MATHEMATICS

Students must pass on Regents examination in mathematics in order to graduate.

The following New York State Regents are offered:

- Algebra I
- Geometry
- Algebra II

Students in most mathematics courses also take periodic assessments to measure their progress toward proficiency.

Students who wish to earn a Regents Diploma with Advanced Designation must pass eight Regents exams with a score of 65 or better. Three of these must be mathematics exams. Additionally, the student must choose either two additional credits in a World Language and pass the Checkpoint Bi exam or a five-unit sequence in the Arts or Career and Technical Education (CTE).

School counselors can provide additional clarification including options for transfer students, alternative pathways, or honors designations.

In order to graduate, students must earn a total of 22 course credits, including three credits in mathematics at the commencement-level. The typical core content sequence is Algebra I, Geometry, and Algebra II. While a fourth year is not required, upper-level math courses, including Advanced Placement (AP), incorporate skills and knowledge that a college-bound student should possess. Students should meet with their school counselor to determine a specific course sequence that will meet graduation requirements and best suit their individual needs, taking into consideration their college and career plans.

Students who do not successfully complete core courses may be asked to participate in recovery programs to make up credits. Depending on the course the student needs to make up, credit recovery may be offered online, via summer school, or scheduled during the school year.

ALGEBRA (1 course credit)

This course formalizes and extends the study of algebraic concepts that students learned in the middle grades. A Regents exam is offered at the end of this course.

CCLS Major Emphasis Clusters – Algebra I
- Interpret the structure of expressions
- Perform arithmetic operations on polynomials
- Create equations that describe numbers or relationships
- Understand solving equations as a process of reasoning; explain the reasoning
- Solve equations and inequalities in one variable
- Represent and solve equations and inequalities graphically
- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context

GEOMETRY (1 course credit)

This course formalizes and extends students' geometric experiences from the middle grades. Students explore more complex geometric situations and deepen their explanations of geometric relationships. A Regents exam is offered at the end of this course.

CCLS Major Emphasis Clusters - Geometry
- Understand congruence in terms of rigid motions
- Prove geometric theorems
- Understand similarity in terms of similarity transformations
- Prove theorems using similarity
- Define trigonometric ratios and solve problems involving right triangles
- Use coordinates to prove simple geometric theorems algebraically
- Apply geometric concepts in modeling situations

ALGEBRA II (1 course credit)

Building on their work with linear, quadratic, and exponential functions, students learn about polynomial, rational, and radical functions. Students work closely with the expressions that define the functions and continue to expand and refine their abilities to model situations and to solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms. A Regents exam is offered at the end of this course.

CCLS Major Emphasis Clusters – Algebra II
• Extend the properties of exponents to rational exponents
• Write expressions in equivalent forms to solve problems
• Understand the relationship between zeros and factors of polynomials
• Understand solving equations as a reasoning process; explain the reasoning
• Represent and solve equations and inequalities graphically interpreting
• Interpret functions that arise in applications in terms of the context
• Build a function that models a relationship between two quantities
• Infer and justify conclusions from sample surveys, experiments, observations

PRECALCULUS and ADVANCED TOPIC (1 course credit)

Extending their understanding of complex numbers to points in the complex plane, students come to understand that multiplying a given set of points by a complex number amounts to rotating and dilating those points in the complex plane about zero. Students study matrices as tools for performing rotations and reflections of the coordinate plane, as well as for solving systems of linear equations. Inverse functions are explored as students study the relationship between exponential and logarithmic functions and restrict the domain of the trigonometric functions to allow for their inverses.

ADVANCED CHS (1 course credit)

This course includes the study of derivatives, differentiation, integration, the definite and indefinite integral, and applications of calculus. Typically, students have previously studied pre-calculus topics including trigonometry, elementary functions, and analytic geometry.

COLLEGE BOUND MATH (1 course credit)

This course is for 11th and 12th graders who are not seeking an advanced regents diploma but counts for a third or fourth math credit option. This course will include higher- level algebraic skills, the theory of functions, financial applications, and trigonometry.

ADDITIONAL MATH COURSES

MATH TOPICS, MATH EXPLORATIONS, ALGEBRA 2A and 2B, INTRODUCTION TO COMPUTER SCIENCE, INTRODUCTION TO COMPUTER SCIENCE: MULTIMEDIA, STATISTICS OF SPORTS, STATISTICS, MATH APPLICATIONS IB SL, MATH ANALYISIS IB SL, CALCULUS.

*Students should consult with their counselors to discuss whether they would benefit from alternate credit-bearing opportunities.

Schenectady City Schools
Est. 1854