

MATHEMATICS

CC ALGEBRA 1 (with lab) (3002)

According to the CCSS for Mathematics, the fundamental purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. Because it is built on the middle grade standards, this is a more ambitious version of Algebra 1 than has generally been offered. The critical areas, called units, deepen and extend understanding of linear and exponential relationships by contrasting them with each other and by applying linear models to data that exhibit a linear trend, and students engage in methods for analyzing, solving, and using quadratic functions. The critical areas include Relationships between Quantities and Reasoning with Equations, Linear and Exponential Relationships, Descriptive Statistics, Expressions and Equations, Quadratic Functions and Modeling. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. This course meets for double periods on alternate days, offering time for additional practice, review, and exploration. Students will use a graphing calculator.

Final Exam:	CC Algebra 1 Regents Exam
Credit:	1 unit of math credit ½ unit of general graduation credit
Prerequisite:	Maintain a 70% or higher average in 8th grade math and 65% or higher on 8th grade final exam. *Students that do not meet these requirements are encouraged to enroll in Introduction to Algebraic Concepts (3019)

INTRODUCTION TO ALGEBRAIC CONCEPTS (3019)

This course is designed for students who have had difficulty with 8th grade math. It is a precursor to CC Algebra 1, and gives students a foundation in skills that will help them to succeed in CC Algebra 1 the following year. Students will use a graphing calculator.

Final Exam:	Local final exam in June
Credit:	1 unit

CC GEOMETRY (with lab) (3210)

According to the CCSS for Mathematics, the fundamental purpose of the course in Geometry is to formalize and extend students' geometric experiences from the middle grades. Students explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. Important differences exist between this Geometry course and the historical approach taken in Geometry classes. For example, transformations are emphasized in this course. Close attention should be paid to the introductory content for the Geometry conceptual category found in the high school CCSS. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. The critical areas are as follows: Congruence, Proof, and Constructions; Similarity, Proof, and Trigonometry; Extending to Three Dimensions; Connecting Algebra and Geometry through Coordinates; Circles With and Without Coordinates. Students will use a graphing calculator. This course meets for double periods on alternate days, offering time for additional practice, review, and exploration.

Final Exam:	CC Geometry Regents in June
Credit:	1 unit of math credit ½ unit of general graduation credit
Prerequisite:	Passing of CC Algebra 1

CC GEOMETRY (H) (3215)

The concepts taught in Geometry are further explored to develop a greater depth of understanding and a higher level of mastery. Students will use a graphing calculator.

Final Exam: CC Geometry Regents Exam

Credit: 1 unit of math credit

Prerequisite: Teacher recommendation and Passing of CC Algebra 1 and CC Algebra 1 Regents Exam with an 80% or higher

CC ALGEBRA 2 (H) (with lab) (3230)

Building on their work with linear, quadratic, and exponential functions, students extend their repertoire of functions to include polynomial, rational, and radical functions. Students work with the expressions that define the functions, and continue to expand their abilities to model situations and to solve equations. The content standards are organized into four units:

- 1) Polynomial, Rational, and radical Relationships: Students focus on properties of operations, particularly the distributive property, identifying zeros of polynomials, including complex zeros of quadratic polynomials, and make connections between zeroes of polynomials and solutions of polynomial equations.
- 2) Trigonometric Functions: Students build on their previous work with functions and on their work with trigonometric ratios and circles in Geometry. Students now use the coordinate plane to extend trigonometry to model periodic phenomena.
- 3) Modeling with Functions: Students synthesize and generalize what they have learned about a variety of function families. They extend their work with exponential functions to include solving exponential equations with logarithms. They explore the effects of transformations on graphs of diverse functions. They identify appropriate types of functions to model a situation and compare models by analyzing appropriateness of fit.
- 4) Inferences and conclusions from Data: Students see how the visual displays and summary statistics they learned in earlier grades relate to different types of data and to probability distributions. They identify different ways of collecting data – including sample surveys, experiments, and simulations – and the role that randomness and careful design play in the conclusions that can be drawn.

The Mathematical Practice Standards apply throughout each unit.

This course meets for double periods on alternate days, offering time for additional practice, review, and exploration.

Final Exam: CC Algebra 2 Regents in June

Credit: 1 unit of math credit

$\frac{1}{2}$ unit of general graduation credit

Prerequisite: Passing of CC Geometry and CC Geometry Regents Exam

CC ALGEBRA 2 (H) (3235)

The concepts taught in CC Algebra 2 are further explored to develop a greater depth of understanding and a higher level of mastery. Students will use a graphing calculator. This class is an Honors level class for students who have shown mastery in Algebra and Geometry. The CC Algebra 2 curriculum will be covered at the highest level of rigor to prepare students not only for the Regents exam but also for preparing students for AP level math courses. Students passing the course and the Regents Exam will have completed the Math requirements for an Advanced Regents diploma.

Final Exam: CC Algebra 2 Regents in June

Credit: 1 unit of math credit

Prerequisite: Teacher recommendation and Passing of CC Geometry and CC Geometry Regents Exam with an 80% or higher.

PRE-CALCULUS (3400)

The principal aim of this course is to prepare students for college calculus through the study of polynomial, rational, exponential, logarithmic, and circular functions. For each type function, a precise definition, a consideration of graphs and applications, and a study of distinguishing and interesting features are presented. Limits and derivatives are introduced. Students will use a graphing calculator.

A second aim of this course is to review and summarize important concepts of algebra, geometry, and trigonometry, and to apply them in solving practical problems.

Final Exam:	Local exam in June
Credit:	1 unit of math credit
Prerequisite:	Passing of CC Algebra 2 and CC Algebra 2 Regents Exam

COLLEGE PRE-CALCULUS (H) (3410)

This course is intended for students who have shown mastery of Algebra 2 and Trigonometry and who have a desire to take AP Calculus or College level calculus. Topics included in this course are the theory of functions and transformations, polynomial, logarithmic, exponential, and trigonometric functions and equations. Also, the course will include complex numbers, DeMoivre's Theorem, the Binomial Theorem, analytical geometry including conics, limits and derivatives. A graphing calculator is needed for this course. Lewiston-Porter is part of Niagara County Community College's *College Acceleration Program* and students have the option of taking the course for college credit. (MAT 116M). Students who successfully complete this course will receive three college credits that will transfer to most higher education institutions.

Final Exam:	Local exam in June
Credit:	1 unit of math credit (Lewiston-Porter) 3 units (NCCC) – optional – Fee approximately \$237
Prerequisite:	Teacher recommendation and passing of CC Algebra 2 and CC Algebra 2 Regents Exam

ADVANCED PLACEMENT CALCULUS (3450)

A Differential and Integral Calculus course designed to prepare students to take the "AB" Level Advanced Placement exam sponsored by Educational Testing Service. The Calculus AP course assumes a good knowledge of Algebra, Geometry, Trigonometry, and Analytic Geometry. The course itself includes Elementary Functions and Calculus. The AP exam is always taken in May. There is a fee to take the exam and, generally, a score from 3–5 on a 5–point scale will allow a student to receive college credit, based on the individual college's policies. The test score has no bearing on the final average for the course.

Final Exam:	AP Exam in May is required (Fee required by Educational Testing Services.) Local Exam in June.
Credit:	1 unit of math credit
Prerequisite:	Admission to the program is by application and includes recommendation from the Math Department and counselor. Student must have passed College Pre- Calculus (H) with at least a 75%.
Fee:	A fee of approximately \$96 is required in order to take the AP exam. Financial aid for the AP exam is available to those that qualify.

INTEGRATED ANALYTICAL MATH (3500)

This course is designed to offer an option for earning a third math credit to students who do not wish to follow the three year sequence. The course addresses the five process standards in the NCTM Goals 2000: problem solving, reasoning, communication, connections and representation. It focuses on reasoning, critical thinking, data collection, and data analysis skills. There is a technology component involving Math Web Quest projects. Topics covered will include ratio and proportion, statistics, data analysis, informal geometry, number theory, financial application (financial management, tax structure, etc.), and integration of technology. Students will use a graphing calculator.

Final Exam:	Local exam in June
Credit:	1 unit of math credit
Prerequisite:	This course is designed for juniors or seniors who have earned 2 math credits
Note:	This course may not meet requirements of NCAA Clearinghouse

ADVANCED PLACEMENT/COLLEGE LEVEL STATISTICS (NUSTEP) (3600)

Advanced Placement Statistics is a full-year course designed to prepare students to take the AP Statistics examination. Students can earn college credit through the AP College Board by passing the AP Exam or through Niagara University by taking the course through their dual enrollment program called NUSTEP. Students must choose at least one of these options. The use of statistics is important and relevant in our society. Nearly as many college students are required to take a statistics course as are required to take a course in calculus. Students interested in fields such as psychology, business, or health/medicine should consider enrolling in this course. For success in this college-level course, a high level of motivation and self-discipline are demanded. Projects are an integral part of the course. Major parts of the curriculum are concerned with exploring data, planning studies, anticipating patterns, and drawing statistical inferences. Students will use a graphing calculator. Students may have the option of taking this course for college credit.

Final Exam:	AP Exam, NUSTEP Exam, or both exams in May are required. AP fee is approximately \$94 – financial aid available to those that qualify.
Credit:	1 unit of math credit 3 college credits from Niagara University – tuition cost is approximately \$250.00
Fee:	AP fee is approximately \$96*. NUSTEP courses are \$80 per credit hour with a \$25 non-refundable Registration fee per course (this course is three credit hours or \$250*) - *financial aid available to those that qualify.
Prerequisite:	Teacher recommendation and passing of CC Algebra 2 with at least 75% and passing of CC Algebra 2 Regents exam.
Note:	Students may enroll in both AP Statistics and another math course (AP Calculus, Pre-Calculus or College Pre-Calculus (H))