RAMAPO COLLEGE OF NEW JERSEY

# Mathematics with MS in Applied Mathematics 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/dmc/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 - 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 | | 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 300 Level or Above (possibly Math 353 **) | 4 | | MATH Elective 300 Level or Above | 4 | |
| MATH Elective numbered above 237 | 4 | | Elective | 4 | |
| Gen Ed Distribution Category: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics **(Must be outside of TAS)** | 4 | | Elective | 4 | |
| **Elective *** | 2 | | | | |
| **Total:** | 18 | | **Total:** | 16 | |

| Fourth Year | | | | | |
|---|---|---|---|---|---|
| **Fall Semester** | **HRS** | **✓** | **Spring Semester** | **HRS** | **✓** |
| MATH 441 - History of Math **WI** | 4 | | **DATA 620 – Ethics in Data and Computing (MSAM)**** | 3 | |
| **MATH 562 - Applied Linear Algebra (MSAM)**** | 3 | | **MATH 654 – Applied Probability (MSAM) OR MSAM Category 1 Elective**** | 3 | |
| Elective | 4 | | Elective | 4 | |
| Elective | 4 | | Elective | 4 | |
| **Total:** | 15 | | **Total:** | 14 | |

| Fifth Year - MSAM | | | | | |
|---|---|---|---|---|---|
| **Fall Semester** | **HRS** | **✓** | **Spring Semester** | **HRS** | **✓** |
| **MATH 680 – Advanced Mathematical Modeling** | 3 | | **MSAM Category 1 Elective or MATH 654 – Applied Probability (MSAM)** | 3 | |
| **MSAM Category 1 Elective** | 3 | | **MATH 750 - THESIS** | 3 | |
| **MSAM Category 2 Elective** | 3 | | **MSAM Category 2 Elective** | 3 | |
| **MSAM Category 2 Elective** | 3 | | | | |
| **Total:** | 12 | | **Total:** | 9 | |

**Total Credits Required for undergraduate degree:** 128 credits****
**GPA Required for BS in Mathematics:** 2.0
**GPA Required for 4+1 Pathway:** 3.0
**WI:** Writing Intensive-3 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.

***Two additional credits are required in the 3rd year because graduate courses are only 3 credits, instead of the usual 4 credits for undergraduate courses. Thus, a student must take an additional 2 credits to meet the 128-credit undergraduate 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 MSAM:** 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.