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 open to freshmen during the UC application period (November 1 - 30). Freshman admission is limited to a maximum of 50 students. Current UC Berkeley sophomores in the College of Engineering majoring in one of the M.E.T. tracks may apply to M.E.T. via the Continuing Student Admissions process.

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 (AACS). 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.
3. Students must complete the College Requirements (p. 4) 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/search/?P=UGBA%20194), UGBA 198 (http://guide.berkeley.edu/search/?P=UGBA%20198) and UGBA 199 (http://guide.berkeley.edu/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. Two M.E.T. Special Topics courses are required. M.E.T. Special Topics courses will count as upper division business units.
10. 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. 4).

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 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, 183 series, 185, 187, 195 series; INDENG 95, 185, 186, 190 series, 191, 192, 195; MECENG 190K, 191K.

Lower Division Requirements

Business Prerequisites

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>UGBA 10</td>
<td>Principles of Business</td>
<td>3</td>
</tr>
<tr>
<td>ECON 1</td>
<td>Introduction to Economics</td>
<td>4</td>
</tr>
<tr>
<td>STAT 20</td>
<td>Introduction to Probability and Statistics</td>
<td>4-7</td>
</tr>
<tr>
<td>or STAT 21</td>
<td>Introductory Probability and Statistics</td>
<td></td>
</tr>
<tr>
<td>or STAT 134</td>
<td>Statistical Methods for Data Science</td>
<td></td>
</tr>
<tr>
<td>or STAT C131</td>
<td>Statistical Methods for Data Science</td>
<td></td>
</tr>
<tr>
<td>or STAT C140</td>
<td>Probability for Data Science</td>
<td></td>
</tr>
<tr>
<td>or DATA C100</td>
<td>Principles &amp; Techniques of Data Science</td>
<td></td>
</tr>
<tr>
<td>&amp; DATA C88S</td>
<td>land Course Not Available</td>
<td></td>
</tr>
<tr>
<td>or EECS 126</td>
<td>Probability and Random Processes</td>
<td></td>
</tr>
<tr>
<td>or COMPSCI C99A</td>
<td>Foundations of Data Science</td>
<td></td>
</tr>
<tr>
<td>&amp; DATA C88S</td>
<td>land Course Not Available</td>
<td></td>
</tr>
<tr>
<td>Reading &amp; Composition Parts A and B</td>
<td>4-4</td>
<td></td>
</tr>
</tbody>
</table>

Natural Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICS 7A</td>
<td>Physics for Scientists and Engineers</td>
<td>8</td>
</tr>
<tr>
<td>&amp; PHYSICS 7B</td>
<td>Physics for Scientists and Engineers</td>
<td></td>
</tr>
<tr>
<td>or PHYSICS 5A</td>
<td>Introduction Mechanics and Relativity</td>
<td></td>
</tr>
<tr>
<td>or PHYSICS 5B</td>
<td>Introduction Electromagnetism, Waves, and</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYSICS 5B</td>
<td>Optics</td>
<td></td>
</tr>
<tr>
<td>or PHYSICS 5B</td>
<td>Introduction to Experimental Physics I</td>
<td></td>
</tr>
</tbody>
</table>

Select one course from the following: 3-5

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTRON 7A</td>
<td>Introduction to Astrophysics [4]</td>
<td></td>
</tr>
<tr>
<td>ASTRON 7B</td>
<td>Introduction to Astrophysics [4]</td>
<td></td>
</tr>
<tr>
<td>ASTRON 7AB</td>
<td>Introduction to Astrophysics: From Planets to</td>
<td></td>
</tr>
<tr>
<td>&amp; 1AL</td>
<td>Cosmology [4]</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 1A</td>
<td>General Biology Lecture</td>
<td></td>
</tr>
</tbody>
</table>

& 1AL
Students must complete 4 units of Technical Elective(s) chosen from are intended for students majoring in 2

Total Lower Division Units

COMPSCI 61C
EECS 16B
EECS 151
EECS 161
EECS 160
EECS 169
EECS 168
EECS 167
EECS 166
EECS 165
EECS 164
EECS 163
EECS 162
EECS 161
EECS 160
EECS 159
EECS 158
EECS 157
EECS 156
EECS 155
EECS 154
EECS 153
EECS 152
EECS 151
EECS 150
EECS 149
EECS 148
EECS 147
EECS 146
EECS 145
EECS 144
EECS 143
EECS 142
EECS 141
EECS 139
EECS 138
EECS 137
EECS 136
EECS 135
EECS 134
EECS 133
EECS 132
EECS 131
EECS 129
EECS 128
EECS 127
EECS 126
EECS 125
EECS 124
EECS 123
EECS 122
EECS 121
EECS 119
EECS 118
EECS 117
EECS 116
EECS 115
EECS 114
EECS 113
EECS 112
EECS 111
EECS 110
EECS 109
EECS 108
EECS 107
EECS 106
EECS 105
EECS 104
EECS 103
EECS 102
EECS 101
EECS 100
EECS 99
EECS 98
EECS 97
EECS 96
EECS 95
EECS 94
EECS 93
EECS 92
EECS 91
EECS 90
EECS 89
EECS 88
EECS 87
EECS 86
EECS 85
EECS 84
EECS 83
EECS 82
EECS 81
EECS 80
EECS 79
EECS 78
EECS 77
EECS 76
EECS 75
EECS 74
EECS 73
EECS 72
EECS 71
EECS 70
EECS 69
EECS 68
EECS 67
EECS 66
EECS 65
EECS 64
EECS 63
EECS 62
EECS 61
EECS 60
EECS 59
EECS 58
EECS 57
EECS 56
EECS 55
EECS 54
EECS 53
EECS 52
EECS 51
EECS 50
EECS 49
EECS 48
EECS 47
EECS 46
EECS 45
EECS 44
EECS 43
EECS 42
EECS 41
EECS 40
EECS 39
EECS 38
EECS 37
EECS 36
EECS 35
EECS 34
EECS 33
EECS 32
EECS 31
EECS 30
EECS 29
EECS 28
EECS 27
EECS 26
EECS 25
EECS 24
EECS 23
EECS 22
EECS 21
EECS 20
EECS 19
EECS 18
EECS 17
EECS 16
EECS 15
EECS 14
EECS 13
EECS 12
EECS 11
EECS 10
EECS 9
EECS 8
EECS 7
EECS 6
EECS 5
EECS 4
EECS 3
EECS 2
EECS 1

Upper Division Requirements

Upper Division Electrical Engineering and Computer Sciences Requirements

Select a minimum of 20 units of upper division EECS courses. At least one of the courses must be a design elective. Select from the following design courses:

COMPSCI 160 User Interface Design and Development
COMPSCI 161 Computer Security
COMPSCI 162 Operating Systems and System Programming
COMPSCI 164 Programming Languages and Compilers
COMPSCI 169 Software Engineering
COMPSCI 178 Introduction to Software Engineering
COMPSCI Software Engineering Team Project
COMPSCI Software Engineering

COMPSCI 182 Designing, Visualizing and Understanding Deep Neural Networks

COMPSCI 184 Foundations of Computer Graphics
COMPSCI 186 Introduction to Database Systems
COMPSCI 194-Course Not Available

COMPSCI 285 Deep Reinforcement Learning, Decision Making, and Control

EECS 106A Introduction to Robotics
EECS 106B Robotic Manipulation and Interaction
EECS 149 Introduction to Embedded and Cyber Physical Systems
EECS 151 Introduction to Digital Design and Integrated Circuits
EECS 151A Introduction to Digital Design and Integrated Circuits Laboratory
EECS 151B Introduction to Digital Design and Integrated Circuits Laboratory

EL ENG 128 Feedback Control Systems
EL ENG 130 Integrated-Circuit Devices
EL ENG 140 Linear Integrated Circuits
EL ENG 143 Microfabrication Technology
EL ENG 192 Mechatronic Design Laboratory

Electrical Engineering and Computer Sciences Ethics Requirement

COMPSCI 195 Social Implications of Computer Technology
or HISTORY 186B An Contexts and Ethics of Data - DATA/History/STS
or ISF 100D Introduction to Technology, Society, and Culture
or ISF 100G Introduction to Science, Technology, and Society
or MEDIAST 106B Privacy in the Digital Age
or NWMEDIA 151B Transforming Tech: Issues and Interventions in STEM and Silicon Valley
Business Administration 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. M.E.T. Special Topics courses will count as upper division business courses.

M.E.T. Special Topics
Two courses are required.

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.

Upper Division Business Administration Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>UGBA 100</td>
<td>Business Communication</td>
<td>2</td>
</tr>
<tr>
<td>UGBA 101A</td>
<td>Microeconomic Analysis for Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 101B</td>
<td>Macroeconomic Analysis for Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 102A</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 102B</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 103</td>
<td>Introduction to Finance</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 104</td>
<td>Introduction to Business Analytics</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 105</td>
<td>Leading People</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 106</td>
<td>Marketing</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 107</td>
<td>The Social, Political, and Ethical Environment of Business</td>
<td>3</td>
</tr>
</tbody>
</table>

M.E.T. Special Topics
Two courses are required.

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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>UGBA 117</td>
<td>Special Topics in Economic Analysis and Policy</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 118</td>
<td>International Trade</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 120AA</td>
<td>Intermediate Financial Accounting 1</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 120AB</td>
<td>Intermediate Financial Accounting 2</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 120B</td>
<td>Advanced Financial Accounting</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 121</td>
<td>Federal Income Tax Accounting</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 122</td>
<td>Financial Information Analysis</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 123</td>
<td>Operating and Financial Reporting Issues in the Financial Services Industry</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 125</td>
<td>Ethics in Accounting</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 126</td>
<td>Auditing</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 127</td>
<td>Special Topics in Accounting</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 128</td>
<td>Strategic Cost Management</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 131</td>
<td>Corporate Finance and Financial Statement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 132</td>
<td>Financial Institutions and Markets</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 133</td>
<td>Investments</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 136F</td>
<td>Behavioral Finance</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 137</td>
<td>Special Topics in Finance</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 141</td>
<td>Production and Operations Management</td>
<td>2-3</td>
</tr>
<tr>
<td>UGBA 143</td>
<td>Game Theory and Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 147</td>
<td>Special Topics in Operations and Information Technology Management</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 151</td>
<td>Management of Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 152</td>
<td>Negotiation and Conflict Resolution</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 154</td>
<td>Power and Politics in Organizations</td>
<td>2,3</td>
</tr>
<tr>
<td>UGBA 155</td>
<td>Leadership</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 157</td>
<td>Special Topics in the Management of Organizations</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 160</td>
<td>Customer Insights</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 161</td>
<td>Market Research: Tools and Techniques for Data Collection and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 162</td>
<td>Brand Management and Strategy</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 162A</td>
<td>Product Branding and Branded Entertainment</td>
<td>2</td>
</tr>
<tr>
<td>UGBA 165</td>
<td>Advertising Strategy</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 167</td>
<td>Special Topics in Marketing</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 169</td>
<td>Pricing</td>
<td>3</td>
</tr>
<tr>
<td>UGBA C172</td>
<td>History of American Business</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 173</td>
<td>Competitive Strategy</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 174</td>
<td>Leading Strategy Implementation</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 175</td>
<td>Legal Aspects of Management</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 176</td>
<td>Innovations in Communications and Public Relations</td>
<td>2</td>
</tr>
<tr>
<td>UGBA 177</td>
<td>Special Topics in Business and Public Policy</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 178</td>
<td>Introduction to International Business</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 179</td>
<td>International Consulting for Small and Medium-Sized Enterprises</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 180</td>
<td>Introduction to Real Estate and Urban Land Economics</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 183</td>
<td>Introduction to Real Estate Finance</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 184</td>
<td>Urban and Real Estate Economics</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 187</td>
<td>Special Topics in Real Estate Economics and Finance</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 190S</td>
<td>Strategy for the Information Technology Firm</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 190T</td>
<td>Special Topics in Innovation and Design</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 191C</td>
<td>Communication for Leaders</td>
<td>2</td>
</tr>
<tr>
<td>UGBA 191I</td>
<td>Improvisational Leadership</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 191P</td>
<td>Leadership and Personal Development</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 192A</td>
<td>Leading Nonprofit and Social Enterprises</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 192B</td>
<td>Strategic Philanthropy</td>
<td>2</td>
</tr>
<tr>
<td>UGBA 192L</td>
<td>Applied Impact Evaluation</td>
<td>2</td>
</tr>
<tr>
<td>UGBA 192N</td>
<td>Topics in Social Sector Leadership</td>
<td>1-5</td>
</tr>
<tr>
<td>UGBA 192P</td>
<td>Sustainable Business Consulting Projects</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 192T</td>
<td>Topics in Responsible Business</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 193B</td>
<td>Energy &amp; Civilization</td>
<td>4</td>
</tr>
<tr>
<td>UGBA 193C</td>
<td>Practical Training</td>
<td>0.0</td>
</tr>
<tr>
<td>UGBA 193I</td>
<td>Business Abroad</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 194</td>
<td>Undergraduate Colloquium on Business Topics</td>
<td>1</td>
</tr>
<tr>
<td>UGBA 195A</td>
<td>Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 195P</td>
<td>Entrepreneurship: How to Successfully start a New Business</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 195S</td>
<td>Entrepreneurship To Address Global Poverty</td>
<td>3</td>
</tr>
<tr>
<td>UGBA 195T</td>
<td>Topics in Entrepreneurship</td>
<td>1-3</td>
</tr>
<tr>
<td>UGBA 196</td>
<td>Special Topics in Business Administration</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 198</td>
<td>Directed Study</td>
<td>1-4</td>
</tr>
<tr>
<td>UGBA 199</td>
<td>Supervised Independent Study and Research</td>
<td>1-4</td>
</tr>
</tbody>
</table>

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: EL ENG 229A, INFO 159, INFO 213, COMPSCI 270, COMPSCI 280, COMPSCI 285, COMPSCI 288, 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/undergraduate/colleges-schools/haas-business/entry-level-writing-requirement/](http://guide.berkeley.edu/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.


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/undergraduate/colleges-schools/haas-business/american-cultures-requirement/](http://guide.berkeley.edu/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/undergraduate/colleges-schools/engineering/reading-composition-requirement/](http://guide.berkeley.edu/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 (http://guide.berkeley.edu/undergraduate/education/
#earningyourdegreetext)

All students who will enter the University of California as freshmen must
demonstrate their command of the English language by satisfying the
Entry Level Writing Requirement (ELWR). The UC Entry Level Writing
Requirement website (https://admission.universityofcalifornia.edu/
elwr/) provides information on how to satisfy the requirement.

American History and American Institutions (http://guide.berkeley.edu/
undergraduate/education/#earningyourdegreetext)
The American History and Institutions (AH&I) requirements are based
on the principle that a US 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/undergraduate/education/
#earningyourdegreetext)
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.

<table>
<thead>
<tr>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPSCI 61A</td>
<td>4 COMPSCI 61B</td>
</tr>
<tr>
<td>MATH 1A¹</td>
<td>4 MATH 1B⁶</td>
</tr>
<tr>
<td>M.E.T. Introductory Topics⁵</td>
<td>2 EECS 16A</td>
</tr>
<tr>
<td>Natural Science Elective⁶</td>
<td>4 Reading &amp; Composition Part A Course⁷</td>
</tr>
<tr>
<td>UGBA 10</td>
<td>3 ECON 1 (Breadth: Social and Behavioral Sciences)³⁴</td>
</tr>
</tbody>
</table>

| Units | 17 |

17 20

Second Year

<table>
<thead>
<tr>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 53</td>
<td>4 COMPSCI 61C</td>
</tr>
<tr>
<td>EECS 16B</td>
<td>4 COMPSCI 70</td>
</tr>
</tbody>
</table>

| Units | 17 |

20-21

Third Year

<table>
<thead>
<tr>
<th>Technical Electives¹²</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Upper Division EECS⁸,¹⁰</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper Division EECS⁸,¹⁰</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Upper Division EECS⁸,¹⁰</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UGBA 100</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 UGBA 101B</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UGBA 101A</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 UGBA 102A</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M.E.T. Capstone Course⁶</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 UGBA 107</td>
<td>3 (Breadth: Philosophy and Values)³</td>
<td></td>
</tr>
</tbody>
</table>

| Units | 15 |

3 17

Fourth Year

<table>
<thead>
<tr>
<th>Upper Division EECS⁸,¹⁰</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 UGBA 106</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper Division EECS⁸,¹⁰</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 UGBA 102B</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UGBA 103</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 UGBA</td>
<td>2 Elective¹</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UGBA 105</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Breadth: International Studies⁴</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UGBA Elective¹¹</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 COMPSCI 195</td>
<td>1 (Engineering Ethics)¹⁵</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UGBA 104</th>
<th>Fall Units</th>
<th>Spring Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Units | 17 |

16

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, ASTRON 7AB, 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.

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 (p. 4) for further restrictions on breadth courses.

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.

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

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.

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 Language 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.

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.

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), 194-26, 285; 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: ELENG 229A, COMPSCI 270, COMPSCI C280, COMPSCI 285, COMPSCI 294-84 (Interactive Device Design), COMPSCI 294-129 (Designing, Visualizing and Understanding Deep Neural Networks), INFO 213 and INFO 159. 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.

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,

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 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.

**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 Management, Entrepreneurship, & Technology (M.E.T.) Major Map PDF. (https://ue.berkeley.edu/sites/default/files/management_entrepreneurship_and_technology.pdf)