

Mathematics with MS in Computer Science 4+1

Recommended Five-Year Plan (Fall 2023)

The recommended five-year plan is designed to provide a blueprint for students to complete their degrees within five years. These plans are the recommended sequences of courses. Students must meet with their Major Advisor to develop a more individualized plan to complete their degree. This plan assumes that no developmental courses are required. If developmental courses are needed, students may have additional requirements to fulfill which are not listed in the plan.

NOTE: This recommended Five-Year Plan is applicable to students admitted into the major during the 2023-2024 academic year.

To enroll, visit <https://www.ramapo.edu/dmc/4plus1/>

Changes to the traditional four-year plan are noted in undergraduate courses taken in order to meet entry requirements, graduate courses taken as an undergraduate, and normal graduate courses

First Year					
Fall Semester	HRS	✓	Spring Semester	HRS	✓
Gen Ed Quantitative Reasoning: MATH 121 - Calculus I *	4		CMPS 130 - Sci Problem Solving with Python or CMPS 147 – Computer Science I	4	
Gen Ed: INTD 101 - First Year Seminar	4		Gen Ed: Historical Perspectives	4	
Gen Ed: CRWT 102 - Critical Reading & Writing II	4		MATH 237 - Discrete Structures WI OR MATH 205 - Mathematical Structures WI	4	
Gen Ed: SOSC 110 - Social Science Inquiry	4		MATH 122 - Calculus II	4	
			TAS Pathways Module 1: (PATH-TS1) Career Assessment/ Advising	Degree Rqmt.	
Total:	16		Total:	16	

Second Year					
Fall Semester	HRS	✓	Spring Semester	HRS	✓
MATH 225 - Multivariable Calculus	4		MATH 305 – Differential Equations	4	
MATH 262 - Linear Algebra WI	4		MATH Elective numbered above 237	4	
Gen Ed Scientific Reasoning: PHYS 116 - Physics I w/ Calculus Lecture and PHYS 116L - Introductory Physics I Lab	4+1		Gen Ed Distribution Category: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics	4	
Gen Ed: AIID 201 - Studies in the Arts & Humanities	4		CMPS 148 Computer Science 2 OR CMPS 240 Data Analytics	4	
TAS Pathways Module 2: (PATH-TS2) Resume/CV Writing	Degree Rqmt.		TAS Pathways Module 3: (PATH-TS3) Interview Preparation	Degree Rqmt.	
Total:	17		Total:	16	

Third Year					
Fall Semester	HRS	✓	Spring Semester	HRS	✓
MATH 432 - Abstract Algebra WI	4		MATH 416 - Introduction to Analysis	4	
MATH Elective 300 Level or Above (possibly Math 353 **)	4		CMPS 310 - Big Data Programming	4	
MATH Elective numbered above 237	4		Gen Ed: Global Awareness	4	

CMPS 231 - Data Structures	4		Gen Ed: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics (Must be outside of TAS)	4	
Elective ***	2				
Total:	18		Total:	16	

Fourth Year

Fall Semester	HRS	✓	Spring Semester	HRS	✓
MATH 441 - History of Math WI	4		CMPS 531 Data Structures and Algorithms	3	
CMPS 547 Foundations of Computer Science	3		MSCS Elective or DATA 620	3	
CMPS 311 - Operating System Design ³	4		MATH Elective 300 Level or Above	4	
Elective	4		Elective	4	
Total:	15		Total:	14	

Fifth Year - MSCS

Fall Semester	HRS	✓	Spring Semester	HRS	✓
MSCS Elective	3		MSCS Elective or DATA 620	3	
MSCS Elective	3		MSCS Elective	3	
MSCS Elective	3		CMPS 750 - THESIS	3	
MSCS Elective	3				
Total:	12		Total:	9	

Total Credits Required for undergraduate degree: 128 credits****

GPA Required for BS in Computer Science: 2.0

GPA Required for 4+1 Pathway: 3.0

WI: Writing Intensive - 3 courses required in the major.

* See the course catalog for prerequisites for Calculus I. One of the ways to enter Calculus I is to place into it via the Calculus Placement Test called Accuplacer Advanced Algebra and Functions Test (AAF Test) at the RCNJ Testing Center. The Testing Center is open all year round. If the placement test results for a given student indicate that developmental courses are required (for instance, Precalculus, or Elementary Algebra Topics followed by Precalculus), such developmental courses may be taken as early as during the summer session(s) preceding the student's freshman year [Summer Session I (late May – late June) or Summer Session II (mid July – mid August)]. See the RCNJ Testing Center website for more details on the Calculus Placement Test.

Those mathematics majors who end up taking Precalculus, which is a 4-credit-hour course counting towards graduation credits, can count it as, for instance, the 4 HR Elective in the Fourth Year Spring in the table above.

** If a student wishes to take a statistics course to fulfill one of their "MATH Elective Level 300 or Above" requirements, the student is advised to take exactly one of the following: Math 353 Statistics OR Math 370 Applied Statistics, but not both. If a student takes both of these two courses, then the one taken earlier will count as a "MATH Elective Level 300 or Above" requirement, but the one taken later will be counted as a

general elective, and not as a “Math elective Level 300 or above”. Similarly, if a student first takes MATH 237 and later takes MATH 205, then MATH 205 will not count as a math elective, but as a general elective.

*** An additional 2-credit elective is required in the 3rd year because graduate courses are only 3 credits, instead of the usual 4 for undergraduate courses. Thus, a student must take an additional 2 credits to meet the 128-credit graduation requirement. Note that one additional credit hour is being taken in the fall second year Physics lab.

Total Graduate Credits Required: 30 credits****

GPA Required for MSCS: 3.0

****The 9 credits of graduate coursework taken in the fourth-year will double count towards both the undergraduate degree requirement of 128 credits as well as the required 30 graduate credits.