

MATHEMATICS

A student must take a minimum of three years of mathematics at Saint Ignatius for graduation. A student's curriculum depends upon his or her freshman math placement and success in previous math courses taken at Saint Ignatius. All core curriculum math courses must be taken at Saint Ignatius except in the case of remediation of failing grades in courses not offered in the Saint Ignatius Summer School.

MA 515 ALGEBRA 1

Two Semester Course
Freshmen

This standard course includes properties of real numbers, solving and graphing linear equations and inequalities, writing linear equations, exponents, polynomials and factoring, quadratic equations, and an introduction to radical equations. A scientific or graphing calculator is required for this course.

MA 519 ALGEBRA LAB

Two Semester Course
Freshmen

Prerequisite: Recommendation of the Department Chair.

This non graded course is designed to supplement the content covered in Algebra 1. Students are scheduled for this course based on entrance examination and course grades. Lab meets during 2 of the 6 scheduled meetings per WOLFPACK. Course instructor and school counselor determine if a student may move out of the course during the year.

MA 520 ALGEBRA 2 /TRIGONOMETRY LAB

Two Semester Course
Sophomores and Juniors

Prerequisite: Recommendation of the Department Chair.

This non graded course is designed to supplement the content covered in Algebra 2/Trig. Students are scheduled for this course based on previous course grades. Lab meets during 2 of the 6 scheduled meetings per WOLFPACK. Course instructor and school counselor determine if a student may move out of the course during the year.

MA 525 GEOMETRY

MA 526 H Two Semester Course
Freshmen and Sophomores

Prerequisite: A+ in MA 515. Recommendation of the Department Chair.

This course includes a strong emphasis on two column proofs working with congruent triangles, parallel lines and related figures as well as lines in the plane and lines and planes in space. In addition the Pythagorean Theorem and an introduction to Trigonometry as well as the study of circles, area, surface area, and volume are included. A scientific or graphing calculator is required for this course.

MA 527**GEOMETRY LAB**

Two Semester Course

Sophomores

Prerequisite: Recommendation of the Department Chair

This non-graded course is designed to supplement the content covered in Geometry. Students are scheduled for this course based on previous course grades. Lab meets during 2 of the 6 scheduled meetings per WOLFPACK. Course instructor and school counselor determine if a student may move out of the course during the year.

MA 506**TWO-YEAR ALGEBRA 2/TRIGONOMETRY ADVANCEMENT PROGRAM, Part 1****Part 1**

Summer School – One semester course

Freshmen

Prerequisite: Algebra 1 MA 515 with a B+ as of March 1. Recommendation of the Department Chair.

This course is designed to provide an opportunity for acceleration for those students who want to take College Calculus, MA 550 or AB Calculus, MA 549 in their senior year. Completion of Part 1 with a minimum of a B in Geometry, MA 525 allows the student to take Part 2 after sophomore year. Students who achieve an A in Part 1 can choose to do Part 2 independently as part of the Algebra 2/Trigonometry Self-Study, MA 529 H. Students will earn .5 credit for this class only after completing the part 2 class. Grades will be included in a student's grade point average and recorded on transcripts. This six week course begins in mid-June and concludes at the end of July. The course grade will only be recorded once a student completes part 2. If a student does not complete part 2, MA 507, the grade for this course, MA 506 will not be recorded. Attendance at each session is important to ensure student success. Students will also be required to pay a fee for this class.

MA 507**TWO-YEAR ALGEBRA 2/TRIGONOMETRY ADVANCEMENT PROGRAM, Part 2****Part 2**

Summer School – One semester course

Sophomores

Prerequisite: Two-Year Algebra 2/Trigonometry Advancement Program, Part 1 MA 506, with a grade of B in first semester MA 525/526 H. Recommendation of the Department Chair.

This course continues the development of topics in advanced algebra, trigonometry, and analytic geometry with a graphing approach. The use of technology allows the focus of the course to be on problem solving and exploration and opens the door to solving problems that arise from real world situations. The course connects numerical, algebraic and graphical representations and stresses the need to know how and when to use a graphing utility. Topics developed include polynomial, rational, exponential, logarithmic and trigonometric functions. Some discrete topics included in the course are: matrices, probability, and statistics. The course is for students who plan to, or will need to, study calculus in college (science, math, or engineering majors) or who simply wish to further their mathematical education. Students will earn .5 credit for this class. Grades will be included in a student's grade point average and recorded on transcripts. This six week course begins in mid-June and concludes at the end of July. The course grade will be recorded in a student's transcript. Attendance at each session is important to ensure student success. Students will also be required to pay a fee for this class.

MA 529 H ALGEBRA 2/TRIGONOMETRY HONORS ADVANCEMENT PROGRAM

Second Semester (Self Study)/Summer School

Freshmen and Sophomores

Prerequisite: Algebra I MA 515 and Geometry Honors MA 526 H with a minimum grade of A- or an A- in Geometry MA 525. Recommendation of the Department Chair.

This course is designed to provide an opportunity for acceleration for those students who want to take College Calculus, MA 550 or Advanced Placement Calculus, MA 549 AP or MA 558 AP during high school. Completion of this program in Algebra 2/Trig with a minimum grade of B+ places a student in Precalculus, MA 545 or Precalculus Honors, MA 546 H. Course grades and credit (1.0) will appear on student transcripts and will be calculated in a student's GPA. Students will be required to pay a fee for this class. A graphing calculator is required for this class.

MA 535 ALGEBRA 2/TRIGONOMETRY

MA 536 H Two Semester Course

Freshmen, Sophomores, Juniors

Prerequisite: B+ in Geometry H MA 526 H or A+ in Geometry MA 525.

Recommendation of the Department Chair.

This course is a deeper study of linear functions, quadratic, polynomial, and radical functions. Course also includes exponential and logarithmic functions, rational functions, and trigonometric functions. MA 536 H also covers conic sections.

MA 542 TRIGONOMETRY

One Semester Course

Juniors and Seniors

Prerequisite: Recommendation of the Department Chair.

This class is appropriate for students who are not taking precalculus but want to extend their knowledge of trigonometry to better prepare for college. Along with a review of basic right triangle trigonometry, students learn radian measure, the unit circle, trigonometric identities, and applications of trigonometry. A graphing calculator is required for this course.

MA 545 PRECALCULUS

Two Semester Course

Juniors and Seniors

Prerequisite: C+ in Algebra 2 Trig MA 535. Recommendation of the Department Chair.

This course continues the development of topics in advanced algebra, trigonometry, and analytic geometry with a graphing approach. The use of technology allows the focus of the course to be on problem solving and exploration and opens the door to solving problems that arise from real world situations. The course connects numerical, algebraic and graphical representations and stresses the need to know how and when to use a graphing utility. Topics developed include: polynomial, rational, exponential, logarithmic and trigonometric functions, parametric equations and polar coordinates. Some discrete topics included in the course are matrices, probability and statistics. The course is for students who plan to, or will need to, study calculus in college (science, math, or engineering majors) or who simply wish to further their mathematical education. A graphing calculator is required for this course.

MA 546 H PRECALCULUS H

Two Semester Course

Freshmen, Sophomores, Juniors, Seniors

Prerequisite: B+ in Algebra 2 Trig H MA 536 H or an A+ in Algebra 2 Trig MA 535. Recommendation of the Department Chair.

The course is described under 545. This honors course is designed for non-seniors planning to take AP Calculus and for seniors who have shown that they can meet the rigors of the honors program. The student is expected to have gained and retained mastery of the subject matter (functions, logarithms, trigonometry, etc.) of Algebra 2. The workload includes independent study and a significant amount of work with graphing calculators. A graphing calculator is required for this course.

MA 547 AP ADVANCED PLACEMENT PRECALCULUS

Two Semester Course

Sophomores, Juniors, Seniors

Prerequisite: A+ in Algebra 2 Trig H MA 536. Recommendation of the Department Chair.

This course is an advanced placement course that prepares students for other higher level mathematics and science courses. Students should have a thorough knowledge of algebra, geometry, and trigonometry. Precalculus topics covered include: polynomials, trigonometric, exponential, logarithmic, trig, and polar functions. It is reserved for those students who are capable of a college level mathematics course. All students are required to take the AP exam.

MA 549 AP ADVANCED PLACEMENT AB CALCULUS

Two Semester Course

Sophomores, Juniors, Seniors

Prerequisite: A- in Precalculus H MA 546 H or an A+ in Precalculus MA 545 and successful completion of the Calculus Readiness Test. Recommendation of the Department Chair.

This course is an advanced placement course and is a full semester of college level calculus. Students should have a thorough knowledge of algebra, axiomatic geometry, trigonometry, and analytic geometry. Calculus topics covered include: differentiation of polynomials, trigonometric, exponential, logarithmic, and inverse trig functions; differentiation of powers, products and quotients; limits; derivative applications such as max-min problems, related rates, and curve sketching; applications of integrations such as area between curves, volumes of revolution and distance traveled in a straight line. It is reserved for those students only who are capable of involving themselves deeply in mathematical content, understanding it with a certain amount of ease, and who are free to dedicate the time necessary for this enterprise. All students are required to take the AP exam. A graphing calculator is required for this course.

MA 550 CALCULUS

Two Semester Course

Sophomores, Juniors, Seniors

Prerequisite: B in Precalculus MA 545 or a C- in Precalculus H MA 546 H or Precalculus Survey MA 552. Recommendation of the Department Chair.

Students should have a thorough knowledge of algebra, axiomatic geometry, trigonometry, and analytic geometry. Calculus topics covered include: limits of all types of functions, differentiation of all types of functions, and integration of all types of functions. A graphing calculator is required for this course.

MA 552 PRECALCULUS SURVEY

Summer School
Sophomores and Juniors

Prerequisite: Algebra 2/Trigonometry MA 535 A- grade semester 1 and a grade of A- as of April 1 or Algebra 2/Trigonometry MA 536 H B+ and a grade of B+ as of April 1. Recommendation of the Department Chair.

This course is designed to provide an opportunity for acceleration for those students who want to take College Calculus, MA 550 or AB Calculus, MA 549 earlier or during their senior year. This six week course begins in mid-June and concludes at the end of July. Attendance at each session is important to ensure student success. Completion of the Precalculus Survey with an average of B places a student in College Calculus, MA 550. Completion of the Precalculus Survey with an average of A places a student in AP Calculus AB, MA 549 AP. Course credit (1.0) will appear on student transcripts as a Pass grade for an average of B or higher, but will not be calculated in a student's GPA. Students will be required to pay a fee for this class. A graphing calculator is required for this class.

MA 557 MULTIVARIABLE CALCULUS

Two Semester Course
Juniors and Seniors

Prerequisite: A- in BC Calculus MA 558 AP. Recommendation of the Department Chair.

Multivariable calculus extends techniques and concepts learned in BC Calculus to three dimensions. Students will study vector operations, differentiation and integration in multiple variable and associated applications. This course is equivalent to a one-semester college multivariable calculus course. A graphing calculator is required for this course. This course is weighted as an Advanced Placement course (.67).

MA 558 AP ADVANCED PLACEMENT BC CALCULUS

Two Semester Course
Sophomores, Juniors, Seniors

Prerequisite: A+ in Precalculus H MA 546 H or a B in AP AB Calculus MA 549 AP and successful completion of the Calculus Readiness Test. Recommendation of the Department Chair.

This course is intended for students who have an understanding of analytic geometry and elementary functions in addition to college preparatory algebra, geometry, and trigonometry. It covers considerably more material than AB Calculus AP with the result that those who pass this course will be able to place out of a full year of college math. It is reserved for those students only who are capable of involving themselves deeply in mathematical content, understanding it with a certain amount of ease, and who are free to dedicate the time necessary for this enterprise. Work with graphing calculators is an integral part of the course. All students are required to take the AP exam. A graphing calculator is required for this class.

MA 561 FINITE MATHEMATICS

One Semester Course
Juniors and Seniors

Prerequisite: Recommendation of the Department Chair.

Finite mathematics is a one semester course often described as the mathematics necessary for decision making. This course will investigate topics that will prepare the student for applying mathematics in a technological society. Major topics to be covered will include: matrix theory, linear programming, game theory, graph theory, mathematics of finance, and their applications to management, life, and social services. A graphing calculator is required for this course.

MA 565**STATISTICS**

One Semester Course

Juniors and Seniors

Prerequisite: A in Algebra 2 Trig MA 535, B in Algebra 2 Trig H MA 536 H, B in Precalculus MA 545, or B- in Precalculus H MA 546 H. Recommendation by the Department Chair.

This one semester course introduces students to the fundamental concepts of statistics--probability, correlation and regression, the binomial and normal distributions, samples and populations, and making predictions with confidence. This course is meant for students who want to develop a better understanding of statistics but are unable to take AP Statistics; it would be especially useful for students involved in research that requires analysis. The focus will be on developing a conceptual understanding and application of statistics. A graphing calculator is required for this course.

MA 569 AP ADVANCED PLACEMENT STATISTICS

Two Semester Course

Juniors and Seniors

Prerequisite: A in Algebra 2 Trig MA 535, or a B in Algebra 2 Trig H MA 536 H, or a B in Precalculus MA 545, or a B- in Precalculus H MA 546 H. Recommendation by the Department Chair.

Advanced Placement Statistics is divided into four major themes: describing graphically and numerically; designing experiments and surveys; working with probability; and using significance tests and confidence intervals. This class would be especially appropriate for students who will be required to take a statistics course in college, e.g. students who plan to major in psychology, social sciences or education where understanding of research designs and interpretation of statistics is required. All students are required to take the AP exam. This course cannot be used as a substitute for a math core curriculum course. A graphing calculator is required for this course.

MA 599**CALCULUS 4 – INDEPENDENT STUDY APW**

Two Semester Course - one semester graded/one semester pass-fail

Juniors and Seniors

Prerequisite: B+ in Multivariable Calculus MA 902. Recommendation by the Department Chair.

The Independent Study (IS) course is a full-year elective open to students who have completed the standard mathematics course offerings. Students in IS will work with a faculty member to pursue a course of study in advanced topics or applied mathematical research. This course is weighted as an Advanced Placement course (.67).