

B.S. in Electrical and Computer Engineering

Academic Program Guide for **New First-Year 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).

Rowan Core Requirements¹

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 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 Attribute² *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 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

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 Core requirements are waived for transfer students with an earned A.A. or A.S. degree from a NJ community/county college.

² The Rowan Seminar requirement is waived for all students transferring 24 or more approved credits into Rowan University at the time of initial entry.

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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					

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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 Artistic Literacy			3
		Any course satisfying Global Literacy			3
		Any elective (soon to be STAT 02.286)			3
		Any course satisfying Humanistic Literacy, if Business Elective is chosen from non HUML courses			3
Subtotal: 12 sh					

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