

# B.S. in Physics

## Academic Program Guide for New First-Year Students (Effective Fall 2018)

Department of Physics & Astronomy ([physics@rowan.edu](mailto:physics@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](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.

### 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 9 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)
  - COMP 01112 College Composition II (3 sh)
  - CMS 04205 Public Speaking (3 sh)
- (ARTL) Artistic Literacy *Recommendation from major:*
- (GLBL) Global Literacy *Recommendation from major:*
- (HUML) Humanistic Literacy *Recommendation from major:* PHIL 09369 (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 major)

Subtotal of credits counted in this section: 9 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 09369 (3 sh counted under non-program)
- (RS) Rowan Seminar Attribute<sup>2</sup> *Recommendation from major:*

### Non-Program Courses (minimum 18 sh)

*Courses in this section cannot be in the major department.*

Course #	Course Name	Course Attributes/Notes	Sem/Yr	Grade	Credits
CS 01103 or 04104	Computer Science & Programming or Intro to Scientific Programming				4
PHIL 09369	Philosophy of Science-WI	Satisfies Humanistic & WI			3
MATH 01130	Calculus I	Satisfies Quantitative			4

*Then choose one of the following course sequences:*

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
○ Biology sequence (take the following two courses):					
BIOL 01104	Diversity, Evolution and Adaptation				4
BIOL 01106	Concepts in Genetics				4
○ Chemistry sequence (take the following two courses): <sup>3</sup>					
CHEM 06100	Chemistry I				4
CHEM 06101	Chemistry II				4
○ Computer Science sequence (take any two of the following three courses):					
CS 04113	Introduction to Object-Oriented Programming				4
CS 04114	Data Abstraction				4
CS 06205	Computer Organization				4
○ Other sequence (proposed by student and approved by advisor):					
					4
					4
					Subtotal: 19 sh

<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.

<sup>3</sup> Chemistry sequence recommended for those considering teaching, along with two more CHEM courses for Physical Science certification.

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## Major Requirements (60 sh)

### SUMMARY OF MAJOR REQUIREMENTS

- 20 sh of Foundational Courses
  - 14 sh of Mid-Level Courses
  - 15 sh of Upper-Level Courses
  - 11 sh of Restricted Electives
- 
- 60 sh total

### FOUNDATIONAL COURSES

Course #	Course Name	Course Designations/Notes	Sem/Yr	Grade	Credits
MATH 01131	Calculus II				4
MATH 01230	Calculus III				4
PHYS 00220	Introductory Mechanics-RS	Satisfies Scientific Literacy			4
PHYS 00221	Introductory Thermodynamics, Fluids, Waves, & Optics				4
PHYS 00222	Introductory Electricity & Magnetism				4
Subtotal: 20 sh					

### MID-LEVEL COURSES

Choose one of the following two-course sequences.

Course #	Course Name	Course Attributes / Notes	Sem/Yr	Grade	Credits
<input type="radio"/> MATH 01231	Linear Algebra				3
<input type="radio"/> MATH 01210	Differential Equations				3
<input type="radio"/> PHYS 00330	Mathematical Physics				3
	Any additional Restricted Elective				3

Then take the following three courses.

Course #	Course Name	Course Designations/Notes	Sem/Yr	Grade	Credits
PHYS 00300	Modern Physics				4
PHYS 00351	Physics Research Methods I				2
PHYS 00352	Physics Research Methods II				2
Subtotal: 14 sh					

### UPPER-LEVEL COURSES

Course #	Course Name	Course Designations/Notes	Sem/Yr	Grade	Credits
PHYS00 310	Analytical Mechanics				4
PHYS00 320	Electricity & Magnetism I				4
PHYS00 410	Quantum Mechanics I				4
PHYS00 430	Statistical Physics				3
Subtotal: 15 sh					

### RESTRICTED ELECTIVES (CHOOSE 11 SH FROM THE FOLLOWING LIST)

- **Physics:** any 300+ level Physics (PHYS 00) course
  - 3 sh max of Physics/Astronomy Research I, II, III, IV (PHYS 00250, 00251, 00350 or 00450; ASTR 11250, 11251, 11350 or 11450)
  - 4 sh max of Physics Learning Assistant for... (PHYS 00361, 00362 or 00363)
- **Astronomy:** any 200+ level Astronomy (ASTR 11) course
- **Earth Science/Geology:**
  - either Geology I (GEOG 06103) or Geology II (GEOG 06104)
- **Materials Science:** either Material Science (ENGR 01281) or Interdisciplinary Materials Science (INTR 01486)
- **Engineering:** any 300+ level Engineering course
- **Mathematics:** any 200+ level Math course
- **Chemistry:** any 200+ level Chemistry (except Chemistry in Environment)
- **Computer Science:** any 200+ level Computer Science course
- **Biology:** any Biology course

Course #	Course Name	Course Designations/Notes	Sem/Yr	Grade	Credits
Subtotal: 11 sh					

