

MATHEMATICS EDUCATION (MTHED-GE)

MTHED-GE 2031 The Teaching of Rational Numbers (2 Credits)

Typically offered Fall

This course provides a link between teachers' mathematical knowledge & understanding of the major skills & concepts of ratios, proportions, percents, decimals & fractions to the effective & appropriate teaching of these topics in grades 7-12.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2033 Teaching of Secondary School Mathematics (3 Credits)

Typically offered Fall

Developing the skills of classroom planning, management, & implementation for effective instructional practices in grades 7-12. Topics include lesson plan development & implementation, different models of teaching, assessing student understanding & the use of instructional technology. Students also visit schools, observe teachers in the classroom & use these observations as the basis for discussions of effective teaching practice. This course requires a field component where students are involved in tutoring & micro teaching.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2034 Educational Technology in Secondary School Mathematics (2 Credits)

Typically offered Fall and Spring

This course provides a link between teachers' mathematical knowledge & understanding of college level mathematics & the use of handheld & computer instructional technology to effectively & appropriately teach many of the important skills & concepts of mathematics in grades 7 through 12.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2035 Teaching of Algebra and Rational Numbers, Grades 5-12 (3 Credits)

Typically offered Fall and Spring

This course provides a link between teachers' mathematical knowledge & understanding of the major skills & concepts of algebra to the effective & appropriate teaching of these topics in grades 7 through 12.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2036 The Teaching of Geometry, Grades 7-12 (2 Credits)

Typically offered Spring

The course provides a link between teachers' mathematical knowledge & understanding of the major skills & concepts of geometry & trigonometry to the effective & appropriate teaching of these topics in grades 7 through 12.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2037 Teaching of Precalculus Trigonometry in High School (2 Credits)

Typically offered occasionally

This course provides a link between teachers' mathematical knowledge & understanding of the major skills & concepts of pre-calculus mathematics to the effective & appropriate teaching of these topics in grades 7 through 12.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2050 Mathematical Proof and Proving (2 Credits)

Typically offered Spring

The course focuses on significant aspects & perspectives of mathematical proof & proving, e.g.: The need for proof; Various types of mathematical proofs & their logical foundation; Communicating & presenting proofs coherently & flawlessly; Visual proofs; Alternative ways of proving a given statement; Mathematical fallacies. Lessons will be structured around activities that engage students in constructing formal proofs, searching for multiple ways of proving various mathematical statements, evaluating each others' proofs, attending to visual entailments, & detecting flaws in mathematical fallacies.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2076 Student Teaching in Computer Science (3 Credits)

This seminar accompanies mentored student teaching field placements in a PreK-6 classroom with computer science (CS) content. The course addresses aspects of classroom practice as related to CS instruction at various levels, including teaching and management, the delivery of CS content and planning strategies that address the needs of all students, especially students with disabilities and emergent bilinguals. In addition, the course helps pre-service teachers develop productive habits of planning and reflecting on the teaching and learning of CS.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: Yes

MTHED-GE 2080 Teaching of Computer Science (3 Credits)

Typically offered Spring

Course is designed to introduce students to the pedagogical approaches & practices associated with teaching computer science at the secondary level. Students will learn methods of teaching secondary CS, but also to become practitioner researchers, taking an evidence-based, questioning, design oriented, analytical, & reflective lens on their teaching practices. Topics include developing learning objectives, theories of learning in CS & computational thinking, instructional approaches, lesson design & implementation, & assessment.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2101 Plane Euclidean Geometry for Teachers (3 Credits)

Typically offered Fall

A content mathematics course in geometry for teachers.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2102 Modern and Abstract Algebra for Teachers (3 Credits)

Typically offered not typically offered

A content mathematics course in modern and abstract algebra for teachers.

Grading: Grad Steinhardt Graded

Repeatable for additional credit: No

MTHED-GE 2103 Probability and Statistics for Teachers (3 Credits)*Typically offered not typically offered*

A content mathematics course in probability and statistics for teachers.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 2110 Introduction to Computer Science Education (3 Credits)***Typically offered Fall*

This course will introduce students to a variety of different conceptualizations & implementations of Computer Science education for K-12. Students will discuss and analyze the rationale & purpose of CS teaching behind each case & critique the benefits & challenges from the perspective of K-12 education. This will support students in making informed decisions in their own CS teaching practice & to articulate & justify their decisions. The course will also serve to empower students to participate in future CS curriculum development in their school.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 2115 Teaching Elementary School Mathematics: Foundations and Concept Development (3 Credits)***Typically offered Fall and Spring*

Mathematical foundations & concept development for children in elementary school grades. An examination of what constitutes a rich mathematical environment that fosters exploration, discovery, & understanding for beginning learners of mathematics will be the focus.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 2122 Professional Seminar Secondary Math (3 Credits)***Typically offered Spring*

This course complements the second semester of Student Teaching (MTHED-GE 2922), providing students a professional community of practice for continued learning as their teaching responsibilities increase. The course will focus on specific aspects of planning & intended instruction, enacted teaching, & the impact of teaching. Students will develop practices of deliberate reflection & analysis of their teaching, making explicit connections between their knowledge of theory & practical experiences. There will be an additional focus on pressing local issues in education and education research at the various levels, and their impact on teaching and learning. Students will make sense of these issues & develop informed stances, demonstrating their emerging abilities to do so in connection with their coursework & student teaching experiences in a culminating project.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 2300 Independent Study (3 Credits)***Typically offered Fall, Spring, and Summer terms*

It should be noted that independent study requires a minimum of 45 hours of work per point. Independent study cannot be applied to the established professional education sequence in teaching curricula. Each departmental program has established its own maximum credit allowance for independent study. This information may be obtained from a student's department. Prior to registering for independent study, each student should obtain an Independent Study Approval Form from the adviser.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** Yes**MTHED-GE 2911 Student Teaching in Mathematics Education: Middle and High School I (3 Credits)***Typically offered Fall and Spring*

One semester supervised student teaching in a mathematics education classroom in middle & high school a minimum of 180 hours within 20 days. Student teaching experiences will be used to support theoretical & practical applications of the planning & implementation of the curriculum. Participation is required in a weekly student teaching seminar which offers a practical examination of teaching problems & practices as they relate to actual classroom teaching.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 2922 Student Teaching in Mathematics Education: Middle and High School II (3 Credits)***Typically offered Fall and Spring*

One semester supervised student teaching in a mathematics education classroom in middle & high school a minimum of 180 hours within 20 days. Student teaching experiences will be used to support theoretical & practical applications of the planning & implementation of the curriculum. Participation is required in a weekly student teaching seminar which offers a practical examination of teaching problems & practices as they relate to actual classroom teaching.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 3010 Qualitative Research in Mathematics in Education (3 Credits)***Typically offered not typically offered*

The course is oriented to the unique aspects of doing research in mathematics education. It involves an exploration of the processes of doing qualitative research in mathematics education from development of the research question through writing the research report. The course emphasizes the purpose & interconnectedness of each part of the research process. Particular methodologies are explored & research skills are developed.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No**MTHED-GE 3011 Qualitative Research in Mathematics in Education II: Guided Data Analysis (3 Credits)***Typically offered Fall and Spring*

Doctoral students in this course will engage in a collective, semester-long project involving the analysis of a qualitative data set. The emphasis is not only to gain in-depth knowledge of an important research methodology, but to provide a more in-depth initiation to working with qualitative data, modifying research designs & research goals, & documenting the research project. This course complements the work done in Qualitative Research in Mathematics Education I, which primarily emphasizes the design of mathematics education qualitative research.

Grading: Grad Steinhardt Graded**Repeatable for additional credit:** No