Electrical Engineering (EE)

MINIMUM 40 CU'S TOTAL

Course Planning Guide (Entered in Fall 15C or after)

1. MATHEMATICS AND NATURAL SCIENCE (MINIMUM 10 CU'S)

- ❑ MATH 104
- ❑ MATH 114
- ❑ MATH 240
- ❑ ESE 301
- ❑ M _____

(see guidance on back)

- ❑ PHYS 140 or PHYS 150 or PHYS 170 or PHYS 93 or MEAM 110
- ❑ PHYS 151 or PHYS 171 or (PHYS 94 + PHYS 51)
- ❑ CHEM 101 or BIOL 101 or BIOL 121

Natural Science Lab (one CU total).

- ❑ (PHYS 150/170 or PHYS 50 or MEAM 147)
- ❑ (PHYS 151/171 or PHYS 51), BIOL 101/121, CHEM 53 can each count 0.5 CU to this requirement)
- ❑ M or NS _____

LEGEND:

M Mathematics

NS Natural Science

E Engineering

SS Social Science

H Humanities

TBS Technology in Business & Society

F Free

See the SEAS UG Student Handbook for approved courses in these categories.

Any required course in any category may be replaced by a higher-level version of that course.

2. MAJOR SPECIFIC ENGINEERING (MINIMUM 16 CU'S)

CORE COURSES

- ❑ CIS 110 or ENGR 105
- ❑ ESE 111
- ❑ ESE 215
- ❑ ESE 218
- ❑ ESE 224

Advanced Computing

- ❑ CIS _____

Select from CIS120, CIS240

INTERMEDIATE OR ADVANCED COURSE

Any ESE Course

- ❑ ESE _____

ADVANCED COURSES

Take any combination of 4 CUs from:

Circuits and computer engineering
ESE 319, 350, 370, 419, 570, 578

Nanodevices and nanosystems

ESE 310, 321, 460, 509, 510, 521, 525,526, 529

Information and decision systems
ESE 303, 313, 325, 407, 500, 504, 505, 512, 527, 528, 531, 539, 590

- ❑ ESE _____
- ❑ ESE _____
- ❑ ESE _____
- ❑ ESE _____

DESIGN AND PROJECT COURSES

- ❑ ESE Lab_____

Select from ESE 290/291, ESE 319, ESE 350, MEAM 410, BE 470

(separate from courses used above)

- ❑ ESE 450
- ❑ ESE 451

3. PROFESSIONAL ELECTIVES[1] (NOMINALLY 4 CU'S)

- ❑ E _____
- ❑ M, NS, or E _____
- ❑ M, NS, or E _____
- ❑ M, NS, or E, or one of ESE400, EAS545, EAS595, Mgmt 235, Mgmt 237

EXPLANATORY NOTES:

[1] At most one freshman level E course outside the major may be used as a Professional Elective.

[2] Two of the courses in the SSH column must satisfy the depth and writing requirements. See the SEAS UG Student Handbook for details.

4. SOCIAL SCIENCE AND HUMANITIES[2] (MINIMUM 7 CU'S)

- ❑ SS _____
- ❑ SS _____
- ❑ H _____
- ❑ H _____
- ❑ SS or H _____
- ❑ SS, H, or TBS _____
- ❑ EAS203 _____

Depth Requirement
_____

Writing Requirement
_____

5. FREE ELECTIVES (3 CU'S)

- ❑ F _____
- ❑ F _____
- ❑ F _____

TERM	MATH & NAT SCI	ENGINEERING	PROFESSIONAL ELEC'S	SSH & FREE ELEC'S
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				
Sum, Yr _____				
Fall, Yr _____				
Spr, Yr _____				

STUDENT NAME: _____ SID: _____ EXP GRAD DATE: _____ **EMAIL:** _____

FACULTY ADVISOR NAME: _____ SIGNATURE: _____ **DATE SIGNED:** _____

UG CHAIR NAME: _____ SIGNATURE: _____ **DATE SIGNED:** _____

Recommended Course Selection by Area of Interest: The advanced course and lab selection is very flexible to allow students to craft a suitable program within the large body-of-knowledge that constitutes modern Electrical Engineering. We recommend students identify a focus area and use this flexibility to gain expertise in their area of interest. Following are recommended sets of courses for students with interests in particular areas.

Devices: How do we design, optimize, and manufacture the basic elements from which circuits, sensors, and actuators are constructed? ESE310, ESE321, ESE3xx-devices-lab, ESE521

Circuits: How do we engineer desired functionality (storage, signal transformation, sensing, actuation, logic, power) from collections of primitive devices? ESE319, ESE370, ESE350, ESE406, CIS240

Embedded Systems: How do we design software and hardware to interface with the physical world and integrate "smarts" into systems and products including vehicles, toys, robots, appliances, and buildings? ESE350, ESE505, CIS120, CIS240 (3), CIS441 (3)

Communications and Networking: How do we transmit data between machines (voice and data, wired and wireless, time and space switching)? ESE325, ESE407, ESE501, ESE575, ESE576, MATH312 (1)

RF Electronics: How do we engineer circuits, antennas and waveguides for high-frequency communications? ESE310, ESE319, ESE419, ESE 510, ESE578

Robotics: How do we designs and control autonomous agents that operate in the physical world? ESE210, ESE304, ESE505, ESE350, MATH312 (1), CIS240, MEAM101 (3), MEAM410

Math selection: we leave one math and one M/NS selection in column 1 flexible so that students can select the appropriate math courses suitable to their area of interest. Students interested in the information and decision systems area are strongly encourage to take linear algebra (MATH 312, ENM 205, or MATH 370) no later than sophomore year. MATH 370 may be preferable for students with a stronger interest in theory. Students interested in communications or machine learning should also consider analysis (MATH 360). Students interested in computing, embedded systems, and digital circuits should consider discrete math (CIS 160). Students interested in eletromagnetics, photonics, analog circuits, and mechanics should consider courses on partial differential equations (MATH 241, MATH425), ordinary differential equations (MATH 420), or complex analysis (MATH 410).