

Master of Education Leading to Massachusetts INITIAL LICENSURE



Mathematics (1-6, 5-8, or 8-12)

For licensure: 38 credits, 4 terms full-time • Non-licensure: 33 credits, 3 terms full-time

• Program approved by the Mass. Dept. of Elementary & Secondary Education

The **MATHEMATICS EDUCATION** program prepares students to effectively teach mathematics at the elementary (1-6), middle (5-8), and high school levels (8-12). Students learn the concepts, language, and procedures of mathematics; and develop competence in mathematics and interest in applying it to the world around them. The program builds on the College's successful student-centered curriculum that links theory and practice in a collaborative learning environment.

Learning Outcomes — Teacher candidates will understand and apply mathematical problem solving processes and construct rigorous mathematical arguments. They will understand how mathematics is best learned and taught, supporting positive attitudes towards the subject. They will make connections among ideas in mathematics and other fields. They will use varied representations of mathematical ideas to communicate mathematical thinking and deepen students' understanding. They will embrace technology as an essential tool for mathematics. They will become proficient in computation, understand relationships among quantities, use measurement concepts and tools, spatial visualizations and geometric modeling. They will understand data analysis, statistics, and probability. For middle and high school levels, they will also understand concepts, techniques and applications of the calculus and discrete mathematics.

Careers — The program is ideally suited for: a) adults who want to work with and help children learn the language of mathematics; b) current teachers who wish to add mathematics as a new subject area; c) those wishing to become National Board Certified mathematics teachers, mathematics coaches, mathematics specialists, and mathematics coordinators/directors; d) non-mathematics majors who wish to earn a highly qualified title to their academic experience to enhance and broaden their teaching careers; and e) career changers who wish to pursue a more meaningful career in working with children. Teachers of mathematics at all school levels remain in high demand nationally; and individuals coming from careers in business, engineering, finance and the military are often very successful in relating the importance of the mathematics they teach, to the real world they have worked in for many years.

Admissions requirements: Bachelor's degree and other general requirements. Applicants for levels 5-8 and 8-12 must take a Cambridge College math placement test. Based on test results and program chair's recommendation, selected lower level math courses may be required before initial licensure courses.

Matriculation: All new students must register for the non-licensure option until they pass the MA Communication & Literacy Test (MTEL).

Non-licensure option: All program components are required except the Practicum, Practicum Seminar and teacher tests. Non-licensure students must complete all pre-practicum hours embedded in the courses.

Satisfactory academic progress — All students must maintain a minimum GPA of 3.0 or be placed on academic probation.

Program and course schedule subject to change.

Professional Seminar & Project 9 credits

- EME691N-693N Professional Seminar in Mathematics - Initial Level (3 terms @ 2 credits) start in first term
- EME800 Independent Learning Project (3 credits) take with Seminar III

Courses 24 credits

Take courses for your licensure level 1-6 5-8 . . . 8-12

- MAT603 Arithmetic to Algebra: Developing Math Patterns & Ideas ● ●
- MAT605 Technol in Math Learning & Teaching . ● ●
- MAT607 College Algebra ● ●
- MAT609 Euclidean Geometry ● ●
- MAT611 Calculus I ● ●
- MAT613 Discrete Math ●
- MAT615 History of Math ● ● ●
- MAT618 Math Essentials ●
- MAT621 Data Analysis ●
- MAT623 Teaching Numerical & Geometric Structures. ● ●
- MAT625 Number Theory ●
- MAT627 Abstract Algebra. ●
- MAT629 Non-Euclidean Geometry ●
- MAT631 Calculus II. ●
- MAT633 Probability & Statistics ●
- MAT635 Applied Math ●

Practicum Prerequisites

- Pass all MTEL teacher tests required for this license: Communication & Literacy, and Elementary Mathematics, Middle School Mathematics, or Mathematics (8-12).
- SEI605 Sheltered English Immersion (3 additional credits) or MA DESE-endorsed course or SEI MTEL.
- Pre-Practicum — 90 hours in diverse settings (0 credit).
- Pass all required courses including Independent Learning Project.

Practicum (licensure students only) 5 credits

Practicum in Mathematics—300 hours (3 credits). Fall, Spring
Guided and evaluated by a licensed/certified math teacher in the classroom and Cambridge College mathematics supervisor. Practicum locations are subject to MA DESE regulations and must be approved by the program chair. Students are responsible for discussing options for practicum with the program chair.

- MAT790A Practicum 1-6
- MAT790B Practicum 5-8
- MAT790C Practicum 8-12
- MAT791 Practicum Seminar** in Mathematics Teaching (2 credits). Fall, Spring
Exit Performance Portfolio required for credit.





Continued

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COURSE OFFERINGS PLAN / PREREQUISITES

Professional Seminar, Independent Learning Project every term

MAT609 Euclidean Geometry Fall

MAT625 Number Theory (req. MAT611) Fall

MAT611 Calculus I (reqs. MAT607 & 609) Fall, Spring

MAT615 History of Math (reqs. MAT607, 609, 611) Fall, Spring

MAT631 Calculus II (req. MAT611) Spring

MAT613 Discrete Math (reqs. MAT607 & 609) Spring

MAT621 Data Analysis Spring

MAT635 Applied Math (reqs. MAT611 & 631) Spring

MAT623 Teaching Numerical & Geometric Structures Spring, Summer

MAT603 Arithmetic to Algebra Summer

MAT605 Technol. in Math (reqs. MAT607, 609, 611, 613) Summer

MAT607 College Algebra Summer

MAT618 Math Essentials Summer

MAT627 Abstract Algebra (req. MAT607) Summer

MAT629 Non-Euclidean Geometry (req. MAT609) Summer

MAT633 Probability & Statistics (req. MAT613) Summer

MAT790-791 Practicum and Practicum Seminar Fall, Spring

Prerequisites as listed or program chair's approval.

Course schedule for Cambridge only.

Graduate certificate



Mathematics Specialist

12 credits, 2 terms

This program is best suited for current classroom teachers who wish to add mathematics as a new subject area to their professional skills; and to new teacher candidates entering the teaching profession who are non-mathematics majors, and who wish to earn a highly qualified title to their academic experience and broaden their teaching careers as a mathematics specialist or mathematics coach.

Choose math specialist option in elementary/middle school or high school math, and take courses as outlined below.

3-credit courses for your Math Specialist choice	Elem/Middle School	High School
MAT603 Arithmetic to Algebra: Developing Math Patterns & Ideas	•	
MAT623 Teaching Numerical & Geometric Structures	•	
MAT615 History of Math	•	•
MAT708 Diagnosis & Remediation of Learning Problems in Math	•	•
MAT611 Calculus I		•
MAT609 Euclidean Geometry		•

