Academic Rhode Map for BS Physics Major at Rhode Island College

GENERAL EDUCATION: A complete listing of General Education courses can be found in the online catalog; 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, Portuguese, or Spanish. For other ways to satisfy the second language requirement look under the Gen Ed. section of the catalog. For information about Math Placement exam visit the orientation webpage. Any courses marked (F) offered Fall only; (Sp) Spring only. **Courses with an asterisk* have prerequisites. Courses with a "W" in the prefix are Writing in the Discipline (WID) courses and will be writing intensive.**

Academic Major Checklist	Course	Academic Major Checklist	Course
PHYS 101 Physics for Science and Mathematics I*		PHYS 403 Classical Mechanics (Sp odd)*	
PHYS 102 Physics for Science and Mathematics II*		PHYS 413W Advanced Physics (F)* (WID)	
PHYS 103 Calculus Applications in Mechanics (F)*		**Select THREE 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***	
PHYS 104 Calculus Applications in Electricity and Magnetism (F)*		**Cognates**	
PHYS 306W Quantum Mechanics Laboratory (Sp odd)*		MATH 212 Calculus I*	
PHYS 307 Quantum Mechanics I (Sp odd)*		MATH 213 Calculus II*	
PHYS 310W Thermodynamics Laboratory (Sp even)		MATH 314 Calculus III*	
PHYS 311 Thermodynamics (Sp even)*		Select TWO 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; ANY additional MATH at 300-level or above* [except for MATH 491]	
PHYS 401 Advanced Electricity and Magnetism I (Sp even)*			

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 you will need to take in a special order, there is some flexibility in this 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 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 Milestone (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. Writing in the Discipline requirement is satisfied through major courses
- 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: Sarah Knowlton Date 6/22/2016
Approved by Undergraduate Curriculum Committee: Date 6/22/2016 Revised: 6/1/2023

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SEMESTER 1	CR		SEMESTER 1 CHECKPOINTS
First Year Writing (FYW 100) or First Year Seminar (FYS 100).	4		FYW 100P is a 6-credit option. There is a Directed Self-Placement questionnaire you can take to aid in this decision; check the RIC First Year Writing website
RIC 100 Introduction to Rhode Island College	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 Mathematics Placement Exam; satisfies Gen Ed Natural Science (NS)
MATH 209 Precalculus* if needed to be able to take MATH 212 Calculus I* next semester, or MATH212* or Gen Ed Dist. course from (A); (L); (H), or (SB).	4		Prereq. for MATH 209 is MATH 120 or appropriate score. MATH 212 Prereq. is 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		Language placement test with Dept. of Modern Languages (optional). Complete Second Lang 101 (if needed)
Requirements and GPA			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
# CREDITS EARNED	17		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		Complete FYS and FYW, for FYW, grade C or better
PHYS 102 Physics for Science and Mathematics II* Lecture and Lab	4		Prereq. is PHYS 101; satisfies Gen Ed Advanced Quantitative/Scientific Reasoning (AQSR)
MATH 212 Calculus I* or MATH 213 Calculus II*	4		Prereq. for MATH 212 is MATH 209 or app. score. Prereq. for MATH 213 is MATH 212
Gen Ed--Second Lang 102* (if needed), or Gen Ed from (A); (L); (H), or (SB).	4		Complete Second Language 102* (if needed)
Requirements and GPA			Aim for minimum of 32 earned credits, with minimum of 2.0 GPA overall and in the major
# CREDITS EARNED	16		Make appointment with advisor to discuss your schedule for next semester in Feb.

SEMESTER 3	CR		SEMESTER 3 CHECKPOINTS
Select 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	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		Prereq. for MATH 213 is MATH 212; Prereq. for MATH 314 is 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			Aim for minimum of 48 earned credits, with minimum of 2.0 GPA overall and in major
# CREDITS EARNED	15-16		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

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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)* (whichever available)	1		Prereq. for PHYS 306W is completed or concurrent enrollment in PHYS 307; prereq. for PHYS 310W is completed or concurrent enrollment in PHYS 311
PHYS 307 Quantum Mechanics I (Sp odd)* or PHYS 311 Thermodynamics (S even)* (whichever available)	3		Prereq. for PHYS 307 is PHYS 102 and MATH 212 or CHEM 405; prereqs for PHYS 311 are 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, or ANY additional MATH at 300-level or above* [except for MATH 491]	3-4		Prereq. for MATH 314 is MATH 213. MATH 314 completed Prereqs from list vary—see catalog; need TWO from this cognate list
Gen Ed Distribution course (A, H, L, or SB)	4		
Requirements and GPA			Aim for minimum of 64 earned credits, with minimum of 2.0 GPA overall and in the major
# CREDITS EARNED	14-16		Make appointment with advisor to discuss your schedule for next semester in Feb. Discuss opportunities for research and Independent study with your advisor if you have not already done so.

SEMESTER 5	CR		SEMESTER 5 CHECKPOINTS
ONE from BIOL 111*; BIOL 112*; CHEM 103*; CHEM 104*; CSCI 102*; CSCI 157*; CSCI 211*; PSCI 211; PSCI 212; PSCI 217, or ANY additional MATH at 300-level or above* [except for MATH 491], or elective	3-4		Prereqs. vary–see catalog. Completed TWO from this cognate list
ONE from PHYS 309 (F)*; PHYS 312 (F)*; PHYS 315 (Sp)*; PHYS 320 (F)*; PHYS 321 (Sp), PHYS 402*; PHYS 407*; PHYS 409*	3-4		Prereqs. vary–see catalog. Need THREE from this list.
Choose 1 Connections course (Gen Ed-C)	4		Prereqs are 45 completed credits and FYW and FYS.
Gen Ed Distribution course (A, H, L, or SB)	4		
Requirements and GPA			Aim for minimum of 80 earned credits, with minimum of 2.0 GPA overall and in the major
# CREDITS EARNED	14-16		Make appointment with advisor to discuss schedule for next semester in Sept.

SEMESTER 6	CR		SEMESTER 6 CHECKPOINTS
PHYS 306W Quantum Mechanics Laboratory (Sp odd)* or PHYS 310W Thermodynamics Laboratory (Sp even)* (whichever available)	1		Prereq. for PHYS 306W is completed or concurrent enrollment in PHYS 307; prereq. for PHYS 310W is completed or concurrent enrollment in PHYS 311. PHYS 306W and 310W completed.
PHYS 307 Quantum Mechanics I (Sp odd)* or PHYS 311 Thermodynamics (S even)* (whichever available)	3		Prereq. for PHYS 307 is PHYS 102 and MATH 212 or CHEM 405; prereqs for PHYS 311 are PHYS 101 and completion or current enrollment in MATH 213, or consent. PHYS 307 and 311 completed.
PHYS 401 Advanced E and M (Sp even)* or PHYS 403 Classical Mechanics (Sp odd)*	4		Prereqs. for either are PHYS 102 and MATH 314. Take whichever available
Gen Ed Distribution course, elective, or course toward minor	3-4		Prereq. completed or concurrent MATH 314
Gen Ed Distribution course, elective, or course toward minor	3-4		
Requirements and GPA			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
# CREDITS EARNED	14-16		Make appointment with advisor to discuss schedule for next semester in Feb.

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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)* (WID)	3		Prereqs. PHYS 102 and PHYS 313 or PHYS 313W
Gen Ed Distribution course, or elective	3-4		
Gen Ed Distribution course, elective, or course toward minor	3-4		
Requirements and GPA			Aim for minimum of 108 earned credits, with minimum of 2.0 GPA overall and in the major. All ten GE courses and second lang. req. completed
# CREDITS EARNED	12-15		Make appointment with advisor to discuss your schedule for next semester in Sept.

SEMESTER 8	CR		***SEMESTER 8 CHECKPOINTS***
ONE from PHYS 309 (F)*; PHYS 312 (F)*; PHYS 315 (Sp)*; PHYS 320 (F)*; PHYS 321 (Sp), PHYS 402*; PHYS 407*; PHYS 409*, or elective	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 are PHYS 102 and MATH 314. Take whichever available. PHYS 401 and PHYS 403 completed
Elective, or course toward minor	3-4		
Elective, or course toward minor	3-4		
Requirements and GPA			Need minimum of 120 earned credits, with minimum of 2.0 GPA overall and in the major
# CREDITS EARNED	14-16		Attend Gradfest and Commencement

For more information, check the Physical Sciences Department website: http://ricollege.prod.acquia-sites.com/department-directory/department-physical-sciences/department-physical-sciences-undergraduate-programs/physics-bs

Note: 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:** "A minor in mathematics consists of a minimum of 20-22 credit hours (six courses), as follows: Mathematics 209 (or 240), 212, 213, and 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.

NOTE: The minimum total credit count for the Physics BS is 56-61 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 84 credits (without secondary language and RIC 100), leaving 36 elective credits, which could be used toward minors or even a double major.