# ELECTRICAL ENGINEERING (BS)

## Program Description

The BS in Electrical Engineering program provides students with a strong foundation to design and analyze electrical and electronics systems, including in the areas of power, energy, biomedical devices, and signal processing.

The BS in Electrical Engineering degree is accredited by the Engineering Accreditation Commission of ABET (http://www.abet.org/).

## Entering and Completing the Major

In order to earn a degree, you must complete at least one academic major. SPU encourages students to explore various academic paths, so if you change your mind about a major, or want to include an additional program, you are able to do so, as outlined below.

Note that the University encourages you to enter your chosen major(s) as soon as you have determined it and are eligible to join it, especially by the start of your junior year. Students who transfer as juniors and seniors should enter a major within their first two quarters at SPU.

- If this is your first quarter at SPU and you identified a major in this department as your first choice on your application for admission to the University, you have gained entry to the major. To change or add a major, follow these instructions (https://spu.atlassian.net/l/cp/a3th1keb/).
- If you are an SPU student with an SPU cumulative GPA of 2.0 or better, follow these instructions (https://spu.atlassian.net/l/cp/a3th1keb/) to enter a major in this department.
- The University requires a grade of C- or better in all classes that apply to a major; however, programs may require higher minimum grades in specific courses. You may repeat an SPU course only once for a higher grade.
- To advance in this program, meet with your faculty advisor regularly to discuss your grades, course progression, and other indicators of satisfactory academic progress. If your grades or other factors indicate that you may not be able to successfully complete the major or minor, your faculty advisor can work with you to explore options, which may include choosing a different major.
- You must complete the major requirements that are in effect in the SPU Undergraduate Catalog for the year you enter the major.

## Electrical Engineering (BS)

130 Credits Minimum, Including 45 Upper Division (UD)

| Code | Title | Credits |
| --- | --- | --- |
| **Mathematics** | | |
| MAT 1234 | Calculus I | 5 |
| MAT 1235 | Calculus II | 5 |
| MAT 1236 | Calculus III | 5 |
| MAT 3237 | Differential Equations | 3 |
| MAT 3238 | Vector Calculus | 3 |
| MAT 2401 | Linear Algebra | 3 |
| EGR 2200 | Engineering Probability and Statistics | 3 |
| or MAT 2200 | Engineering Probability and Statistics | |
| Section Credits Required | | 27 |
| **Science** | | |
| EE 3315 | Electricity and Magnetism I | 3 |
| or PHY 3315 | Electricity and Magnetism I | |
| PHY 1121 | Physics for Science and Engineering | 5 |
| PHY 1122 | Physics for Science and Engineering | 5 |
| PHY 1123 | Physics for Science and Engineering | 5 |
| Section Credits Required | | 18 |
| **Engineering: Computer Science** | | |
| CSC 1230 | Problem Solving and Programming | 5 |
| CSC 2430 | Data Structures I | 5 |
| Section Credits Required | | 10 |
| **Engineering** | | |
| EGR 3000 | Principles of Professional Practice | 1 |
| or GS 3001 | Internship and Job Search Strategies | |
| EGR 3810 | General Engineering Design | 5 |
| or EE 3730 | Engineering Design | |
| EE 4211 | Electrical Engineering Senior Design I | 3 |
| EGR 4812 | Engineering Senior Design II | 3 |
| or EE 4212 | Electrical Engineering Senior Design II | |
| EGR 4899 | Engineering Capstone and Senior Design | 3 |
| or EE 4899 | Electrical Engineering Capstone and Senior Design | |
| EGR 4941 | Engineering Professional Experience [3] | 1 |
| Section Credits Required | | 16 |
| **Electrical Engineering** | | |
| EE 1210 | Introduction to Logic System Design | 5 |
| EE 1502 | Electrical and Computer Engineering Fundamentals | 1 |
| EE 2726 | Electric Circuits I | 5 |
| EE 2727 | Electric Circuits II | 4 |
| or EE 2728 | Electric Circuits II - Expanded | |
| EE 3280 | Microcontroller System Design | 5 |
| EE 3410 | Signal and System Analysis | 5 |
| EE 3500 | Power Systems Fundamentals [4] | 5 |
| or EE 3501 | Power Systems Applications | |
| EE 3721 & 3721L | Electronics I - Analog Devices and Circuits and Electronics I - Analog Devices and Circuits Lab | 6 |
| EE 3722 & 3722L | Electronics II Analog Electronics and Electronics II Analog Electronics Lab | 6 |
| EE 3760 | Computer Organization and Assembly Language | 5 |
| Section Credits Required | | 47 |
| **Technical Electives** | | |
| Select 12 credits of the following: | | 12 |
| BUS 3682 | Social Venture Planning | |
| CPE 3350 | Operating Systems Programming | |
| CPE 4350 | Advanced Operating Systems | |
| CPE 4750 | Computer Networks | |
| CPE 4760 | Advanced Computer Architecture | |
| DAT/MAT 3380 | Introduction to Data Science | |
| DAT 4380 | Introduction to Machine Learning | |
| EE 3500 | Power Systems Fundamentals | |
| EE 3510 | Power Electronics Fundamentals | |

| | | |
|---|---|---|
| EE 3520 | Microgrids | |
| EE 4311 | Optics and Lasers | |
| EE 4450 | Control System Design | |
| EE 4770 | Fundamentals of Advanced Embedded Systems | |
| EE 4930 | Practicum in Electrical Engineering - Service | |
| EE 4950 | Topics in Electrical Engineering [2] | |
| EE 4960 | Senior Project | |
| EGR 3611 | Appropriate and Sustainable Engineering I: Alternative Energy Systems | |
| EGR 3800 | Biomedical Engineering I | |
| EGR 4615 | Engineering Project Management | |
| EGR 4930 | Practicum - Service [1] | |
| EGR 4931 | Engineering Practicum | |
| EGR 4960 | Senior Project | |
| EGR 4970 | Research | |
| PHY 3311 | Experimental Methods I | |
| PHY 3312 | Experimental Methods II | |
| PHY 3313 | Experimental Methods III | |
| PHY 4315 | Electricity and Magnetism II | |
| Section Credits Required | | 12 |
| **Total Credits** | | **130** |

**1**

Can apply a maximum of nine credits to meet the Technical Electives requirement from the combination of the following courses: EGR/EE 4930, EGR 4931,  EGR/EE 4960 and EGR 4970.

**2**

EE 4950 may be repeated for additional tech elective credit if the topic of the course is different.

**3**

A tech internship or professional experience must be approved before enrolling in EGR 4941 and must be completed before passing EGR 4941.

**4**

The second course may be used to meet the technical elective requirement.

# Additional Requirements and Information

- **Chemistry Proficiency Requirement:** You must score 75 percent or higher on SPU's Chemistry Placement Test or complete CHM 1310 Survey of General Chemistry or CHM 1211 General Chemistry.

# Suggested Course Sequences
## Four Year Plan Starting with Calculus

| Course | Title | Credits |
|---|---|---|
| **Freshman** | | |
| **Variable** | | |
| Take one of each of the following per quarter: | | |
| WRI 1000 | Academic Inquiry and Writing Seminar [1] | 5 |
| WRI 1100 | Disciplinary Research and Writing Seminar [1] | 5 |
| UFDN 1000 | The Christian Faith | 5 |
| | **Credits** | **15** |
| **Autumn** | | |
| MAT 1234 | Calculus I | 5 |
| UCOL 1000 | University Colloquium [2] | 1 |

| Course | Title | Credits |
|---|---|---|
| Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5 |
| | **Credits** | **11** |
| **Winter** | | |
| CSC 1230 | Problem Solving and Programming | 5 |
| EE 1502 | Electrical and Computer Engineering Fundamentals | 1 |
| MAT 1235 | Calculus II | 5 |
| | **Credits** | **11** |
| **Spring** | | |
| CSC 2430 | Data Structures I | 5 |
| MAT 1236 | Calculus III | 5 |
| | **Credits** | **10** |
| **Sophomore** | | |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) or CHM 1310 (if needed) | | 0-5 |
| GS 3001 [3] | | 1 |
| MAT 2401 | Linear Algebra | 3 |
| | **Credits** | **4-9** |
| **Autumn** | | |
| EE 1210 | Introduction to Logic System Design | 5 |
| EE 2726 | Electric Circuits I | 5 |
| MAT 3238 | Vector Calculus | 3 |
| PHY 1121 | Physics for Science and Engineering | 5 |
| | **Credits** | **18** |
| **Winter** | | |
| EE 2728 | Electric Circuits II - Expanded | 5 |
| MAT 3237 | Differential Equations | 3 |
| PHY 1122 | Physics for Science and Engineering | 5 |
| CHM 1310 | Survey of General Chemistry (if needed) | 5 |
| | **Credits** | **18** |
| **Spring** | | |
| EE 3721 & 3721L | Electronics I - Analog Devices and Circuits and Electronics I - Analog Devices and Circuits Lab [4] | 6 |
| PHY 1123 | Physics for Science and Engineering | 5 |
| | **Credits** | **11** |
| **Junior** | | |
| **Variable** | | |
| Technical Electives [5] | | 0-10 |
| MAT 2200 | Engineering Probability and Statistics [6] | 3 |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and/or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5-20 |
| | **Credits** | **8-33** |
| **Autumn** | | |
| EE 3722 & 3722L | Electronics II Analog Electronics and Electronics II Analog Electronics Lab [6] | 6 |
| EE/PHY 3315 | Electricity and Magnetism I [7] | 3 |
| GS 3001 | Internship and Job Search Strategies [8] | 1 |
| | **Credits** | **10** |
| **Winter** | | |
| EE 3760 | Computer Organization and Assembly Language | 5 |
| EE 3500 | Power Systems Fundamentals (alt years) | 5 |
| EE 3410 | Signal and System Analysis (alt years) | 5 |
| | **Credits** | **15** |
| **Spring** | | |
| EE 3280 | Microcontroller System Design | 5 |
| EE 3730 | Engineering Design | 5 |

| | | |
|---|---|---|
| EE 3721 & 3721L | Electronics I - Analog Devices and Circuits and Electronics I - Analog Devices and Circuits Lab [8] | 6 |
| | **Credits** | **16** |
| **Senior** | | |
| **Variable** | | |
| EGR 4941 | Engineering Professional Experience [9] | 1 |
| MAT 2200 | Engineering Probability and Statistics [8] | 3 |
| Technical Electives [5] | | 0-10 |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and/or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5-20 |
| | **Credits** | **9-34** |
| **Autumn** | | |
| EE 4211 | Electrical Engineering Senior Design I | 3 |
| EE/PHY 3315 | Electricity and Magnetism I [10] | 3 |
| EE 3722 & 3722L | Electronics II Analog Electronics and Electronics II Analog Electronics Lab [8] | 6 |
| | **Credits** | **12** |
| **Winter** | | |
| EE 4212 | Electrical Engineering Senior Design II | 3 |
| EE 3500 | Power Systems Fundamentals [10] | 5 |
| EE 3410 | Signal and System Analysis [10] | 5 |
| | **Credits** | **13** |
| **Spring** | | |
| EE 4899 | Electrical Engineering Capstone and Senior Design | 3 |
| | **Credits** | **3** |
| | **Total Credits** | **184-239** |

**1**

WRI 1000 Academic Inquiry and Writing Seminar must be taken before WRI 1100 Disciplinary Research and Writing Seminar. The WRI 1100 Disciplinary Research and Writing Seminar should be the section taught by an engineering faculty member.

**2**

UCOL 1000 University Colloquium should be the section taught by an engineering faculty member

**3**

May be taken Fall of junior year.

**4**

May be taken Spring of junior year.

**5**

Can be taken junior or senior year. See link at the bottom of this page for the list.

**6**

May be taken senior year.

**7**

May be taken senior year and may switch to alt years.

**8**

If not already completed.

**9**

Must be taken AFTER completing an approved internship or pursuing an approved certification.

**10**

If not already completed. Offered alt years.

## Four Year Plan Starting with Algebra or Trigonometry

| Course | Title | Credits |
|---|---|---|
| **Freshman** | | |
| **Variable** | | |
| Select one of the following each quarter: | | |
| WRI 1000 | Academic Inquiry and Writing Seminar [1] | 5 |
| WRI 1100 | Disciplinary Research and Writing Seminar [1] | 5 |
| UFDN 1000 | The Christian Faith | 5 |
| | **Credits** | **15** |
| **Autumn** | | |
| UCOL 1000 | University Colloquium [2] | 1 |
| MAT 1010 | College Algebra (if needed) | 3 |
| Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5 |
| | **Credits** | **9** |
| **Winter** | | |
| CSC 1230 | Problem Solving and Programming | 5 |
| EE 1502 | Electrical and Computer Engineering Fundamentals | 1 |
| MAT 1110 | Precalculus | 5 |
| | **Credits** | **11** |
| **Spring** | | |
| CSC 2430 | Data Structures I | 5 |
| MAT 1234 | Calculus I | 5 |
| | **Credits** | **10** |
| **Sophomore** | | |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) or CHM 1310 (if needed) | | 0-5 |
| GS 3001 | Internship and Job Search Strategies [3] | 1 |
| | **Credits** | **1-6** |
| **Autumn** | | |
| EE 1210 | Introduction to Logic System Design | 5 |
| PHY 1121 | Physics for Science and Engineering | 5 |
| MAT 1235 | Calculus II | 5 |
| | **Credits** | **15** |
| **Winter** | | |
| PHY 1122 | Physics for Science and Engineering | 5 |
| MAT 1236 | Calculus III | 5 |
| EE 3760 | Computer Organization and Assembly Language | 5 |
| | **Credits** | **15** |
| **Spring** | | |
| PHY 1123 | Physics for Science and Engineering | 5 |
| MAT 2401 | Linear Algebra | 3 |
| EE 3280 | Microcontroller System Design | 5 |
| | **Credits** | **13** |
| **Junior** | | |
| **Variable** | | |
| MAT 3238 | Vector Calculus | 3 |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and/or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5-20 |
| Technical Electives [4] | | 0-10 |
| MAT 2200 | Engineering Probability and Statistics [5] | 3 |
| CHM 1310 | Survey of General Chemistry (if needed) | 5 |
| | **Credits** | **16-41** |
| **Autumn** | | |
| EE 2726 | Electric Circuits I | 5 |

| | | |
|---|---|---|
| GS 3001 | Internship and Job Search Strategies [6] | 1 |
| | **Credits** | **6** |
| **Winter** | | |
| MAT 3237 | Differential Equations | 3 |
| EE 2728 | Electric Circuits II - Expanded | 5 |
| | **Credits** | **8** |
| **Spring** | | |
| EE 3280 | Microcontroller System Design [6] | 5 |
| EE 3730 | Engineering Design | 5 |
| EE 3721 & 3721L | Electronics I - Analog Devices and Circuits and Electronics I - Analog Devices and Circuits Lab | 6 |
| | **Credits** | **16** |
| **Senior** | | |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and/or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5-20 |
| Technical Electives | | 0-10 |
| EGR 4941 | Engineering Professional Experience [7] | 1 |
| MAT 2200 | Engineering Probability and Statistics [6] | 3 |
| | **Credits** | **9-34** |
| **Autumn** | | |
| EE 4211 | Electrical Engineering Senior Design I | 3 |
| EE/PHY 3315 | Electricity and Magnetism I | 3 |
| EE 3722 & 3722L | Electronics II Analog Electronics and Electronics II Analog Electronics Lab | 6 |
| | **Credits** | **12** |
| **Winter** | | |
| EE 4212 | Electrical Engineering Senior Design II | 3 |
| EE 3500 | Power Systems Fundamentals [8] | 5 |
| EE 3410 | Signal and System Analysis (offered alt years) | 5 |
| | **Credits** | **13** |
| **Spring** | | |
| EE 4899 | Electrical Engineering Capstone and Senior Design | 3 |
| | **Credits** | **3** |
| | **Total Credits** | **172-227** |

**1**

WRI 1000 Academic Inquiry and Writing Seminar must be taken before WRI 1100 Disciplinary Research and Writing Seminar. The WRI 1100 Disciplinary Research and Writing Seminar should be the section taught by an engineering faculty member.

**2**

UCOL 1000 University Colloquium should be the section taught by an engineering faculty member

**3**

Can also be completed in Fall of junior year.

**4**

Can be taken junior or senior year. See link at the bottom of this page for the list.

**5**

Or may be taken senior year.

**6**

If not already completed.

**7**

Must be taken AFTER completing an approved internship or pursuing an approved certification.

**8**

EE 3520 Microgrids if EE 3500 Power Systems Fundamentals not offered in senior year.

## Two Year Plan for a Transfer Student with or without a DTA

See below for the pre-requisite courses required to complete the degree in two years. Note also that without a DTA, it will depend on how many of the General Education Courses (Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/), Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/), etc (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/graduation-requirements-policies/). ) are completed before transferring as to whether or not the degree can be completed in two years.

Check the quarter, day and time in the current schedule as course offerings may change. Pay close attention to the pre-requisites of the courses.

| Course | Title | Credits |
|---|---|---|
| **First Year** | | |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed [1] | | |
| MAT 2200 | Engineering Probability and Statistics [2] | 3 |
| | **Credits** | **3** |
| **Autumn** | | |
| EE 1210 | Introduction to Logic System Design | 5 |
| EE 2502 or EE 2726 | Selected Circuits Topics for Transfer Students or Electric Circuits I | 2 |
| PHY 3315 | Electricity and Magnetism I | 3 |
| GS 3001 | Internship and Job Search Strategies | 1 |
| | **Credits** | **11** |
| **Winter** | | |
| CPE 3760 | Computer Organization and Assembly Language | 5 |
| EE 2728 | Electric Circuits II - Expanded | 5 |
| EE 3410 | Signal and System Analysis [3] | 5 |
| | **Credits** | **15** |
| **Spring** | | |
| EE 3280 | Microcontroller System Design | 5 |
| EE 3721 | Electronics I - Analog Devices and Circuits | 5 |
| EE 3721L | Electronics I - Analog Devices and Circuits Lab | 1 |
| EE 3730 | Engineering Design | 5 |
| | **Credits** | **16** |
| **Second Year** | | |
| **Variable** | | |
| Technical Electives [4] | | |
| MAT 2200 | Engineering Probability and Statistics [5] | 3 |
| EGR 4941 | Engineering Professional Experience [6] | 1 |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed [1] | | |
| | **Credits** | **4** |
| **Autumn** | | |
| EE 4211 | Electrical Engineering Senior Design I | 3 |

| | | |
|---|---|---|
| EE 3722 & 3722L | Electronics II Analog Electronics and Electronics II Analog Electronics Lab | 6 |
| | **Credits** | **9** |
| **Winter** | | |
| EE 4212 | Electrical Engineering Senior Design II | 3 |
| EE 3410 | Signal and System Analysis [7] | 5 |
| EE 3500 | Power Systems Fundamentals [8] | 5 |
| | **Credits** | **13** |
| **Spring** | | |
| EE 4899 | Electrical Engineering Capstone and Senior Design | 3 |
| | **Credits** | **3** |
| | **Total Credits** | **74** |

**1**

Spread between first and second year.

**2**

May be taken the first or second year.

**3**

Offered alt years.

**4**

Pay attention to pre-reqs. Spread between first and second year. See link at the bottom of this page for the list.

**5**

If not already completed.

**6**

Completed approved internship or certification is a required pre-req.

**7**

If not already completed. Offered alt years.

**8**

EE 3520 Microgrids if EE 3500 Power Systems Fundamentals not offered and graduating this year.

## Prerequisites for the Two Year Plan

The following courses must be completed before coming to SPU in order to finish at SPU in two years.

| Code | Title | Credits |
|---|---|---|
| **Calculus Equivalent to SPU's** | | |
| MAT 1234 | Calculus I | |
| MAT 1235 | Calculus II | |
| MAT 1236 | Calculus III | |
| **Two Quarters of Programming in Same Language [1]** | | |
| Prog. I | | |
| Prog II Data Structures | | |
| **A Circuits I Class with Lab [2]** | | |
| **Additional Math Equivalents to SPU's** | | |
| MAT 2401 | Linear Algebra | |
| MAT 3237 | Differential Equations | |
| MAT 3238 | Vector Calculus | |
| **Physics Equivalent to SPU's** | | |
| PHY 1121 | Physics for Science and Engineering | |
| PHY 1122 | Physics for Science and Engineering | |
| PHY 1123 | Physics for Science and Engineering | |

**Chemistry Equivalent to SPU's**

| | | |
|---|---|---|
| CHM 1310 | Survey of General Chemistry (or a similar class) | |

**1**

The second must include data structures concepts.

**2**

Or, instead, take EE 2502 Selected Circuits Topics for Transfer Students or EE 2726 Electric Circuits I at SPU in the Fall.

## Four Year Plan including Junior Fall Study Abroad

| Course | Title | Credits |
|---|---|---|
| **Freshman** | | |
| **Variable** | | |
| Select one of the following each quarter: | | |
| WRI 1000 | Academic Inquiry and Writing Seminar [1] | 5 |
| WRI 1100 | Disciplinary Research and Writing Seminar [1] | 5 |
| UFDN 1000 | The Christian Faith | 5 |
| | **Credits** | **15** |
| **Autumn** | | |
| MAT 1234 | Calculus I | 5 |
| UCOL 1000 | University Colloquium [2] | 1 |
| Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5 |
| | **Credits** | **11** |
| **Winter** | | |
| CSC 1230 | Problem Solving and Programming | 5 |
| EE 1502 | Electrical and Computer Engineering Fundamentals | 1 |
| MAT 1235 | Calculus II | 5 |
| | **Credits** | **11** |
| **Spring** | | |
| CSC 2430 | Data Structures I | 5 |
| MAT 1236 | Calculus III | 5 |
| | **Credits** | **10** |
| **Sophomore** | | |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) or CHM 1310 (if needed) | | 0-5 |
| GS 3001 | Internship and Job Search Strategies | 1 |
| MAT 2401 | Linear Algebra | 3 |
| | **Credits** | **4-9** |
| **Autumn** | | |
| EE 1210 | Introduction to Logic System Design | 5 |
| EE 2726 | Electric Circuits I | 5 |
| MAT 3238 | Vector Calculus | 3 |
| PHY 1121 | Physics for Science and Engineering | 5 |
| | **Credits** | **18** |
| **Winter** | | |
| EE 2728 | Electric Circuits II - Expanded | 5 |
| MAT 3237 | Differential Equations | 3 |
| PHY 1122 | Physics for Science and Engineering | 5 |
| | **Credits** | **13** |
| **Spring** | | |
| EE 3721 & 3721L | Electronics I - Analog Devices and Circuits and Electronics I - Analog Devices and Circuits Lab [3] | 6 |
| PHY 1123 | Physics for Science and Engineering | 5 |
| | **Credits** | **11** |

| Junior | | |
| --- | --- | --- |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and/or Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) | | 5-20 |
| Technical Electives [4] | | 0-12 |
| MAT 2200 | Engineering Probability and Statistics [5] | 3 |
| | **Credits** | **8-35** |
| **Autumn** | | |
| Study Abroad Quarter. Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) , Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) , and/or Cultural Understanding and Engagement (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/cue-requirement/) | | 15 |
| | **Credits** | **15** |
| **Winter** | | |
| EE 3760 | Computer Organization and Assembly Language | 5 |
| EE 3500 | Power Systems Fundamentals (alt years) | 5 |
| EE 3410 | Signal and System Analysis (alt years) | 5 |
| | **Credits** | **15** |
| **Spring** | | |
| EE 3280 | Microcontroller System Design | 5 |
| EE 3730 | Engineering Design | 5 |
| EE 3721 & 3721L | Electronics I - Analog Devices and Circuits and Electronics I - Analog Devices and Circuits Lab [6] | 6 |
| | **Credits** | **16** |
| Senior | | |
| **Variable** | | |
| Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) , Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) , and/or Cultural Understanding and Engagement (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/cue-requirement/) | | 5-20 |
| Technical Electives [4] | | 0-12 |
| EGR 4941 | Engineering Professional Experience [7] | 1 |
| MAT 2200 | Engineering Probability and Statistics [6] | 3 |
| | **Credits** | **9-36** |
| **Autumn** | | |
| EE 4211 | Electrical Engineering Senior Design I | 3 |
| EE/PHY 3315 | Electricity and Magnetism I | 3 |
| EE 3722 & 3722L | Electronics II Analog Electronics and Electronics II Analog Electronics Lab | 6 |
| | **Credits** | **12** |
| **Winter** | | |
| EE 4212 | Electrical Engineering Senior Design II | 3 |
| EE 3500 | Power Systems Fundamentals [8] | 5 |
| EE 3410 | Signal and System Analysis [8] | 5 |
| | **Credits** | **13** |
| **Spring** | | |
| EE 4899 | Electrical Engineering Capstone and Senior Design | 3 |
| | **Credits** | **3** |
| | **Total Credits** | **184-243** |

**1**

WRI 1000 Academic Inquiry and Writing Seminar must be taken before WRI 1100 Disciplinary Research and Writing Seminar. The WRI 1100 Disciplinary Research and Writing Seminar should be the section taught by an engineering faculty member.

**2**

UCOL 1000 University Colloquium should be the section taught by an engineering faculty member

**3**

May be taken Spring of junior year.

**4**

Spread between junior and senior years. See the link at the bottom of the page for this list.

**5**

Or may be taken senior year.

**6**

If not already completed.

**7**

Must be taken AFTER completing an approved internship or pursuing an approved certification.

**8**

If not already completed. Offered alt years.

## Technical Electives List

See the Requirements (p. 1) tab for a complete list of technical electives.