Electrical Engineering and Computer Sciences and Business Administration

M.E.T. at a Glance: One program, two Bachelor of Science (BS) degrees

The Electrical Engineering and Computer Sciences and Business Administration simultaneous degree is part of the Management, Entrepreneurship, & Technology Program. The M.E.T. Program aims to educate leaders with a seamless understanding of technology innovation, from idea to real-world impact.

M.E.T. students earn two Bachelor of Science degrees in one program that combines the best of the top-ranked College of Engineering and Haas School of Business. The integrated curriculum is completed in four years. Internships, career coaching, and other enrichment activities provide ample opportunity for hands-on experience with innovation and entrepreneurship. Each M.E.T. cohort is small, allowing for close mentoring and a tight-knit community.

Admission to the M.E.T. Program

The M.E.T. Program seeks inquisitive, self-motivated students with a passion for finding and solving big problems. It is highly competitive and is only open to freshmen during the UC application period.

For further information, please see the M.E.T. website (http://met.berkeley.edu).

Accreditation

All UC Berkeley programs are accredited through the Accrediting Commission for Schools, Western Association of Schools and Colleges (ACS WASC). The Undergraduate Business Degree Program is accredited by The Association to Advance Collegiate Schools of Business (AACSB).

In addition to the University, campus, and M.E.T. Program requirements, listed on the College Requirements tab, students must fulfill the below requirements.

General Guidelines

1. A minimum of 38 upper division business units are required, and a minimum of 12 upper division non-business units are required. (Upper division EECS classes will fulfill the 12 upper division non-business units.)
2. A minimum of 40 engineering units are required.[1]
3. Students must complete the College Requirements (p. 3) and the Major Requirements.
4. Students must complete the degree program in eight semesters. (Summer Session is not required for degree completion in eight semesters.)
5. All Haas business courses must be taken for a letter grade, with the exception of UGBA 194 (http://guide.berkeley.edu/archive/2020-21/search/?P=UGBA%20194), UGBA 198 (http://guide.berkeley.edu/archive/2020-21/search/?P=UGBA%20198) and UGBA 199 (http://guide.berkeley.edu/archive/2020-21/search/?P=UGBA%20199) (only offered *Pass/No Pass*).
6. All technical courses that can be used to fulfill a requirement must be taken for a letter grade.
7. Students who receive a grade of D+ or lower in a core UGBA course must repeat the course until they achieve a grade of C- or better.
8. Students must complete their business prerequisite courses (including Reading & Composition Parts A & B) by the spring semester of their sophomore (2nd) year.
9. Students in this program must adhere to all policies and procedures of the College of Engineering and the Haas School of Business.

For information regarding University and campus requirements, Reading and Composition, breadth, class schedule, minimum academic progress, and unit requirements, please see the College Requirements (p. 3).

[1]The 40 units of engineering courses cannot include: any course taken on a P/NP basis; courses numbered 24, 32, 39, 84, H194, 196, H196, H196A, H196B; BIOENG 100; COMPSCI 70, C79; DESINV courses (except DESINV 15, 22, 23, 90E, 190E); ENGIN 125, 157AC, 180, 185, 187; INDENG 95, 185, 186, 190 series, 191, 192, 195; MECENG 190K, 191K.

Lower Division Requirements

Business Prerequisites		
UGBA 10	Principles of Business	3
ECON 1	Introduction to Economics	4
STAT 20	Introduction to Probability and Statistics	4
or STAT 21	Introductory Probability and Statistics for Business	
or STAT 131A	Course Not Available	
or STAT 134	Concepts of Probability	
or COMPSCI C & STAT 88 OR	Principles & Techniques of Data Science and Course Not Available	
or EECS 126	Probability and Random Processes	
or COMPSCI C & STAT 88 OR	Foundations of Data Science and Course Not Available	
Reading & Composition Parts A and B		4-4
Natural Sciences		
PHYSICS 7A & PHYSICS 7B	Physics for Scientists and Engineers and Physics for Scientists and Engineers	8
or PHYSICS 5A & PHYSICS 5B & PHYSICS 5BL	Introductory Mechanics and Relativity and Introductory Electromagnetism, Waves, and Optics and Introduction to Experimental Physics I	
Select one course from the following:		3-5
ASTRON 7A	Introduction to Astrophysics [4]	
ASTRON 7B	Introduction to Astrophysics [4]	
BIOLOGY 1A & 1AL	General Biology Lecture and General Biology Laboratory	
BIOLOGY 1B	General Biology Lecture and Laboratory [4]	
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory	
CHEM 1B	General Chemistry [4]	
CHEM 3A & 3AL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	
CHEM 3B & 3BL	Chemical Structure and Reactivity and Organic Chemistry Laboratory	

CHEM 4A	General Chemistry and Quantitative Analysis [5] [1]	
CHEM 4B	General Chemistry and Quantitative Analysis [5] [1]	
MCELLBI 32 & 32L	Introduction to Human Physiology and Introduction to Human Physiology Laboratory	
PHYSICS 5C & 5CL	Introductory Thermodynamics and Quantum Mechanics and Introduction to Experimental Physics II	
PHYSICS 7C	Physics for Scientists and Engineers [4]	
Any upper division letter graded course of 3 units or more in astronomy, chemistry (except 100, 149, 192), earth and planetary science (except C100), integrative biology (except 101, C105, 191), molecular cell biology, physics (except 100), or plant & microbial biology		
Mathematics		
MATH 1A	Calculus	4
MATH 1B	Calculus	4
MATH 53	Multivariable Calculus	4
COMPSCI 70	Discrete Mathematics and Probability Theory	4
Technical Electives (Lower or Upper Division) [2]		**4**
EECS Lower Division Core		
EECS 16A	Designing Information Devices and Systems I	4
EECS 16B	Designing Information Devices and Systems II	4
COMPSCI 61A	The Structure and Interpretation of Computer Programs	4
COMPSCI 61B	Data Structures	4
or COMPSCI 61BL	Data Structures and Programming Methodology	
COMPSCI 61C	Great Ideas of Computer Architecture (Machine Structures)	4
or COMPSCI 61CL	Machine Structures (Lab-Centric)	
Total Lower Division Units		**58-60**

[1] CHEM 4A and CHEM 4B are intended for students majoring in chemistry or a closely-related field.

[2] Students must complete 4 units of Technical Elective(s) chosen from any lower or upper division course in the following departments: astronomy, chemistry, data science, earth and planetary science, integrative biology, mathematics, molecular cell biology, physics, plant & microbial biology, statistics or any engineering department (including EECS). The 4 units of technical elective(s) must be in addition to the natural science elective and the 20 units of required EECS upper division technical electives. If the 4 units of technical elective(s) are from an engineering department, the units can count toward the required 40 units of engineering coursework (see footnote 1 above in General Guidelines section). The 4 units of Technical Elective(s) cannot include: any course taken on a P/NP basis; any course that counts as H/SS; courses numbered 24, 32 (except MCELLBI 32 and MCELLBI 32L), 39, 84, H194, 196, H196, H196A, H196B; BIOENG 100; CHEM 100, 149, 192; COMPSCI 10, (if taken after COMPSCI 61x), C79; DESINV courses (except DESINV 15, 22, 23, 90E, 190E); ENGIN 125, 157AC, 180, 185, 187; EPS C100; INDENG 95, 185, 186, 190 series, 191, 192, 195; INTEGBI 35AC, 88, 101, C105, 191; MATH 55, C103, 151, 152, 153, 160; MECENG 190K, 191K; PHYSICS 100.

Upper Division Requirements

Upper Division Electrical Engineering and Computer Sciences Requirements

Select a minimum of 20 units of upper division EECS courses. [3]		20
At least one of the courses must be a design elective. Select from the following design courses:		
COMPSCI 160	User Interface Design and Development [4]	
COMPSCI 161	Computer Security [4] [2]	
COMPSCI 162	Operating Systems and System Programming [4]	
COMPSCI 164	Programming Languages and Compilers [4]	
COMPSCI 169	Software Engineering [4]	
or COMPSCI 160	Introduction to Software Engineering	
or COMPSCI 169A	Software Engineering Team Project	
or COMPSCI 169B	Software Engineering	
COMPSCI 182	Designing, Visualizing and Understanding Deep Neural Networks [4]	
or COMPSCI 182D	Designing, Visualizing and Understanding Deep Neural Networks	
or COMPSCI 182E	Designing, Visualizing and Understanding Deep Neural Networks	
COMPSCI 184	Foundations of Computer Graphics [4]	
COMPSCI 186	Introduction to Database Systems [4]	
or COMPSCI 186D	Introduction to Database Systems	
EECS C106A	Introduction to Robotics [4]	
EECS C106B	Robotic Manipulation and Interaction [4]	
EECS 149	Introduction to Embedded Systems [4]	
EECS 151 & 151LA	Introduction to Digital Design and Integrated Circuits and Application Specific Integrated Circuits Laboratory	
EECS 151 & 151LB	Introduction to Digital Design and Integrated Circuits and Field-Programmable Gate Array Laboratory	
EL ENG C128	Feedback Control Systems [4]	
EL ENG 130	Integrated-Circuit Devices [4]	
EL ENG 140	Linear Integrated Circuits [4]	
EL ENG 143	Microfabrication Technology [4]	
EL ENG 192	Mechatronic Design Laboratory [4]	
Electrical Engineering and Computer Sciences Ethics Requirement		
COMPSCI 195	Social Implications of Computer Technology	1
or HISTORY C184D	Human Contexts and Ethics of Data - DATA/History/STS	
or ISF 100D	Introduction to Technology, Society, and Culture	
or NWMEDIA 151AC	Transforming Tech: Issues and Interventions in STEM and Silicon Valley	
or STS C104D	Human Contexts and Ethics of Data - DATA/History/STS	
Upper Division Business Administration Requirements		
UGBA 100	Business Communication	2
UGBA 101A	Microeconomic Analysis for Business Decisions	3
UGBA 101B	Macroeconomic Analysis for Business Decisions	3
UGBA 102A	Financial Accounting	3
UGBA 102B	Managerial Accounting	3
UGBA 103	Introduction to Finance	4
UGBA 104	Introduction to Business Analytics	3
UGBA 105	Leading People	3

UGBA 106	Marketing	3
UGBA 107	The Social, Political, and Ethical Environment of Business	3
M.E.T. Special Topics		
Two courses are required. [1]		2-4
Upper Division Business Administration Elective Courses		
Select a minimum of 4-6 units of upper division UGBA elective courses in order to complete a minimum of 38 units of upper division Business Administration courses.		4-6
UGBA 115	Course Not Available	
UGBA 117	Special Topics in Economic Analysis and Policy [1-4]	
UGBA 118	International Trade [3]	
UGBA 119	Course Not Available	
UGBA 120AA	Intermediate Financial Accounting 1 [4]	
UGBA 120AB	Intermediate Financial Accounting 2 [4]	
UGBA 120B	Advanced Financial Accounting [4]	
UGBA 121	Federal Income Tax Accounting [4]	
UGBA 122	Financial Information Analysis [4]	
UGBA 123	Operating and Financial Reporting Issues in the Financial Services Industry [3]	
UGBA 126	Auditing [4]	
UGBA 127	Special Topics in Accounting [1-4]	
UGBA 128	Strategic Cost Management [3]	
UGBA 131	Corporate Finance and Financial Statement Analysis [3]	
UGBA 132	Financial Institutions and Markets [3]	
UGBA 133	Investments [3]	
UGBA 136F	Behavioral Finance [3]	
UGBA 137	Special Topics in Finance [1-4]	
UGBA 141	Production and Operations Management [2-3]	
UGBA 143	Game Theory and Business Decisions [3]	
UGBA 147	Special Topics in Operations and Information Technology Management [1-4]	
UGBA 151	Management of Human Resources [3]	
UGBA 152	Negotiation and Conflict Resolution [3]	
UGBA 154	Power and Politics in Organizations [2,3]	
UGBA 155	Leadership [3]	
UGBA 157	Special Topics in the Management of Organizations [1-4]	
UGBA 160	Customer Insights [3]	
UGBA 161	Market Research: Tools and Techniques for Data Collection and Analysis [3]	
UGBA 162	Brand Management and Strategy [3]	
UGBA 162A	Product Branding and Branded Entertainment [2]	
UGBA 165	Advertising Strategy [3]	
UGBA 167	Special Topics in Marketing [1-4]	
UGBA 169	Pricing [3]	
UGBA C172	History of American Business [3]	
UGBA 175	Legal Aspects of Management [3]	
UGBA 176	Innovations in Communications and Public Relations [2]	
UGBA 177	Special Topics in Business and Public Policy [1-4]	
UGBA 178	Introduction to International Business [3]	
UGBA 179	International Consulting for Small and Medium-Sized Enterprises [3]	
UGBA 180	Introduction to Real Estate and Urban Land Economics [3]	
UGBA 183	Introduction to Real Estate Finance [3]	
UGBA 184	Urban and Real Estate Economics [3]	
UGBA 187	Special Topics in Real Estate Economics and Finance [1-4]	
UGBA 190S	Strategy for the Information Technology Firm [3]	
UGBA 190T	Special Topics in Innovation and Design [1-4]	
UGBA 191C	Communication for Leaders [2]	
UGBA 191I	Improvisational Leadership [3]	
UGBA 191P	Leadership and Personal Development [3]	
UGBA 192A	Leading Nonprofit and Social Enterprises [3]	
UGBA 192B	Strategic Philanthropy [2]	
UGBA 192L	Applied Impact Evaluation [2]	
UGBA 192N	Topics in Social Sector Leadership [1-5]	
UGBA 192P	Sustainable Business Consulting Projects [3]	
UGBA 192T	Topics in Responsible Business [1-4]	
UGBA 193B	Energy & Civilization [4]	
UGBA 193C	Practical Training [0.0]	
UGBA 193I	Business Abroad [1-4]	
UGBA 194	Undergraduate Colloquium on Business Topics [1]	
UGBA 195A	Entrepreneurship [3]	
UGBA 195P	Entrepreneurship: How to Successfully start a New Business [3]	
UGBA 195S	Entrepreneurship To Address Global Poverty [3]	
UGBA 195T	Topics in Entrepreneurship [1-3]	
UGBA 196	Special Topics in Business Administration [1-4]	
UGBA 198	Directed Study [1-4]	
UGBA 199	Supervised Independent Study and Research [1-4]	
Total Upper Division Units		**57-61**

1 M.E.T. Special Topics courses will count as upper division business units.

2 COMPSCI 161 can fulfill the EECS Design requirement if taken Spring 2019 or later.

3 In addition to upper division EECS courses, the following courses can count toward the 20 units of upper division EECS: INFO 159, COMPSCI 270, COMPSCI C280, EL ENG 229A, COMPSCI 294-84 (Interactive Device Design), and COMPSCI 294-129 (Designing, Visualizing and Understanding Deep Neural Networks). Note that no more than two graduate level courses (courses numbered 200-294) can be used to fulfill requirements for your B.S. degree. See footnote 2 above for the list of excluded courses. The 20 units of upper division EECS courses cannot include any course taken on a P/NP basis, COMPSCI H196A, COMPSCI H196B, ELENG H196A, or ELENG H196B.

University of California Requirements

Entry Level Writing (http://guide.berkeley.edu/archive/2020-21/undergraduate/colleges-schools/haas-business/entry-level-writing-requirement/)

All students who enter the University of California as freshmen must demonstrate their command of the English language by fulfilling the

Entry Level Writing Requirement. Fulfillment of this requirement is also a prerequisite to enrollment in all reading and composition courses at UC Berkeley.

American History and American Institutions (http://guide.berkeley.edu/archive/2020-21/undergraduate/colleges-schools/haas-business/american-history-institutions-requirement/)

The American History and Institutions requirements are based on the principle that a US resident who graduates from an American university should have an understanding of the history and governmental institutions of the United States.

Campus Requirement

American Cultures (http://guide.berkeley.edu/archive/2020-21/undergraduate/colleges-schools/haas-business/american-cultures-requirement/)

American Cultures (AC) is the one requirement that all undergraduate students at UC Berkeley need to take and pass in order to graduate. The requirement offers an exciting intellectual environment centered on the study of race, ethnicity, and culture of the United States. AC courses offer students opportunities to be part of research-led, highly accomplished teaching environments, grappling with the complexity of American culture.

M.E.T. Program Requirements

Reading and Composition

Two Reading and Composition (R&C) courses must be taken for a letter grade (C- or better required), and must be completed by no later than the end of the sophomore year (4th semester of enrollment). The first half of R&C, the “A” course, must be completed by the end of the freshman year; the second half of R&C, the “B “course, by no later than the end of the sophomore year or a student's registration will be blocked. View a detailed list of courses (http://guide.berkeley.edu/archive/2020-21/undergraduate/colleges-schools/engineering/reading-composition-requirement/)that fulfill Reading and Composition requirements.

Breadth Requirement

The undergraduate breadth requirement provides Berkeley students with a rich and varied educational experience outside of their major program. As the foundation of a liberal arts education, breadth courses give students a view into the intellectual life of the University while introducing them to a multitude of perspectives and approaches to research and scholarship. Engaging students in new disciplines and with peers from other majors, the breadth experience strengthens interdisciplinary connections and context that prepare Berkeley graduates to understand and solve the complex issues of their day.

Students in the M.E.T. Program must successfully complete six breadth courses, one in each of the following categories:

Arts and Literature

Historical Studies

International Studies

Philosophy and Values (will be satisfied with UGBA 107)

Physical Science (will be satisfied with Physics 7B)

Social and Behavioral Sciences (will be satisfied with Econ 1)

- With the exception of UGBA 107, UGBA courses cannot be used to fulfill breadth requirements.
- With the exception of Econ 1 or Econ 2, microeconomics and macroeconomics at any level (Econ 3, Econ 100A/B, Econ 101A/B, IAS 106/107) cannot be used to fulfill breadth requirements.
- No more than two courses from any one department may be used to satisfy the breadth requirement (L&S Discovery courses (http://lsdiscovery.berkeley.edu) are exempt).
- Advanced Placement, International Baccalaureate and A-Level exams cannot be used to fulfill the breadth requirement.
- Courses numbered 97, 98, 99, or above 196 may not be used to complete any breadth requirement.
- Breadth courses must be a minimum of 3 semester units.
- Reading & Composition courses cannot be used to fulfill breadth requirements.

Class Schedule Requirements

- Minimum units per semester: 13
- Maximum units per semester: 20.5
- Students in the M.E.T. Program must enroll each semester in no fewer than two letter graded technical courses (of at least 3 units each, with the exception of Engineering 25, 26 and 27). Every semester they are expected to make satisfactory progress in their declared major; satisfactory progress in the student's declared major is determined by their ESS adviser.

Minimum Academic (Grade) Requirements

- A minimum overall and semester grade point average of 2.000 (C average) is required. Students will be subject to dismissal from the University if during any fall or spring semester their overall U.C. GPA falls below a 2.000, or their semester GPA is less than 2.000.
- Students must achieve a minimum GPA of 2.000 (C average) in upper division technical courses each semester. Students will be subject to dismissal from the University if their upper division technical GPA falls below 2.000.
- A minimum overall GPA of 2.000, and a minimum 2.000 GPA in upper division technical course work required of the major are required to graduate.

Unit Requirements

- A minimum of 120 units are required to graduate.
- A maximum of 16 units of Special Studies coursework (courses numbered 97, 98, 99, 197, 198, or 199) will count towards the 120 units; a maximum of four are allowed in a given semester.
- A maximum of four units of Physical Education from any school attended will count towards the 120 units.
- Passed grades may account for no more than one third of the total units completed at UC Berkeley, Fall Program for Freshmen (FPF), UC Education Abroad Program (UCEAP), or UC Berkeley Washington Program (UCDC) toward the 120 overall minimum unit requirement. Transfer credit is not factored into the limit. This includes transfer units from outside of the UC system, other UC campuses, credit-bearing exams, as well as UC Berkeley Extension XB units.

University of California Requirements

Entry Level Writing (https://www.ucop.edu/elwr/)

All students who will enter the University of California as freshmen must demonstrate their command of the English language by fulfilling the Entry Level Writing Requirement. Satisfaction of this requirement is also a prerequisite to enrollment in all Reading and Composition courses at UC Berkeley.

American History and American Institutions (http://guide.berkeley.edu/archive/2020-21/undergraduate/education/#universityrequirementstext)

The American History and Institutions requirements are based on the principle that a U.S. resident graduated from an American university should have an understanding of the history and governmental institutions of the United States.

Campus Requirement

American Cultures (http://guide.berkeley.edu/archive/2020-21/undergraduate/education/#campusrequirementstext)

The American Cultures requirement is a Berkeley campus requirement, one that all undergraduate students at Berkeley need to pass in order to graduate. You satisfy the requirement by passing, with a grade not lower than C- or P, an American Cultures course. You may take an American Cultures course any time during your undergraduate career at Berkeley. The requirement was instituted in 1991 to introduce students to the diverse cultures of the United States through a comparative framework. Courses are offered in more than fifty departments in many different disciplines at both the lower and upper division level.

The American Cultures requirement and courses constitute an approach that responds directly to the problem encountered in numerous disciplines of how better to present the diversity of American experience to the diversity of American students whom we now educate.

Faculty members from many departments teach American Cultures courses, but all courses have a common framework. The courses focus on themes or issues in United States history, society, or culture; address theoretical or analytical issues relevant to understanding race, culture, and ethnicity in American society; take substantial account of groups drawn from at least three of the following: African Americans, indigenous peoples of the United States, Asian Americans, Chicano/Latino Americans, and European Americans; and are integrative and comparative in that students study each group in the larger context of American society, history, or culture.

This is not an ethnic studies requirement, nor a Third World cultures requirement, nor an adjusted Western civilization requirement. These courses focus upon how the diversity of America's constituent cultural traditions have shaped and continue to shape American identity and experience.

Visit the Class Schedule (http://classes.berkeley.edu/) or the American Cultures website (http://americancultures.berkeley.edu/) for the specific American Cultures courses offered each semester. For a complete list of approved American Cultures courses at UC Berkeley and California Community Colleges, please see the American Cultures Subcommittee's website (https://academic-senate.berkeley.edu/committees/amcult/). See your academic adviser if you have questions about your responsibility to satisfy the American Cultures breadth requirement.

			First Year	
	Fall Units		**Spring Units**	
COMPSCI 61A		4	COMPSCI 61B	4
MATH 1A[1]		4	MATH 1B[6]	4
M.E.T. Special Topics[5]		2	EECS 16A	4
Natural Science Elective[2]		4	Reading & Composition Part A Course[7]	4
UGBA 10		3	ECON 1 (Breadth: Social and Behavioral Sciences)[3,4]	4
		17		20
			Second Year	
	Fall Units		**Spring Units**	
MATH 53		4	COMPSCI 61C	4
EECS 16B		4	COMPSCI 70	4
PHYSICS 7A or 5A[8]		3-4	PHYSICS 7B or 5B (Breadth: Physical Science)[8]	4-5
Breadth: Historical Studies/AC[3]		4	Breadth: Arts and Literature/AC[3]	4
Reading & Composition Part B Course[7]		4	STAT 20, 21, 131A, STAT 134, DATA C100, EECS 126, or C8[13]	4
		19-20		20-21
			Third Year	
	Fall Units		**Spring Units**	
Technical Electives[12]		4	Upper Division EECS[9,10]	4
Upper Division EECS[9,10]		4	Upper Division EECS[9,10]	4
UGBA 100		2	UGBA 101B	3
UGBA 101A		3	UGBA 102A	3
UGBA 105		3	UGBA 107 (Breadth: Philosophy and Values)[3]	3
		16		17
			Fourth Year	
	Fall Units		**Spring Units**	
Upper Division EECS[9,10]		4	UGBA 106	3
Upper Division EECS[9,10]		4	UGBA 102B	3
M.E.T. Special Topics[5]		2	UGBA Elective[11]	2
UGBA 103		4	UGBA Elective[11]	2
UGBA 104		3	Breadth: International Studies[3,4]	4
			COMPSCI 195 (Engineering Ethics)[14]	1
		17		15

Total Units: 141-143

1 Math 1A may be fulfilled with a score of 3, 4 or 5 on the AP Calculus AB or BC exam, a score of 5, 6 or 7 on the IB Higher Level Math exam, or a grade of A, B or C on the A-Level Math H1, H2, H3, Pure Math or Further Math exam.

[2] Students must complete one course from the following list: ASTRON 7A, ASTRON 7B, BIOLOGY 1A and BIOLOGY 1AL (must take both), BIOLOGY 1B, CHEM 1A and CHEM 1AL (must take both), CHEM 1B, CHEM 3A and CHEM 3AL (must take both), CHEM 3B and CHEM 3BL (must take both), CHEM 4A, CHEM 4B, MCELLBI 32 and MCELLBI 32L (must take both), PHYSICS 7C, or any upper division letter graded course of 3 units or more in astronomy, chemistry (except 100, 149, 192), earth and planetary science (except C100), integrative biology (except 101, C105, 191), molecular cell biology, physics (except 100), or plant & microbial biology. This requirement is listed in the freshman year curriculum, but many of the options would not be appropriate for a first year student. Complete this requirement in the semester when it is most appropriate to do so (i.e., take PHYSICS 7C after completing PHYSICS 7B). Your M.E.T. adviser can help guide your selection on this requirement. The Natural Science Elective may be fulfilled with a score of 4 or 5 on the AP Biology exam, a score of 3, 4 or 5 on the AP Chemistry exam, a score of 5, 6 or 7 on the IB Higher Level Biology exam or the IB Higher Level Chemistry exam, or a grade of A, B or C on the A-Level Biology exam or the A-Level Chemistry exam.

[3] ECON 1 (or Econ 2) and UGBA 107 will be accepted for the Social and Behavioral Sciences and Philosophy and Values breadth requirements, respectively, as exceptions for students in the M.E.T. Program. The Biological Science breadth requirement is waived for students in the M.E.T. Program. Some American Cultures courses will also fulfill the Arts & Literature or Historical Studies breadth requirement; use Requirements filters to search the Class Schedule (http://classes.berkeley.edu/) for courses that apply**.** See College Requirements (http://guide.berkeley.edu/archive/2020-21/undergraduate/degree-programs/electrical-engineering-computer-sciences-business-administration/#collegerequirementstext) for further restrictions on breadth courses.

[4] Econ 1 may be fulfilled with scores of 4 or 5 on both the AP Microeconomics exam and AP Macroeconomics exam. However, the Social and Behavioral Sciences Breadth requirement cannot be fulfilled with AP exam scores.

[5] M.E.T. Special Topics courses will count as upper division business units.

[6] Math 1B may be fulfilled with a score of 4 or 5 on the AP Calculus BC exam, a score of 5, 6 or 7 on the IB Higher Level Math exam, or a grade of A, B or C on the A-Level Math H2, H3, Pure Math or Further Math exam.

[7] Reading & Composition part A may be fulfilled with a score of 4 or 5 on the AP English Language and Composition exam or the AP English Literature and Composition exam, or a score of 5, 6 or 7 on the IB Higher Level English Literature exam or the IB Higher Level English Language and Literature exam. A 5 on the AP English Literature and Composition exam, or a score of 5 or higher on the IB Higher Level English Language and Literature exam will fulfill Reading & Composition part A and part B.

[8] Physics 7A may be fulfilled with a score of 5 on the AP Physics C Mechanics exam. Students may choose to take the Physics 7 series or the Physics 5 series. Students who fulfill Physics 7A with an AP exam score, transfer work, or at Berkeley may complete the physics requirement by taking either Physics 7B, or Physics 5B and 5BL. Students who take Physics 5A must take Physics 5B and 5BL to complete the physics requirement. Completion of Physics 5A and Physics 7B will not fulfill the physics requirement.

[9] Students must complete a minimum of 20 units of upper division EECS courses. One course must provide a major design experience, and be selected from the following list: ELENG C128, 130, 140, 143, 192; COMPSCI 160, 161 (if taken Spring 2019 or later), 162, 164, 169 (or 169A, W169A, 169L), 182 (or L182, W182), 184, 186 (or W186); EECS C106A, C106B, 149, 151 and 151LA (must take both), 151 and 151LB (must take both). See footnote 12 for the list of excluded courses. In addition to upper division EECS courses, the following courses can count toward the 20 units of upper division EECS: INFO 159, COMPSCI 270, COMPSCI C280, ELENG 229A, COMPSCI 294-84 (Interactive Device Design), and COMPSCI 294-129 (Designing, Visualizing and Understanding Deep Neural Networks). Note that no more than two graduate level courses (courses numbered 200-294) can be used to fulfill requirements for your B.S. degree. The 20 units of upper division EECS courses cannot include any course taken on a P/NP basis, COMPSCI H196A, COMPSCI H196B, ELENG H196A, or ELENG H196B.

[10] Students must complete a minimum of 40 units of Engineering coursework. Included in these units are CS 61A, 61B, 61C, EE 16A, 16B, and the required 20 units of upper division EECS. Technical Electives and the 40 units of Engineering courses cannot include: any course taken on a Pass/No Pass basis; courses numbered 24, 39, 84, H194, 196, H196, H196A, H196B; BIO ENG 100; COMP SCI 70, C79; DES INV courses (except DES INV 15, 22, 90E, 190E); ENGIN 125, 157AC, 180, 185, 187; IND ENG 95, 172, 185, 186, 190 series, 191, 192, 195; MEC ENG 191AC, 190K, and 191K.

[11] Students must complete a minimum of 38 units of upper division business coursework. See UGBA Elective course list under “Major Requirements” tab.

[12] Students must complete 4 units of Technical Elective(s) chosen from any lower or upper division course in the following departments: astronomy, chemistry, data science, earth and planetary science, integrative biology, mathematics, molecular cell biology, physics, plant & microbial biology, statistics or any engineering department (including EECS). The 4 units of technical elective(s) must be in addition to the natural science elective and the 20 units of required EECS upper division technical electives. If the 4 units of technical elective(s) are from an engineering department, the units can count toward the required 40 units of engineering coursework (see footnote 10). The 4 units of Technical Elective(s) cannot include: any course taken on a P/NP basis; any course that counts as M.E.T. Breadth; courses numbered 24, 32 (except MCELLBI 32 and MCELLBI 32L), 39, 84, H194, 196, H196, H196A, H196B; BIOENG 100; CHEM 100, 149, 192; COMPSCI 10, (if taken after COMPSCI 61x), C79; DESINV courses (except DESINV 15, 22, 23, 90E, 190E); ENGIN 125, 157AC, 180, 185, 187; EPS C100; INDENG 95, 185, 186, 190 series, 191, 192, 195; INTEGBI 35AC, 88, 101, C105, 191; MATH 55, C103, 151, 152, 153, 160; MECENG 190K, 191K; PHYSICS 100.

[13] Students can also take STAT C8 or COMPSCI C8 plus a connector course (STAT 88 OR UGBA 88) to fulfill the statistics prerequisite. Students taking Data C100 must also take a connector course (STAT 88 OR UGBA 88). Both courses must be taken to satisfy the requirement, although they do not need to be taken in the same semester. *Note: STAT courses will also fulfill the Technical Elective requirement.*

[14] To fulfill the Ethics Requirement take one course from the following: COMPSCI 195; HISTORY C184D, ISF 100D; NWMEDIA 151AC, STS C104D.

Electrical Engineering and Computer Sciences

Mission

1. Preparing graduates to pursue postgraduate education in electrical engineering, computer science, or related fields.
2. Preparing graduates for success in technical careers related to electrical and computer engineering, or computer science and engineering.
3. Preparing graduates to become leaders in fields related to electrical and computer engineering or computer science and engineering.

Learning Goals

ECE

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to configure, apply test conditions, and evaluate outcomes of experimental systems.
3. An ability to design systems, components, or processes that conform to given specifications and cost constraints.
4. An ability to work cooperatively, respectfully, creatively, and responsibly as a member of a team.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of the norms of expected behavior in engineering practice and their underlying ethical foundations.
7. An ability to communicate effectively by oral, written, and graphical means.
8. An awareness of global and societal concerns and their importance in developing engineering solutions.
9. An ability to independently acquire and apply required information, and an appreciation of the associated process of life-long learning.
10. A knowledge of contemporary issues.
11. An in-depth ability to use a combination of software, instrumentation, and experimental techniques practiced in circuits, physical electronics, communication, networks and systems, hardware, programming, and computer science theory.

CSE

1. An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline.
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. An ability to function effectively on teams to accomplish a common goal.
5. An understanding of professional, ethical, legal, security and social issues and responsibilities.
6. An ability to communicate effectively with a range of audiences.
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
8. Recognition of the need for and an ability to engage in continuing professional development.
9. An ability to use current techniques, skills, and tools necessary for computing practice.

Business Administration

Mission

Guided by the missions of the undergraduate program, and the University's mission of teaching, research, and service, the mission of the Haas School of Business is to develop leaders who redefine how we do business.

The Haas School of Business Undergraduate Program has developed student learning goals for the Business major that provide faculty and students with a shared understanding of the purpose of the major as well as what graduating seniors are expected to know or to be able to do at the end of their course of study as it relates to the school's mission.

The learning goals are assessed to determine whether students are achieving the outcomes. The assessment results are used to inform curricular design and other program offerings. All steps require input and participation from the business school community, particularly the faculty. The resulting learning goals, which have their origin in the core curriculum, were shaped over several months by faculty and administration and are listed below.

Learning Goals

1. Students will be skilled in critical thinking and decision making, as supported by the appropriate use of analytical and quantitative techniques.
2. Students will apply functional area concepts and theories appropriately.
3. Students will be effective communicators who can prepare and deliver oral and written presentations using appropriate technologies.
4. Students will be sensitive to the ethical requirements of business activities.
5. Students will tackle strategic and organizational challenges with innovative solutions.

For a visual representation of the relationship between the core curriculum and the expected outcomes, please see the Haas School of Business website (http://www.haas.berkeley.edu/Undergrad/learninggoals.html).

Major Maps help undergraduate students discover academic, co-curricular, and discovery opportunities at UC Berkeley based on intended major or field of interest. Developed by the Division of Undergraduate Education in collaboration with academic departments, these experience maps will help you:

- **Explore** your major and gain a better understanding of your field of study
- **Connect** with people and programs that inspire and sustain your creativity, drive, curiosity and success
- **Discover** opportunities for independent inquiry, enterprise, and creative expression
- **Engage** locally and globally to broaden your perspectives and change the world
- **Reflect** on your academic career and prepare for life after Berkeley

Use the major map below as a guide to planning your undergraduate journey and designing your own unique Berkeley experience.

View the Electrical Engineering and Computer Sciences Major Map PDF. **(**https://vcue.berkeley.edu/sites/default/files/electrical_engineering_and_computer_sciences.pdf**)**