

# B.S. in Electrical and Computer Engineering

## Academic Program Guide for **New First-Year Students** (Effective Fall 2021) Department of Electrical and Computer Engineering ([polikar@rowan.edu](mailto:polikar@rowan.edu))

*Students who entered Rowan University prior to Fall 2021 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 courses have a higher minimum grade requirement
- 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](http://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

#### OUT OF DISCIPLINE / MULTIDISCIPLINARY EXPERIENCE

- Students must complete an out-of-discipline experience, which can be done using any of the following options.

	Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
<input type="radio"/>			An out of discipline (non-ECE) junior or senior engineering clinic			
<input type="radio"/>			Clinic consultant project to a non-ECE project			
<input type="radio"/>			An approved non-ECE technical elective			
<input type="radio"/>			Completing a Minor or CUGS in a scientific field outside of ECE			

### Rowan Core Requirements<sup>1</sup>

*Students must satisfy all six Rowan Core Literacies. A minimum total of 3 sh of coursework is required to satisfy each Literacy.*

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

- (COML) Communicative Literacy: *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)
- (ARTL) Artistic Literacy *Recommendation from major:*
- (GLBL) Global Literacy *Recommendation from major:*
- (HUML) Humanistic Literacy *Recommendation from major:* ECON 04101 or 04102 (3 sh counted under non-program)
- (QNTL) Quantitative Literacy *Recommendation from major:* MATH 01130 (4 sh counted under non-program)
- (SCIL) Scientific Literacy *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 Attribute<sup>2</sup> *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 four courses.

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

<sup>1</sup> The Rowan Core requirements are waived for transfer students with an earned A.A. or A.S. degree from a NJ community/county college.

<sup>2</sup> 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

Then take all of the following courses.

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
CS 04103	Computer Science and Programming		F/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

## Major Requirements (85 sh)

### SUMMARY OF MAJOR REQUIREMENTS

▪ 8 sh of 1<sup>st</sup> Year Courses    ▪ 24 sh of 2<sup>nd</sup> Year Courses    ▪ 29 sh of Third Year Courses    ▪ 24 sh of Fourth Year Courses    ▪ Total: 85sh

### FIRST YEAR COURSES

Take all of the following courses.

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
ENGR 01101	Freshman Engineering Clinic I	Satisfies RS requirement	F/Fr		2
ECE 09101	ECE: Solving Tomorrow's Problems		F/Fr		2
ECE 09241	Introduction to Digital Systems		S/Fr		2
ENGR 01102	Freshman Engineering Clinic II		S/Fr		2
					Subtotal: 8 sh

### SECOND YEAR COURSES

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
ECE 09243	Computer Architecture	Minimum Grade = C	F/So		3
MATH 01235	Math for Eng. Analysis		S/So		4
CS 04225	Principles of Data Structures		S/So		3
ECE 09342	Introduction to Embedded Systems		S/So		3
ECE 09311	Electronics I		S/So		3
					Subtotal: 24 sh

### THIRD 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/Jr		4
<input type="radio"/> BIOL 01113	General Biology, Human Focus		F/Jr		4
<input type="radio"/> BIOL 01115	General Biology, Plants and People		F/ Jr		4
<input type="radio"/> BIOL 10210	Human Anatomy and Physiology		F/ Jr		4
<input type="radio"/> CHEM 06100	Chemistry I		F/ Jr		4
<input type="radio"/> PHYS 00300	Modern Physics		F/ Jr		4
<input type="radio"/> PHYS 00221	Introductory Thermodynamics, Fluids, Waves & Optics		F/ Jr		4

Then take all of the following courses.

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
ENGR 01303	Junior Engr. Clinic	Must be taken twice (2 sh each)	F+S/Jr		2+2=4
ECE 09341	Signals & Systems	Minimum Grade = C	F/Jr		2
ECE 09303	Engr. Electromagnetics		F/Jr		3
ME 10320	Mech. Engr. For ECEs		F/Jr		3
STAT 02286	Probability and Statistics for ECEs		S/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: 29 sh

# B.S. in Electrical and Computer Engineering

## FOURTH YEAR COURSES

Take all of the following 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 09414	VLSI Design		F/Sr		3
ECE 09433	Electrical Comm. Sys.		F/Sr		3
ECE 094XX		ECE Elective (see note below)	F/Sr		3
ECE 094XX		ECE Elective (see note below)	F/Sr		3
ECE 09462	Engr. Clinic Consultant		S/Sr		1
ECE 09498	Seminar: Frontiers		S/Sr		1
ECE/ENGR 4XX		ECE elective (see note below)	S/Sr		3
ECE 094XX		ECE Elective (see note below)	S/Sr		3
<b>Subtotal: 24 sh</b>					

## ELECTRICAL AND COMPUTER ENGINEERING ELECTIVES

The ECE program requires a total of five technical electives, which are 400-level advanced ECE courses covering electrical and computer engineering core areas, as well as cross-cutting and emerging topics. Required 400-level ECE courses cannot be counted towards ECE electives. ECE department will accept up to one approved 400-level non-ECE technical elective towards ECE electives. The electives should be chosen based on student's areas of interest and with consent of advisor to meet student & program goals, though the ECE Department recommends taking electives that cover a broad spectrum of advanced topics among the 5 total electives.

### Free Electives for this Major/Degree (9 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 Artistic Literacy			3
		Any course satisfying Global Literacy			3
		Any course satisfying Humanistic Literacy, if Business Elective is chosen from non HUML courses. Otherwise, any elective.			3
<b>Subtotal: 9 sh</b>					

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