

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/2019-20/search/?P=UGBA%20194>), UGBA 198 (<http://guide.berkeley.edu/archive/2019-20/search/?P=UGBA%20198>) and UGBA 199 (<http://guide.berkeley.edu/archive/2019-20/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).

¹The 40 units of engineering courses cannot include: any course taken on a P/NP basis; courses numbered 24, 32, 39, 84, H194, H196; BIOENG 100; COMPSCI 70, C79, 195, H195; 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 | Statistical Methods for Data Science | |
| or STAT 134 | Concepts of Probability | |
| or COMPSCI C | Principles & Techniques of Data Science | |
| or EECS 126 | Probability and Random Processes | |
| or COMPSCI C | Foundations of Data Science | |
| & STAT 88 | and Probability and Mathematical Statistics in Data Science | |

Reading & Composition Parts A and B 4-4

Natural Sciences

| | | |
|---------------|---|---|
| PHYSICS 7A | Physics for Scientists and Engineers | 8 |
| & PHYSICS 7B | and Physics for Scientists and Engineers | |
| or PHYSICS 5A | Introductory Mechanics and Relativity | |
| & PHYSICS 5B | and Introductory Electromagnetism, Waves, and | |
| & PHYSICS 5B | 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 | General Biology Lecture |
| & 1AL | and General Biology Laboratory |
| BIOLOGY 1B | General Biology Lecture and Laboratory [4] |
| CHEM 1A | General Chemistry |
| & 1AL | and General Chemistry Laboratory |
| CHEM 1B | General Chemistry [4] |
| CHEM 3A | Chemical Structure and Reactivity |
| & 3AL | and Organic Chemistry Laboratory |
| CHEM 3B | Chemical Structure and Reactivity |
| & 3BL | and Organic Chemistry Laboratory |
| CHEM 4A | General Chemistry and Quantitative Analysis [4] ¹ |

| | | |
|---|---|----------------|
| CHEM 4B | General Chemistry and Quantitative Analysis [4] | 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 61B Data Structures and Programming Methodology | |
| COMPSCI 61C | Great Ideas of Computer Architecture (Machine Structures) | 4 |
| | or COMPSCI 6 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). The 4 units of Technical Elective(s) cannot include: any course taken on a P/NP basis; courses numbered 24, 32, 39, 84, H194, H196; BIOENG 100; CHEM 100, 149, 192; COMPSCI C79, 195, H195; 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; INTEGRI 88, 101, C105, 191; MATH 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] | |
| COMPSCI 182 | Designing, Visualizing and Understanding Deep Neural Networks [4] | |
| COMPSCI 184 | Foundations of Computer Graphics [4] | |
| COMPSCI 186 | Introduction to Database Systems [4] | |
| | or COMPSCI 186 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 C194D Human Contexts and Ethics of Data - DATA/History/STS | |
| | or ISF 100D Introduction to Technology, Society, and Culture | |
| | 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 113 | Course Not Available | |
| UGBA 115 | Competitive Strategy [3] | |

| | |
|------------|---|
| UGBA 117 | Special Topics in Economic Analysis and Policy [1-4] |
| UGBA 118 | International Trade [3] |
| UGBA 119 | Leading Strategy Implementation [3] |
| 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 W125 | Course Not Available [3] |
| UGBA 126 | Auditing [4] |
| UGBA 127 | Special Topics in Accounting [1-4] |
| UGBA 128 | Strategic Cost Management [3] |
| UGBA 129 | Course Not Available [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 156AC | Course Not Available |
| 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 168B | Course Not Available [3] |
| UGBA 169 | Pricing [3] |
| UGBA 170 | Course Not Available |
| 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 190V | Course Not Available [2] | |
| 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 Corporate Social Responsibility [1-4] | |
| UGBA 193C | Curricular Practical Training for International Students [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, ELEN 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, ELEN H196A, or ELEN H196B.

University of California Requirements

Entry Level Writing (<http://guide.berkeley.edu/archive/2019-20/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/2019-20/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/2019-20/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/2019-20/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, microeconomics and macroeconomics at any level (Econ 2, Econ 3, Econ 100A/B, Econ 101A/B, IAS 106/107) cannot be used to fulfill breadth requirements.
- Courses offered by any Engineering department, with the exception of BIO ENG 100, COMPSCI C79, ENGIN 125, 157AC, MEC ENG 191K and 191AC, 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 or International Baccalaureate exams cannot be used to fulfill the breadth requirement. Some A-Level exams are accepted, but a maximum of two A-Level exams may be used to fulfill breadth requirements.
- Two of the breadth courses must be upper-division (courses numbered 100-196).
- 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 technical courses (of a minimum of 3 units each) required of the engineering major program of study in which the student is officially declared.

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.
- No more than 1/3 of a student's total UC Berkeley units may be taken Pass/No Pass, including physical education courses, Education Abroad Program, or courses taken on another UC campus.

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/2019-20/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/2019-20/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 ¹⁴ | | 4 | COMPSCI 61B | 4 |
| ECON 1 (Breadth: Social and Behavioral Sciences) ^{3,4} | | 4 | MATH 1B ⁶ | 4 |
| MATH 1A ¹ | | 4 | EECS 16A | 4 |
| M.E.T. Special Topics ⁵ | | 1-2 | UGBA 10 | 3 |

| Natural Science Elective ² | | 4 | Reading & Composition Part A Course ⁷ | 4 |
|--|------|-------|--|-------|
| | | 17-18 | | 19 |
| 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 ³ | | 4 | Breadth: Arts and Literature ³ | 3 |
| Reading & Composition Part B Course | | 4 | STAT 20, 21, 131A, 134, 100, EECS 126, or C8 ¹³ | 4 |
| | | 19-20 | | 19-20 |
| 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 |
| COMPSCI 195 (Engineering Ethics) ¹⁴ | | 1 | UGBA 106 | 3 |
| Upper Division EECS ^{9,10} | | 4 | UGBA 102B | 3 |
| Upper Division EECS ^{9,10} | | 4 | UGBA Elective ¹¹ | 2-3 |
| M.E.T. Special Topics ⁵ | | 1-2 | UGBA Elective ¹¹ | 2-3 |
| UGBA 103 | | 4 | Breadth: International Studies ^{3,4} | 3 |
| UGBA 104 | | 3 | | |
| | | 17-18 | | 13-15 |
| Total Units: 137-143 | | | | |

- 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 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. In order to satisfy the College of Engineering Humanities and Social Sciences requirement, two of the breadth courses must be upper division. 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 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 A: Literature (formerly English A1) or Higher Level English A: Language and Literature exam.
- 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, 182, 184, 186 (including 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, or 84; BIO ENG 100; COMP SCI 70, C79, 195, H195; 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; courses numbered 24, 32, 39, 84, H194, H196; BIOENG 100; CHEM 100, 149, 192; COMPSCI C79, 195, H195; 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 88, 101, C105, 191; MATH 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 100 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: CS 195; HISTORY C184D, ISF 100D; 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>).