

BACHELOR OF SCIENCE (B.S.) MAJOR IN ELECTRICAL ENGINEERING (NETWORKS AND COMMUNICATION SYSTEMS CONCENTRATION)

**Minimum required: 131
semester credit hours**

Admission Requirements

- The Bachelor of Science (B.S.) degree with a major in Electrical Engineering requires admission to the university and admission to the program. Information about the program admissions can be found at: <http://mycatalog.txstate.edu/undergraduate/science-engineering/ingram-school/#admissionstext>
- In order to declare Electrical Engineering as a major, students must meet one of the following prerequisites:
 - ACT Math score of 24 or higher,
 - SAT Math score of 550 (re-centered) or higher, or
 - credit for one of the following Math courses with a grade of "C" or higher:

| Code | Title | Hours |
|-----------|-------------------------------------------|-------|
| MATH 1315 | College Algebra | 3 |
| MATH 1317 | Plane Trigonometry | 3 |
| MATH 1319 | Mathematics for Business and Economics I | 3 |
| MATH 1329 | Mathematics for Business and Economics II | 3 |

3. Students who do not meet the above prerequisites may choose Pre-Electrical Engineering as their major. Pre-Electrical Engineering students who complete one of the following Math courses with a grade of "C" or higher may declare Electrical Engineering as their major:

| Code | Title | Hours |
|-----------|-------------------------------------------|-------|
| MATH 1315 | College Algebra | 3 |
| MATH 1317 | Plane Trigonometry | 3 |
| MATH 1319 | Mathematics for Business and Economics I | 3 |
| MATH 1329 | Mathematics for Business and Economics II | 3 |

General Requirements

- The general education core curriculum courses are listed in the degree plan below along with the statewide component code number. See the General Education Core Curriculum (<http://mycatalog.txstate.edu/undergraduate/general-education-core-curriculum/>) section of this catalog for the Texas State requirements and options in the core curriculum, including Honors courses.
- For transfer students, 30-31 semester credit hours may be transferred from a Texas public institution of higher education for the Electrical Engineering Field of Study and be applied to the Bachelor of Science degree with a major in Electrical Engineering at Texas State University. More information about the Field of Study (<http://mycatalog.txstate.edu/undergraduate/general-information/academic-policies/texas-legislative-requirements/>) is available in the

Academic Policies section of this catalog. The transferable Texas Common Course Number (TCCN) is listed below the Texas State University course number in the following course list.

| Code | Title | Hours |
|------------------------------|-----------------------------------|-----------|
| MATH 2471 | Calculus I | 4 |
| TCCN: MATH 2413 | | |
| MATH 2472 | Calculus II | 4 |
| TCCN: MATH 2414 | | |
| MATH 2393 | Calculus III | 3 |
| TCCN: MATH 2315 | | |
| MATH 3323 | Differential Equations | 3 |
| TCCN: MATH 2320 | | |
| PHYS 1430 | Mechanics | 4 |
| TCCN: PHYS 2425 or 2325/2125 | | |
| PHYS 2425 | Electricity and Magnetism | 4 |
| TCCN: PHYS 2426 or 2326/2126 | | |
| CS 1428 | Foundations of Computer Science I | 4 |
| TCCN: COSC 1420 or 1320 | | |
| EE 2400 | Circuits I | 4 |
| TCCN: ENGR 2405 or 2305/2105 | | |
| Total Hours | | 30 |

- Students must complete a minimum of 36 advanced hours (3000 or 4000 level courses).
- Nine semester credit hours must be writing-intensive (WI).
- Students entering Texas State with fewer than 16 credit hours completed after high school graduation will be required to take US 1100. All others will be exempt from taking this course.
- All students in the Electrical Engineering degree programs must complete Electrical Engineering (EE) course prerequisites with a grade of "C" or higher.
- If two years of the same language are taken in high school, then no additional language hours will be required for the degree. In the absence of such high school language, two semesters of the same modern language must be taken at the college level.
- The Electrical Engineering degree programs include all the courses required for an Applied Mathematics minor.

Course Requirements

| | | | Freshman |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------|----------|
| First Hours Semester | Second Hours Semester | Summer Hours | |
| CHEM 1335 (Life and Physical Sciences Component Code 030 [TCCN CHEM 1309 or 1409]) | 3 PHYS 1430 (Life and Physical Sciences Component Code 030 [TCCN PHYS 2425]) | 4 American History Component Code 060 | 3 |

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|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------|
| CHEM 1135 (TCCN CHEM 1109 [taken with TCCN 1309]) | 1 MATH 2472 (Component Area Option Code 090/092 [TCCN MATH 2414]) | 4 |
| MATH 2471 (Mathematics Component Code 020 [TCCN MATH 2413]) | 4 American History Component Code 060 | 3 |
| US 1100 | 1 Communica Component Code 010 | 3 |
| PHIL 1305 or 1320 (Language, Philosophy, and Culture Component Code 040 [TCCN PHIL 1301 or TCCN PHIL 2306]) | 3 | |
| ENG 1310 (Communica Component Code 010 [TCCN ENGL 1301]) | 3 | |
| | 15 | 14 |

| | | | 3 |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------|
| | | | Sophomore |
| First Hours | Second Hours | Summer Hours | |
| Semester | Semester | | |
| EE 2400 (TCCN ENGR 2405 or ENGR 2305/2105) | 4 ECO 2301 (Social and Behavioral Sciences Component Code 080 [TCCN ECON 1301 or ECON 2302]) | 3 POSI 2310 (Government/ Political Science Component Code 070 [TCCN GOVT 2306]) | 3 |
| MATH 3323 (TCCN MATH 2320) | 3 EE 2420 | 4 | |
| MATH 2393 (TCCN MATH 2315) | 3 ENGR 2301 (TCCN ENGR 2301) | 3 | |

| | | |
|-----------------------------------------------------------------------------------------|---------------------------------------|---|
| PHYS 2425 (Component Area Option Code 090/093 [TCCN PHYS 2426]) | 4 MATH 3377 | 3 |
| CS 1428 (TCCN COSC 1420 or 1320) | 4 PHYS 2435 (TCCN PHYS 2426) | 4 |

| | 18 | 17 | 3 |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-----------|---------------|
| | | | Junior |
| First Hours | Second Hours | | |
| Semester | Semester | | |
| EE 3400 | 4 EE 3340 | 3 | |
| EE 3420 | 4 EE 3350 | 3 | |
| ENGR 3315 | 3 EE 3355 | 3 | |
| IE 3320 | 3 EE 3370 | 3 | |
| POSI 2320 (Government/ Political Science Component Code 070 [TCCN GOVT 2305]) | 3 Creative Arts Component Code 050 [HUMA 1315] | 3 | |
| | 17 | 15 | |

| | | | Senior |
|-----------------------------|--------------------------------|-----------|---------------|
| First Hours | Second Hours | | |
| Semester | Semester | | |
| EE 4350 | 3 EE 4372 | 3 | |
| EE 4370 | 3 EE 4391 | 3 | |
| EE 4323 or 4377 | 3 EE Electives ¹ | 6 | |
| EE 4390 | 3 | | |
| EE Elective ¹ | 5 | | |
| | 17 | 12 | |

Total Hours: 131

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A minimum of eleven (11) hours of advanced Electrical Engineering electives chosen from the list below are required.

Advanced Electrical Engineering Electives

| Code | Title | Hours |
|-------------|-----------------------------------------------------|--------------|
| EE 3326 | Numerical and Scientific Data Analysis Using Python | 3 |
| EE 4321 | Digital Systems Design Using HDL | 3 |
| EE 4351 | Fundamentals of Electroceramics | 3 |
| EE 4353 | Fundamentals of Advanced Semiconductor Technology | 3 |
| EE 4354 | Flexible Electronics | 3 |

| | | |
|-----------|------------------------------------------------|---|
| EE 4355 | Analog and Mixed Signal Design | 3 |
| EE 4356 | Power Electronics | 3 |
| EE 4358 | Introduction to Microelectromechanical Systems | 3 |
| EE 4360 | Linear Control Systems | 3 |
| EE 4374 | Introduction to Wireless Communication | 3 |
| EE 4375 | Building a Smart Grid Architecture | 3 |
| EE 4376 | Introduction to Telecommunications | 3 |
| EE 4378 | Data Compression and Error Control Coding | 3 |
| ENGR 3190 | Cooperative Education | 1 |
| ENGR 3290 | Advanced Cooperative Education | 2 |
| ENGR 4395 | Independent Studies in Engineering | 3 |