Master of Science (M.S.) Degree in Mathematics Teacher Preparation Program

MATHEMATICS EDUCATION AT SYRACUSE UNIVERSITY

The School of Education, in cooperation with the Department of Mathematics in the College of Arts and Sciences, offers a preparation program leading to the degree of Master of Science in Mathematics Education. The program prepares students to become mathematics educators who are proficient in five areas:

- critical reflection and explanations of practice
- content knowledge
- inclusive and culturally responsive pedagogy
- assessment of student learning
- professional conduct and collaboration

The preparation program is designed for students who have attained a bachelor’s degree in mathematics (i.e., with a major field in mathematics) or its equivalent, and seek certification to teach mathematics in secondary schools.

For those students who already have initial certification to teach grades 7-12 mathematics, the School of Education offers a program leading to the degree of Master of Science in Teaching and Curriculum. Students may have a concentration in mathematics education through this program, which is designed to support professional development for teachers and to enhance understanding of the theories and practices associated with teaching.

FEATURES:

- prepares students for New York State initial certification as mathematics teachers (grades 7-12) while earning a master’s degree;
- a 43-credit program exposing students to cutting-edge ideas in education courses taught by faculty specialists, and offering students opportunities to increase their content knowledge through graduate mathematics courses;
- special emphases on these areas: working with students who have difficulties in learning mathematics, serving diverse student populations, using technology to promote active learning, developing skills in assessing student learning, and developing a knowledge of mathematics for teaching;

“I came to Syracuse University seeking my mathematics education master’s degree. As a middle-aged adult looking for a career change, I found an exciting and challenging program. I found cutting-edge classes that included the latest research on teaching practices and the use of technology in the classroom. I found instructors who modeled effective pedagogical practices. I left Syracuse University with my personal theory about learning and learners well-formulated, and with very useful lesson plans that I had developed for my first year of teaching. SU prepared me well for teaching and inspired me to keep on growing and learning as a teacher.”

—ELAINA HAJDUK ’04

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five field placements, allowing each candidate to learn from urban and suburban school settings, from a variety of teaching professionals, and by working with students of diverse backgrounds and abilities;

- a pace of learning based on personal choice, including a full-time 16-month program (beginning in summer), a full-time 2-year program (beginning in September), and the opportunity to begin part-time (culminating in a 9-credit spring semester followed by a 9-credit fall semester);

- graduate assistantship opportunities;

- professional development opportunities through shared experiences with a cohort of mathematics education students as well as students from other secondary programs, encountered in common core courses;

- participation in the Academy of Mathematics Education, whose twice yearly meetings bring candidates together with teachers and SU faculty and staff to share professional development ideas; and

- a mathematics education faculty located within Syracuse University’s Department of Mathematics, affording candidates opportunities for formal and informal interactions with mathematicians and graduate students in mathematics.

**TEACHER CERTIFICATION**

This program is a New York State (NYS)-approved teacher preparation program. Those completing it are eligible for institutional recommendation for NYS initial adolescence certification in Mathematics 7-12. Mathematics education graduates may, of course, apply for certification in other states. State requirements and reciprocity agreements between states vary.

**Admission to the Program**

Program degree prerequisites:
- a bachelor’s degree with a major in mathematics, including a minimum of 33 credits comprised of at least 12 credits of calculus, 3 credits of linear algebra, and 3 credits of analysis; or
- a bachelor’s degree with a major in a subject other than mathematics, with a minimum of 30 mathematics credits completed at the calculus level or higher, including at least 12 credits of calculus, 3 credits of linear algebra, and 3 credits of analysis.

General liberal arts course prerequisites:
- at least one course emphasizing arts and culture;
- at least one course in history or with an historical focus;
- at least one course in the social sciences (other than history or psychology);
- at least one college-level writing course;
- at least one college-level science course; and
- study of a language other than English (which may include American Sign Language) through the first year of college study or equivalent, as demonstrated through completion of appropriate college or high school (Level III) courses.

All applicants are encouraged to arrange early transcript reviews so that missing prerequisites can be identified in time for coursework to be completed before entry. Applicants who have not completed all prerequisites should consult the program coordinator.

Admission is competitive, with decisions based on overall and mathematics grade point averages, letters of recommendation, and the candidate’s stated goals. The minimum undergraduate grade point average for admission is typically 3.0 on a 4.0 scale. Interviews are encouraged. You can apply online at [https://apply.embark.com/grad/syracuse](https://apply.embark.com/grad/syracuse).

Once admitted, students must be successful in early program courses to be eligible for student teaching. Criteria for success include demonstrated skill in writing, productive engagement in assigned field experience, grades of “B” or better in courses, and display of professional disposition.

"I thoroughly enjoyed my experience in the mathematics education program. The high standards at SU create an environment for in-depth learning. The range and quality of my field experiences gave me the confidence I needed to enter the job market. I consider the math ed professors I studied with as exemplars and role models, with an appropriate blend of research-based and practice-based experience."

—JESSICA DOCTEUR ’00

**Apply online at** [https://apply.embark.com/grad/syracuse](https://apply.embark.com/grad/syracuse)
Financial Aid

Graduate awards and appointments administered by Syracuse University are merit-based and highly competitive. Most require separate applications of their own. (Please note: checking the “interested in aid?” box on the admissions application is not sufficient to initiate consideration for specialized awards.)

Graduate assistantships may require additional applications as well as contact with the academic departments or programs offering them. Graduate assistantships with the Department of Mathematics are often awarded to mathematics education students (see the program coordinator for more information). For general information about financial aid programs and applications for student loans and Federal Work-Study opportunities for graduate students, consult the Financial Aid Office online at http://financialaid.syr.edu/ or at 315-443-1513.

To determine eligibility for Federal Stafford Loans and/or Federal Work-Study and other federal programs, complete the Free Application for Federal Student Financial Aid (FAFSA) online at http://fafsa.ed.gov. For information about the School of Education’s own scholarships and awards, consult http://soe.syr.edu/future/scholarships/default.aspx.

Faculty

The Syracuse University Program in Mathematics Education is research-based and has strong collaborative ties to local schools. It offers students the advantages of studying with a faculty of experts in education research who have extensive K–12 teaching backgrounds. Opportunities for learning are further enhanced by access to faculty members of the University’s other schools and colleges.

For Further Information, Contact

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**Degree Requirements**

**Professional Portfolio and the Master’s Examination**
Each student develops a professional portfolio over the course of three semesters, making three portfolio presentations during this period. These occur just before the candidacy semester, at the end of the candidacy semester, and at the end of the standard student teaching semester. The final requirement of the program is completion of the Master’s Examination.

**Mathematics Courses**
All master’s degree students in mathematics education are required to take a minimum of four graduate courses in mathematics. The four major content areas for secondary mathematics teachers are algebra, analysis, geometry, and statistics. Although backgrounds and levels of achievement differ, most master’s degree students in mathematics education are expected to take one course in each of these areas to satisfy the four-course requirement. All students must take at least one course in analysis and all students must take at least one mathematics course at the 600 level.

Working with their advisors and subject to advisor approval, students may select from among the following courses in each of these areas:

1. **Algebra**: MAT 531, 532, 534, 545, 635, 636
2. **Analysis**: MAT 512 or MAT 605 (For students who have taken an equivalent of either course, the requirement may be fulfilled by taking MAT 513, 517, or 518.)
3. **Probability and Statistics**: MAT 525, 526, 621, 625, 626, 627, 628.
4. **Geometry**: MAT 551, 554, 645.

For students with a strong interest in applied mathematics who have appropriate preparation in computer languages, the following courses may be taken as electives: MAT 581, 682, 683, or 687.

For students with an interest in number theory, MAT 541 may be taken as an elective.

The program recommends that all students consider taking MAT 593 History of Mathematics as an elective (although it may not be used to meet the requirement of four mathematics courses).

Course descriptions are found in the graduate catalog, available online at [http://www.syr.edu/publications/gradcat/](http://www.syr.edu/publications/gradcat/).

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**M.S. Degree in Mathematics Education**

**Sample Program of Study**

**Fall Semester 1st Year**
- **EDU 605**  Teaching in a Diverse Society (3 credits)
- **EDU 607**  Principles of Teaching and Learning in Inclusive Classrooms (3 credits)
- **MAT xxx**  One graduate mathematics course (3 credits)

**Spring Semester 1st Year**
- **EDU 508**  Candidacy Student Teaching (3 credits)
- **SED 609**  Adapting Instruction for Diverse Student Needs (3 credits)
- **SED 613**  Methods and Curriculum in Teaching/Mathematics (3 credits)
- **MAT 512**  Introduction to Real Analysis (3 credits)

**Summer 1st Year**
- **RED 625**  Literacy Across the Curriculum (4 credits)
- **Electives**  MAT 525, 541, 551, or 593, (3 credits) Not all are offered each summer.

Foreign language courses, if needed for state certification

**Fall Semester 2nd Year**
- **EDU 508**  Standard Student Teaching (6 credits)
- **SED 615**  Teacher Development/Mathematics (3 credits)

**Spring Semester 2nd Year**
- **MTD xxx**  One graduate mathematics education course (3 credits)
- **MAT xxx**  One graduate mathematics course (3 credits)
- **MAT xxx**  One graduate mathematics course (3 credits)

**Summer 2nd Year**
- **Electives**  MAT 525, 541, 551, or 593, (3 credits) Not all are offered each summer.