Mathematics Department

For all Freshmen: Placement test, standardized testing, and prior scores will determine placement in Math classes.

402 CP Algebra I (1 Cr.)   Grade 9

This course helps students develop a solid foundation in basic algebra skills and concepts. It challenges students to develop their mathematic ability through problem solving strategies, critical thinking, and reasoning activities. Topics include real numbers, algebraic equations with one and two variables, inequalities, polynomials, relations/functions and variation, radicals, quadratic equations, an introduction to statistics and probability, and graphing linear equations. *A graphing calculator is required.*

411 H Algebra II (1 Cr.)   Grade 9

This course is designed to help students become independent thinkers. It is an in-depth study of the concepts of equalities and inequalities, linear equations and functions, polynomials, rational expressions, complex numbers, quadratic equations, exponential and logarithmic functions, probability and statistics, and trigonometry. Students will expand their skills to prepare for higher level mathematics.

A graphing calculator is required.

412 CP Algebra II (1 Cr.)   Grades 9 or 11

The goal of this course is to build a solid foundation of algebraic skills and   concepts that can be applied in a systematic manner to solve problems. Concepts presented include real numbers, equations, inequalities, functions and their graphs, polynomials, rational expressions, complex numbers, trigonometric functions, and probability and statistics. At the end of each section, skills are applied to concepts in the real world and related disciplines. *A graphing calculator is required.*

414 Algebra II   (1 Cr.)   Grades 9

This course builds on the foundation developed in the basic algebra course. Emphasis is placed on the study of real numbers, solving equations, functions and their graphs, probability and statistics, and rational expressions. Students will solve problems analytically and support the solutions graphically.   Concepts are utilized that demonstrate that algebra has a relevant connection to students' daily lives.   *A graphing calculator is required.*

421 H Geometry (1 Cr.)   Grade 10

This course includes plane, solid, transformational, and coordinate geometry with particular attention given to lines, planes, angles, polygons, circles, and geometric solids with applications of their related concepts to problem solving and real life situations. Emphasis is placed on inductive and deductive reasoning to complete proofs to develop a sequential manner of applying definitions, postulates, and theorems.   *A calculator and geometer are required.*

Prerequisite: 85 in Honors Algebra II; 93 in CP Algebra II; Department approval

422 CP Geometry (1 Cr.)   Grade 10

This course provides students with an exposure to plane, coordinate, transformational, and spherical geometry. Students will explore basic geometric figures focusing on the properties of sides, angles, triangles, polygons, circles, and three dimensional solids. The concepts will be applied to various disciplines and careers. Students are introduced to inductive and deductive reasoning, problem solving, geometric probability, coordinate geometry, and practical applications. *A calculator and geometer are required.*

424 Geometry (1 Cr.)   Grade 10

This course provides the student with knowledge of the basic foundations of plane geometry. Emphasis is placed on the study of basic geometric figures with definitions, theorems, transformations, problem solving strategies, and calculator activities. The concepts of perimeter, area, sides and angles as related to polygons and circles will allow students to experience real life situations in various disciplines and careers. *A calculator and geometer are required.*

220 Standardized Test Prep Course (STPC) (.25 Cr.)   Grade 10

This course, being offered by the Math and English Departments, will help students develop the skills and test taking strategies needed to prepare for standardized testing, focusing on the PSAT and SAT tests. A calculator will be required for the Math classroom days. *All sophomores are required to take this course.*

431 H Pre-Calculus (1 Cr.)   **Grade 11**

This course balances the algebraic, numerical, graphical, and verbal methods of representing problems and allows students to encounter ideas that foreshadow calculus. Throughout the course explorations provide students with critical thinking and problem-solving skills. This course also covers functions and graphs; polynomial, power and rational functions; exponential, logistic, and logarithmic functions; trigonometric functions; analytic trigonometry; applications of trigonometry; derivatives; and probability and statistics. ***A graphing calculator is required.*** _Prerequisite: 85 in Honors Algebra II; 93 in CP Algebra II; Department Approval_

432 CP Pre-Calculus (1 Cr.)   **Grades 11 and 12**

This course is designed to develop techniques to represent real world problems as mathematical models. Students learn to communicate mathematically, improve critical thinking skills, connect and integrate mathematics in real-life situations, and use technology to enhance their understanding of mathematics. Topics include functions and graphs, probability and statistics, applications of trigonometric functions, polynomial equations, exponential and logarithmic functions.   ***A graphing calculator is required.***
Prerequisites: successful completion of Algebra II

441 H Calculus (1 Cr.)   (Dual Enrollment)   **Grade 12**

This challenging course brings students to an understanding of the structure of mathematics and the real number system. The course is invaluable to students who plan to major in math or science-related fields in college. The topics considered are polynomials, exponential, logarithmic, and trigonometric functions. Students also study advanced graphing, limits, derivatives, and integrals. Applications relate to the physical sciences and engineering, business, economics, and the life sciences. This course may be taken as a dual enrollment course with LCCC. Students must meet LCCC requirements to qualify. A fee is required to register at LCCC.   ***A graphing calculator is required.***
Prerequisites: 85 in Honors Pre-Calculus; 93 in CP Pre-Calculus; Department approval

442 CP Calculus   (1 Cr.)   **Grade 12**

This course is designed to build on skills introduced in the Pre-Calculus course. The topics considered are limits, derivatives of a polynomial, rational, logarithmic and exponential functions, integrals, graphing and applications of these topics. Applications include business, economics, life sciences, and general interest. ***A graphing calculator is required.***
Prerequisites: successful completion of Pre-Calculus; Department approval

444 CP Math and Reasoning Applications (1 Cr.)   **Grades 11 and 12**

This course includes inductive and deductive reasoning, estimation, mathematical models, problem solving, set operations, Venn Diagrams, survey problems, arguments and truth tables, number bases in positional systems and computations, Investment topics and strategies, cost of home ownership, voting methods, apportionment methods, and statistical study.
A calculator is required.
Prerequisites: successful completion of Algebra II; Department approval

451 AP Calculus (1 Cr.)   (Dual Enrollment)   **Grade 12**

Senior students who have demonstrated the self-motivation necessary to succeed in challenging courses, and who have department approval are eligible for this course. Following the curriculum prescribed by the College Board, the course includes elementary functions, limits, derivatives and their applications, antiderivatives, techniques of integration, the definite integral, and applications of the integral*. Students approved for this course are required to take the AP Calculus exam.* Satisfactory grades in this exam may qualify students to receive college credit for a semester course and to receive advanced placement in college. This course may be taken as a dual enrollment course with LCCC. Students must meet LCCC requirements to qualify. A fee is required to register at LCCC.   ***A graphing calculator is required. The College Board exacts a fee for the exam of approximately $95.***
Prerequisite: A qualifying PSAT or SAT score; Department approval

453 H Introduction to Probability and Statistics (.5 Cr)   **Grade 12**

Dual Credit offered with LCCC - LCCC requirements must be met. If taking this course for credit a fee is involved.

This course is for students who plan to enter a profession where measurements and predictions are made. Topics include tabulation of data, measures of central tendency and dispersion, sampling, types of distribution, probability, hypothesis-testing, and elementary aspects of correlation. The course may be taken by Marian students as an elective and not as a credited course with LCCC. All students planning to take this course for credit must take a placement test administered by LCCC.   For credit through LCCC, a student must meet the eligibility requirements set forth by Academic Services of LCCC for acceptance into the program. *A graphing calculator is required.*

Prerequisites: A qualifying PSAT or SAT score; Department approval

454 CP College Algebra (1Cr.)   **Grade 12**

Dual Credit offered with LCCC - LCCC requirements must be met. If taking this course for credit a fee is involved.

This course is designed for students planning on continuing their education in a non-mathematical/non-science field. It will build on Algebra skills and include a comprehensive treatment of topics needed for the mathematics placement test for college and a basic college mathematics course required for all four-year programs. The course balances theory, application, modeling and drill, covering a wide variety of disciplines.

A graphing calculator is required.

Prerequisite: Successful completion of Pre-Calculus; department approval