URSULINE ACADEMY 2018-2019 Curriculum Guide

MATHEMATICS

MT 510 MATHEMATICAL STRATEGIES
Grade: 9
Credit: ½ Credit
Length: 1 Semester
Prerequisite: Department recommendation
Description: This course is designed to improve the students' understanding of algebraic concepts

MT 511 ALGEBRA I
Grade: 9
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: NONE; placement is based on elementary school records and the placement test.
Description: After a brief review of operations with real numbers, the student solves and graphs linear equations and inequalities in one variable; solves and graphs linear equations and inequalities in two variables; writes linear equations; solves and graphs systems of equations; applies properties of exponents; factors polynomials; adds, subtracts, multiplies and divides polynomials; simplifies radical expressions; and solves simple quadratic equations. Emphasis is placed on increasing math confidence, using algebra as an aid to solving real-life problems and appropriately using the required graphing calculator as a problem-solving tool.
Homework: An average of 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 519 ADVANCED HONORS ALGEBRA I
Grade: 9
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: NONE; placement is based on elementary school record and the placement test.
Description: After a brief review of real number operations and solving advanced linear equations and inequalities in one variable, the student writes linear equations; solves and graphs linear equations and inequalities in two variables; solves systems of linear equations and inequalities in two variables; applies properties of exponents, solves and graphs quadratic equations; factors polynomials; and adds, subtracts, multiplies, and divides polynomials, rational expressions, and radical expressions. A strong emphasis is placed on abstract concepts, using algebra as an aid to solving real-life problems and using the required graphing calculator as a problem-solving tool.
Homework: Approximately 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 521 GEOMETRY
Grade: 10
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Algebra I; department recommendation
Description: Students develop logical thinking skills as they learn the geometric concepts involving points, lines, planes, angles, parallel lines, triangles, quadrilaterals, other polygons, circles, area, transformations, and solid geometry. Algebraic connections are emphasized. The required graphing calculator is used as a tool.
Homework: An average of 30 minutes per class period
Special cost or materials: The required graphing calculator from Algebra I and Math XL

MT 529 HONORS GEOMETRY
Grade: 9, 10
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: A grade of "A" or "B" in Algebra I; department recommendation
Description: Students study in depth the geometric concepts involving points, lines, planes, angles, vectors, parallel lines, triangles, quadrilaterals, polygons, circles, areas, transformations, and solid geometry. In addition, students study and work with the logic involved in deductive proofs. Algebraic connections are emphasized. The required graphing calculator is used as a tool.
Homework: Average of 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator from Algebra I and Math XL

MT 531 ALGEBRA II
Grade: 11
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Algebra I; Geometry; department recommendation
Description: After a review of Algebra I topics, the student solves and graphs absolute value equations and inequalities, linear equations and inequalities in two variables, and quadratic equations over the complex number system; solves systems of linear equations; applies the properties of exponents; factors polynomials; and applies the four basic operations to polynomials, rational expressions, and radical expressions. Continued emphasis is placed on using algebra as an aid to solving real-life problems and appropriately using the required graphing calculator as a problem-solving tool.
Homework: Approximately 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 532 ACCELERATED ALGEBRA II
Grade: 11
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: A grade of "A" or "B" in Algebra I and Geometry; department recommendation
Description: In addition to the topics listed in MT 531, the student is introduced to the six trig functions and solving right triangles. Continued emphasis is placed on abstract concepts and solving real-life problems by appropriately using algebraic skills and the required graphing calculator.
Homework: Approximately 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 538 HONORS PRECALCULUS - A
Grade: 11
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Department recommendation
Description: This course provides the honors math student with the opportunity to begin the study of college-level mathematics through the study of Algebra II, College Algebra and College Trigonometry. Algebraic topics include linear, quadratic, polynomial, rational, radical, exponential, and logarithmic functions, and systems of equations. Concepts are presented visually using the required graphing calculator. Heavy emphasis is placed on solving application problems, both algebraically and graphically.
Homework: 45 to 60 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 539 HONORS ALGEBRA II/TRIGONOMETRY
Grade: 10, 11
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: A grade of "A" or "B" in MT 519 and Geometry; department recommendation
Description: The student solves and graphs linear equations and inequalities in one and two variables; adds, subtracts, multiplies, and divides polynomials, rational expressions, complex numbers, exponential logarithmic functions, and radical expressions; solves quadratic equations over the complex number system; and solves systems of equations in two and three variables. A strong emphasis is placed on real-life problems. Topics in Trigonometry include right triangle and unit circle definitions of the trigonometric functions, graphs, identities, formulas, trigonometric equations, and the Laws of Sines and Cosines.
Homework: Approximately 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 540 MATH IV
Grade: 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Algebra II, department recommendation
Description: This class is designed for students who need additional explanation, practice, and confidence before taking college mathematics. Topics may include fundamental concepts of algebra, geometry, elementary concepts of trigonometry, and personal finance, probability and statistics.
Homework: An average of 30 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 541 ALGEBRA III
Grade: 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Algebra II and department recommendation
Description: Topics may include polynomial operations and functions, powers, roots and radicals, rational functions and operations, logarithms and an introduction to probability and statistics, and personal finance.
Homework: Approximately 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 542 STATISTICS & PROBABILITY
Grade: 11, 12
Credit: ½ Credit
Length: 1 Semester
Prerequisite: Algebra II or teacher recommendation.
Description: This class is designed for students who want to expand their knowledge of mathematics in statistics and probability. Topics include graphic display of data, analysis of data, measures of central tendency, variation, the normal curve, probability, an introduction to hypothesis testing, and other topics as time permits.
Homework: Varies
Special cost or materials: The required graphing calculator and Math XL

MT 552 STATISTICS & PROBABILITY - ONLINE
Grade: 11, 12
Credit: ½ Credit
Length: 1 Semester
Prerequisite: Algebra II or teacher recommendation.
Description: This class is designed for students who want to expand their knowledge of mathematics in statistics and probability. Topics include graphic display of data, analysis of data, measures of central tendency, variation, the normal curve, probability, an introduction to hypothesis testing, and other topics as time permits.
Homework: Varies
Special cost or materials: The required graphing calculator and Math XL

MT 543 ADVANCED TOPICS IN MATH
Grade: 11, 12
Credit: ½ Credit
Length: 1 Semester
Prerequisite: Successful completion of Algebra II or teacher recommendation
Description: This course is designed for students who want to expand their knowledge of mathematics and study mathematics topics more in depth. Topics would include but not be limited to Conics, Sequences/Series, Linear Programming, Polar coordinates, Matrices, and Parametrics.
Homework: 30 to 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 544 PRECALCULUS
Grade: 11, 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: A grade of "B" or better in Algebra II and department recommendation
Description: This course is an introduction to College Algebra and College Trigonometry. Topics include linear, quadratic, polynomial, rational, radical, exponential, logarithmic, and trig functions; conic sections; right triangle and unit circle trigonometry; basic trig identities; and the Laws of Sines and Cosines. Concepts are presented visually using the required graphing calculator. Emphasis is placed on solving application problems, both algebraically and graphically.
Homework: Approximately 45 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 545 CALCULUS
Grade: 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Department recommendation
Description: This course provides the student with the opportunity to begin the study of college-level mathematics. The topics include: review of selected algebra topics, limits, continuity, derivatives and their applications, anti-derivatives, definite integrals and their applications, and the Fundamental Theorem of Calculus. Emphasis is placed on solving application problems, both algebraically and graphically.
Homework: 45 to 60 minutes per class period
Special cost or materials: The required graphing calculator and Math XL

MT 548 HONORS PRECALCULUS
Grade: 11, 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: A grade of "A" or "B" in MT 539 or "A+" in MT 532, and department recommendation
NOTE: Students from MT 532 **will need tutoring** during the summer to be fully prepared for this course. This course is designed for students who may be interested in math- or science-related careers.
Description: This course provides the honors math student with the opportunity to begin the study of college-level mathematics through the study of College Algebra and College Trigonometry. Algebraic topics include linear, quadratic, polynomial, rational, radical, exponential, and logarithmic functions, and systems of equations. Concepts are presented visually using the required graphing calculator. Heavy emphasis is placed on solving application problems, both algebraically and graphically.
College credit is offered through Missouri Baptist University.
Homework: 45 to 60 minutes per class period
Special cost or materials: The required graphing calculator and Math XL; fee for college credit is payable to Missouri Baptist

MT 549 HONORS CALCULUS I
Grade: 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Department recommendation
Description: This course is designed for students with a strong interest in a math or science-related career. Honors Calculus provides the student with the opportunity to begin the study of college-level mathematics. This course will include a substantial review of Precalculus topics. The topics covered include: limits, continuity, derivatives and their applications. If there is time, integration and derivatives of logarithmic, exponential, and other transcendental functions will be covered. Emphasis is placed on solving application problems, both algebraically and graphically.
Homework: 45 to 60 minutes daily
Special cost or materials: The required graphing calculator and Math XL

MT 550 AP/HONORS CALCULUS   AB
Grade: 12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Department recommendation
Description: This course will follow the College Board Advanced Placement Calculus AB syllabus and will prepare students for the Advanced Placement Calculus AB exam. Topics include: concepts, skills and applications of limits, derivatives, and integrals. The course teaches students how to approach calculus problems when they are represented graphically, numerically, analytically and verbally. Students learn how to use technology to solve problems, experiment, interpret results and support conclusions. College credit is offered through St. Louis University.
Homework: 45 to 60 minutes per class period
Special cost or materials: The required graphing calculator and Math XL; fee for college credit is payable to St. Louis University; fee for Advanced Placement Exam if student chooses to take it

MT 559 AP/HONORS STATISTICS
Grade: 11,12
Credit: 1 Credit
Length: 2 Semesters
Prerequisite: Department recommendation
Description: This course extends the concepts and activities of statistics and probability with an emphasis on hypothesis testing, mode line and inferential statistics. College credit is offered through Missouri Baptist University.
Homework: 45 to 60 minutes per class period
Special Cost or materials: The required graphing calculator and Math XL; fee for college credit is payable to Missouri Baptist University; fee for Advanced Placement Exam if student chooses to take it