

B.S. in Electrical and Computer Engineering

Academic Program Guide for **Transfer Students** (Effective Fall 2019) Department of Electrical and Computer Engineering (polikar@rowan.edu)

Students who entered Rowan University prior to Fall 2018 should follow the guide for their program and start year in consultation with their advisor.

Rowan University Graduation Requirements for all Majors / Degrees

- Students must complete at least 120 semester hours (sh) of coursework that apply to their Rowan University degree.
- Students must have a cumulative GPA of at least 2.0 in Rowan University coursework. (Transfer courses/credit do not count toward the RU GPA.)
- A minimum of 30 sh of coursework must be completed at/through Rowan University.
- Only grades of "D-" or above may apply to graduation/degree requirements. (Some programs may set higher minimums.)
- Students must meet the Rowan Core and Rowan Experience Requirements.
 - An individual course can potentially satisfy one Rowan Core literacy and/or multiple Rowan Experience attributes.
 - Rowan Core and Rowan Experience designations are listed in course details in Section Tally (www.rowan.edu/registrar) and may also be searched on that site under "Attributes." A list of Rowan Core courses is here: <https://confluence.rowan.edu/display/AS/Rowan+Core+Course+List>.
- Students must apply for graduation and should do so for the term in which they will complete all program requirements.

Program-Specific Graduation Requirements for this Major / Degree

- Students must complete an out-of-discipline experience (as described in advising sheet).

Legacy General Education Requirements

With the exception of the 11 sh counted here for Communicative Literacy, credits attached to the courses in this section will apply elsewhere.

- Communication: *Must be met by the following three courses or their official equivalents:*
 - COMP 01111 College Composition I (3 sh) ENGR 01201 Sophomore Eng. Clinic I (4 sh) ENGR 01202 Sophomore Eng. Clinic II (4 sh)
- (ART) Artistic and Creative Experiences *Recommendation from major:*
- (SBS) Social and Behavioral Science *Recommendation from major:* ECON 04102 (3 sh counted under non-program)
- (SBS) Social and Behavioral Science *Recommendation from major:*
- (HHL) History, Humanities, Languages *Recommendation from major:*
- (HHL) History, Humanities, Languages *Recommendation from major:*
- Science and Mathematics *Recommendation from major:* MATH 01130 (4 sh counted under non-program)
- Science and Mathematics *Recommendation from major:* PHYS 00220 (4 sh counted under non-program)

Subtotal of credits counted in this section: 11 sh

Rowan Experience Requirements

Students must satisfy all three Rowan Experience attributes. Credits attached to the courses in this section will apply elsewhere.

- (LIT) Broad-Based Literature Attribute *Recommendation from major:*
- (WI) Writing Intensive Attribute *Recommendation from major:* ENGR 01403 (4 sh counted under major)
- (RS) Rowan Seminar Attribute¹ *Recommendation from major:* ENGR 01101 (2 sh counted under major)

Non-Program Courses (23 sh)

Courses in this section cannot be in the major department.

BUSINESS ELECTIVE Choose one of the following courses.

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|----------------------------------|------------------------------------|---------------------------|--------|-------|---------|
| <input type="radio"/> ECON 04101 | Intro to Economics: Macroeconomics | Satisfies SBS | F/Jr | | 3 |
| <input type="radio"/> ECON 04102 | Intro to Economics: Microeconomics | Satisfies SBS | F/Jr | | 3 |
| <input type="radio"/> ENT 06240 | Entrepreneurship and Innovation | Satisfies SBS | F/Jr | | 3 |
| <input type="radio"/> ENT 06326 | Small Business Management | | F/Jr | | 3 |

Then take all of the following courses.

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|------------|--------------------------------------|---------------------------------|--------|-------|-----------------|
| CS 04103 | Computer Science and Programming | | S/Fr | | 4 |
| MATH 01130 | Calculus I | Satisfies Quantitative Literacy | F/Fr | | 4 |
| MATH 01131 | Calculus II | Min grade = C- | S/Fr | | 4 |
| PHYS 00220 | Introductory Mechanics | Satisfies Scientific Literacy | F/Fr | | 4 |
| PHYS 00222 | Introductory Electricity & Magnetism | Min grade = C | S/Fr | | 4 |
| | | | | | Subtotal: 23 sh |

¹ The Rowan Seminar requirement is waived for all students transferring 24 or more approved credits into Rowan University at the time of initial entry.

B.S. in Electrical and Computer Engineering

Major Requirements (82 sh)

SUMMARY OF MAJOR REQUIREMENTS

- 7 sh of First Year Courses
 - 25 sh of Second Year Courses
 - 25 sh of Third Year Courses
 - 25 sh of Fourth Year Courses
-
- 82 sh total

FIRST YEAR COURSES

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|-----------------------|--------------------------------|---------------------------|--------|-------|---------|
| ENGR 01101 | Freshman Engineering Clinic I | Satisfies RS requirement | F/Fr | | 2 |
| ECE 09241 | Intro. to Digital Systems | | F/Fr | | 3 |
| ENGR 01102 | Freshman Engineering Clinic II | | S/Fr | | 2 |
| Subtotal: 7 sh | | | | | |

SECOND YEAR COURSES

Choose one of the following approved Science Electives.

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|----------------------------------|-----------------------------------------------------|---------------------------|--------|-------|---------|
| <input type="radio"/> BIOL 01112 | General Biology, Environmental Focus | | F/So | | 4 |
| <input type="radio"/> BIOL 01113 | General Biology, Human Focus | | F/So | | 4 |
| <input type="radio"/> BIOL 01115 | General Biology, Plants and People | | F/So | | 4 |
| <input type="radio"/> BIOL 10210 | Human Anatomy and Physiology | | F/So | | 4 |
| <input type="radio"/> CHEM 06100 | Chemistry I | | F/So | | 4 |
| <input type="radio"/> PHYS 00300 | Modern Physics | | F/So | | 4 |
| <input type="radio"/> PHYS 00221 | Introductory Thermodynamics, Fluids, Waves & Optics | | F/So | | 4 |

Then take all of the following courses.

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|------------------------|-------------------------------------------|---------------------------|--------|-------|---------|
| MATH 01230 | Calculus III | Minimum Grade = C- | F/So | | 4 |
| ECE 09203 | Principles of Electrical Circuit Analysis | Minimum Grade = C | F/So | | 4 |
| MATH 01235 | Math for Eng. Analysis | | S/So | | 4 |
| CS 04225 | Principles of Data Structures | | S/So | | 3 |
| ECE 09243 | Computer Architecture | Minimum Grade = C | S/So | | 3 |
| ECE 09311 | Electronics I | | S/So | | 3 |
| Subtotal: 25 sh | | | | | |

THIRD YEAR COURSES

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|------------------------|---------------------------|-------------------------------|--------|-------|---------|
| ENGR 01303 | Junior Engr. Clinic | Taken twice (2 sh each) | F+S/Jr | | 2+2=4 |
| ECE 09341 | Signals & Systems | Minimum Grade = C | F/Jr | | 2 |
| ECE 09342 | Embedded Systems | | F/Jr | | 3 |
| ECE 09303 | Engr. Electromagnetics | | F/Jr | | 3 |
| ME 10320 | Mech. Engr. For ECEs | | F/Jr | | 3 |
| ECE 09321 | Systems & Control I | | S/Jr | | 3 |
| ECE 09351 | Digital Signal Processing | | S/Jr | | 3 |
| ECE 09363 | Modules in ECE | | S/Jr | | 1 |
| ECE 094XX | | ECE elective (see note below) | S/Jr | | 3 |
| Subtotal: 25 sh | | | | | |

B.S. in Electrical and Computer Engineering

FOURTH YEAR COURSES

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|------------------|----------------------------|---------------------------------------------------|--------|-------|--------------|
| ENGR 01403 | Senior Engineering Clinic | Taken twice (2 sh each); satisfies WI requirement | F+S/Sr | | 2+2=4 |
| ECE 09460 | Engr. Clinic Consultant I | | F/Sr | | 1 |
| ECE 09414 | VLSI Design | | F/Sr | | 3 |
| ECE 09433 | Electrical Comm. Sys. | | F/Sr | | 3 |
| ECE 094XX | | ECE Elective (EE focus - see note below) | F/Sr | | 3 |
| ECE 094XX | | ECE Elective (CpE focus - see note below) | F/Sr | | 3 |
| ECE 09462 | Engr. Clinic Consultant II | | S/Sr | | 1 |
| ECE 09498 | Seminar: Frontiers | | S/Sr | | 1 |
| ECE/ENGR 4XX | | ECE elective (Tech focus - see note below) | S/Sr | | 3 |
| ECE 094XX | | ECE Elective (see note below) | S/Sr | | 3 |
| Subtotal: | | | | | 25 sh |

ELECTRICAL AND COMPUTER ENGINEERING ELECTIVES

The ECE program requires a total of five electives that can be broadly categorized as Computer Engineering (CpE), Electrical Engineering (EE), Electrical and Computer Engineering (ECE) or Tech Focus electives. The categorization is not a requirement, but just a suggestion to have a broad background. An EE/CpE elective is a class that focuses on core electrical/computer engineering topics, whereas an ECE elective is any 400-level elective offered by the ECE Department that may or may not fall within traditional EE / CpE boundaries. A Tech Focus elective is an elective that may include approved multidisciplinary (non-ECE) engineering courses. The electives – all of which should be 400-level courses – should be chosen with consent of advisor to meet student & program goals, though the ECE Department suggests taking at least 1 CpE & 1 EE elective among the 5 total electives. CpE and EE electives appearing in Junior Spring & Senior Fall semesters are for placeholders only, and any approved elective can be taken during any semester – subject to its prerequisites – in which it is offered.

Free Electives for this Major/Degree (12 sh)

Students should choose Free Electives that satisfy any Rowan Core or Rowan Experience requirements that are not fulfilled by Major or Non-Program courses.

| Course # | Course Name | Course Attributes / Notes | Sem/Yr | Grade | Credits |
|------------------|-------------|---------------------------|--------|-------|--------------|
| | | Any course satisfying ART | | | 3 |
| | | Any course satisfying HHL | | | 3 |
| | | Any course satisfying HHL | | | 3 |
| | | Any course satisfying SBS | | | 3 |
| Subtotal: | | | | | 12 sh |

Total Program Credits Required for this Major / Degree: 128 SH