

_____   _____

_____   _____

NON-MAJOR ELECTIVES

Free Electives taken:

_____
_____
_____
_____
_____

TOTAL UNITS REQUIRED FOR GRADUATION 189

ELECTRICAL ENGINEERING 2023-24

This grid is intended to serve as a guide and should be adjusted for individual circumstances in consultation with academic advisors.
Course availability subject to change. Changes will be announced by the department.

FRESHMAN YEAR

FALL	units	WINTER	units	SPRING	units
ECE 3	4	CMPSC 16 or CMPSC 9	4	ECE 6 or CHEM 1A/1AL[2]	4/5
ECE 5[1]	4	MATH 3B	4	MATH 4A	4
MATH 3A	4	PHYS 7A	4	PHYS 7B	4
WRIT 1E or 2E	4	WRIT 2E or 50E	4	WRIT 50E or G.E.	4
TOTAL	**16**		**16**		**16/17**

SOPHOMORE YEAR

FALL	units	WINTER	units	SPRING	units
ECE 10A	3	ECE 10B	3	ECE 10C	3
ECE 10AL	2	ECE 10BL	2	ECE 10CL	2
MATH 4B	4	ECE 130A	4	ECE 139	4
PHYS 7L	1	MATH 6A	4	MATH 6B	4
G.E.	4	PHYS 7C	4	PHYS 7D	3
TOTAL	**14**		**17**		**16**

JUNIOR YEAR

FALL	units	WINTER	units	SPRING	units
ECE 15A	4	ECE 152A	5	ECE 153B or ECE Elective	4
ECE 134	4	ECE 130B	4	ECE Elective	4
ECE Elective	4	ECE Elective	4	ECE Elective	4
ECE Elective	4	G.E.	4	G.E.	4
TOTAL	**16**		**17**		**16**

SENIOR YEAR

FALL	units	WINTER	units	SPRING	units
ECE 153A or ECE Elective	4	ECE 188B	4	ECE 188C	4
ECE 188A	4	ECE Elective	4	ECE Elective	4
G.E.	4	ECE Elective	4	ENGR 101[4]	3
Free Elective[3]	4	G.E.	4	G.E.	4
TOTAL	**16**		**16**		**15**

[1] ECE 5 is also offered in winter quarter.
[2] Students interested in the BS/MS Materials Program are advised to take CHEM 1A/1AL.
[3] Students must complete at least 189 units to graduate. See an advisor for more information.
[4] ENGR 101 may be taken any quarter of the senior year.

MECHANICAL ENGINEERING 2023-24

Units

PREPARATION FOR THE MAJOR — 77

CHEM 1A, 1AL, 1B, 1BL or 2A, 2AC, 2B, 2BC 10
ENGR 3.. 3
MAT H 3A-B, 4A-B, 6A-B................................... 24
ME 6 4
ME 10 4
ME 12S 1
ME 14 4
ME 15 4
ME 16 4
ME 17 3
PHYS 7A, 7B, 7C, 7D, 7L 16

UPPER DIVISION MAJOR — 69

Third Year

MATRL 101 or MATRL 100C....................................... 3
ME 103 4
ME 104 4
ME 107 3
ME 108 3
ME 151A-B 8
ME 152A... 4
ME 153 3
1 Specialization Group*... 6
*Two courses required: Either a group, or 1 course from L1 and 1 course from L2

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
L1	BIO E 120A	ME 163	ME 127	ME 141A	ME 166	ME 152B
L2	BIO E120B	ME 155A	ME 129	ME 141B	ME 154	ME 151C

Fourth Year

ME 105 4
ME 154 or 157 or 167.. 3
ME 156A-B 6
ME 189A-B-C... 9
Engineering Electives... 9

Prior approval of the student's departmental electives must be obtained from the student's faculty adviser. Note, the list of approved electives may change from year to year and that not all courses are offered each year.

Approved Engineering Electives:

BIOE 120A-B	ME 124	ME 159
CHEM 109A	ME 125 AA-ZZ	ME 162
CHEM 123	ME 127	ME 166
ECE 147A,C	ME 128	ME 167
CMPSC/ECE 181B	ME 129	ME W167[1]
ENGR 101	ME 134	ME 169
ENGR 195A-B-C	ME 135	ME 179D-L-P
ENV S 105	ME 140A-B	ME 180
MATRL 100A	ME 141A-B	ME 185
MATRL 100B	ME 146	ME 186A-B
MATRL 186A-B	ME 147	ME 197[2]
MATRL 188	ME 154	ME 199[2]
ME 102	ME 155B-C	TMP 120, 122
ME 110	ME 157	(max 1 course)
ME 112	ME 158	

[1]ME W167 online version of ME 167.
[2]Four units maximum from ME 197 and ME 199 combined

To satisfy major requirements, courses taken inside or outside the Department of Mechanical Engineering, must be taken for a letter grade.

UNIVERSITY REQUIREMENTS

UC Entry Level Writing Requirement: English Composition
Must be fulfilled within three quarters of matriculation

Satisfied by: _____

American History and Institutions – (one 4-unit course, may be counted as G.E. if selected from approved list)

_____

GENERAL EDUCATION

General Subject Areas

Area A: English Reading & Comprehension – (2 courses required)

A-1: _____ **A-2**: _____

Area D: Social Science
(2 courses minimum)

_____   _____

Area E: Culture and Thought
(2 courses minimum)

_____   _____

Area F: The Arts   Area G: Literature
(1 course minimum)   (1 course minimum)

_____   _____

Special Subject Areas

Ethnicity (1 course):_____

European Traditions
or World Cultures (1 course):_____

Writing (4 courses required):
_____   _____

_____   _____

NON-MAJOR ELECTIVES

Free Electives taken:

_____

_____

_____

_____

_____

TOTAL UNITS REQUIRED FOR GRADUATION.....180

MECHANICAL ENGINEERING 2023-24

This grid is intended to serve as a guide and should be adjusted for individual circumstances in consultation with academic advisors.
Course availability subject to change. Changes will be announced by the department.

FRESHMAN YEAR

FALL	units	WINTER	units	SPRING	units
CHEM 1A or 2A	3	CHEM 1B or 2B	3	MATH 4A	4
CHEM 1AL or 2AC	2	CHEM 1BL or 2BC	2	ME 10	4
MATH 3A	4	MATH 3B	4	ENGR 3	3
ME 12S[1]	1	PHYS 7A	4	PHYS 7B	4
WRIT 1E or 2E	4	WRIT 2E or 50E	4	WRIT 50E or G.E.	4
TOTAL	14		17		19

SOPHOMORE YEAR

FALL	units	WINTER	units	SPRING	units
MATH 4B	4	MATH 6A	4	MATH 6B	4
ME 14	4	ME 6	4	ME 16	4
ME 17	3	ME 15	4	PHYS 7D	3
G.E.	4	PHYS 7C	4	PHYS 7L	1
				G.E.	4
TOTAL	15		16		16

JUNIOR YEAR

FALL	units	WINTER	units	SPRING	units
ME 103	4	MATRL 101[2^]	3	ME 104	4
ME 107	3	ME 108	3	ME 153	3
ME 151A	4	ME 151B	4	Specialization Course	3
ME 152A	4	Specialization Course	3	G.E.	4
TOTAL	15		13		14

SENIOR YEAR

FALL	units	WINTER	units	SPRING	units
ME 154, ME 157, or ME 167[3]	3	ME 156B	3	ME 189C	3
ME 105	4	ME 189B	3	Departmental Elective	3
ME 156A	3	Departmental Elective	3	G.E. or Free Electives	8
ME 189A	3	G.E. or Free Elective	4		
Departmental Elective	3				
TOTAL	16		13		14

[1] ME 12S is offered every Fall, Winter, and Spring quarter. The ME 12S requirement must be finished before the start of the third year.

[2] If applying to the BS/MS Materials program, third year students must take the MATRL 100A in Fall, MATRL 100B in Winter, and MATRL 100C in Spring.

[3] Course availability may vary. If using ME 154, ME 157, or ME 167 to satisfy requirement, students may not count the course as an Engineering Elective. If either of the other courses are also taken, those additional courses will count as an engineering elective.

^ Students may only count one course toward the major (MATRL 101 or MATRL 100C).

Additional Resources and Information

Gaucho On-Line Data (GOLD) – grades, class registration, progess checks—**https://my.sa.ucsb.edu/gold**

UMAIL – campus email for official notifications—**http://www.umail.ucsb.edu**

Schedule of Classes information – quarterly calendar and information—**http://www.registrar.ucsb.edu**

General Catalog for UCSB – academic requirements for all campus majors—**http://my.sa.ucsb.edu/Catalog/**

Summer Sessions – Summer programs and course offerings—**http://www.summer.ucsb.edu**

Tutoring – course-specific tutoring and academic skills development—**http://www.clas.ucsb.edu**

Education Abroad Program – EAP options for engineering students—**email: eap@engineering.ucsb.edu**

College Honors Program – program information and opportunities—**email: honors@engineering.ucsb.edu**

Advising Staff

College Advisors: general education requirements, academic standing, final degree clearance

Departmental Advisors: course selection, class enrollment, change of major, academic requirements

	Phone	Email	Location
College Advising staff	(805) 893-2809	coe-info@engr.ucsb.edu	Harold Frank Hall, Rm. 1006
Departmental Advisors:			
Chemical Engineering	893-8671	cheugrads@engr.ucsb.edu	Engr.II, Rm. 3357
Computer Engineering	893-8292	ugrad-advisor@ece.ucsb.edu	Trailer 380, Rm. 101
Computer Science	893-4321	ugradhelp@cs.ucsb.edu	Harold Frank Hall, Rm. 2104
Electrical Engineering	893-8292	ugrad-advisor@ece.ucsb.edu	Trailer 380, Rm. 101
Mechanical Engineering	893-8198	meugrad@engr.ucsb.edu	Engr.II, Rm. 2355
Technology Management	893-2729	advising@tmp.ucsb.edu	Phelps 2219

Academic Integrity

The UCSB Student Conduct Code exists to support the highest standards of social and academic behavior and ensure and environment conducive to student learning. It is expected that students attending the UCSB understand and subscribe to the ideal of academic integrity, and are willing to bear individual responsibility for their work. Any submission that fulfills an academic requirement must represent a student's original work. Any act of academic dishonesty will subject a person to University disciplinary action.

Student Conduct Code and Student Due Process: http://www.sa.ucsb.edu/regulations/student-conduct-code/student-conduct-code (B. Student Rights: Procedural Due Process).

Instructor Responsibilities and Procedures: https://senate.ucsb.edu/bylaws-and-regulations/ (Section 10, Reg. 90)

Academic dishonesty includes cheating, plagiarism, unauthorized collaboration, furnishing false information, and misuse of course materials. Definitions and misconduct are posted at http://studentconduct.sa.ucsb.edu/academic-integrity.

A specific note about student collaboration: Collaboration on homework assignments (i.e., problem sets), especially in light of the recognized pedagogical benefit of group study, is dictated by standards that can and do vary widely from course to course and instructor to instructor. The use of old solution sets and published solution guides presents a similar situation. Because homework assignments serve two functions – helping students learn the material and helping instructors evaluate academic performance – it is usually not obvious how much collaboration or assistance from commonly-available solutions, if any, the instructor expects. It is therefore imperative that students and instructors play an active role in communicating expectations about the nature and extent of collaboration or assistance from materials that is permissible or encouraged.

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