

Academic Rhode Map for BS Physics Major at Rhode Island College

- This Rhode Map is a suggested pathway to graduation in 8 semesters
 - There are other valid pathways available to graduation - part time, summer/early spring classes, etc.
- The left column contains the suggested courses for each semester, the right column contains notes for the course and about progress towards graduation
- Some courses might not be offered during the semester shown on the map
 - In these cases, courses listed in future semesters can be substituted if their prerequisites have been satisfied
 - Your advisor can help you determine which courses can be used during your appointment each semester
- This Rhode Map is designed primarily with incoming freshmen in mind and assumes a Fall start
 - Transfer students can also use it as a guide, knowing that their transfer credits may have satisfied some requirements. Academic advisors are available to answer questions about how these will affect the program
 - Students starting in the spring may need to adjust based on class offerings and availability

GENERAL EDUCATION REQUIREMENTS CHECKLIST

| | | |
|--|---|--|
| FYW 100 – Taken in first year (Cannot be used as elective) | Distribution Courses - One from each category | Math (M) - Suggested in first year - Satisfied by MATH 212 |
| FYS 100 – Taken in first year (Cannot be used as elective) | | Arts (A) |
| | | History/Philosophy (HP) |
| | | Literature/Language (LL) |
| | | Natural Science (NS) -Satisfied by PHYS 101 |
| Connections – Taken after FYW & FYS | | Social & Behavioral Sciences (SB) |
| | | Elective(s) to bring total Gen Ed credits to 40 (E) |

ACADEMIC MAJOR CHECKLIST

| | | |
|---|--------------------------|---|
| PHYS 101 Physics for Science and Mathematics I | Select THREE from | PHYS 321 Digital Electronics (Sp) |
| PHYS 102 Physics for Science and Mathematics II | | PHYS 402 Advanced Electricity and Magnetism II |
| PHYS 103 Calculus Applications in Mechanics (F) | | PHYS 407 Quantum Mechanics II |
| PHYS 104 Calculus Applications in Electricity and Magnetism (F) | | PHYS 409 Solid State Physics |
| PHYS 306W Quantum Mechanics Laboratory (Sp odd) | Cognates | |
| PHYS 307 Quantum Mechanics I (Sp odd) | | MATH 212 Calculus I |
| PHYS 310W Thermodynamics Laboratory (Sp even) | | MATH 213 Calculus II |
| PHYS 311 Thermodynamics (Sp even) | | MATH 314 Calculus III |
| PHYS 401 Advanced Electricity and Magnetism I (Sp even) | Select TWO from | BIOL 111 Intro. Biology I |
| PHYS 403 Classical Mechanics (Sp odd) | | BIOL 112 Intro. Biology II |
| PHYS 413W Advanced Physics (F) | | CHEM 103 General Chemistry I |
| | | CHEM 104 General Chemistry II |
| | | CSCI 102 Computer Fundamentals for Cyber Security |
| | | CSCI 157 Intro to Algorithmic Thinking in Python |
| | | CSCI 211 Computer Programming and Design |
| | | PSCI 211 Intro. to Astronomy |
| | | PSCI 212 Intro. to Geology |
| | | PSCI 217 Intro to Oceanography |
| | | ANY additional MATH at 300-level or above [except for MATH 491] |

Graduation Requirements:

- Completion of General Education Requirements** – See table above
- Completion of Major Requirements** — See table above
- RIC 100 or Equivalent** — Taken in first year
- College Math Milestone** — Satisfied by placement exam or completion of MATH 010
- College Writing Competency** — Satisfied by FYW 100 with a minimum grade of C
- Minimum 120 Credit Hours** — At least 30 credits at RIC (of which 15 from major, including 12 at 300 or 400 level)
- Minimum 2.0 GPA** — Need at least 2.0 for both overall and classes in major

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| SEMESTER 1 | CR | SEMESTER 1 CHECKPOINTS |
|--|-------------------------|---|
| FYW 100 First Year Writing OR FYS 100 First Year Seminar | 4 | FYW Directed Self Placement exam |
| RIC 100 Introduction to RIC | 1 | Exempt if taking COLL 101, COLL 150, or HONR 150 |
| PHYS 101 Physics for Science and Mathematics I Lecture and Lab | 4 | Prereq = MATH 120 or appropriate score on Placement Exam Satisfies Gen Ed Natural Science (NS) |
| MATH 212 or prerequisite (MATH 209) | 4 | MATH 212 prereq = MATH 209 or appropriate score on Mathematics Placement Exam Satisfies Gen Ed Math (M) |
| General Education Course | 3-4 | |
| Requirements and GPA | | <i>Aim for at least 16 earned credits (While 12 is fulltime, 16 credits are preferred to stay on track to graduate in 4 years). Math Milestone completed. Minimum 2.0 GPA</i> |
| # CREDITS EARNED | 16 -17 | <i>By October, make appointment with advisor to discuss your schedule for next semester</i> |

| SEMESTER 2 | CR | SEMESTER 2 CHECKPOINTS |
|--|-------------------------|--|
| FYW 100 First Year Writing OR FYS 100 First Year Seminar | 4 | |
| PHYS 102 Physics for Science and Mathematics II Lecture and Lab | 4 | Prereq = PHYS 101 Satisfies Gen Ed Elective |
| MATH 212 Calculus I OR MATH 213 Calculus II | 4 | MATH 212 prereq = MATH 209 or appropriate score MATH 213 prereq = MATH 212 or appropriate score |
| General Education Course | 3-4 | |
| Requirements and GPA | | <i>Aim for minimum of 32 earned credits, with minimum of 2.0 GPA overall and in the major</i> |
| # CREDITS EARNED | 15 -16 | <i>By March, make appointment with advisor to discuss your schedule for next semester</i> |

| SEMESTER 3 | CR | SEMESTER 3 CHECKPOINTS |
|--|-------------------------|---|
| ONE from BIOL 111 Intro. Biology I CSCI 157 Intro. to BIOL 112 Intro. Biology II Algorithmic CHEM 103 General Thinking in Python Chemistry I CSCI 211 Computer CHEM 104 General Programming and Design Chemistry II PSCI 211 Intro to CSCI 102 Computer Astronomy Fundamentals PSCI 212 Intro to Geology for Cyber Security PSCI 217 Intro to Oceanography | 4 | Prereqs vary—check catalog Need Two from this cognate list, which also includes MATH 300-level and above courses (except for MATH 491) if you have the prerequisite |
| PHYS 103 Calculus Applications in Mechanics (F) | 1 | Prereqs = MATH 212 and PHYS 101 |
| PHYS 104 Calculus Applications in Electricity and Magnetism (F) | 1 | Prereqs = MATH 212 and PHYS 102 |
| MATH 213 Calculus II OR MATH 314 Calculus III | 4 | MATH 213 prereq = MATH 212 MATH 314 prereq = MATH 213 |
| General Education Course | 3-4 | |
| Requirements and GPA | | <i>Aim for minimum of 48 earned credits, with minimum of 2.0 GPA overall and in major</i> |
| # CREDITS EARNED | 13 -14 | <i>By October, make appointment with advisor to discuss your schedule for next semester and discuss possible minor in Sept. Also discuss opportunities for research and Independent study</i> |

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| SEMESTER 4 | | CR | SEMESTER 4 CHECKPOINTS |
|--|---|---------------|--|
| ONE from PHYS 309 Nanoscience and Nanotechnology (F) PHYS 312 Mathematical Methods in Physics (F) PHYS 315 Optics (Sp) PHYS 320 Analog Electronics (F) | PHYS 321 Digital Electronics (Sp) PHYS 402 Advanced Electricity and Magnetism II PHYS 407 Quantum Mechanics II PHYS 409 Solid State Physics | 3-4 | Prereqs vary—see catalog. Need THREE from this list |
| PHYS 306W Quantum Mechanics Laboratory (Sp odd) OR PHYS 310W Thermodynamics Laboratory (Sp even) | | 1 | PHYS 306W prereq = completed/concurrent enrollment in PHYS 307 PHYS 310W prereq = completed/concurrent enrollment in PHYS 311 |
| PHYS 307 Quantum Mechanics I (Sp odd) OR PHYS 311 Thermodynamics (S even) (whichever available) | | 3 | PHYS 307 prereq = PHYS 102 and MATH 212 or CHEM 405 PHYS 311 prereq = PHYS 101 and completion or current enrollment in MATH 213, or consent |
| MATH 314 Calculus III OR ONE from BIOL 111 Intro. Biology I BIOL 112 Intro. Biology II CHEM 103 General Chemistry I CHEM 104 General Chemistry II CSCI 102 Computer Fundamentals for Cyber Security | CSCI 157 Intro. to Algorithmic Thinking in Python CSCI 211 Computer Programming and Design PSCI 211 Intro to Astronomy PSCI 212 Intro to Geology PSCI 217 Intro to Oceanography | 3-4 | Prereqs vary—check catalog Need Two from this cognate list, which also includes MATH 300-level and above courses (except for MATH 491) if you have the prerequisite |
| General Education Course | | 3-4 | |
| Requirements and GPA | | | <i>Aim for minimum of 64 earned credits, with minimum of 2.0 GPA overall and in the major</i> |
| # CREDITS EARNED | | 13 -16 | <i>By March, make appointment with advisor to discuss your schedule for next semester</i> <i>Discuss opportunities for research and Independent study with your advisor if you have not already done so</i> |

| SEMESTER 5 | | CR | SEMESTER 5 CHECKPOINTS |
|--|---|---------------|--|
| ONE from BIOL 111 Intro. Biology I BIOL 112 Intro. Biology II CHEM 103 General Chemistry I CHEM 104 General Chemistry II CSCI 102 Computer Fundamentals for Cyber Security | CSCI 157 Intro. to Algorithmic Thinking in Python CSCI 211 Computer Programming and Design PSCI 211 Intro. to Astronomy PSCI 212 Intro. to Geology PSCI 217 Intro to Oceanography | 3-4 | Prereqs vary—check catalog Need Two from this cognate list, which also includes MATH 300-level and above courses (except for MATH 491) if you have the prerequisite |
| ONE from PHYS 309 Nanoscience and Nanotechnology (F) PHYS 312 Mathematical Methods in Physics (F) PHYS 315 Optics (Sp) PHYS 320 Analog Electronics (F) | PHYS 321 Digital Electronics (Sp) PHYS 402 Advanced Electricity and Magnetism II PHYS 407 Quantum Mechanics II PHYS 409 Solid State Physics | 3-4 | Prereqs vary—see catalog. Need THREE from this list. |
| Gen Ed - Connections (C) | | 4 | Prereqs = FYW and FYS. |
| General Education Course | | 3-4 | |
| Requirements and GPA | | | <i>Aim for minimum of 80 earned credits, with minimum of 2.0 GPA overall and in the major</i> |
| # CREDITS EARNED | | 13 -16 | <i>By October, make appointment with advisor to discuss your schedule for next semester</i> |

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| SEMESTER 6 | CR | SEMESTER 6 CHECKPOINTS |
|---|-------------------------|--|
| PHYS 306W Quantum Mechanics Laboratory (Sp odd) OR PHYS 310W Thermodynamics Laboratory (Sp even) (whichever available) | 1 | PHYS 306W prereq = completed/concurrent enrollment in PHYS 307 PHYS 310W prereq = completed/concurrent enrollment in PHYS 311 |
| PHYS 307 Quantum Mechanics I (Sp odd) OR PHYS 311 Thermodynamics (S even) (whichever available) | 3 | PHYS 307 prereq = PHYS 102 and MATH 212 or CHEM 405; PHYS 311 prereq = PHYS 101 and completion or current enrollment in MATH 213, or consent |
| PHYS 401 Advanced E and M (Sp even) OR PHYS 403 Classical Mechanics (Sp odd) | 4 | Prereqs for either = PHYS 102 and MATH 314. Take whichever available |
| Gen Ed, elective, or course toward minor | 3-4 | |
| Gen Ed, elective, or course toward minor | 3-4 | |
| Requirements and GPA | | <i>Do not take more than 18 credits. Aim for minimum of 96 earned credits, with minimum of 2.0 GPA overall and in the major. Apply for degree audit online through MyRIC</i> |
| # CREDITS EARNED | 14 -16 | <i>By March, make appointment with advisor to discuss your schedule for next semester</i> |

| SEMESTER 7 | CR | SEMESTER 7 CHECKPOINTS |
|---|-------------------------|--|
| ONE from PHYS 309 Nanoscience and Nanotechnology (F) PHYS 312 Mathematical Methods in Physics (F) PHYS 315 Optics (Sp) PHYS 320 Analog Electronics (F) PHYS 321 Digital Electronics (Sp) PHYS 402 Advanced Electricity and Magnetism II PHYS 407 Quantum Mechanics II PHYS 409 Solid State Physics | 3-4 | Prereqs vary—see catalog. Need THREE from this list. |
| PHYS 413W Advanced Physics (F) | 3 | Prereqs = PHYS 102 and PHYS 313 or PHYS 313W |
| Gen Ed, elective, or course toward minor | 3-4 | |
| Gen Ed, elective, or course toward minor | 3-4 | |
| Requirements and GPA | | <i>Aim for minimum of 108 earned credits, with minimum of 2.0 GPA overall and in the major</i> |
| # CREDITS EARNED | 12 -15 | <i>By October, make appointment with advisor to discuss your schedule for next semester</i> |

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| SEMESTER 8 | CR | SEMESTER 8 CHECKPOINTS |
|---|-------------------------|---|
| ONE from PHYS 309 Nanoscience and Nanotechnology (F) PHYS 312 Mathematical Methods in Physics (F) PHYS 315 Optics (Sp) PHYS 320 Analog Electronics (F) PHYS 321 Digital Electronics (Sp) PHYS 402 Advanced Electricity and Magnetism II PHYS 407 Quantum Mechanics II PHYS 409 Solid State Physics | 3-4 | Prereqs vary—see catalog. Completed THREE from this list. |
| PHYS 401 Advanced E and M (Sp even) OR PHYS 403 Classical Mechanics (Sp odd) | 4 | Prereqs for either = PHYS 102 and MATH 314. Take whichever available. |
| Elective or course toward minor | 3-4 | |
| Elective or course toward minor | 3-4 | |
| Requirements and GPA | | <i>Need minimum of 120 earned credits, with minimum of 2.0 GPA overall and in the major</i> |
| # CREDITS EARNED | 14 -16 | <i>Attend Gradfest and Commencement</i> |

Notes:

- Prior to enrolling in any Physics course students must have completed the College Mathematics Milestone. Math Requirement for major (MATH 010 or SAT score >480 or Math Placement Exam). Also note: MATH 209 Pre-Calculus Mathematics is a prerequisite for MATH 212, unless score high enough on Math Placement Exam.
- **You should also consider getting a Math minor:**
 - Requirements:
 - Minimum of 20-22 credit hours (six courses), as follows:
 - MATH 209 (or 240),
 - MATH 212
 - MATH 213
 - At least 8 MATH or DATA credits at the 300-level or above, except Mathematics 409.
 - For a physics student MATH 212 Calculus I; MATH 213 Calculus II; and MATH 314 Calculus III will all double-count, along with any other MATH courses you take as part of the Physics BS.
- The total number of credits needed for the major, general education, and other requirements may be less than the 120 required for graduation. Those remaining credits can be satisfied with electives, or they can be used toward a second major or minor which could be very useful.
 - Along with your advisor, this Rhode Map can help you determine if a second major or minor could fit into your plan

Approved by Department Chair: Andrea Del Vecchio

Date: 12/2/2024

Approved by Undergraduate Curriculum Committee

Date: 11/9/2024

Revised:

The total credit count for the major is 56-61 credits, and 40 credits for General Education. However, 12 Gen. Ed. credits for M, NS and Elective can double count, so the program can be completed in 84-89 credits.