

REQUIREMENTS

A TOTAL OF 97-101 UNITS ARE REQUIRED, DISTRIBUTED AS FOLLOWS:

Mathematics and Science (45 units minimum)

Mathematics (23 units minimum, including at least one class from each group):

Group A; Choose one:			
MATH 53	Ordinary Differential Equations with Linear Algebra	A,W,S,Sum	5
CME 102	Ordinary Differential Equations for Engineers	A,W,S,Sum	5
Group B; Choose one:			
CME 106	Introduction to Probability and Statistics for Engineers	W, Sum	4
STATS 60	Introduction to Statistical Methods: Pre-calculus	A,W,S	5
STATS 101	Data Science 101	(not offered AY20-21)	5
STATS 110	Statistical Methods in Engineering and the Physical Sciences	A	4-5

Science (20 units minimum, including all of the following):

Course	Title	Qtr	Units
PHYSICS 41	Mechanics (or PHYSICS 41E (5 units) by application or placement)	A,S	4
PHYSICS 43 or 45	Electricity & Magnetism <i>OR</i> Light & Heat	W,Sum A	4 4
CHEM 31B or CHEM 31M	Chemical Principles II or Chemical Principles: From Molecules to Solids (formerly 31X)	W,Sum A	5 5
CEE 70*	Environmental Science and Technology (same as ENGR 90)	W,Sum2021	3

* Can count as science or fundamental but not both

Technology in Society (one course required; must be on the SoE Approved list, Chap 4, Fig 4-3, the year taken)

Writing in the Major (WIM): One 3-5 unit course required. Choose either:

Choose a TiS course that also fulfills WIM:			
BIOE 131	Ethics in Bioengineering	S	3
COMM 120W	Digital Media in Society	S	4-5
OR a Skills Course:			
CEE /ENGR 102W	Technical and Professional Communication	S	3
CEE 100	Managing Sustainable Building Projects	A	4
CEE 136	Urban Development and Governance	W	3

Engineering Fundamentals and Depth Units: Of the 48-51 units required below, 40 units minimum must be School of Engineering coursework

Engineering Fundamentals (two courses minimum, pick two out of the following):

Course	Title	Qtr	Units
ENGR 50E*	Introduction to Materials Science, Energy Emphasis	Sum	4
ENGR 10	Intro to Engineering Analysis	Not Offered AY20-21	4
CS 106A	Programming Methodology	A, W, S, Sum	5
ENGR 21	Engineering of Systems	S	3
ENGR 60	Engineering Economics and Sustainability	A, S, Sum	3
A third Fundamentals Elective is optional but recommended; choose from above or from list in Figure 4-4 in Chap 4			3 to 5

* ENGR 50E can count as Engineering Fundamental or Engineering Depth Energy Elective, but not both

Engineering Depth (42 units minimum)

1) Required Courses (6-8 units):

Course	Title	Qtr	Units
CEE 63* <i>or</i>	Weather and Storms (req'd)* <i>or</i>	A	3
CEE 64* <i>or</i>	Air Pollution & Global Warming: History, Sci., Solutions (req'd)* <i>or</i>	Not offered AY20-21	3
CEE 172	Air Quality Management	S	3
CEE 107A <i>or</i>	Understanding Energy (required) <i>or</i>	A,S	4-5
CEE 107S	Understanding Energy: Essentials	Sum	3

*Can count as depth course or science but not both.

2) Skills Courses (*elective; 0-5 units may count towards 42 units*):

Course	Title	Qtr	Units
CEE /ENGR 102W	Technical and Professional Communication (WIM)	S	3
CEE 100	Managing Sustainable Building Projects (WIM)	A	4
CEE 136	Urban Development and Governance (WIM)	W	3
CEE 151A/B/C	Race in Science/Technology/Medicine	A/W/S	1/1/1
CEE 130R	Racial Equity in Energy	A	2-3

3) Elective Courses (*At least 29-36 units from the following, with at least 4 courses from each group*):

Group A: Atmosphere			
Course	Title	Qtr	Units
AA 100	Introduction to Aeronautics and Astronautics	A	3
CEE 63	Weather and Storms (if not counted under Req'd. Depth)	A	3
CEE 101B <i>or</i>	Mechanics of Fluids <i>or</i>	W,Sum 2021	4
ME 70	Introductory Fluids Engineering	W,S	3
CEE 161C	Natural Ventilation of Buildings	S	3
CEE 161I	Atmosphere, Ocean, & Climate Dynamics: Atmospheric Circulation	A	3
CEE 162I	Atmosphere, Ocean, & Climate Dynamics: Ocean Circulation	W	3
CEE 172	Air Quality Management (if not counted under Req'd. Depth)	S	3
CEE 178	Introduction to Human Exposure Analysis	Not offered AY20-21	3
EARTH 2**	Climate and Society	W	3
EARTHSYS 111**	Biology and Global Change	W	4
EARTHSYS 142**	Remote Sensing of Land	W	4
<i>or</i>	<i>or</i>		
EARTHSYS 144**	Fundamentals of Geographic Information Science (GIS)	A	3-4
EARTHSYS 188**	Social & Environmental Tradeoffs in Climate Decision	Not offered AY20-21	1-2
ME 133	Intermediate Fluid Mechanics	S	4

PHYSICS 199**	The Physics of Energy and Climate Change	S	3
Group B: Energy			
CEE 107R	Extreme Energy Efficiency	W	3
CEE 156	Building Systems	W	4
CEE 173S	Electricity Economics	W	3
CEE 177L	Smart Cities and Communities	Sum	3
CEE 176A	Energy Efficient Buildings	W	3
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	S	3-4
CEE 177S	Design for a Sustainable World	S	1-5
EARTHSYS 101**	Energy and the Environment	W	3
EARTHSYS 102**	Fundamentals of Renewable Power	S	3
EE 155	Green Electronics	Not offered AY20-21	4
ENERGY 104**	Sustainable Energy for 9 Billion	S	3
ENGR 50E	Introduction to Materials Science, Energy Emphasis (if not counted as an Eng.Fund.)	Sum 2021	4
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies	S	4
MATSCI 156	Solar Cells, Fuel Cells, & Batteries: Materials for the Energy Solution	S	3-4
OSPSANTG 29**	Sustainable Cities: Comparative Transportation Systems in Latin America	S	4-5
OSPSANTG 71**	Santiago: Urban Planning, Public Policy, and the Built Environment	Not offered AY20-21	5
POLISCI 73**	Energy Policy in California and the West	S	1

** Courses outside the School of Engineering do not count toward the 40-unit engineering minimum in Fundamentals and Depth categories but can count toward the 42-unit Depth total.