

**Department of Mathematics, Science and Technology
Program in Mathematics**

Study Guide for Mathematics Education

Degree: M.A.

Major Code: MATH-PROF

This academic Program Study Guide has been developed to assist you in planning your course of study at Teachers College. Below you will find the Study Guide for the degree program to which you have been admitted.

We hope this Study Guide provides a helpful introduction and orientation to your program. Given the richness and complexity of graduate and professional programs at Teachers College, these Study Guides are intended to be illustrative, rather than definitive. The Teachers College Catalog (<https://www.tc.columbia.edu/catalog/>), for the year in which you were admitted, remains the official reference document for College policies and Program in Mathematics requirements for each degree plan. For doctoral degrees, additional documentation can be found in the appropriate doctoral requirements bulletin, which is available online through the Office of Doctoral Studies (<https://www.tc.columbia.edu/doctors/forms/requirements/>).

Congratulations, again, on your admission to graduate study at Teachers College, Columbia University!

TEACHERS COLLEGE COLUMBIA UNIVERSITY

A Graduate School of Education, Health & Psychology

Department of Mathematics, Science and Technology Program in Mathematics

Degree in: MATHEMATICS EDUCATION

Master of Arts in Mathematics Education with NY State Professional Certification

Master of Arts Degree with NY State
Professional Certification (M.A.)

Major Code: MATH-PROF

Brief Program Description

The Master of Arts degree in Mathematics Education with NY State professional certification is an advanced professional degree for elementary school, secondary school, and community college teachers of mathematics¹. The program of study for the degree is designed to increase the teacher's knowledge of mathematics as well as the teaching of mathematics.

Prerequisite Requirements

Admission to the program requires evidence of ability to do graduate work in mathematics education. Normally, an undergraduate major in a mathematical science or strong minor in a mathematical science (an equivalent of 24 credit hours) that includes substantial coursework beyond calculus is required. Applicants are supposed to have initial certification and at least two years of teaching experience so that they are eligible for the professional certification by the end of their studies. Students are referred to the Admission Bulletin of the Teachers College Catalog for general information concerning admission and degree requirements (<https://www.tc.columbia.edu/catalog/admission/>).

Minimum Point Requirement

The program of study for the M.A. degree with NY State professional certification must include a minimum of 34 points of graduate study under Teachers College auspices, as well as observations of teaching by Teachers College supervisors. (The point requirements include the 32 points required for the master's degree, and an additional 2-point seminar.) Normally students complete at least 24 points in Program in Mathematics courses.

¹ The degree is for those who already have initial certification to teach in New York State; those seeking initial New York State certification should find our initial certification program.

Course Requirements

Courses offered within the Program in Mathematics (MSTM) tend to be either mathematics content or mathematics education courses (the latter of which include our courses in research methods). The program of study has certain requirements (see the Table below) – though there are few specific courses that are required. Students’ precise programs of study should be determined in consultation with their program advisor.

1. Mathematics Content Breadth in mathematics content in order to enrich student’s undergraduate preparation, with sufficient depth in two or three areas of mathematics to communicate content effectively. (Statistics courses outside the Program–offered in mathematics departments–can generally count toward this requirement.)	At least 12 points
2. Mathematics Education Theory and methods courses in the teaching of mathematics or other professional courses in mathematics education. (MSTM 4019 <i>Mathematics Teaching and Learning</i> is a recommended course.) This must include the additional 2-point seminar for those seeking professional certification, via registration in MSTM 4901 <i>Guided Study in Mathematics Education</i>.	At least 8 points
3. General Professional Education Teachers College courses outside the Program in Mathematics related to general educational foundations or broader professional issues that are useful for mathematics educators.	At least 6 points

Specialists in the teaching of elementary school mathematics should include MSTM 5010 *Mathematics in the Elementary School* (with approval from program advisor). Secondary school specialists should enroll in MSTM 5011 *Mathematics in the Secondary School*, MSTM 5023 *Problem Solving*, MSTM 4034 *Exploring Secondary School Mathematics* and MSTM 5037 *History of Mathematics*. Prospective community college teachers should select courses in at least three mathematical areas such as analysis, algebra, probability, etc. in preparation for study beyond the Master’s level.

Additional Program Requirements

Breadth Requirement

The College breadth requirement is fulfilled through the General Professional Education course requirement.

Master's Degree Integrative Project Requirement

The Integrative Project, or “Departmental Special Project,” is a requirement for all master’s degrees. Toward the end of your program of study, a culminating paper should be submitted to your program advisor that makes connections among the various courses you have taken as well as any field experiences, thus demonstrating an ability to integrate various aspects of the M.A. program. The paper should (i) specify a key issue in mathematics education, (ii) reflect on this issue in relation to existing scholarly literature, and (iii) provide potential implications for teaching; it should be approximately ten typewritten pages with a title page that includes the designation “Departmental Special Project” and the date submitted.

Official deadlines for applying to graduate and for submission of the project for approval by an advisor can be found on the College’s Academic Calendar for the appropriate academic year (<https://www.tc.columbia.edu/academics/academic-calendar/>). The table below provides approximate deadlines.

To graduate in:	Submit approved application for degree to Registrar by:	Submit paper and obtain approval from Department by:
May	Approximately February 1	Approximately April 30
October	Approximately August 1	Approximately August 1
February	Approximately November 1	Approximately December 15

Continuous Enrollment Requirement

Students must register for courses beginning with their initial term of entry and continuing each fall and spring term until their degree requirements have been met. To meet the continuous enrollment requirement students must register for coursework, register as a master’s candidate or doctoral candidate, or request and receive a leave of absence.

Transfer Credit Evaluation

By College policy, no transfer credits can be applied to the M.A. degree. If you choose to continue on for an advanced master’s degree (M.S. or Ed.M.), up to 30 points of acceptable prior graduate credits can be applied to the degree.

Statement on Satisfactory Progress and Academic Performance

Students are expected to make satisfactory progress toward the completion of degree requirements. Program faculty will review each student’s progress annually. If a student is performing below expectations he/she may be required to complete additional coursework. The program will provide a plan and timeline for remediation so students know the expectation for them to continue in the program. If satisfactory progress is not maintained a student may be dismissed from the program. For additional information about Academic

Performance, please refer to Policy on Degree Requirements in the Policies of the College (<https://www.tc.columbia.edu/policy/>).

An average grade of B or better is expected for satisfactory completion of the degree. According to College policy, no more than 3 points of C- may be credited toward any degree, certificate or diploma. Students completing requirements for more than one degree or diploma may count 3 points of C- toward only one such award. Students who accumulate 8 points or more with grades of C- or lower may not continue study at the College and will not receive a degree or diploma.

Standard Policies and Procedures

Included below are some other pertinent policies and procedures, taken from Policies in the Teachers College Catalog (<https://www.tc.columbia.edu/catalog/>) and other Policies of the College (<https://www.tc.columbia.edu/policy/>). Further information, and all other policies, can be found online.

Accommodations

The College will make reasonable accommodations for persons with documented disabilities. Students are encouraged to contact the Office of Access and Services for Individuals with Disabilities for information about registration (301 Zankel Hall). Services are available only to students who are registered and submit appropriate documentation.

Statement on Academic and General Conduct

Students are expected to observe traditional norms of scholarly discourse and academic integrity, and engage in responsible social conduct. They are to refrain from any conduct, including cheating, plagiarizing, harassment, or discrimination, that calls into question their academic or professional probity. Decisions regarding academic evaluation in all aspects of students' work at the college, including coursework, certification examinations, clinical or field experiences, and preparation of dissertations, are within the sole jurisdiction of the faculty concerned, including as appropriate, the department or program staff members. Disciplinary actions (e.g., reprimand, suspension, or expulsion) in cases of academic misconduct can be imposed by the Vice Provost for Student Affairs or the Student Conduct Committee.

Academic Program Concerns and Grievance Procedures

Any student who has a concern regarding an academic or other matter may seek assistance. The College provides both informal and formal dispute resolution procedures. The procedure for resolving academic program concerns (see also the note on grade correction procedures below) begins with the student contacting either the faculty member (if the concern is related to a course) or the student's program advisor. If the student is not satisfied with the response or resolution achieved at this first level, or if speaking with the faculty member presents a conflict of interest for the student, the student should proceed

to speak with the Program Director in the area in which the academic concern resides. If the student is not satisfied with the response or resolution achieved through the Program Director, the student can contact the Vice Provost for Student Affairs. At any stage of the process, students are welcome to seek the advice and guidance of the Ombudsman, who is charged with attempting to informally resolve student dissatisfaction of an academic nature on a completely confidential basis.

Grade Correction Procedure

The instructor for a course has the responsibility for setting the requirements for a course and making an evaluation of students' work. All grades other than Incomplete are final once submitted to the Office of the Registrar. Once final grades have been given, instructors may not change them unless errors occurred in the original transmission of grades. If a student believes that an error has been made, the student must take the initiative to bring about the necessary correction prior to the conclusion of the semester immediately following the semester in which the course was taken. The normal procedure for effecting a correction of a final grade on the official student record would be through direct discussion between the student and the instructor. If redress cannot be attained through such discussions, the student may next appeal to the department chairperson of the department offering the course. If resolution cannot be attained through appeal, the student may next appeal to the Vice Provost for Student Affairs. In situations where the student feels that such an appeal process might not be in the student's interest, counsel and assistance can be sought from the Ombudsman or the Vice Provost for Student Affairs.

Appendix

Point Allocation Chart

M.A. Degree in Mathematics Education with NY State Professional Certification (MATH-PROF)

The following table provides *recommendations* for a program of study, as well as *example* courses. The recommendations align with, and fulfill all of, the course requirements given previously, though they may not be the only ways of doing so. Notably, there is a degree of choice in the specific courses used to fulfill the requirements; the example courses do not necessarily indicate ones recommended over others. The specifics of all programs of study should be determined in consultation with the student's program advisor.

Recommended Competencies	Points Recommended	Example Courses
1. Breadth in mathematics content, with sufficient depth in two or three areas of mathematics to communicate content effectively.	12-18	Number Theory (MSTM 4031) Exploring Secondary School Mathematics (MSTM 4034) Topics in Algebra (MSTM 5033) Topics in Geometry (MSTM 5032) Topics in Analysis (MSTM 5034) Topics in Discrete Mathematics (MSTM 5036) Problem Solving (MSTM 5023)
2. Mathematics education professional competencies in theory and methods, including the 2-point seminar for those seeking professional certification.	8-11	Mathematics Teaching and Learning (MSTM 4019) Mathematics and Multicultural Education (MSTM 5020) Teaching Mathematics with Technology (MSTM 4025) Mathematics in the Secondary School (MSTM 5011) *Seminar for those seeking Professional Certification (via MSTM 4901)
3. Background in general professional education.	6-8	Courses outside of the Program in Mathematics (i.e., <i>not</i> MSTM); must be relevant to general educational foundations or broader professional issues.

		For example, the Department of Arts & Humanities (A&H) has programs and courses related to the philosophy and history of education (e.g., A&HF 4090 <i>Philosophies of education</i>).
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* Indicates required course