B.S. in Biomedical Engineering

Academic Program Guide for **New First-Year Students** (Effective Fall 2018)
Department of Biomedical Engineering (bme@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 & 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 earn a C- or better in all BME courses (BME 11.xxx).

Rowan Core Requirements[1]

*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 Comp. 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:*
◯ (QNTL) Quantitative Literacy *Recommendation from major:* MATH 01130 (4 sh counts under non-program)
◯ (SCIL) Scientific Literacy *Recommendation from major:* CHEM 06100 or PHYS 00220 (4 sh counts 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:* PHIL 09341 (3 sh counts under non-program)
◯ (RS) Rowan Seminar Attribute[2] *Recommendation from major:* ENGR 01101 (2 sh counts under major)

Non-Program Courses (28 sh)

Courses in this section cannot be in the major department.

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
MATH 01130	Calculus I	Satisfies Quantitative Literacy			4
CHEM 06100	Chemistry I	Satisfies Scientific Literacy			4
CHEM 06101	Chemistry II	Pre-req. for BIOL 01205			4
CS 01104 or CS 04103	Intro to Scientific Programming or Computer Science and Programming				3 or 4
PHYS 00220	Introductory Mechanics	Satisfies Scientific Literacy; Pre-req. for PHYS 02222, BME 11201, BME 11303, >= C- required			4
PHIL 09341	Biomedical Ethics-WI	HHL; Satisfies WI requirement			3
STAT 02284	Statistics for Biomedical Sciences				3
ENT 06240	Entrepreneurship and Innovation	SBS			3
				Subtotal:	28 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 (83 sh)

Summary of Major Requirements

- 9 sh of Foundational Courses
- 24 sh of Mid-Level Courses
- 25 sh of Upper-Level Courses
- 4 sh of Advanced Science Elective
- 3 sh of Science / Technical Elective
- 18 sh of Biomedical Engineering Core Competency Focus Electives
- 83 sh total

Foundational Courses

Course #	Course Name	Course Designations / Notes	Sem/Yr	Grade	Credits
ENGR 01101	Freshman Engineering Clinic I	Satisfies RS requirement			2
ENGR 01102	Freshman Engineering Clinic II				2
MATH 01131	Calculus II	>= C- required			4
BME 11100	Biomedical Engineering Seminar				1
					Subtotal: 9 sh

Mid-Level Courses

Course #	Course Name	Course Designations / Notes	Sem/Yr	Grade	Credits
MATH 01230	Calculus III	>= C- required			4
BIOL 01205	Foundations in Bio for Biomed Sci I				4
BIOL 01206	Foundations in Bio for Biomed Sci II	>= C- required			4
MATH 01235	Math for Engineering Analysis	>= C- required			4
PHYS 02222	Introduction to Electricity and Magnetism	>= C- required			4
BME 11201	Chemical Foundations in BME	>= C- required			4
					Subtotal: 24 sh

Upper-Level Courses

Course #	Course Name	Course Designations / Notes	Sem/Yr	Grade	Credits
BME 11301	Physiological Foundations in BME				4
BME 11302	Electrical Foundations in BME				4
BME 11303	Mechanical Foundations in BME				4
ENGR 01303	Junior Engineering Clinic	Must take this course twice			2
ENGR 01303	Junior Engineering Clinic				2
ECE 09404	Principles of Biomedical Systems and Devices				3
BME 11411	Sim, Model, and Control in Biomed Systems				2
ENGR 01403	Senior Engineering Clinic	Must take this course twice;			2
ENGR 01403	Senior Engineering Clinic	satisfies WI requirement			2
					Subtotal: 25 sh

Advanced Science Elective

Choose one of the following courses.

	Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
◯	CHEM 07200	Organic Chemistry I				4
◯	BIOL 10210	Human Anatomy and Physiology I				4
◯	BIOL 10212	Human Anatomy and Physiology II				4
						Subtotal: 4 sh

Science / Technical Elective

Choose one course taught in the College of Science and Math or College of Engineering that is not a pre-requisite for any required courses.

Course #	Course Name	Course Designations / Notes	Sem/Yr	Grade	Credits
					Subtotal: 3 sh

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Biomedical Engineering Core Competency Focus Electives

Choose six CCF courses. Four must be in-discipline (BME 11.4xx, excluding BME 11.411). Up to two may be from a list of approved out-of-discipline CCF courses.

Course #	Course Name	Course Designations / Notes	Sem/Yr	Grade	Credits
				Subtotal: 18 sh	

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			3
				Subtotal: 9 sh	

Total Program Credits Required for this Major / Degree: 131 SH