



Master of Education

# Mathematics (5-8 or 8-12)

- CIP code 131311 • For licensure: 35-38\* credits, 4-5 terms full-time
- Non-licensure: 30 credits, 3 terms full-time
- Program approved by the Mass. Dept. of Elementary & Secondary Education (DESE)

## Program Description

The Mathematics Education program prepares students to effectively teach mathematics at the 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. Program completers are career-ready, technologically savvy, exhibit inter-cultural competence and are equipped to advance social justice.

## Learning Outcomes

Graduates have strong mathematical content knowledge and the skills to help students they teach in accessing and learning that content and support positive attitudes towards the subject. They understand and apply mathematical problem solving processes and construct rigorous mathematical arguments. They make connections among ideas in mathematics and other fields, using varied representations of mathematical ideas to communicate mathematical thinking and deepen students' understanding. They embrace technology as an essential tool for mathematics, are proficient in computation, understand relationships among quantities, use measurement concepts and tools, spatial visualizations and geometric modeling and understand data analysis, statistics, and probability. Graduates who teach in the secondary levels, understand the concepts, techniques and applications of calculus and discrete mathematics. They utilize inclusive practices to create a safe and collaborative learning environment that fosters positive socio-emotional development. They set high expectations for all students; implement well-structured lessons, with measurable assessments of learning; and engage in ongoing reflection on practice.

## 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.

(All courses @ 3 credits except as noted.)

## Courses for 5-8..... 30 credits

**Term 1** .....Fall  
 EED 735 Program Portfolio Integration (0 credit) . . . . .every term  
 MAT 603 Arithmetic to Algebra: Developing Math Patterns & Ideas  
 MAT 607 College Algebra

**Term 2** ..... Spring  
 MAT 609 Euclidean Geometry  
 MAT 623 Common Core Math

**Term 3** .....Summer  
 MAT 615 History of Math (preqs. MAT 607, 609, 611)  
 MAT 611 Calculus I (preqs. MAT 607, 609)

**Term 4** .....Fall  
 MAT 700 Inclusion in Math Class  
 MAT 613 Discrete Math (preqs. MAT 607, 609)

**Term 5** ..... Spring  
 MAT 605 Technology in Math Learning & Teaching  
 MAT 633 Probability & Statistics (req. MAT 613)

## Courses for 8-12..... 30 credits

**Term 1** .....Fall  
 EED 735 Program Portfolio Integration (0 credit) . . . . .every term  
 MAT 613 Discrete Math (preqs. MAT 607, 609)  
 MAT 700 Inclusion in Math Class

**Term 2** ..... Spring  
 MAT 633 Probability & Statistics (req. MAT 613)  
 MAT 629 Non-Euclidean Geometry (req. MAT 609)

**Term 3** .....Summer  
 MAT 611 Calculus I (preqs. MAT 607, 609)  
 MAT 627 Abstract Algebra (req. MAT 607)

**Term 4** .....Fall  
 MAT 631 Calculus II (req. MAT 611)  
 MAT 625 Number Theory (req. MAT 611)

**Term 5** ..... Spring  
 MAT 605 Technology in Math Learning & Teaching  
 MAT 635 Applied Math (preqs. MAT 611, 631)





# Mathematics Specialist Certificate

• CIP code 131311 • 12 credits, 2 terms

M.Ed.

Continued

## Mathematics (5-8 or 8-12)

### Practicum Prerequisites ..... 1-4 credits

- Pass all MTEL teacher tests required for this license: Communication & Literacy, and Middle School Mathematics or Mathematics (8-12)
- SEI 605 Sheltered English Immersion or DESE-endorsed course or SEI MTEL.
- Pass all required courses.
- Pre-Practicum — Successfully complete program-specific hours in diverse settings (0 credit)
- EDU 704 Practicum Readiness (1 credit)
- Submit Practicum Application and Placement Approval Forms.

### Practicum & Seminar (licensure students only)..... 4 credits

**Practicum** in Mathematics — 300 hours (2 credits)

Guided and evaluated by a licensed/certified math teacher in the classroom and Cambridge College mathematics supervisor. Practicum locations are subject to DESE regulations and must be discussed with the program chair and approved by the pre-practicum/practicum coordinator.

MAT 794B Practicum 5-8. . . . . Fall, Spring

MAT 794C Practicum 8-12. . . . . Fall, Spring

#### MAT 791 Practicum Seminar

in Mathematics Teaching (2 credits). . . . . Fall, Spring

Electronic exit portfolio (Tevera) required for credit.

**Math placement test:** 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.

**Non-licensure option:** All program components are required (including pre-practicum) *except* for SEI, Practicum Readiness course, Practicum, Practicum Seminar, and MTEL exams.

**\*Program credits:** 35 credits total if SEI is completed before enrollment, 38 credits if SEI is completed at Cambridge College.

**Program and course schedule subject to change.**

### Program Description

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
MAT 603	Arithmetic to Algebra: Developing Math Patterns & Ideas. . . . .	•	
MAT 623	Common Core Math . . . . .	•	
MAT 605	Technol in Math Learning & Teaching . . . . .	•	•
MAT 700	Inclusion in Math Class . . . . .	•	•
MAT 611	Calculus I . . . . .		•
MAT 609	Euclidean Geometry . . . . .		•

If a student wishes to cover both levels, one four-course certificate for one level must be completed, and then the student may re-enroll to complete a second certificate for the other level: Complete the remaining two courses above, and two more courses below, for a total of four courses:

MAT 615 History of Math

MAT 613 Discrete Math

The two certificates may not be taken concurrently.

(All courses @ 3 credits except as noted.)