**B.S. in Physics**

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

**Department of Physics & Astronomy (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.*

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**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](https://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](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.

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**Rowan Core Requirements**

*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:**
  - (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

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**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: Recommendation from major

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

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

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Course Attributes/Notes</th>
<th>Sem/Yr</th>
<th>Grade</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 01103 or 04104</td>
<td>Computer Science &amp; Programming or Intro to Scientific Programming</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHIL 09369</td>
<td>Philosophy of Science-WI</td>
<td>Satisfies Humanistic &amp; WI</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 01130</td>
<td>Calculus I</td>
<td>Satisfies Quantitative</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Then choose one of the following course sequences:

- Biology sequence (take the following two courses):
  - BIOL 01104 Diversity, Evolution and Adaptation
  - BIOL 01106 Concepts in Genetics

- Chemistry sequence (take the following two courses):
  - CHEM 06100 Chemistry I
  - CHEM 06101 Chemistry II

- Computer Science sequence (take any two of the following three courses):
  - CS 04113 Introduction to Object-Oriented Programming
  - CS 04114 Data Abstraction
  - CS 06205 Computer Organization

- Other sequence (proposed by student and approved by advisor):

Subtotal: 19 sh

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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.

3 Chemistry sequence recommended for those considering teaching, along with two more CHEM courses for Physical Science certification.
# B.S. in Physics

## 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

### Foundational Courses

<table>
<thead>
<tr>
<th>Course #</th>
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<th>Grade</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 01131</td>
<td>Calculus II</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>MATH 01230</td>
<td>Calculus III</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHYS 00220</td>
<td>Introductory Mechanics-RS</td>
<td>Satisfies Scientific Literacy</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHYS 00221</td>
<td>Introductory Thermodynamics, Fluids, Waves, &amp; Optics</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHYS 00222</td>
<td>Introductory Electricity &amp; Magnetism</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

**Subtotal: 20 sh**

### Mid-Level Courses

Choose one of the following two-course sequences.

- **MATH 01231** Linear Algebra
- **MATH 01210** Differential Equations

- **PHYS 00330** Mathematical Physics
  - Any additional Restricted Elective

Then take the following three courses.

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>PHYS 00300</td>
<td>Modern Physics</td>
<td></td>
<td>4</td>
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</tr>
<tr>
<td>PHYS 00351</td>
<td>Physics Research Methods I</td>
<td></td>
<td>2</td>
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<td>2</td>
</tr>
<tr>
<td>PHYS 00352</td>
<td>Physics Research Methods II</td>
<td></td>
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**Subtotal: 14 sh**

### Upper-Level Courses

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</tr>
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<tbody>
<tr>
<td>PHYS00 310</td>
<td>Analytical Mechanics</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>PHYS00 320</td>
<td>Electricity &amp; Magnetism I</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
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<tr>
<td>PHYS00 410</td>
<td>Quantum Mechanics I</td>
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<td>4</td>
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<td>4</td>
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<tr>
<td>PHYS00 430</td>
<td>Statistical Physics</td>
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**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

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**Subtotal: 11 sh**

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*Updated 05/17/2018*
Free Electives for this Major/Degree (32 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.

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<td>Subtotal: 32 sh</td>
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Total Program Credits Required for this Major / Degree: 120 SH