

**Academy of Our Lady of Mercy
Lauralton Hall**

**MATHEMATICS DEPARTMENT
Course Descriptions 2012-2013**

The Mathematics Department requires that all students take three credits of high school math; four credits are recommended for most students.

Students must have a minimum final average of A (93) to move from CP1 to Honors. To remain in an Honors level course, students must maintain at least a C+ (77) average.

(411) Algebra 1 Honors **Year** **1 Credit**

(Prerequisite: Administration determines placement)

This course stresses the structure of Algebra and the development of computational and problem solving skills. Topics include properties of real numbers, simplifying expressions, solving equations and inequalities, factoring, fractions, polynomials, and graphing. A graphing calculator is required for this course.

(412) Algebra 1 (CP1) **Year** **1 Credit**

(Prerequisite: Administration determines placement)

This course stresses the use of linear equations and inequalities to represent real-world data. The student's knowledge is further enhanced through an introduction to quadratic, polynomial, exponential, and rational functions. A graphing calculator is required for this course.

(413) Algebra 1 (CP2) **Year** **1 Credit**

(Prerequisite: Administration determines placement)

This course is similar to Mathematics 412; it is differentiated by presentation, book and difficulty.

(421) Geometry Honors **Year** **1 Credit**

(Prerequisite for freshmen: Administration determines placement. Students should have successfully completed a full year of Algebra 1 at the honors level in Grade 8)

(Prerequisite for sophomores: Math 411)

This course introduces students to deductive reasoning and logical problem solving. Topics include angles, perpendicular and parallel lines, congruent and right triangles, similar polygons, area and volume of polygons and solids. Other topics include coordinate geometry and transformations.

(422) Geometry (CP1) **Year** **1 Credit**

(Prerequisite for freshmen: Administration determines placement. Students should have successfully completed a full year of Algebra 1 in Grade 8)

(Prerequisite for sophomores: Math 412; or Math 413 with a recommended minimum final average of 85)

This course is similar to Math 421; it is differentiated by presentation, book and difficulty.

(423) Geometry (CP2) **Year** **1 Credit**

(Prerequisite: Math 413 or Math 412)

This course is similar to Math 422; it is differentiated by presentation, book and difficulty.

(431) Algebra 2 and Trigonometry Honors **Year** **1 Credit**

(Prerequisite: Math 421)

This course focuses on the study of linear, quadratic, exponential, logarithmic, and trigonometric functions. Within this context, properties of polynomials, rational expressions, radicals and complex numbers are explored. Additional topics include matrices, conic sections, sequences, series and combinatorics. A graphing calculator is required for this course.

(432) Algebra 2 (CP1) **Year** **1 Credit**

(Prerequisite: Math 422; or Math 423 with a recommended minimum final average of 85)

This course is a study of functions - linear, quadratic, exponential and logarithmic functions with focus on graphing and applications. It also includes matrices, equations, systems of equations, the complex number system, and abstract exercises useful for SAT preparation. A graphing calculator is required for this course.

(433) Algebra 2 (CP2) **Year** **1 Credit**

(Prerequisite: Math 423 or Math 422)

This course is a review of Algebra I and introduces the student to quadratic equations, rational expressions, word problems, graphing, exponents and radicals. The student is also given assignments to specifically prepare for SAT test taking. A graphing calculator is required for this course.

(441) Pre-Calculus Honors **Year** **1 Credit**

(Prerequisite: Math 431; or students with a minimum final average of A (93) in Alg 2 CP1 who elect 441 must complete significant independent work before September)

This course studies functions as models of change. It focuses on a thorough knowledge of functions . linear, exponential, logarithmic, trigonometric, polynomial, and rational . their graphs, and their uses as models for real world situations. It also includes additional pre-calculus topics, such as limits, as time permits. A graphing calculator is required for this course.

(4042) Pre-Calculus (CP1) **Year** **1 Credit**

(Prerequisite: Math 432-with a recommended minimum final average of B (85))

This course is similar to Pre-Calculus Honors; it is differentiated by presentation and difficulty. A graphing calculator is required for this course.

(4421) Elementary Discrete Mathematics Honors - UConn ECE **Semester** **.5 Credit**

(Prerequisite: Math 432 with a minimum final average of B- (80) or Math 431)

Problem solving and reasoning skills are developed in an interactive setting while covering voting methods, apportionments, mathematics of finance, counting, probability, and graph theory. A graphing calculator is required for this course. Students may elect to take this course for UConn credit.

(4422) Statistics (CP1) **Semester** **.5 Credit**

(Prerequisite: Math 432 with a minimum final average of B- (80) or Math 431)

This is an introductory course in statistics with an emphasis on statistical thinking that prepares a student for a college level statistics course. Applications to various fields are used to explore statistical ideas and reasoning. Students have opportunities to investigate, discuss and make use of statistical ideas and methods. A graphing calculator is required for this course.

(4403) Applications of Mathematics (CP1)

Semester .5 Credit

(Prerequisite: Math 432 or 433.) Open to seniors.

Students use the technology of graphing calculators, computer application programs, the internet, and spreadsheets to investigate real life applications of mathematics. Students model applications using linear and exponential functions in Excel and present their findings in portfolios requiring Word and Excel documents. Probability and statistics are used to explore and analyze data. A unit on practical financial knowledge is also included. Portfolios are used in addition to traditional methods of assessment.

(442) Personal Financial Literacy (CP1)

Semester .5 Credit

(Prerequisite: Math 433 or 432)

This course introduces students to the study of personal finance. Topics include income, money management, spending and credit, and saving and investing. Students must be able to access the Internet outside of class to complete assignments and research topics.

(451) Calculus Advanced Placement

Year 1 Credit

(Prerequisite: Math 441 with a minimum final average of B (83).

The AP Calculus course follows the AP curriculum for Calculus AB (approved by the College Board AP Audit). Students are required to take the Advanced Placement Calculus examination in the spring. A graphing calculator is required for this course.