Mathematics, A.S.

HEGIS: 5617.00
PROGRAM CODE: 01041
PROGRAM DIRECTOR: Dr. Rina Yarmish

DEPARTMENT: MATHEMATICS AND COMPUTER SCIENCE

The Mathematics AS degree is designed to provide students with a solid foundation in the fundamentals of mathematics in preparation for transfer to baccalaureate programs. Courses provide extensive background in assessing formal logical statements for validity, providing proofs by direct and indirect methods, use of differentiation and integration in problem solving, testing of infinite series for convergence or divergence, and support communication of mathematical ideas in writing.

The curriculum presented here applies to students who started the major in Fall 2025 or Spring 2026. If you enrolled as a matriculant prior to that, please see the *College Catalog* for the year you started the major as a matriculant for the curriculum requirements that apply to you.

Consultation with the Program Advisor is required.

Degree Maps:

Degree Map for Mathematics, A.S. - MAT 9010 or MAT 9B0 or MAT 900 Placement
Degree Map for Mathematics, A.S. - MAT 1500 Placement - Calculus I

Your Degree Map contains the suggested term-by-term course sequence for your academic path towards graduation.

To ensure successful and timely completion of your degree, it is recommended that you meet with your academic advisor to discuss your unique map.

Please note some courses *may* only be offered once an academic year.

Program Learning Outcomes

Upon successful completion of the Mathematics degree program requirements, graduates will:

1. Assess formal logical statements for validity
2. Give proofs by direct and inductive methods
3. Solve problems using differentiation and integration
4. Test infinite series for convergence or divergence
5. Manipulate and interpret matrix notation
6. Analyze graphs for paths, circuits, and spannings

7. Communicate mathematical ideas clearly in writing

College Requirements:

English and Math proficient as determined by the CUNY Proficiency Index, unless otherwise exempt, or successful completion of any required developmental course(s).

Civic Engagement Experiences:

One (1) Civic Engagement experience satisfied by Civic Engagement Certified or Civic Engagement Component course or approved outside activity.

Writing Intensive Requirement:

One (1) Writing Intensive Course in any discipline is required.

Required Core (4 Courses, 12 Credits):

When Required Core Courses are specified for a category, they are required for the major

- ENG 1200 - Composition I 3 Credit(s)
- ENG 2400 - Composition II 3 Credit(s)
- **Mathematical & Quantitative Reasoning Course***
  - MAT 9010 - Introduction to Mathematics with College Algebra 3 Credit(s) **^ or**
  - MAT 9B0 - College Algebra for STEM Majors 3 Credit(s) **^ or**
  - MAT 900 - College Algebra 3 Credit(s) **^ or**
  - MAT 1400 - Analytic Geometry and Pre-Calculus Mathematics 3 Credit(s) **or**
  - MAT 1500 - Calculus I 3 Credit(s)
- **Life & Physical Sciences Course 3 Credit(s)**

Flexible Core (6 Courses, 18 Credits):

When Flexible Core Courses are specified for a category, they are required for the major

One course from each Group A to D (Group E is satisfied by the courses show). **No more than two courses can be selected from the same discipline**

A. World Cultures and Global Issues Designated Course

B. U.S. Experience in its Diversity Designated Course

C. Creative Expression Designated Course

D. Individual and Society Designated Course

- *Recommended:* CIS 100 - Digital Society 3 Credit(s)

E. Scientific World Designated Course*

- MAT 1400 - Analytic Geometry and Pre-Calculus Mathematics 3 Credit(s) **^ or**
- MAT 1500 - Calculus I 3 Credit(s) **or**
- MAT 1600 - Calculus II 3 Credit(s)
- **AND**
- CS 1200 - Introduction to Computing 3 Credit(s)

Major Requirements (7 to 9 Courses, 24 to 29 Credits):

- CS 3500 - Discrete Structures 3 Credit(s)
- MAT 2100 - Calculus III 3 Credit(s)
- MAT 5500 - Differential Equations 3 Credit(s)
- MAT 5600 - Linear Algebra 3 Credit(s)
  AND
- MAT 2200 - Business Statistics 4 Credit(s) **or**
  - BA 2200 - Business Statistics 4 Credit(s)

  OR
- MAT 9100 - Biostatistics 4 Credit(s) **or**
  - BIO 9100 - Biostatistics 4 Credit(s)

If not taken for Required Core or Flexible Core

- MAT 1500 - Calculus I 3 Credit(s)
- MAT 1600 - Calculus II 3 Credit(s)

Select <u>ONLY ONE</u> (1) of the two options below based on initial Math Placement**

Option 1: (2 Courses, 7 Credits)

If student's initial Mathematics Placement is **<u>below</u>** MAT 1500:

- MAT 1000 - College Trigonometry 3 Credit(s)
  AND

<u>Select **one (1)** course from the following</u>:

- CS 13A0 - Advanced Programming Techniques 4 Credit(s)
- MAT 1100 - Finite Mathematics 4 Credit(s)
- MAT 3200 - Introduction to Set Theory 4 Credit(s)
- MAT 7100 - Applications of Linear Algebra and Vector Analysis 4 Credit(s)

Option 2: (2 Courses, 8 Credits)

If student's initial Mathematics Placement is MAT 1500:

Select **two (2)** from the following:

- CS 13A0 - Advanced Programming Techniques 4 Credit(s)
- MAT 1100 - Finite Mathematics 4 Credit(s)
- MAT 3200 - Introduction to Set Theory 4 Credit(s)
- MAT 7100 - Applications of Linear Algebra and Vector Analysis 4 Credit(s)

Electives:

1 - 6 credits sufficient to meet required total of 60 credits

Notes:

^ Depending on Math placement, students may be required to complete MAT 9010 **or** MAT 9B0 **or** MAT 900 **and/or** MAT 1000 **and** MAT 1400
****** Consultation with the Mathematics Department is **HIGHLY** recommended to ensure that the student selects the correct option.

* This program has a waiver to require particular courses in the Common Core, otherwise more than the minimum credits for the degree may be necessary.

Total Credits: 60