ELECTRICAL ENGINEERING (CONTROL & POWER) - BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Overview
The Bachelor of Science in Electrical Engineering (B.S. EE) program of the Klipsch School is accredited by the Engineering Accreditation Commission of ABET, Inc. This particular concentration in the B.S. EE program gives students the opportunity to explore more deeply the area of control and power systems.

Electrical Engineering Program Educational Objectives
Below are the program educational objectives (PEOs) that describe the expected accomplishments of graduate during their first few years after graduation.

1. Our graduates will obtain relevant, productive employment in the private sector, government and/or pursue an advanced degree.
2. Our graduates will be using their engineering foundation to innovate solutions to the problems of the real world.

Requirements (121 credits)
Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 121 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

Prefix     Title                          Credits
General Education
Area I: Communications
English Composition - Level 1
ENGL 1110G Composition I                      4
English Composition - Level 2 1
Oral Communication                             3
Area II: Mathematics
MATH 1511G Calculus and Analytic Geometry I 2   4
Area III/IV: Laboratory Sciences and Social/Behavioral Sciences 11
CHEM 1215G General Chemistry I Lecture and Laboratory for STEM Majors
PHYS 1310G & PHYS 1310L Calculus -Based Physics I and Calculus -Based Physics I Lab
Area IV: Social/Behavioral Sciences (3 credits) 1
Area V: Humanities                              3
Area VI: Creative and Fine Arts                 3
General Education Elective
MATH 1521G Calculus and Analytic Geometry II   4
Viewing A Wider World 3
Viewing a Wider World Electives (PHIL 323V strongly recommended)       6
Departmental/College Requirements

Program Specific Requirements
Mathematics and Natural Science
MATH 392 Introduction to Ordinary Differential Equations                     3
PHYS 1320G & PHYS 1320L Calculus -Based Physics II and Calculus -Based Physics II Lab
E E 200 Linear Algebra, Probability and Statistics Applications               4
E E 240 Multivariate and Vector Calculus Applications                         3

STEM
Choose two STEM Electives 4

Electrical and Computer Engineering
ENGR 100G Introduction to Engineering (or choose third STEM Elective) 2 3
E E 100 Introduction to Electrical and Computer Engineering               4
E E 112 Embedded Systems                                                   4
E E 212 Introduction to Computer Organization                              4
E E 230 Circuit Analysis and Introduction to Electronics                   4
E E 300 Cornerstone Design                                                  2
E E 317 Semiconductor Devices and Electronics I                             4
E E 320 Signals and Systems I                                               3
E E 325 Signals and Systems II                                              4
E E 333 AC Circuit Analysis and Introduction to Power Systems               3
E E 340 Fields and Waves                                                    4
E E 402 Capstone Design I                                                  3
or ENGR 401 Engineering Capstone I                                         3
E E 404 Capstone Design II                                                 3
or ENGR 402 Engineering Capstone II                                        3

E E Concentration Required Courses
E E 431 Power Systems II                                                    3
E E 493 Power Systems III                                                   3
E E Concentration Electives: Choose two courses from the following (one must be an E E course):
E E 432 Power Electronics                                                    4
E E 475 Automatic Control Systems                                           4
E E 476 Computer Control Systems                                            4
C S 343 Algorithm Design & Implementation                                   4
C S 483 Introduction to Robotics                                            4
CHME 361 Engineering Materials                                             4
M E 481 Alternative and Renewable Energy                                   4
M E 487 Mechatronics                                                        4
MATH 480 Matrix Theory and Applied Linear Algebra                          4

Object-Oriented Programming
Select one course from the following:                                       3-4
C S 151 C++ Programming                                                     4
C S 152 Java Programming                                                    4
C S 154 Python Programming                                                  4
C S 172 Computer Science I                                                  4
C S 271  Object Oriented Programming

Second Language: (not required)

Electives, to bring the total credits to 121  0

Total Credits  121-122

1  See the General Education section of the catalog for a full list of courses.
2  MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1511G Calculus and Analytic Geometry I first.
3  See the Viewing a Wider World section of the catalog for a full list of courses.
4  STEM Elective: Course at the 300 level or above from E E that is not used to satisfy any other E E program requirement or courses at the 300 level or above from A E, C E, CHME, I E, M E, ASTR, BIOL, CHEM, C S, MATH, PHYS and STAT. Excluded courses include VWW courses and those which are substantially equivalent to an E E course. Click to view a list of excluded STEM Electives.

A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1511G Intermediate Algebra and ENGL 1110G Rhetoric and Composition. The contents and order of this roadmap may vary depending on initial student placement in mathematics and english. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change.

Course | Title | Credits
--- | --- | ---
**First Year**
**Fall**
E E 100  Introduction to Electrical and Computer Engineering  4
ENGR 100G  Introduction to Engineering  3
ENGL 1110G  Composition I  4
MATH 1511G  Calculus and Analytic Geometry I  4

**Credits**  15

**Spring**
CHEM 1215G  General Chemistry I Lecture and Laboratory for STEM Majors  4
E E 112  Embedded Systems  4
MATH 1521G  Calculus and Analytic Geometry II  4
General Education Requirement (Area I, IV, V, VI or VWW)  2  3

**Credits**  15

**Second Year**

**Fall**
E E 212  Introduction to Computer Organization  4
E E 200  Linear Algebra, Probability and Statistics Applications  4
PHYS 1310G & PHYS 1310L  Calculus -Based Physics I and Calculus -Based Physics I Lab  4
General Education Requirement (Area I, IV, V, VI or VWW)  2  3

**Credits**  15

**Spring**
MATH 392  Introduction to Ordinary Differential Equations  3
E E 230  Circuit Analysis and Introduction to Electronics  4
E E 240  Multivariate and Vector Calculus Applications  3
PHYS 1320G & PHYS 1320L  Calculus -Based Physics II and Calculus -Based Physics II Lab  4
General Education Requirement (Area I, IV, V, VI or VWW)  2  3

**Third Year**

**Fall**
E E 300  Cornerstone Design  2
E E 320  Signals and Systems I  3
E E 333  AC Circuit Analysis and Introduction to Power Systems  3
E E 340  Fields and Waves  4
General Education Requirement (Area I, IV, V, VI or VWW)  2  3

**Credits**  15

**Spring**
E E 317  Semiconductor Devices and Electronics I  4
E E 325  Signals and Systems II  4
General Education Requirement (Area I, IV, V, VI or VWW)  2  3
General Education Requirement (Area I, IV, V, VI or VWW)  2  3

**Credits**  15

**Fourth Year**

**Fall**
E E 402  or ENGR 401  Capstone Design I or Engineering Capstone I  3
E E 431  or E E 493  Power Systems II or Power Systems III  3
Control & Power Elective  4  3
STEM Electives  5  6
General Education Requirement (Area I, IV, V, VI or VWW)  2  3

**Credits**  18

**Spring**
E E 431  or E E 493  Power Systems II or Power Systems III  3
E E 404  or ENGR 402  Capstone Design II or Engineering Capstone II  3
Choose one Object-Oriented Programming course from the following:  3-4
C S 151  C++ Programming
C S 152  Java Programming
C S 154  Python Programming II
C S 172  Computer Science I
C S 271  Object Oriented Programming
Control & Power Elective  4  3

**Credits**  12-13

**Total Credits**  121-122

1  MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1511G Calculus and Analytic Geometry I first.
2  See the General Education and Viewing a Wider World section of the catalog for a full list of courses.
3  Students must take both E E 431 Power Systems II and E E 493 Power Systems III.
One Control & Power Elective Courses must be from the E E Prefix.

Control & Power Elective Courses:

- E E 432 Power Electronics, E E 475 Automatic Control Systems, E E 476 Computer Control Systems
- C S 343 Algorithm Design & Implementation, C S 483 Introduction to Robotics
- CHME 361 Engineering Materials
- M E 481 Alternative and Renewable Energy, M E 487 Mechatronics
- MATH 480 Matrix Theory and Applied Linear Algebra

STEM Elective: Course at the 300 level or above from E E that is not used to satisfy any other E E program requirement or courses at the 300 level or above from A E, C E, CHME, I E, M E, ASTR, BIOL, CHEM, C S, MATH, PHYS and STAT. Excluded courses include VWW courses and those which are substantially equivalent to an E E course. Click to view a list of excluded STEM Electives.