MATHEMATICAL ARTS

If you wish to select a mathematics course for the first semester, the following courses are offered. Suggestions for the appropriate course according to high school background, aptitude, interests, and performance on the math placement test are given with each description. The placement test is required for all incoming students and **MUST** be completed before registering for the fall semester.

The Mathematics department will determine a recommended math course placement based on your scores and previous math experience. Any student who wishes to take a more advanced course than is recommended or who has concerns about placement should contact the Department of Mathematics and Computer Science via the following email: mathplacement@saintmarys. edu (mathplacement@saintmarys.edu). In this email, include your scores, your academic background (performance in math classes in high school), and your intended major (if you have one).

Course	Math Placement Score	Math SAT	Math ACT	Min. # of Years of Math in High School	AP Calculus AB Exam
100	20 or less	460 or less	18 or less	3	N/A
102	21-26	470-520	19-23	3	N/A
103	25-35	490-560	21-25	3	N/A
104	26-34	530-570	23-26	3	N/A
113	23-40	550-610	25-28	4	N/A
131	36-44	570 or better	26 or better	4	3 or less
132	40 or better	600 or better	28 or better	4	3 or better
133	44 or better	630 or better	29 or better	4	4 or better

Please note that students in need of stronger basic mathematics problem-solving skills (as shown by previous academic background and performance on the placement test) must take MATH 100 Problem-Solving Strategies in Mathematics . Students wishing to enroll in a calculus course (MATH 113 Survey of Calculus, MATH 131 Calculus I) that are in need of more preparation (as shown by previous academic background and performance on the math placement test) must successfully complete MATH 103 Precalculus before enrolling.

MATH 100 Problem-Solving Strategies in Mathematics (3)
This course is an intensive study of the problem-solving process. Algebraic, patterning, modeling, and geometric strategies are explored. This course does not fulfill a Sophia Program requirement in mathematical arts but is required for students whose basic mathematics problem-solving skills need to be stronger for college level work. This is required for students with three or four years of high school math who meet any one of the following: Math SAT score of 460 or less, Math ACT score of 18 or less, or math placement test score of 20 or less. **This course does not fulfill the Sophia Program requirement in Mathematical Arts.** ***This course is offered only in the fall semester.***

MATH 102 Liberal Arts Mathematics (3)
This course focuses on mathematical modeling through the use of graph theory. Topics include graphs, directed graphs, trees, matchings, and network flows.

MATH 103 Precalculus (3)
This course is a study of polynomial, rational, exponential, logarithmic, and trigonometric functions from the symbolic, numeric, and graphical perspectives that provides a solid preparation for a college-level calculus course. Recommended for students who need a calculus course for their program of study but who are not yet ready for the calculus course. **This course does not fulfill the Sophia Program requirement in Mathematical Arts.** ***This course is offered during the summer term from June 20th through August 9th and also in fall semester. It is not offered spring semester.***

MATH 104 Finite Mathematics (3)
Set theory, counting techniques, probability, random variables, expected value, variance, standard deviation, and linear programming are all covered in this course.

MATH 113 Survey of Calculus (4)
One semester survey of differential and integral calculus designed primarily for liberal arts students and those in the professional programs. Limits are treated intuitively. Emphasis on applications in biology, economics, and other disciplines.

MATH 131 Calculus I (4)
This course covers algebraic and transcendental functions, limits, continuity, derivatives, maxima and minima, concavity, related rates, Mean Value Theorem, anti-differentiation, Riemann sums, the Fundamental Theorem of Calculus. The course is based on graphical, numerical, and symbolic points of view. Graphing calculators are used throughout the course. **Note:** There is a problem session offered for this course every Wednesday at the same time as the class is taught on Monday. The problem session is optional, but it is highly recommended that students keep this time free in their schedules so that they may attend the problem session.

MATH 132 Calculus II (4)
This is the continuation of Calculus I. It includes the techniques of integration, applications of the integral, and sequences and series. Graphing calculators are used throughout the course. **Note:** There is a problem session offered for this course every Wednesday at the same time as the class is taught on Monday. The problem session is optional, but it is highly recommended that students keep this time free in their schedules so that they may attend the problem session. Students should register for this course as a first math course only if they have credit for Calculus I or placed into the course. ***This course does not fulfill the Sophia Program requirement in Mathematical Arts. However, students who have the equivalent of two semesters of AP calculus in high school with strong supporting test scores may be placed into MATH 132 in consultation with the Math Placement Advisor. Students who are placed into MATH 132 and earn a grade of C or higher are eligible to receive credit for MATH 131 Calculus I.***

MATH 133 Theory and Application of Calculus (4)
This course is designed for students who have completed a full year of calculus in high school at the AP or equivalent level and have mastered the mechanics of differentiation and integration. Students who have taken the Math AP AB Exam should have a score of at least a 4^{1}. Students who have not taken the AP test should have two semesters of calculus at or above the AP level in high school and at least a 630 on the Math SAT or a 29 on the Math ACT. The basic concepts of calculus, including limits, derivatives, integrals, sequences, and series, will be explored in depth. The content of a full-year college- level calculus

sequence is included in this one-semester course. The emphasis of the course is on understanding the theory of calculus and constructing mathematical models. Graphing calculators are used throughout the course. It is typically followed by MATH 231 Calculus III. **Note:** There is a problem session offered for this course every Wednesday at the same time as the class is taught on Monday. The problem session is optional, but it is highly recommended that students keep this time free in their schedules so that they may attend the problem session. ***This course is offered only in the fall semester*.**

[1] Some students who have the equivalent of two semesters of AP calculus in high school and have strong supporting test scores may be placed into MATH 133 in consultation with the Math Placement Advisor. Students who are placed into MATH 133 and earn a grade of C or higher are eligible to receive credit for MATH 131 Calculus I.