MASTER OF ARTS IN TEACHING MATHEMATICS

Overview and Contact Information

The Master of Arts in Teaching Mathematics program is designed for K-8 teachers, interventionists, and math coaches looking to strengthen their mathematical content and pedagogical knowledge and enhance their skills in mathematics teacher leadership while developing their professional credentials and expertise to make a difference in the field of mathematics education. This 36-credit program is structured around educators' schedules so they can balance work, family, and life responsibilities while pursuing a graduate degree. Students can attend the week-long summer courses on campus or participate online through our dynamic hybrid learning format. The academic year courses are conducted online.

Upon successful completion of the program, students are awarded the Master of Arts in Teaching (M.A.T.) degree.

Contact Information

Marria Carrington, Director
Naomi Dupre-Edelman, Assistant Director

413-538-3478
https://www.mtholyoke.edu/directory/departments-offices-centers/professional-and-graduate-education (https://www.mtholyoke.edu/directory/departments-offices-centers/professional-and-graduate-education/)

Learning Goals

Graduates of the Master of Arts in Teaching Mathematics will:

- Investigate and examine how students make sense of mathematical concepts, how these concepts and skills build from kindergarten through eighth grade, and how they apply to state standard for mathematics and the Standards of Mathematical Practice.
- Investigate and implement equitable, student-centered teaching practices to improve current instructional practices and student learning outcomes at the individual, school, or district level.
- Explore and identify different expressions of authentic leadership as an educator (e.g. advocacy, policy work, innovation, curriculum design) and demonstrate an ability to strategize and implement authentic leadership.

Virginia Bastable (https://www.mtholyoke.edu/people/virginia-bastable/), Ed.D., University of Massachusetts

Sarah Bent (https://www.mtholyoke.edu/people/sarah-bent/), M.A.T., Mount Holyoke College

Beth Brady, M.A.T., Mount Holyoke College

Marria Carrington, M. Ed., Smith College; M. Ed. Lesley University

Yi Law Chan, M.Ed., Bank Street College of Education

Amy Chang, M.Ed., University of Massachusetts Amherst

Stephanie Charbonnet, M.A.T, Mount Holyoke College

Naomi Dupre-Edelman, M.A.T, Mount Holyoke College

Heidi Fessenden, Ed.M. Harvard University

Michael Flynn (https://www.mtholyoke.edu/people/michael-flynn/), M.Ed., Lesley University

Marta Garcia, M.A., Florida Atlantic University

Lauren Giordano, M.A.T., Mount Holyoke College

James Hanson, M.A.T., Mount Holyoke College

Jennifer Hawkins, M.A.T., Mount Holyoke College

Shauna Hedgepeth, M.S., University of Southern Mississippi

TJ Jemison, M. Ed., University of Vermont

Katisha John, M.A.T., Mount Holyoke College

Patricia Kepler, M.Ed., George Mason University

Lauren Lamb, M.A.T., Mount Holyoke College

Deborah Peart, M.A., Manhattanville College

Stephanie Roszko, M. Ed., University of Massachusetts

Karen Schweitzer, M.A.T., Mount Holyoke College

Meredith Stanley, M.A.T., Mount Holyoke College

Anne Sussman, M.A.T., Smith College

Janice Szymaszek, M.Ed., Smith College

Kaneka Turner, M.A.T., Mount Holyoke College; M.Ed., University of Phoenix

Elizabeth Van Cleef, M.S., Bank Street College of Education

Polly Wagner, M.Ed., Lesley College

Ann Zito, M.A.T., Mount Holyoke College

Curriculum and Requirements

This 36-credit program is built around the latest research and best practices in math education. The core component of the work is the Developing Mathematical Ideas curriculum. The two year program involves three intensive summer sessions (up to three weeks each summer) and two academic years of online work.

Each summer will consist of up to three weeks of courses, some focused on mathematics, others on educational leadership. The final summer will consist of one week of mathematics and one week of educational leadership. Students will have the option to attend in person on our beautiful campus at Mount Holyoke College or online through our virtual learning environment during the summer sessions.

Each academic year will include up to four credits of work each semester, all conducted online. The academic year online courses blend asynchronous assignments in mathematics or educational leadership with live virtual learning sessions.

Sample Plan of Study

Code	Title	Credits
Summer		
X.MATH-400	Developing Mathematical Ideas: Building a System of Tens	2
X.MATH-401	Developing Mathematical Ideas: Making Meaning for Operations	2
Fall		
X.MATH-407	Developing Mathematical Ideas: Reasoning Algebraically About Operations	2
X.MATH-460	Connecting Arithmetic to Algebra	4
Spring		
X.MATH-424	Developing Mathematical Reasoning	4
X.MATH-415	Early Numeracy Assessment and Instruction I	2
Summer		
X.MATH-405	Developing Mathematical Ideas: Measuring Space in One, Two, and Three Dimensions	2
X.MATH-406	Developing Mathematical Ideas: Patterns, Functions, and Change	2
X.MTHED-409	Educational Leadership I: Exploring the Roles of Math Teacher Leadership	2
Fall		
X.MATH-426	Rational Numbers Assessment and Instruction	3
X.MTHED-465	From Theory to Practice: The Learning and Teaching of Mathematics	4
Spring		
X.MTHED-466	Advocacy Through Math Teacher Leadership	4
Summer		
X.MTHED-411	Educational Leadership II: Facilitating Adult Learning	2
Teaching Mathematics to Students with Learning Differences		2
Total Credits		**37**

Admission

The M.A.T. in Mathematics is designed for teachers, math coaches, math specialists, and math interventionists in grades K-8 who have at least a bachelor's degree. The program is ideal for educators looking to strengthen their skills and expertise as math teachers and those who wish to enhance their professional credentials in order to become teacher leaders in mathematics education.

To apply to the M.A.T., Mathematics program, prospective students must complete an application and upload all supporting materials via the online application (https://gradadmission.mtholyoke.edu/apply/?_ga=2.203493840.1115798967.1659984764-1556106209.1601496778). Send official transcripts to:

Amy Asadoorian
Professional and Graduate Education
Mount Holyoke College
50 College Street
South Hadley, MA 01075

Financing

Please see Graduate Tuition, Fees, Financing, and Financial Aid (http://catalog.mtholyoke.edu/PaGE/financial-policies/) for further information.

Course Offerings

Mathematics

X.MATH-400 Developing Mathematical Ideas: Building a System of Tens
Fall. Credits: 2
Participants will explore the base-ten structure of the number system, consider how that structure is exploited in multi-digit computational procedures, and examine how basic concepts of whole numbers reappear when working with decimals. They will study the various ways children naturally tend to think about separating and combining numbers and what children must understand in order to work with numbers in these ways.
Applies to requirement(s): Meets No Distribution Requirement
N. Dupre-Edelman, T. Jemison
Restrictions: This course is offered for graduate students only.

X.MATH-401 Developing Mathematical Ideas: Making Meaning for Operations
Fall. Credits: 2
This course provides opportunities for participants to examine the actions and situations modeled by the four basic operations. The course will begin with a view of young children's counting strategies as they encounter word problems, moves to an examination of the four basic operations on whole numbers, and revisits the operations in the context of rational numbers.
Applies to requirement(s): Meets No Distribution Requirement
D. Peart, S. Rozko
Restrictions: This course is offered for graduate students only.

X.MATH-402 Developing Mathematical Ideas: Examining Features of Shape
Credits: 2
Participants examine aspects of two-dimensional and three-dimensional shapes, develop geometric vocabulary, and explore both definitions and properties of geometric objects. The seminar includes a study of angle, similarity, congruence, and the relationships between three-dimensional objects and their two-dimensional representations. Participants examine how students develop these concepts through analyzing print and video cases as well as reading and discussing research articles.
Applies to requirement(s): Meets No Distribution Requirement
K. Schweitzer

X.MATH-404 Developing Mathematical Ideas: Modeling With Data
Not Scheduled for This Year. Credits: 2
Participants will work with the collection, representation, description, and interpretation of data. They will learn what various graphs and statistical measures show about features of the data, study how to summarize data when comparing groups, and consider whether the data provides insight into the questions that led to data collection.
Applies to requirement(s): Meets No Distribution Requirement
S. Hedgepeth

X.MATH-405 Developing Mathematical Ideas: Measuring Space in One, Two, and Three Dimensions
Credits: 2
Participants will examine different aspects of size, develop facility in composing and decomposing shapes, and apply these skills to make sense of formulas for area and volume. They will also explore conceptual issues of length, area, and volume, as well as their complex interrelationships.
Applies to requirement(s): Meets No Distribution Requirement
K. John, K. Schweitzer

X.MATH-406 Developing Mathematical Ideas: Patterns, Functions, and Change
Not Scheduled for This Year. Credits: 2
Participants discover how the study of repeating patterns and number sequences can lead to ideas of functions, learn how to read tables and graphs to interpret phenomena of change, and use algebraic notation to write function rules. With a particular emphasis on linear functions, participants also explore quadratic and exponential functions and examine how various features of a function are seen in graphs, tables, or rules. Participants examine how students develop these concepts through analyzing print and video cases as well as reading and discussing research articles.
Applies to requirement(s): Meets No Distribution Requirement
The department
Advisory: Intended for practicing teachers.

X.MATH-407 Developing Mathematical Ideas: Reasoning Algebraically About Operations
Fall and Spring. Credits: 2
Participants examine generalizations at the heart of the study of operations in the elementary grades. They express these generalizations in common language and in algebraic notation, develop arguments based on representations of the operations, study what it means to prove a generalization, and extend their generalizations and arguments when the domain under consideration expands from whole numbers to integers.
Applies to requirement(s): Meets No Distribution Requirement
K. Schweitzer

X.MATH-415 Early Numeracy Assessment and Instruction I
Spring. Credits: 2
This course helps teachers identify and address challenges students are having with K-2 math skills. Interview assessments that help teachers develop strategies to monitor and support progress in number words and numerals, structuring numbers, and addition and subtraction are learned and put into practice. Through assessments, data and teaching tools, teachers will recognize their students' current levels of numeracy and make data-driven instructional decisions. This course supports Pk-2 educators with core instruction, and Pk-8 educators working with students who haven't yet learned the Pk-2 standards. This course provides a certificate of completion from the US Math Recovery Council.
Applies to requirement(s): Meets No Distribution Requirement
M. Carrington
Restrictions: This course is offered for graduate students only.
Notes: Materials fee: $150

X.MATH-417 Data Informed Tiered II Numeracy Instruction
Credits: 1
This course will support participants as they implement math interview assessments and instructional techniques learned in the X.MATH-415 Early Numeracy I course or Add+VantageMR Course 1 Professional Development course. Participants will unpack a learning trajectory that best fits their students' needs. Then, participants will analyze data from interview assessments and receive support as they implement and design strengths-based instruction for their students. Participants will receive, share, and provide feedback to each other as they try new instructional and assessment techniques in their classroom.
Applies to requirement(s): Meets No Distribution Requirement
M. Carrington
Prereq: X.MATH-415.
Advisory: Students who completed Add+VantageMR Course 1 Professional Development can provide a certificate of completion if they haven't taken X.MATH-415.

X.MATH-424 Developing Mathematical Reasoning
Spring. Credits: 4
Developing Mathematical Reasoning (DMR) builds on and extends the work of Connecting Arithmetic to Algebra. Participants will work with a five-phase model for instruction in mathematical argument: Noticing, Articulating, Representing Specific Instances, Creating Mathematical Argument, and Comparing and Contrasting Operations. They will examine and implement a set of lessons designed to engage their own students with generalizations about the operations using these phases of instruction. DMR investigates how this approach to mathematics thinking supports a range of mathematics learners including those who have difficulty with grade-level mathematics and those who need additional challenge.
Applies to requirement(s): Meets No Distribution Requirement
V. Bastable, J.Szymaszek
Restrictions: This course is offered for graduate students only.
Advisory: X.MATH-460 Connecting Arithmetic to Algebra.

X.MATH-426 Rational Numbers Assessment and Instruction
Fall. Credits: 3
Rational Numbers Assessment and Instruction focuses on how students working with whole numbers can more meaningfully understand fractions. In this course we explore fractions as relationships between the whole and the parts, as measures, and as unique numbers with meaning. Educators will learn how to observe their students' mathematical thinking through activities, and strategies for engaging students. Throughout the semester educators will be asked to implement strategies with students in a classroom setting, and share and explore what they found together.
Applies to requirement(s): Meets No Distribution Requirement
The department
Notes: Materials fee: $150

X.MATH-460 Connecting Arithmetic to Algebra
Fall. Credits: 4
Connecting Arithmetic to Algebra (CAA) is a year-long professional development experience in which teachers consider generalizations that arise from the study of number and operations in grades 1 through 7. They examine cases of students who are engaged in the process of articulating general claims, working to understand those claims, and learning how to prove them. The course also focuses on how this approach to mathematical thinking supports a range of mathematics learners, including those who have difficulty with grade-level mathematics and those who need additional challenge.
Applies to requirement(s): Meets No Distribution Requirement
V. Bastable, K. Scott
Restrictions: This course is offered for graduate students only.

Mathematics Education

X.MTHED-408 Professional Development for Coaching Mathematics
Not Scheduled for This Year. Credits: 2
This course is designed for elementary math specialists with responsibilities for supporting teachers in the development of strong mathematics education programs. Participants explore issues related to: learning mathematics while in the context of teaching; facilitating the professional development of colleagues; teachers' and students' ideas about mathematics and learning; and fostering a stance of collaborative investigation. By way of a central theme of mathematics learning, the institute will offer coaches opportunities to explore, through the coaching perspective, ideas of number and geometry in the elementary grades.
Applies to requirement(s): Meets No Distribution Requirement
L. Garrison, P. Wagner

X.MTHED-409 Educational Leadership I: Exploring the Roles of Math Teacher Leadership
Credits: 2
This course will explore the roles of teacher leadership in math education at the local, state, and national level. Topics will include coaching, mentoring, writing (blogs, journals, op-eds, articles), professional learning communities (virtual and face- to-face), and advocacy. Participants will consider current issues and challenges facing students and teachers with regard to math education and will work to develop action plans to address these issues in the coming school year.
Applies to requirement(s): Meets No Distribution Requirement
M. Garcia, The department

X.MTHED-410 Developing Mathematical Ideas: Facilitator Training
Credits: 2
This institute focuses on learning to teach one of the Developmental Mathematical Ideas (DMI) modules. Participants will choose a particular DMI module on which to concentrate their facilitation work. The institute will include examination of the central mathematical ideas of the module, identifying key goals for each session, discussion of the process of interacting with participants both in the institute sessions and through written responses, as well as opportunities for practice facilitation.
Applies to requirement(s): Meets No Distribution Requirement
V. Bastable, The department
Advisory: Prior experience with a DMI seminar recommended.

X.MTHED-411 Educational Leadership II: Facilitating Adult Learning
Credits: 2
This course provides opportunities for participants to develop skills and knowledge to enable them to design and implement professional learning opportunities in mathematics for adults. Activities focus on four aspects: the importance of identifying key ideas and goals for professional learning, strategically using both small and whole group formats, an analysis of the range of professional learning opportunities for teachers, and opportunities to practice facilitating professional learning with an audience of teachers.
Applies to requirement(s): Meets No Distribution Requirement
K. Scott

X.MTHED-465 From Theory to Practice: The Learning and Teaching of Mathematics
Fall. Credits: 4
This course focuses on the teaching and learning of mathematics and considers how we move from theory to practice. The course focuses on the pedagogical moves of the teacher and the impact on students' mathematical experiences. Participants in the course will produce written cases of practice based on audio or videotaped classroom discussions and interviews with their own students. They will analyze their own cases and those of their colleagues to examine the learning of students and the impact of teacher moves. Course instructors will provide individual feedback based on the classroom cases.
Applies to requirement(s): Meets No Distribution Requirement
M. Garcia, The department
Restrictions: This course is offered for graduate students only.
Notes: Online.

X.MTHED-466 Advocacy Through Math Teacher Leadership
Not Scheduled for This Year. Credits: 4
The course involves exploring teacher leadership roles in mathematics education and how to advocate for change in the field. Students will create an action plan related to a change initiative in math education, develop a capstone project, and share findings and reflections so the group can provide critical feedback and support. The scalable nature of this work allows each student to define a leadership role and project to fit their interests and professional goals.
Applies to requirement(s): Meets No Distribution Requirement
M. Garcia, H. Patel
Restrictions: This course is offered for graduate students only.
Advisory: X.MTHED-465