# BACHELOR OF ENGINEERING IN ELECTRICAL ENGINEERING, TRADITIONAL TRACK

## Summary for Traditional Track

| COURSE | TITLE | S.H. |
|---|---|---|
| Elec & Comp Engin | | 53 |
| Science | | 12 |
| Engineering [1] | | 11 |
| Mathematics/Computer Science [1] | | 21 |
| Writing and Speech [1] | | 9 |
| General Education Courses [1] | | 18 |
| **Total Semester Hours** | | **124** |

[1] See Curriculum section for courses in these areas that are common to the three options.

| COURSE | TITLE | S.H. |
|---|---|---|
| **FIRST YEAR REQUIREMENT -STUDENT SUCCESS** | | |
| YSU 1500 | Success Seminar | 1-2 |
| or SS 1500 | Strong Start Success Seminar | |
| or HONR 1500 | Intro to Honors | |
| **General Education Requirements** | | |
| ENGL 1550 | Writing 1 | 3-4 |
| or ENGL 1549 | Writing 1 with Support | |
| ENGL 1551 | Writing 2 | 3 |
| CMST 1545 | Communication Foundations | 3 |
| CHEM 1515 & 1515L | General Chemistry 1 and General Chemistry 1 Laboratory Lecture is 4 sh lab is 0 sh | 4 |
| PHYS 2610 & 2610L | General Physics 1 and General Physics Laboratory 1 Lecture is 4 sh lab is 1 sh | 5 |
| PHIL 2626 | Engineering Ethics | 3 |
| Arts and Humanities | | 3 |
| ECON 2610 | Principles 1: Microeconomics | 3 |
| Social Science | | 3 |
| Social and Personal Awareness | | 6 |
| **Major Requirements** | | |
| ECEN 1521 & 1521L | Digital Circuits and Digital Circuits Laboratory Lecture is 3 sh lab is 1 sh | 4 |
| ECEN 2611 | Instrumentation and Computation Lab 1 | 1 |
| ECEN 2612 | Instrumentation and Computation Lab 2 | 1 |
| ECEN 2632 | Basic Circuit Theory 1 | 3 |
| ECEN 2633 | Basic Circuit Theory 2 | 3 |
| ECEN 3710 | Signals and Systems | 3 |
| ECEN 3711 | Intermediate Laboratory 1 | 1 |
| ECEN 3712 | Intermediate Laboratory 2 | 1 |
| ECEN 3733 | Digital Circuit Design | 3 |
| ECEN 3741 | Electromagnetic Fields 1 | 3 |
| ECEN 3742 | Electromagnetic Fields 2 | 3 |
| ECEN 3771 | Digital and Analog Circuits 1 | 3 |
| ECEN 3772 | Digital and Analog Circuits 2 | 3 |
| ECEN 4803 & 4803L | Linear Control Systems and Linear Control Systems Laboratory | 4 |
| ECEN 4811 | Senior Laboratory | 1 |
| ECEN 4844 | Electromagnetic Energy Conversion | 3 |
| ECEN 4899 | Senior Design Project | 4 |
| ENGR 1500 | Engineering Orientation | 1 |
| ENGR 1550 | Engineering Concepts | 2 |
| ENGR 1560 | Engineering Computing | 2 |
| MECH 2620 | Statics and Dynamics | 3 |
| ISEN 3710 | Engineering Statistics | 3 |
| PHYS 3705 | Thermodynamics and Classical Statistical Dynamics | 3 |
| CSIS 2605 | Fundamentals of Programming and Problem- Solving 2 | 3 |
| **ECEN Electives** | | |
| Select 9 s.h. of ECEN Electives ECEN 2600 and above | | 9 |
| **Mathematics Minor -one course counts toward Gen Ed** | | |
| MATH 1571 | Calculus 1 | 4 |
| MATH 1572 | Calculus 2 | 4 |
| MATH 2673 | Calculus 3 | 4 |
| MATH 3705 | Differential Equations | 3 |
| MATH 3718 | Linear Algebra and Discrete Mathematics for Engineers | 3 |
| **Total Semester Hours** | | **125-127** |

Course List

**Year 1**

| **Fall** | | **S.H.** |
|---|---|---|
| MATH 1571 | Calculus 1 | 4 |
| STEM 1520 | STEM First Year Orientation | 2 |
| ENGR 1500 | Engineering Orientation | 1 |
| ENGR 1550 | Engineering Concepts | 2 |
| CHEM 1515 & 1515L | General Chemistry 1 and General Chemistry 1 Laboratory | 4 |
| ENGL 1550 or ENGL 1549 | Writing 1 or Writing 1 with Support | 3-4 |
| | **Semester Hours** | **16-17** |
| **Spring** | | |
| MATH 1572 | Calculus 2 | 4 |
| ENGR 1560 | Engineering Computing | 2 |
| ECEN 1521 & 1521L | Digital Circuits and Digital Circuits Laboratory | 4 |
| ENGL 1551 | Writing 2 | 3 |
| CMST 1545 | Communication Foundations | 3 |
| | **Semester Hours** | **16** |

**Year 2**

| **Fall** | | |
|---|---|---|
| MATH 2673 | Calculus 3 | 4 |
| ECEN 2632 | Basic Circuit Theory 1 | 3 |
| ECEN 2611 | Instrumentation and Computation Lab 1 | 1 |
| PHYS 2610 & 2610L | General Physics 1 and General Physics Laboratory 1 | 5 |
| General Education Requirement | | 3 |
| | **Semester Hours** | **16** |
| **Spring** | | |
| MATH 3705 | Differential Equations | 3 |
| MATH 3718 | Linear Algebra and Discrete Mathematics for Engineers | 3 |
| ECEN 2633 | Basic Circuit Theory 2 | 3 |
| ECEN 2612 | Instrumentation and Computation Lab 2 | 1 |
| MECH 2620 | Statics and Dynamics | 3 |

| | | |
|---|---|---|
| CSIS 2605 | Fundamentals of Programming and Problem-Solving 2 | 3 |
| | **Semester Hours** | **16** |
| **Year 3** | | |
| **Fall** | | |
| ECEN 3711 | Intermediate Laboratory 1 | 1 |
| ECEN 3733 | Digital Circuit Design | 3 |
| ECEN 3741 | Electromagnetic Fields 1 | 3 |
| ECEN 3771 | Digital and Analog Circuits 1 | 3 |
| ISEN 3710 | Engineering Statistics | 3 |
| PHIL 2626 | Engineering Ethics | 3 |
| | **Semester Hours** | **16** |
| **Spring** | | |
| ECEN 3712 | Intermediate Laboratory 2 | 1 |
| ECEN 3710 | Signals and Systems | 3 |
| ECEN 3742 | Electromagnetic Fields 2 | 3 |
| ECEN 3772 | Digital and Analog Circuits 2 | 3 |
| ECEN 4844 | Electromagnetic Energy Conversion | 3 |
| ECON 2610 | Principles 1: Microeconomics | 3 |
| | **Semester Hours** | **16** |
| **Year 4** | | |
| **Fall** | | |
| ECEN 4803 & 4803L | Linear Control Systems and Linear Control Systems Laboratory | 4 |
| ECEN 4811 | Senior Laboratory | 1 |
| ECEN elective | | 3 |
| ECEN elective | | 3 |
| PHYS 3705 | Thermodynamics and Classical Statistical Dynamics | 3 |
| General Education Requirement | | 3 |
| | **Semester Hours** | **17** |
| **Spring** | | |
| ECEN 4899 | Senior Design Project | 4 |
| ECEN Elective | | 3 |
| General Education Requirement | | 3 |
| General Education Requirement | | 3 |
| | **Semester Hours** | **13** |
| | **Total Semester Hours** | **126-127** |

# Student Outcomes

The following (1 through 7) Student Outcomes support the program educational objectives. Attainment of these outcomes by students by the time of their graduation prepares graduating students to enter the professional practice of engineering.

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.