

# ENGINEERING, ELECTRICAL - ASSOCIATE IN SCIENCE IN ENGINEERING



## ENEL

Successful completion of this program enables qualified students to transfer to an accredited engineering curriculum and apply most credits to a Bachelor of Science degree in engineering. This program provides a firm background in basic engineering principles. The curriculum includes a strong foundation in mathematics, the basic sciences and engineering fundamentals, as well as liberal arts courses that are applicable to most Bachelor of Science degree programs.

Entrance to the program requires a mathematics placement examination at a calculus level (student is ready to take Calculus I (MATH 2141)) or the completion of Pre-Calculus Mathematics (MATH 2111). It is recommended that all applicants take a mathematics placement examination prior to the summer session.

For courses to transfer to accredited engineering programs, it is important that students adhere to the required prerequisites and corequisites. When in doubt, refer to the course descriptions (<https://catalog.ccri.edu/course-descriptions/>).

Although most courses apply to the curriculum of many B.S. in engineering programs, the course sequences and schedules listed on the following pages will allow students to apply their studies toward one of nine University of Rhode Island engineering programs. These course sequences are for full-time, day students who enter in the fall semester, allowing them to complete the Associate in Science degree requirements at CCRI in four semesters and transfer to the University of Rhode Island as a junior. For the first semester, all engineering students take all the same courses. In all other semesters, the required courses will depend upon the desired engineering program. For most engineering programs, students are required to take courses only offered by URI. For CCRI students taking 12 or more credits, up to seven of these credits can be taken per semester at URI under the inter-institutional agreement at no additional cost. See description of the agreement on this page (<https://catalog.ccri.edu/academic-information/>).

**Note:** Many courses require prerequisites, corequisites and/or testing. See course descriptions for details (<https://catalog.ccri.edu/course-descriptions/>).

## Program Learning Outcomes

Upon completion of this program, a student will be able to:

1. Complete a course of study that leads to successful transfer to a 4-yr ABET accredited program.
2. Apply knowledge of mathematics, science, and engineering.
3. Identify, formulate, and solve engineering problems.
4. Communicate effectively.
5. Function on project teams.
6. Design and conduct experiments as well as analyze and interpret data.

7. Demonstrate knowledge of contemporary issues.
8. Recognize and understand the need to engage in life-long learning.

## Requirements

| Code                                                                                                                                                                                                                                          | Title                                                                                                                          | Hours     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>General Education Requirements</b>                                                                                                                                                                                                         |                                                                                                                                |           |
| CHEM 1030                                                                                                                                                                                                                                     | General Chemistry I<br>MSCI; Scientific Reasoning; Quantitative Literacy                                                       | 5         |
| ECON 2030                                                                                                                                                                                                                                     | Principles of Microeconomics<br>SSCI; Critical Thinking; Quantitative Literacy                                                 | 3         |
| ENGL 1010                                                                                                                                                                                                                                     | Composition I (or ENGL 1010A)<br>HUMN; Written Communication; Information Literacy                                             | 3         |
| MATH 2141                                                                                                                                                                                                                                     | Calculus I<br>MSCI; Scientific Reasoning; Quantitative Literacy                                                                | 4         |
| MATH 2142                                                                                                                                                                                                                                     | Calculus II<br>MSCI; Scientific Reasoning; Quantitative Literacy                                                               | 4         |
| MATH 2243                                                                                                                                                                                                                                     | Calculus III<br>MSCI; Scientific Reasoning; Quantitative Literacy                                                              | 4         |
| Choose ONE of the following:                                                                                                                                                                                                                  |                                                                                                                                | 3         |
| Humanities Elective ( <a href="https://catalog.ccri.edu/academic-information/general-education/course-attributes/#humngened/">https://catalog.ccri.edu/academic-information/general-education/course-attributes/#humngened/</a> )<br>HUMN     |                                                                                                                                |           |
| Social Science Elective ( <a href="https://catalog.ccri.edu/academic-information/general-education/course-attributes/#ssciigned/">https://catalog.ccri.edu/academic-information/general-education/course-attributes/#ssciigned/</a> )<br>SSCI |                                                                                                                                |           |
| Subtotal                                                                                                                                                                                                                                      |                                                                                                                                | 26        |
| <b>Core Requirements</b>                                                                                                                                                                                                                      |                                                                                                                                |           |
| ENGR 1020                                                                                                                                                                                                                                     | Introduction to Engineering & Technology                                                                                       | 3         |
| ENGR 2160                                                                                                                                                                                                                                     | Introduction to Engineering Analysis                                                                                           | 2         |
| MATH 2362                                                                                                                                                                                                                                     | Advanced Engineering Mathematics                                                                                               | 4         |
| PHYS 1150 & PHYS 1151                                                                                                                                                                                                                         | University Physics I and University Physics I Laboratory (Formerly PHYS 1100)<br>MSCI; Critical Thinking; Scientific Reasoning | 4         |
| PHYS 1500 & PHYS 1501                                                                                                                                                                                                                         | University Physics II and University Physics Lab II (Formerly ENGR 2150/2151)                                                  | 4         |
| Subtotal                                                                                                                                                                                                                                      |                                                                                                                                | 17        |
| <b>Electrical (ENEL)</b>                                                                                                                                                                                                                      |                                                                                                                                |           |
| ENGR 2320                                                                                                                                                                                                                                     | Digital Electronics                                                                                                            | 4         |
| ENGR 2520                                                                                                                                                                                                                                     | Microprocessor & Microcomputers                                                                                                | 4         |
| ENGR 2620 & ENGR 2621                                                                                                                                                                                                                         | Linear Electrical Systems and Circuit Theory for Engineers and Linear Circuits Lab                                             | 5         |
| MATH 1220                                                                                                                                                                                                                                     | Scientific Programming                                                                                                         | 3         |
| PHYS 2000 & PHYS 2001                                                                                                                                                                                                                         | University Physics III and University Physics III Lab (Formerly PHYS 2110/2111)                                                | 4         |
| Subtotal                                                                                                                                                                                                                                      |                                                                                                                                | 20        |
| <b>Total Hours</b>                                                                                                                                                                                                                            |                                                                                                                                | <b>63</b> |

## Recommended Course Sequence

| Course               | Title                    | Hours    |
|----------------------|--------------------------|----------|
| <b>Prerequisites</b> |                          |          |
| MATH 2111            | Pre-Calculus Mathematics | 4        |
| <b>Hours</b>         |                          | <b>4</b> |
| <b>Total Hours</b>   |                          | <b>4</b> |

| Course                                                                                                                                                                                                                                | Title                                                                                    | Hours     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------|
| <b>Year 1</b>                                                                                                                                                                                                                         |                                                                                          |           |
| <b>Semester 1</b>                                                                                                                                                                                                                     |                                                                                          |           |
| Fall:                                                                                                                                                                                                                                 |                                                                                          |           |
| CHEM 1030                                                                                                                                                                                                                             | General Chemistry I                                                                      | 5         |
| ECON 2030                                                                                                                                                                                                                             | Principles of Microeconomics                                                             | 3         |
| ENGL 1010                                                                                                                                                                                                                             | Composition I (or ENGL 1010A)                                                            | 3         |
| ENGR 1020                                                                                                                                                                                                                             | Introduction to Engineering & Technology                                                 | 3         |
| MATH 2141                                                                                                                                                                                                                             | Calculus I                                                                               | 4         |
| <b>Hours</b>                                                                                                                                                                                                                          |                                                                                          | <b>18</b> |
| <b>Semester 2</b>                                                                                                                                                                                                                     |                                                                                          |           |
| Spring:                                                                                                                                                                                                                               |                                                                                          |           |
| ENGR 2160                                                                                                                                                                                                                             | Introduction to Engineering Analysis                                                     | 2         |
| ENGR 2520                                                                                                                                                                                                                             | Microprocessor & Microcomputers                                                          | 4         |
| MATH 2142                                                                                                                                                                                                                             | Calculus II                                                                              | 4         |
| PHYS 1150<br>& PHYS 1151                                                                                                                                                                                                              | University Physics I<br>and University Physics I Laboratory (Formerly<br>PHYS 1100)      | 4         |
| Choose ONE of the following:                                                                                                                                                                                                          |                                                                                          | 3         |
| Humanities Elective ( <a href="https://catalog.ccri.edu/academic-information/general-education/course-attributes/#humngened/">https://catalog.ccri.edu/academic-information/general-education/course-attributes/#humngened/</a> )     |                                                                                          |           |
| Social Science Elective ( <a href="https://catalog.ccri.edu/academic-information/general-education/course-attributes/#sscigened/">https://catalog.ccri.edu/academic-information/general-education/course-attributes/#sscigened/</a> ) |                                                                                          |           |
| <b>Hours</b>                                                                                                                                                                                                                          |                                                                                          | <b>17</b> |
| <b>Year 2</b>                                                                                                                                                                                                                         |                                                                                          |           |
| <b>Semester 1</b>                                                                                                                                                                                                                     |                                                                                          |           |
| Fall:                                                                                                                                                                                                                                 |                                                                                          |           |
| ENGR 2320                                                                                                                                                                                                                             | Digital Electronics                                                                      | 4         |
| MATH 1220                                                                                                                                                                                                                             | Scientific Programming                                                                   | 3         |
| MATH 2243                                                                                                                                                                                                                             | Calculus III                                                                             | 4         |
| PHYS 1500<br>& PHYS 1501                                                                                                                                                                                                              | University Physics II<br>and University Physics Lab II (Formerly ENGR<br>2150/2151)      | 4         |
| <b>Hours</b>                                                                                                                                                                                                                          |                                                                                          | <b>15</b> |
| <b>Semester 2</b>                                                                                                                                                                                                                     |                                                                                          |           |
| Spring:                                                                                                                                                                                                                               |                                                                                          |           |
| ENGR 2620<br>& ENGR 2621                                                                                                                                                                                                              | Linear Electrical Systems and Circuit Theory<br>for Engineers<br>and Linear Circuits Lab | 5         |
| MATH 2362                                                                                                                                                                                                                             | Advanced Engineering Mathematics                                                         | 4         |
| PHYS 2000<br>& PHYS 2001                                                                                                                                                                                                              | University Physics III<br>and University Physics III Lab (Formerly PHYS<br>2110/2111)    | 4         |
| Choose ONE of the following:                                                                                                                                                                                                          |                                                                                          | 3         |
| Humanities Elective ( <a href="https://catalog.ccri.edu/academic-information/general-education/course-attributes/#humngened/">https://catalog.ccri.edu/academic-information/general-education/course-attributes/#humngened/</a> )     |                                                                                          |           |
| Social Science Elective ( <a href="https://catalog.ccri.edu/academic-information/general-education/course-attributes/#sscigened/">https://catalog.ccri.edu/academic-information/general-education/course-attributes/#sscigened/</a> ) |                                                                                          |           |
| <b>Hours</b>                                                                                                                                                                                                                          |                                                                                          | <b>16</b> |
| <b>Total Hours</b>                                                                                                                                                                                                                    |                                                                                          | <b>66</b> |

## Transfer

Please meet with an Academic Advisor/Student Success Coach (<https://ccri.edu/advising/>) if you are interested in earning a bachelor's degree. Your Academic Advisor will help you select the courses that best prepare you for transfer to a four-year college or university.

Check out the Joint Admissions Agreement (<https://ccri.edu/jaa/>) if you are interested in transferring to Rhode Island College or the University of Rhode Island. The JAA program offers seamless transfer to RIC or URI with additional benefits. Transfer information, events, and articulations are available on the Transfer Center website ([https://ccri.edu/oes/transfer\\_center/](https://ccri.edu/oes/transfer_center/)).