RAMAPO COLLEGE OF NEW JERSEY

School of Theoretical and Applied Science

Mathematics with MS in Data Science 4+1

Recommended Five-Year Plan (Fall 2022)

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 2022-2023 academic year. To enroll, visit https://www.ramapo.edu/data-science/4plus1/

Changes to the traditional four-year plan are noted in light red.

First Year					
Fall Semester	**HRS**	**✓**	**Spring Semester**	**HRS**	**✓**
Gen Ed Quantitative Reasoning: MATH 121 - Calculus I *	4		CMPS 130 - Scientific Programming with Python or CMPS 147 – Computer Science	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: PHYS 116 - Physics I w/ Calculus Lecture and PHYS 116L - Introductory Physics I Lab	4+1		Gen Ed: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics	4	
Gen Ed: AIID 201 - Studies in the Arts & Humanities	4		Gen Ed: Global Awareness	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 Level 300 or Above	4		MATH Elective: Math 370 OR Math 353, not both**	4	
MATH Elective numbered above 237	4		Elective	4	
Gen Ed: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics **(Must be outside of TAS)**	4		Elective	4	
			Elective (for missing 2 credits senior year)	2	
Total:	16		**Total:**	18	

Fourth Year					
Fall Semester	**HRS**	**✓**	**Spring Semester**	**HRS**	**✓**
MATH 441 - History of Math WI	4		Elective	4	
Elective	4		Elective	4	
DATA 601: Introduction to Data Science (MS)	3		Elective	4	
MATH 570: Applied Statistics (MS)	3		DATA 620: Ethics for Data Science (MS)	3	
Total:	14		**Total:**	15	

Fifth Year					
Fall Semester	**HRS**	**✓**	**Spring Semester**	**HRS**	**✓**
CMPS 530: Python for Data Science	3		CMPS 664: Advanced Database and Big Data Systems	3	
MATH 680: Advanced Mathematical Modeling	3		Data Science Elective at 600/700 level	3	
Technical Elective AND/OR Interdisciplinary Elective AND/OR DATA 730 Fieldwork Experience***	3 + 3		DATA 750: Data Science Thesis	3	
Total:	12		**Total:**	9	

Total Undergraduate Credits Required: 128 credits (all courses listed in first four years)
Major GPA required for undergraduate graduation: 2.0
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 Accuplacer Advanced Algebra and Functions (AAF) placement 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 AAF 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.

**A student in Math 4+1 program must take either Math 353 or Math 370, but not both. Math 353 is a fall course. Math 370 is a spring course. 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.

Total Graduate Credits Required: 30 credits (listed with MS in fourth year and all fifth year courses)
Student must be in good academic standing:

***Students must complete **two** technical electives and **one** interdisciplinary elective. DATA 730 Fieldwork Experience may be used to replace **one** of the three total electives.