

# ELECTRICAL ENGINEERING

B.S. Degree Requirements  
125 Credits

## GENERAL REQUIREMENTS (58 – 63)

### COMMUNICATIONS: - (9)

WRTG 111X (3) \_\_\_\_\_  
WRTG 211X OR 213X (3) \_\_\_\_\_  
COJO 131X OR 141X (3) \_\_\_\_\_

### ARTS, HUMANITIES, SOCIAL SCIENCES, ETHICS: - (18 – 22)

Complete 6 courses from the list given in the catalog under Summary of Bachelor's Degree Requirements, in the following categories: (to access, go to:

<https://goo.gl/8W1S1u> or

<http://catalog.uaf.edu/bachelors/summary-of-bachelors-degree-reqs/>

and click on Bachelor of Science)

Arts (3) \_\_\_\_\_  
Humanities (3-5) \_\_\_\_\_  
Social Sciences (3) \_\_\_\_\_  
Social Sciences (3) \_\_\_\_\_  
Arts, Humanities or Social Sciences (3-5) \_\_\_\_\_  
Ethics (3) \_\_\_\_\_

### MATHEMATICS: - (15)

Math 251X (4) \_\_\_\_\_ Math 253X (4) \_\_\_\_\_  
Math 252X (4) \_\_\_\_\_ Math 302 (3) \_\_\_\_\_

### NATURAL SCIENCE: - (16)

Chem 105X (4) \_\_\_\_\_  
Phys 211X (4) \_\_\_\_\_  
Phys 212X (4) \_\_\_\_\_  
Chem 106X OR Phys 213X (4) \_\_\_\_\_

### LIBRARY INFORMATION & RESEARCH: - (0 – 1)

LS competency test \_\_\_\_\_ OR  
LS 101X (1) \_\_\_\_\_

COMPLETE 2 DESIGNATED (W) COURSES AND  
1 DESIGNATED (O) COURSE OR 2 COURSES  
DESIGNATED (O/2) AT THE UPPER DIVISION LEVEL:

\_\_\_\_\_ (W) AND \_\_\_\_\_ (W)  
\_\_\_\_\_ (O) OR  
\_\_\_\_\_ (O/2) AND \_\_\_\_\_ (O/2)

### UPPER DIVISION CREDITS: - (39)

Transfer Credits \_\_\_\_\_  
UAF Credits (24)\* \_\_\_\_\_  
TOTAL TO DATE: \_\_\_\_\_  
TO BE COMPLETED: \_\_\_\_\_

\*a minimum of 24 UAF credits  
(ELEE)

PLEASE NOTE: Grades of 'C-' or better are required for all courses.

## MAJOR REQUIREMENTS:

### A. Complete the following EE core: - (47)

EE 102 (3)	_____	EE 333 (4) (W)	_____
EE 203 (4)	_____	EE 354 (3)	_____
EE 243 (4)	_____	EE 444 (4)	_____
EE 253 (3)	_____	EE 451 (4)	_____
EE 301 (3)	_____	EE 461 (4)	_____
EE 303 (4)	_____	EE 471 (3)	_____
EE 311 (3)	_____		
EE 331 (1)	_____		

### B. Complete Senior Capstone Design: - (4)

EE 481 (1) (W, O) \_\_\_\_\_  
EE 482 (3) (W, O) \_\_\_\_\_

### C. Complete the following: - (7)

ES 100X (3) \_\_\_\_\_  
ES 100L (1) \_\_\_\_\_  
ES 201 (3) \_\_\_\_\_

D. Complete at least **9 300/400-level credits (3 courses)** of following approved EE electives. The following are recommended: - (9-12)

EE 334 (4) \_\_\_\_\_  
EE 412 (3) \_\_\_\_\_  
EE 404 (4) \_\_\_\_\_  
EE 406 (4) \_\_\_\_\_  
EE 408 (4) \_\_\_\_\_  
EE 443 (4) \_\_\_\_\_  
EE 464 (3) \_\_\_\_\_

Graduate **600-level EE credits** may also be used upon approval as EE electives.

E. Complete the Fundamentals of Engineering Exam: \_\_\_\_\_

Credits for core/general requirements:	58 – 63
Credits required for major:	67 – 70
Total credits required for degree	125

# BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

## Degree Plan (125 Credits)

### FIRST YEAR: FALL

WRTG 111X	Writing Across Contexts	3
Math 251X	Calculus I	4
ES 100X	Engineering AK-Intro to Engineering	3
ES 100L	Makerspace AK-Lab for Intro to Engr	1
Chem 105	General Chemistry I	4
	Arts, Hum, Soc Sci, Ethics* (1 of 6)	<u>3</u>
		<b>18</b>

### SECOND YEAR: FALL

Math 253X	Calculus III	4
Phys 211X	General Physics I	4
<b>EE 243</b>	<b>Digital Systems Design</b>	<b>4</b>
EE 203	Electric Circuits (Circuits I)	4
LS 101X	Library Info and Research	<u>0-1</u>
		<b>16-17</b>

### THIRD YEAR: FALL

<b>EE 303</b>	<b>Electric Power Systems and Machines</b>	<b>4</b>
EE 311	Applied Eng. Electromagnetics	3
EE 331	High Frequency Lab	1
EE 333	Electronic Devices	4
EE 354	Engineering Signal Analysis	<u>3</u>
		<b>15</b>

### FOURTH YEAR: FALL

<b>EE 451</b>	<b>Digital Signal Processing</b>	<b>4</b>
<b>EE 481</b>	<b>ECE Design I</b>	<b>1</b>
	Approved EE Elective	3-4
	Arts, Hum, Soc Sci, Ethics (3 of 6)	3
	Arts, Hum, Soc Sci, Ethics (4 of 6)	<u>3</u>
		<b>14-15</b>

### Notes:

- 1) EE 204 (4), EE 334 (4), EE 412/432, two ES electives (6 or 8), and Math elective (3) removed as core requirements.
- 2) EE 301 E&CE Math (3) added as core requirement.
- 3) EE 243 (previously EE 343) moved to fall of sophomore year; offered in same semester as BSCpE core requirement.
- 4) EE 353 (now EE 253 with EE 203; MATH 252; ES or CS 201 as prereqs) moved to spring of second year to follow in sequence with EE 203.
- 5) EE 303 title changed, and power systems content added.
- 6) EE 444 and EE 461 content revised and become core requirements for BSEE in previous concentration areas.
- 7) EE 443 offered every fall for BSCpE students but can also serve as an approved EE elective for BSEE students.
- 8) Senior Capstone Design I (1) and Senior Capstone Design II (3) format added in fall and spring of fourth year to replace previous one semester design elective format with same course sequence for all BSEE and BSCpE students.
- 9) EE 334, EE 412, EE 404, EE 406, EE 408, EE 443, and EE 464 become elective course not offered every year in the BSEE program.

10) Yellow shading means see notes with yellow shading.

11) Green shading means new course.

12) Gray shading means added or revised course.

### FIRST YEAR: SPRING

COJO 131X or 141X	Oral Communication	3
Math 252X	Calculus II	4
EE 102	Intro to Electrical & Computer Engr.	3
ES 201	Computer Techniques	3
Chem 106	General Chemistry II	<u>4</u>
		<b>17</b>

### SECOND YEAR: SPRING

Math 302	Differential Equations	3
Phys 212X	General Physics II	4
<b>EE 253</b>	<b>Circuit Theory (Circuits II)</b>	<b>3</b>
<b>EE 301</b>	<b>EE Math (Anlyt Methods for ECE)</b>	<b>3</b>
WRTG 211X/12X/13X/14X		<u>3</u>
		<b>16</b>

### THIRD YEAR: SPRING

<b>EE 444</b>	<b>Embedded Systems Design</b>	<b>4</b>
<b>EE 461</b>	<b>Communications Systems and Networks</b>	<b>4</b>
EE 471	Automatic Control	3
	Approved EE Elective	3-4
	Arts, Hum, Soc Sci, Ethics (2 of 6)	<u>3</u>
		<b>17-18</b>

### FOURTH YEAR: SPRING

<b>EE 482</b>	<b>ECE Design II</b>	<b>3</b>
	Approved EE Elective	3-4
	Arts, Hum, Soc Sci, Ethics (5 of 6)	3
	Arts, Hum, Soc Sci, Ethics (6 of 6)	3
	Take the Fundamentals of Engr. Exam	<u>    </u>
		<b>12-13</b>

Approved EE Electives (Offered on a rotating basis.)

EE 334	Electronic Circuit Design	4
<b>EE 404</b>	<b>Electric Power Systems Analysis</b>	<b>4</b>
<b>EE 406</b>	<b>Electric Power Prot. and Cont. Systems</b>	<b>4</b>
<b>EE 408</b>	<b>Power Electronics Design</b>	<b>4</b>
<b>EE 412</b>	<b>Electromagnetic Waves and Devices</b>	<b>3</b>
<b>EE 443</b>	<b>Computer Engr Analysis and Design</b>	<b>4</b>
<b>EE 464</b>	<b>Advanced Communication Systems</b>	<b>4</b>

Graduate level EE and upper level and graduate CS courses may be used as electives upon approval.

<b>EE 607</b>	<b>Electric Motor Drives</b>	<b>3</b>
EE 609	Ren. & Sus. Energy Systems	3
EE 646	Wireless Sensor Networks	3
EE 654	UAS Systems Design	3
EE 656	Aerospace Systems Design	3
EE 662	Digital Communications Theory	3
EE 663	Computational Electromagnetics	3
EE 671	Digital Control Systems	3