# Electrical Systems Technology

Bachelor in Science (BS) Degree

Minimum Credits: 130.0
Contact Hours: 153.0

**Introduction** The bachelor's degree program is designed to train individuals to install, modify, maintain, troubleshoot, and perform functional test on electrical grid systems equipment for employment in the fields of electric distribution, transmission, and generation. This includes grounding grids, power transformers, circuit breakers, lightning arresters, switches, and various protective relay equipment including electronmechanical and microprocessor based hardware.

## General Education Courses

| Course | Title | Credits | Contact Hours |
|---|---|---|---|
| ENG 111 or ENG 120 | English Composition I or Applied Communications | 3.0 | 3.0 |
| ENG 112 or ENG 123 | English Composition II or Technical Communication | 3.0 | 3.0 |
| MTH 123 | Algebra & Analytic Trigonometry | 4.0 | 4.0 |
| ECN 231 | Economics (Micro) | 3.0 | 3.0 |
| PSY 101 | General Psychology | 3.0 | 3.0 |
| SPE 123 | Public Communication | 3.0 | 3.0 |
| CEM 111 or CEM 121 | General Chemistry or General and Inorganic Chemistry | 4.0 | 7.0 |
| PHY 221 | Physics | 5.0 | 7.0 |
| | General Education Credits/Contact Hours: | 28.0 | 33.0 |

## Core Program Courses

| Course | Title | Credits | Contact Hours |
|---|---|---|---|
| APP 100E | Electrical Studies for Trades[B] | 3.0 | 4.0 |
| APP 104E | AC/DC Fundamentals[B] | 3.0 | 4.0 |
| APP 111E | Motor Controls[B] | 3.0 | 4.0 |
| APP 114E | PLC Programming[B] | 3.0 | 4.0 |
| APP 122E | Digital Electronics[B] | 3.0 | 4.0 |
| BUS 390 | Utility Financing and Accounting[B] | 3.0 | 3.0 |
| BUS 391 | Utility Regulations[B] | 3.0 | 3.0 |
| EPT 230 | Poly-Phase Metering[B] | 3.0 | 4.0 |
| EST 301 | Power Systems[B] | 3.0 | 3.0 |
| EST 302 | Circuits[B] | 4.0 | 4.0 |
| EST 304 | Three Phase Power/Phasor Analysis[B] | 3.0 | 3.0 |
| EST 306 | Electric Power Generation[B] | 3.0 | 3.0 |
| EST 307 | Introduction to Computer Modeling Power Systems[B] | 3.0 | 4.0 |
| EST 308 | Distribution/Transmission Power[B] | 3.0 | 3.0 |
| EST 401 | Renewables[B] | 3.0 | 3.0 |
| EST 402 | SCADA (Supervisory Control and Data Acquisition)[B] | 3.0 | 4.0 |
| EST 403 | Protection[B] | 3.0 | 3.0 |
| EST 404 | Power Line Parameters[B] | 3.0 | 4.0 |
| EST 405 | Relaying[B] | 3.0 | 4.0 |
| EST 406 | The Grid[B] | 3.0 | 3.0 |
| EST 408 | Electrical Systems Capstone Course | 3.0 | 4.0 |
| UTT 300 | Utility Systems and Equipment | 7.0 | 8.0 |
| | Core Program Credits/Contact Hours: | 71.0 | 83.0 |

## Additional Program Courses

| | | | |
|---|---|---|---|
| BUS 121 | Introduction to Business | 3.0 | 3.0 |
| CNS 151 | Network Cabling | 3.0 | 4.0 |
| GEO 151 | Introduction to GIS | 1.5 | 2.0 |
| GEO 152 | Advanced GIS | 1.5 | 2.0 |
| IND 120 | Introduction to Computers & Networking | 3.0 | 4.0 |
| MTH 131 | Calculus I | 5.0 | 5.0 |
| MTH 221 | C++ Programming | 3.0 | 4.0 |
| PHY 222 | Physics | 5.0 | 7.0 |
| PLS 221 | American Government and Politics | 3.0 | 3.0 |
| PSY 241 | Social Psychology | 3.0 | 3.0 |
| | Additional Program Credits/Contact Hours: | 31.0 | 37.0 |
| | Minimum Program Credits/Contact Hours: | 130.0 | 153.0 |

# Electrical Systems Technology

Bachelor in Science (BS) Degree

Minimum Credits: 130.0
Contact Hours: 153.0

**Suggested Sequencing of Courses:**

| Year 1 (Fall Semester) 16.0 credits | Credits | Contact Hrs | Year 1 (Spring Semester) 17.0 credits | Credits | Contact Hrs |
|---|---|---|---|---|---|
| APP 100E Electrical Studies for Trades | 3.0 | 4.0 | APP 104E AC/DC Fundamentals | 3.0 | 4.0 |
| BUS 121 Introduction to Business | 3.0 | 3.0 | ECN 231 Economics (Micro) | 3.0 | 3.0 |
| ENG 111 or ENG 120 English Composition I or Applied Communication | 3.0 | 3.0 | ENG 112 or ENG 123 English Composition II or Technical Communication | 3.0 | 3.0 |
| MTH 123 Algebra & Analytic Trigonometry | 4.0 | 4.0 | MTH 131 Calculus I | 5.0 | 5.0 |
| PSY 101 General Psychology | 3.0 | 3.0 | SPE 123 Public Communication | 3.0 | 3.0 |
| TOTAL | 16.0 | 17.0 | TOTAL | 17.0 | 18.0 |
| **Year 2 (Fall Semester) 15.0 credits** | **Credits** | **Contact Hrs** | **Year 2 (Spring Semester) 17.0 credits** | **Credits** | **Contact Hrs** |
| APP 111E Motor Controls | 3.0 | 4.0 | APP 114E PLC Programming | 3.0 | 4.0 |
| APP 122E Digital Electronics | 3.0 | 4.0 | MTH 221 C++ Programming | 3.0 | 4.0 |
| CEM 111 or CEM 121 General Chemistry or General & Inorganic Chemistry | 4.0 | 7.0 | PHY 222 Physics | 5.0 | 7.0 |
| PHY 221 Physics | 5.0 | 7.0 | PLS 221 American Government & Politics | 3.0 | 3.0 |
| | | | PSY 241 Social Psychology | 3.0 | 3.0 |
| TOTAL | 15.0 | 22.0 | TOTAL | 17.0 | 21.0 |
| **Year 3 (Fall Semester) 16.0 credits** | **Credits** | **Contact Hrs** | **Year 3 (Spring Semester) 19.0 credits** | **Credits** | **Contact Hrs** |
| CNS 151 Network Cabling | 3.0 | 4.0 | EPT 230 Poly-Phase Metering | 3.0 | 4.0 |
| EST 302 Circuits | 3.0 | 3.0 | EST 301 Power Systems | 3.0 | 3.0 |
| EST 304 Three Phase Power/Phasor Analysis | 3.0 | 3.0 | EST 308 Distribution/Transmission Power | 3.0 | 3.0 |
| EST 306 Electric Power Generation | 3.0 | 3.0 | GEO 151 Introduction to GIS | 1.5 | 2.0 |
| IND 120 Intro to Computers & Networking | 4.0 | 4.0 | GEO 152 Advanced GIS | 1.5 | 2.0 |
| TOTAL | 16.0 | 18.0 | UTT 300 (UTT 201, 202, 204) | 7.0 | 8.0 |
| | | | TOTAL | 19.0 | 22.0 |
| **Year 4 (Fall Semester) 15.0 credits** | **Credits** | **Contact Hrs** | **Year 4 (Spring Semester) 15.0 credits** | **Credits** | **Contact Hrs** |
| BUS 390 Utility Financing & Accounting | 3.0 | 3.0 | BUS 391 Utility Regulations | 3.0 | 3.0 |
| EST 401 Renewables | 3.0 | 3.0 | EST 307 Intro to Comp Modeling Power Syst | 3.0 | 4.0 |
| EST 402 SCADA | 3.0 | 4.0 | EST 403 Protection | 3.0 | 4.0 |
| EST 404 Power Line Parameters | 3.0 | 4.0 | EST 405 Relaying | 3.0 | 3.0 |
| EST 406 The Grid | 3.0 | 3.0 | EST 408 Electrical Systems Capstone | 3.0 | 4.0 |
| TOTAL | 15.0 | 17.0 | TOTAL | 15.0 | 18.0 |

**Notes:**

A It is recommended that students intending to transfer work closely with their academic advisor and transfer destination.

B Included in occupational specialty: GPA of 2.0 or higher must be maintained in the area of occupational specialty.