

**ACADEMIC RHODE MAP
BS PHYSICS MAJOR**



RHODE ISLAND COLLEGE

GENERAL EDUCATION: A complete listing of General Education courses can be found at the Office of Academic Support (OASIS) 401 456-8083 or online at <http://www.ric.edu/recordsoffice/Pages/College-Catalog.aspx>; look at catalog for year you enrolled. For Gen Ed courses, aside from Second Language requirement, which varies depending on where you are placed, you need ONE course from each category. Second Language 101/102 options are: American Sign, Arabic, French, German, Italian, Japanese, Korean, Latin, Portuguese, or Spanish. For other ways to satisfy the second language requirement look under the Gen Ed. section of the catalog. Courses marked (F) offered Fall only; (Sp) Spring; (Su) Summer (some with session number included). All courses marked with an asterisk * have a prerequisite. For info. about Math Placement exam visit: <http://www.ric.edu/orientation/Pages/Math-Placement.aspx>

| Academic Major Checklist | Course | Academic Major Checklist | Course |
|--|--------|---|--------|
| PHYS 101 Physics for Science and Mathematics I* | | PHYS 413 Senior Laboratory (Sp)* | |
| PHYS 102 Physics for Science and Mathematics II* | | CHEM 103 General Chemistry I* | |
| PHYS 307 Quantum Mechanics I (F even)* | | CHEM 104 General Chemistry II* | |
| PHYS 311 Thermodynamics (F odd)* | | MATH 212 Calculus I* | |
| PHYS 312 Mathematical Methods in Physics (Sp)* | | MATH 213 Calculus II* | |
| PHYS 313 Junior Laboratory (Sp)* | | MATH 314 Calculus III* | |
| PHYS 401 Advanced Electricity and Magnetism I (F odd)* | | MATH 416 Ordinary Differential Equations (Sp, as needed)* | |
| PHYS 403 Classical Mechanics (F even)* | | MATH 416 Ordinary Differential Equations (Sp, as needed)* | |
| Select ONE from PHYS 315 Optics (F odd)*; PHYS 320 Analog Electronics (F even)*; or PHYS 321 Digital Electronics (Sp odd). | | | |
| Select TWO from PHYS 309 S (even years), PHYS 402 S (even years), PHYS 407 S (odd years), PHYS 409 F (even years). | | | |

This map is a semester-by-semester plan to help you toward graduation in four years. Not everyone graduates in four years as it depends on how many courses you can take, and how you do in those courses. This map is not your only route; it is a suggestion. While there are many courses in your major that have prerequisites that will need you to take them in a special order, there is some flexibility in this map. All courses that have prerequisites are marked with an asterisk* in the checklists above and in the map.

The column to the left on the other side of this page suggests the ideal courses for you to take each semester. There are times when those courses may be full or unavailable the semester you plan to take them, in which case consider another course from a different semester with which you can switch. The column on the right has "Checkpoints" for each semester that show where you should be by the end of that semester. You should work from this map as you plan each semester's schedule with your advisor. You should plan to see your advisor in late September for the Spring Semester and in February for the Fall. The Map is designed primarily for freshmen coming to college for the first time, but transfer students may also use the Rhode Map with the understanding that they have most likely completed several requirements through transfer of credit, and will be starting further into the program. Maps assume a Fall start, but choices depend on whether it is an odd or even year in which the program is begun.

GRADUATION REQUIREMENTS: The following requirements must be completed by undergraduate degree candidates at Rhode Island College in order to graduate:

- General Education program, including a second language requirement and RIC 100 or equivalent
- College Math Competency (which is separate from the Gen Ed math requirement)
- College Writing Competency (satisfied by FYW with a minimum grade of C)
- Academic Major—see check chart below.
- A minimum of 120 credit hours, with a minimum of 45 credit hours taken at RIC. Of the 45 credit hours, a minimum of 15 credit hours must be in the major (12 of which must be at the 300- or 400-level).
- A minimum overall grade point average of 2.0
- A minimum grade point average of 2.0 in your major

Approved by Department Chair: Peter Meyer Date 6/21/2016

Approved by Undergraduate Curriculum Committee: Date 6/21/2016

Revised: 6/1/2019

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| SEMESTER 1 | CR | SEMESTER 1 CHECKPOINTS ✓ |
|--|-----------|---|
| First Year Writing (FYW 100) or First Year Seminar (FYS 100). | 4 | <input type="checkbox"/> FYW 100P is a 6 credit option. To decide which FYW to take, see Directed Self-Placement test at www.ric.edu/firstyearwriting |
| RIC 100 Introduction to Rhode Island College | 1 | <input type="checkbox"/> Exempt if taking COLL 101, COLL 150, or HONR 150 |
| PHYS 101 Physics for Science and Mathematics I* Lecture and Lab | 4 | <input type="checkbox"/> Prereq. MATH 120 or appropriate score on mathematics placement exam; satisfies Gen Ed Natural Science (NS) |
| MATH 212 Calculus I* | 4 | <input type="checkbox"/> Prereq MATH 209 or appropriate score on mathematics placement exam; satisfies Gen Ed Math (M) |
| Gen Ed--Second Lang 101 (based on placement, course higher than 101/102 may be taken). If lang. req. satisfied: Gen Ed Dist. course from (A); (L); (H), or (SB). | 4 | <input type="checkbox"/> Language placement test with Dept. of Modern Languages (optional) <input type="checkbox"/> Complete Second Lang 101 (if needed) |
| Requirements and GPA | | <input type="checkbox"/> Aim for at least 16 earned credits (While 12 is fulltime, 16 credits are preferred to stay on track to graduate in 4 years) <input type="checkbox"/> Minimum 2.0 GPA |
| # CREDITS EARNED | 17 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester in Sept. |

| SEMESTER 2 | CR | SEMESTER 2 CHECKPOINTS ✓ |
|--|-----------|--|
| FYW 100 or FYS 100 | 4 | <input type="checkbox"/> Complete FYS and FYW, for FYW, grade C or better |
| PHYS 102 Physics for Science and Mathematics II* Lecture and Lab | 4 | <input type="checkbox"/> Prereq. is PHYS 101; satisfies Gen Ed Advanced Quantitative/Scientific Reasoning (AQSR) |
| MATH 213 Calculus II* | 4 | <input type="checkbox"/> Prereq MATH 212 |
| Gen Ed--Second Lang 102* (if needed), or Gen Ed from (A); (L); (H), or (SB). | 4 | <input type="checkbox"/> Complete Second Language 102*, grade C or better (if needed) |
| Requirements and GPA | | <input type="checkbox"/> Aim for minimum of 32 earned credits <input type="checkbox"/> Minimum 2.0 GPA |
| # CREDITS EARNED | 16 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester in Feb. |

| SEMESTER 3 | CR | SEMESTER 3 CHECKPOINTS ✓ |
|--|-----------|---|
| CHEM 103 General Chemistry I (F, Sul)* Lecture and Lab | 4 | <input type="checkbox"/> Prereq. Math competency or placement on Math exam; satisfies Gen Ed Natural Science (NS) |
| MATH 314 Calculus III* or elective | 4 | <input type="checkbox"/> Prereq. MATH 213 |
| PHYS 307 Quantum Mechanics I (F even)* or PHYS 311 Thermodynamics (F odd)* (whichever available) | 4 | <input type="checkbox"/> Prereq. for PHYS 307 is PHYS 102 <input type="checkbox"/> Prereq. for PHYS 311 are PHYS 101 and MATH 213 |
| Gen Ed Distribution course from one of these GE categories: Arts (A); Literature (L); History (H), or Social and Behavioral Sciences (SB) | 4 | |
| Requirements and GPA | | <input type="checkbox"/> Aim for minimum of 48 earned credits, <input type="checkbox"/> Minimum of 2.0 GPA overall and in major |
| # CREDITS EARNED | 16 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester and discuss possible minor in Sept. <input type="checkbox"/> Also discuss opportunities for research and Independent study |

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| SEMESTER 4 | CR | SEMESTER 4 CHECKPOINTS ✓ |
|--|-----------|---|
| CHEM 104 General Chemistry II (Sp, Su)* Lecture and Lab | 4 | <input type="checkbox"/> Prereq. CHEM 103 with C- or better |
| PHYS 312 Mathematical Methods in Physics (Sp)* | 3 | <input type="checkbox"/> Prereq. MATH 314 |
| MATH 416 Ordinary Differential Equations* or elective | 3-4 | <input type="checkbox"/> Prereq. completed or concurrent MATH 314 |
| MATH 314 Calculus III*, Gen ed., or elective | 3-4 | <input type="checkbox"/> Prereq. MATH 213; MATH 314 completed |
| Requirements and GPA | | <input type="checkbox"/> Aim for minimum of 64 earned credits <input type="checkbox"/> Minimum of 2.0 GPA overall and in major |
| # CREDITS EARNED | 13-15 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester in Feb. <input type="checkbox"/> Discuss opportunities for research and Independent study with your advisor if you have not already done so. |

| SEMESTER 5 | CR | SEMESTER 5 CHECKPOINTS ✓ |
|--|-----------|---|
| ONE PHYS elective (PHYS 309, 315, 320, 407 or 409) | 3-4 | <input type="checkbox"/> Prereqs. vary—see catalog. <input type="checkbox"/> If take PHYS 315 or 320, do not take PHYS 321 |
| PHYS 307 Quantum Mechanics I (F even)* or PHYS 311 Thermodynamics (F odd)* (whichever available) | 4 | <input type="checkbox"/> Prereq. for PHYS 307 is PHYS 102 <input type="checkbox"/> Prereqs. for PHYS 311 are PHYS 101 and MATH 213 <input type="checkbox"/> PHYS 307 and PHYS 311 completed |
| PHYS 403 Classical Mechanics (F even)* or PHYS 401 Advanced E and M (F odd)* | 4 | <input type="checkbox"/> Prereqs. for either are PHYS 102 and MATH 314 <input type="checkbox"/> Take whichever available |
| Gen Ed Distribution course (A, H, L, or SB) | 4 | |
| Requirements and GPA | | <input type="checkbox"/> Aim for minimum of 80 earned credits <input type="checkbox"/> Minimum of 2.0 GPA overall and in major |
| # CREDITS EARNED | 15-16 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester in Sept. |

| SEMESTER 6 | CR | SEMESTER 6 CHECKPOINTS ✓ |
|---|-----------|--|
| Choose 1 Connections course (Gen Ed-C) | 4 | <input type="checkbox"/> Prereqs are 45 completed credits and FYW and FYS. |
| PHYS 313 Junior Laboratory (Sp)* | 3 | <input type="checkbox"/> Prereqs. PHYS 102 and PHYS 307 |
| ONE PHYS elective (PHYS 321, 402, or 407) | 3-4 | <input type="checkbox"/> Prereqs. vary—see catalog <input type="checkbox"/> If take PHYS 321, do not take PHYS 315 or 320 |
| MATH 416 Ordinary Differential Equations* if offered, or elective | 3-4 | <input type="checkbox"/> Prereq. completed or concurrent MATH 314 |
| Requirements and GPA | | <input type="checkbox"/> Do not take more than 18 credits <input type="checkbox"/> Aim for minimum of 96 earned credits <input type="checkbox"/> Minimum of 2.0 GPA overall and in major <input type="checkbox"/> Apply for degree audit online through MyRIC |
| # CREDITS EARNED | 13-15 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester in Feb. |

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| SEMESTER 7 | CR | SEMESTER 7 CHECKPOINTS ✓ |
|--|-----------|--|
| ONE PHYS elective (PHYS 309, 315, 320, 407, or 409) | 3-4 | <input type="checkbox"/> Prereqs. vary—see catalog |
| PHYS 403 Classical Mechanics (F even)* or PHYS 401 Advanced E and M (F odd)* | 4 | <input type="checkbox"/> Prereqs. for either are PHYS 102 and MATH 314 <input type="checkbox"/> Take whichever available <input type="checkbox"/> PHYS 307 and PHYS 311 completed |
| Gen Ed Distribution course, or elective | 3-4 | <input type="checkbox"/> |
| Gen Ed Distribution course, elective, or course toward minor | 3-4 | <input type="checkbox"/> |
| Requirements and GPA | | <input type="checkbox"/> Aim for minimum of 108 earned credits <input type="checkbox"/> Minimum of 2.0 GPA <input type="checkbox"/> Minimum GPA of 2.0 in major <input type="checkbox"/> All ten GE courses and second lang. req. completed |
| # CREDITS EARNED | 13-16 | <input type="checkbox"/> Make appointment with advisor to discuss your schedule for next semester in Sept. |

| SEMESTER 8 | CR | SEMESTER 8 CHECKPOINTS ✓ |
|--|-----------|--|
| ONE PHYS elective (PHYS 321 or 402) | 3-4 | <input type="checkbox"/> Prereqs. vary—see catalog <input type="checkbox"/> ONE PHYS elective from PHYS 315, 320 or 321 completed <input type="checkbox"/> TWO PHYS electives from PHYS 309, 402, or 409 completed |
| Elective, or course toward minor | 3-4 | <input type="checkbox"/> |
| PHYS 413 Senior Laboratory (Sp)* | 3 | <input type="checkbox"/> Prereqs. PHYS 102 and PHYS 313 |
| MATH 416 Ordinary Differential Equations* if needed, or elective | 4 | <input type="checkbox"/> Prereq. completed or concurrent MATH 314; MATH 416 completed |
| Requirements and GPA | | <input type="checkbox"/> Need minimum of 120 earned credits <input type="checkbox"/> Minimum of 2.0 GPA <input type="checkbox"/> Minimum GPA of 2.0 in major |
| # CREDITS EARNED | 13-14 | Attend Gradfest and Commencement |

For more information, check the Physical Sciences Department website: <http://www.ric.edu/physicalSciences/Pages/default.aspx>

Note: Prior to enrolling in any Physics course students must have completed the college mathematics competency. Math Requirement for major (MATH 010 or SAT score >480 or placement exam). Also note: MATH 209 Pre-Calculus Mathematics is a prerequisite for MATH 212, unless score high enough on math placement.

You should also consider getting a Math minor: “A minor in mathematics consists of a minimum of 21 credit hours (six courses), as follows: Mathematics 209 (or 240), 212, 213, and at least three additional courses at the 300-level or above, except Mathematics 409.” For a physics student this might mean: MATH 212 Calculus I; MATH 213 Calculus II; MATH 314 Calculus III; MATH 416: Ordinary Differential Equations; MATH 240 Statistical Methods I; and ONE from MATH 300 Bridge to Advanced Mathematics; MATH 324 College Geometry; MATH 411 Calculus IV; MATH 431 Number Theory, or MATH 436 Discrete Mathematics.

NOTE: The minimum total credit count for the Physics BS is 67 credits (depending on choices), although 12 of those may be offset against Gen Ed. courses (AQSR, M, NS), which leaves 28 more credits of Gen Ed. and possibly 9 more depending on secondary language needs and RIC 100. The minimum credit count will be 95 credits (without secondary language and RIC 100), leaving 25 elective credits, which could be used toward a minor.