

Mathematics Courses

Courses

MATH 0108. Pre-Calculus Co-requisite.

Pre-calculus Co-requisite: This is a 1-hour co-requisite course paired with MATH 1508, pre-calculus. It will provide just-in-time support to underprepared students who are enrolled in a college level course.

Department: Mathematics

1 Credit Hour

12 Total Contact Hour

6 Lab Hour

6 Lecture Hour

0 Other Hour

Prerequisite(s): (TSIM score between 336 and 349) OR (2TDM score between 1 and 4 AND 2TSM score between 910 and 949)

MATH 0311. Intermediate Algebra.

This course begins with a review of polynomials. Major topics include rational expressions and equations, radical expressions, rational exponents, complex numbers, quadratic equations, graphing lines, and geometry. The Course is designed as an introduction to MATH 1508 or 1320. Credit hours received for MATH 0311 may count toward removal of provisional status, but may not be used to satisfy any institutional degree requirements. Prerequisite: MATH 0310 with a "C" or better or placement by examination.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0310 w/C* or better) OR (MATH 0311 w/C* or better) OR (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (MATH 2301 w/C or better) OR (BANM score between 2 and 5) OR (ACCL score between 000 and 120 AND BANM score between 2 and 5) OR (BANM score between 2 and 5 AND EPCM score between 000 and 120) OR (BANM score between 2 and 5 AND MAPM score between 613 and 725) OR (BANM score between 2 and 5 AND MATE score between 26 and 48) OR (MATH 0310 w/S* or better) OR (MATH 0311 w/S* or better) OR (BANM score between 2 and 5 AND TAKM score between 2200 and 2821) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (MDM1 score of Y) OR (NCBM M020 w/S* or better) OR (NCBM M021 w/S* or better) OR (TSIM score between 336 and 349) OR (NCBM M031 w/S* or better) OR (TABM score between 5 and 6 AND TSIM score between 310 and 335) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (MATH 1310 w/C or better) OR (2TDM score of 5 AND 2TSM score between 910 and 949) OR (2TDM score between 1 and 4 AND 2TSM score between 910 and 949) AND (ALEK score between 30 and 45)

MATH 0312. Intermediate Algebra Co-Req.

Intermediate Algebra Co-Req This course will provide college-level course specific (MATH 1320 or MATH 1508) foundational content to include: Define, represent, and perform operations on real and complex numbers. Recognize, understand, and analyze features of a function. Recognize and use algebraic properties, concepts, procedures (including factoring), and algorithms to combine, transform, and evaluate absolute value, polynomial, radical, rational expressions. Identify and solve absolute value, polynomial, radical and exponential equations.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (ALEK score between 0 and 32)

MATH 0313. College Algebra CoReq.

This course will provide college-level course specific foundational content to include: Rectangular Coordinates, Graphs and Linear Equations in Two Variables, Analyzing Graphs of Functions, Transformation, Combinations, Inverse and Quadratic Function Models, Polynomial and Synthetic Division, Complex Numbers, Zeros of Polynomial Functions, Rational and Exponential Functions and Graphs, Logarithmic Functions and Graphs, Properties of Logarithms, Exponential and Logarithmic Equations and Models, Linear and Non-Linear Systems of Equations, Linear Systems, Partial Fractions, and Matrices.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (ALEK score between 32 and 45)

MATH 1309. College Algebra.

College Algebra: The content of the entire course covers topics from basic mathematics and develop them using practical and theoretical tools, building applications and making a strong support for Calculus classes. As student passing MATH 1309 College Algebra will be able to work with the concepts of functions (functions in general, exponential and logarithmic functions, polynomial and rational functions), to solve a system of linear and non-linear equations and inequalities, to make basic operations with matrices and apply mathematical induction method. [TCCN MATH 1314]

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0311 w/C* or better) OR (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 3 and 5) OR (MATH 0311 w/S* or better) OR (ACCL score between 051 and 120 AND BANM score between 3 and 5) OR (BANM score between 3 and 5 AND EPCM score between 051 and 120) OR (BANM score between 3 and 5 AND MAPM score between 714 and 725) OR (BANM score between 3 and 5 AND MATE score between 36 and 48) OR (BANM score between 3 and 5 AND TAKM score between 2200 and 2900) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (MDM2 score of Y) OR (MATH 0120 w/C or better AND ACCL score between 035 and 120) OR (MATH 0120 w/C or better AND MAPM score between 613 and 725) OR (MATH 0120 w/C or better AND MATE score between 26 and 48) OR (STAT 1380 w/C or better) OR (NCBM M021 w/S* or better) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (CPMA score of 1) OR (NCBM M011 w/S* or better) OR (MATH 1310 w/C or better) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60) AND (MATH 0311 w/C or better AND TSIM score between 350 and 390)

MATH 1310. Trigonometry and Conics.

Trigonometry and Conics: The content of the entire course covers topics from basic mathematics and develop them using practical and theoretical tools, building applications and making a strong support for Calculus classes. A student passing MATH 1310 Trigonometry and Conics course will be able to work with the concepts of trigonometric functions and their properties, and to apply them in problems related to other branches of Science: Calculus, Algebra, Physics, Chemistry, Biology, Pharmacy, Engineering, Statistics, etc. To work with conics (Parabola, Ellipses, and Hyperbolas), conic rotations, parametric equations. [TCCN MATH 1316]

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1309 w/C or better AND ALEK score between 61 and 75)

MATH 1312. Calculus II.

Calculus II: [TCCN MATH 2314] Continuation of MATH 1411. Topics include special methods of integration and applications; infinite series.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better)

MATH 1319. Math in the Modern World.

Mathematics in the Modern World: An introduction to some of the great ideas of mathematics, including current applications of logic, algebra, geometry, statistics, and other topics. Intended for students whose majors do not require MATH 2301, MATH 1508 or MATH 1411. Prerequisite: An adequate score on a placement examination or MATH 0311.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0311 w/C* or better) OR (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 3 and 5) OR (MATH 0311 w/S* or better) OR (ACCL score between 051 and 120 AND BANM score between 3 and 5) OR (BANM score between 3 and 5 AND EPCM score between 051 and 120) OR (BANM score between 3 and 5 AND MAPM score between 714 and 725) OR (BANM score between 3 and 5 AND MATE score between 36 and 48) OR (BANM score between 3 and 5 AND TAKM score between 2200 and 2900) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (MDM2 score of Y) OR (MATH 0120 w/C or better AND ACCL score between 035 and 120) OR (MATH 0120 w/C or better AND MAPM score between 613 and 725) OR (MATH 0120 w/C or better AND MATE score between 26 and 48) OR (STAT 1380 w/C or better) OR (NCBM M021 w/S* or better) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (CPMA score of 1) OR (NCBM M011 w/S* or better) OR (MATH 1310 w/C or better) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60)

MATH 1320. Math for Social Sciences I.

Mathematics for Social Sciences: [TCCN MATH 1324] Topics of college algebra and geometry including the algebra of sets; linear, quadratic, exponential and logarithmic functions; systems of linear equations and inequalities; matrix algebra; probability and the mathematics of finance.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0311 w/C* or better) OR (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 3 and 5) OR (MATH 0311 w/S* or better) OR (ACCL score between 051 and 120 AND BANM score between 3 and 5) OR (BANM score between 3 and 5 AND EPCM score between 051 and 120) OR (BANM score between 3 and 5 AND MAPM score between 714 and 725) OR (BANM score between 3 and 5 AND MATE score between 36 and 48) OR (BANM score between 3 and 5 AND TAKM score between 2200 and 2900) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (MDM2 score of Y) OR (MATH 0120 w/C or better AND ACCL score between 035 and 120) OR (MATH 0120 w/C or better AND MAPM score between 613 and 725) OR (MATH 0120 w/C or better AND MATE score between 26 and 48) OR (STAT 1380 w/C or better) OR (NCBM M021 w/S* or better) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (CPMA score of 1) OR (NCBM M011 w/S* or better) OR (MATH 1310 w/C or better) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60)

MATH 1332. Contemporary Math (UTPB).**Department:** Mathematics**3 Credit Hours****3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

MATH 1411. Calculus I.

Calculus I: [TCCN MATH 2413] Topics include limits, continuity, differentiation, and integration of functions of a single variable.

Department: Mathematics**4 Credit Hours****4 Total Contact Hours**

0 Lab Hours

4 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1508 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 4 and 5) OR (ACCL score between 081 and 120 AND BANM score between 4 and 5) OR (BANM score between 4 and 5 AND EPCM score between 081 and 120) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (MATH 1310 w/C or better) OR (MTWS score of 1) OR (AAFT score between 276 and 300) OR (ALEK score between 76 and 100)

MATH 1508. Precalculus.

Precalculus: [TCCN MATH 2412] Topics include the algebraic manipulation and graphical representation of the following classes of real functions: linear, polynomial, rational, exponential, logarithmic, and trigonometric. Inverse functions, triangle trigonometry, complex numbers, and polar coordinates are included.

Department: Mathematics**5 Credit Hours****5 Total Contact Hours**

0 Lab Hours

5 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0311 w/C* or better) OR (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 3 and 5) OR (MATH 0311 w/S* or better) OR (ACCL score between 051 and 120 AND BANM score between 3 and 5) OR (BANM score between 3 and 5 AND EPCM score between 051 and 120) OR (BANM score between 3 and 5 AND MAPM score between 714 and 725) OR (BANM score between 3 and 5 AND MATE score between 36 and 48) OR (BANM score between 3 and 5 AND TAKM score between 2200 and 2900) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (MDM2 score of Y) OR (MATH 0120 w/C or better AND ACCL score between 035 and 120) OR (MATH 0120 w/C or better AND MAPM score between 613 and 725) OR (MATH 0120 w/C or better AND MATE score between 26 and 48) OR (STAT 1380 w/C or better) OR (NCBM M021 w/S* or better) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (CPMA score of 1) OR (NCBM M011 w/S* or better) OR (MATH 1310 w/C or better) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60)

MATH 2300. Discrete Mathematics.

Discrete Mathematics: [TCCN MATH 2305] Topics in discrete mathematics including induction, recursion and recurrence relations, sets and relations, combinatorics, and graph theory.

Department: Mathematics**3 Credit Hours****3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better)

MATH 2301. Math for Social Sciences II.

Mathematics for Social Sciences II: [TCCN MATH 1325] Topics include linear programming and an introduction to differential and integral calculus with applications to business and the social sciences.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (MATH 2301 w/C or better) OR (BANM score between 4 and 5) OR (ACCL score between 081 and 120 AND BANM score between 4 and 5) OR (BANM score between 4 and 5 AND EPCM score between 081 and 120) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (MATH 1310 w/C or better)

MATH 2303. Number Concepts.

Number Concepts: This course focuses on numbers and operations for prospective elementary and middle school teachers. Topics include place value, whole numbers, rational numbers, signed numbers, arithmetic operations and algorithms, divisibility tests, multiples and factors. The focus is on conceptual understanding, quantitative reasoning, number sense, multiple representations and ways of thinking, mathematical justification and communication, problem solving, connection making and addressing students' common misconceptions and errors. [TCCN MATH 1350]

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 0311 w/C* or better) OR (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1508 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 3 and 5) OR (MATH 0311 w/S* or better) OR (ACCL score between 051 and 120 AND BANM score between 3 and 5) OR (BANM score between 3 and 5 AND EPCM score between 051 and 120) OR (BANM score between 3 and 5 AND MAPM score between 714 and 725) OR (BANM score between 3 and 5 AND MATE score between 36 and 48) OR (BANM score between 3 and 5 AND TAKM score between 2200 and 2900) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (MDM2 score of Y) OR (MATH 0120 w/C or better AND ACCL score between 035 and 120) OR (MATH 0120 w/C or better AND MAPM score between 613 and 725) OR (MATH 0120 w/C or better AND MATE score between 26 and 48) OR (STAT 1380 w/C or better) OR (NCBM M021 w/S* or better) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (CPMA score of 1) OR (NCBM M011 w/S* or better) OR (MATH 1310 w/C or better) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60)

MATH 2304. Geometry & Measurement.

Geometry and Measurement: This course focuses on geometry and measurement for prospective elementary and middle school teachers. Topics include measurement as a process of units of measurement for quantities such as length, area, volume, angle size, and speed; conversions of units of measurement; properties and formulas for basic geometrical shapes such as polygons, circles, polyhedra, and cones; transformations such as translations, rotations, reflections, and dilations to geometric relationships and constructions using straight edge, compass, and technology. The focus is on spatial reasoning, logical reasoning, and making connections among geometric ideas and measurement, number concepts, and algebra. [TCCN MATH 1351]

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2303 w/C or better)

MATH 2313. Calculus III.

Calculus III: [TCCN MATH 2315] Continuation of MATH 1312. Topics include solid analytic geometry, partial differentiation, and multiple integrals.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better)

MATH 2320. Mathematics of Interest.

Mathematics of Interest: Mathematical foundations - a calculus based development of the theory of interest with applications including annuities bonds, depreciation, sinking funds, amortization schedules, insurance and yield rates. Prerequisite: MATH 2301 or MATH 1312 with a grade of "C" or better.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1312 w/C or better)

MATH 2325. Intro. to Higher Mathematics.

Introduction to Higher Mathematics: An introduction to mathematical problem-solving, experimentation, and proof-writing, and the relationships among all three. The course will be built around a series of in-depth problems from a variety of areas of higher mathematics, especially those not encountered in pre-calculus and calculus courses.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

MATH 2326. Differential Equations.

Differential Equations: [TCCN MATH 2320] An analytical, graphical, and numerical study of first-order equations and systems of equations, modeling, bifurcations, linearization, and Laplace transforms.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1312 w/C or better) OR (MATH 2313 w/C or better)

MATH 3300. History of Mathematics.

History of Mathematics: One of two periods will be covered: 1) Pre-17th century history: Mathematical contributions of various cultures and eras from ancient Babylonia to 16th century Europe are reviewed with special focus on Greek mathematics. The history is viewed through the problems of the various eras studied. 2) Early modern history: A historical account of the genesis of trigonometry, logarithms, analytical geometry, calculus, and the study of functions, with an emphasis on the period of the European scientific revolution (1600-1750). Original works by noted mathematicians will be examined in order to understand the evolution of our current mathematics curriculum. May be repeated for credit when the periods differ.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better)

MATH 3303. Fundmtl Numb Thry Adv Stndpt.

Fundamentals of Number Theory from an Advanced Standpoint: Basic number theory including divisibility and congruencies. Topics in finite mathematics.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1508 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 1310 w/C or better) AND (MATH 3308 w/C or better) AND (MATH 1508 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 4 and 5) OR (ACCL score between 081 and 120 AND BANM score between 4 and 5) OR (BANM score between 4 and 5 AND EPCM score between 081 and 120) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (MATH 1310 w/C or better)

MATH 3304. Fundamentals/Geometry Standpt.

Fundamentals of Geometry from an Advanced Standpoint: An axiomatic treatment of Euclidean geometry including some historical perspectives. Informal treatment of other geometries such as distance and hyperbolic geometry.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2304 w/C or better) OR (MATH 1310 w/C or better) AND (MATH 1508 w/C or better) OR (MATH 1411 w/C or better) OR (MATH 2301 w/C or better) OR (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better) OR (BANM score between 4 and 5) OR (ACCL score between 081 and 120 AND BANM score between 4 and 5) OR (BANM score between 4 and 5 AND EPCM score between 081 and 120) OR (MATH 1411A w/C or better AND MATH 1411B w/C or better AND MATH 1411C w/C or better) OR (MATH 1508A w/C or better AND MATH 1508B w/C or better AND MATH 1508C w/C or better) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (MATH 1310 w/C or better)

MATH 3305. Proportion and Algebra.

Proportion and Algebra: This course focuses on proportional and algebraic reasoning for prospective elementary teachers. Topics include ratios as measures, ratios as multiplicative comparisons, proportions, rates of change, patterns, linear functions and solving linear equations, inequalities and systems. The focus is on identifying relationships between quantities in contextualized problems, using inductive reasoning to identify patterns and express them algebraically making connections among verbal, graphic, numeric and symbolic representations, solving problems, using concrete numeric, tabular, graphic and algebraic methods, and addressing student's misconceptions and errors.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2303 w/C or better)

MATH 3308. Propoirtn & Algebrc Reasong I.

Proportion and Algebraic Reasoning I: This course focuses on proportional and algebraic reasoning for prospective elementary teachers. Topics include ratios as measures, ratios as multiplicative comparisons, proportions, rates of change, patterns, linear functions and solving linear equations, inequalities and systems. The focus is on identifying relationships between quantities in contextualized problems, using inductive reasoning to identify patterns and express them algebraically making connections among verbal, graphic, numeric and symbolic representations, solving problems, using concrete numeric, tabular, graphic and algebraic methods and addressing students' misconceptions and errors.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2303 w/C or better)

MATH 3309. Proportn & Algebrc Reasong II.

This course focuses on concepts in algebra reasoning for prospective middle school teachers. Topics include co- variation of quantities, rates of change in numerical, graphic and symbolic representations, average and instantaneous rates of change, concept of limit, equations and inequalities contrasting linear and exponential functions, arithmetic and geometric patterns, transformations of functions, inverse functions, irrational numbers and complex numbers. The focus is on developing symbol sense and structure sense, using technology to explore functions and to make connections between graphical and symbolic representations and understanding the different uses of letters and equal signs and addressing student's misconceptions and errors. Prerequisite: MATH 3308 with a grade of C or better.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3308 w/C or better)

MATH 3319. Elementary Number Theory.

Elementary Number Theory: An introduction to some of the classical topics in number theory including divisibility, congruences, quadratic reciprocity. Diophantine equations and the distribution of primes.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3325 w/C or better)

MATH 3320. Actuarial Mathematics.

Actuarial Mathematics (3-0) Individual and collective risk models. Survival distributions and life contingency tables. Models for life insurance and multiple life functions. Prerequisite: STAT 3330 with a grade of "C" or better.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (STAT 3330 w/C or better)

MATH 3323. Matrix Algebra.

Matrix Algebra: Systems of linear equations, matrices, determinants, eigenvalues and eigenvectors, diagonalization, vector spaces and linear transformations.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better)

MATH 3325. Principles of Mathematics.

Principles of Mathematics: Logic and proofs, elements of set theory, relations and functions: application of these ideas. Cardinality, groups and their quotients, the field of real numbers.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1312 w/C or better) OR (MATH 2313 w/C or better) OR (MATH 2326 w/C or better)

MATH 3329. Geometry.

Geometry: Axiomatic development of two-and three-dimensional Euclidean geometry. Introduction to non-Euclidean geometry. Use of transformations (reflections, translations, glide-reflections, rotations, dilations) in geometry.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3325 w/C or better)

MATH 3335. Applied Analysis I.

Applied Analysis I: Line and surface integrals, change of variables in multiple integrals, differential and integral vector calculus including Green's theorem, divergence theorem, and Stoke's theorem, and an introduction to complex variables.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2313 w/C or better) OR (MATH 2326 w/C or better)

MATH 3341. Introduction to Analysis.

Introduction to Analysis: A theoretical study of the foundations of calculus of functions of one variable. Includes the real number system, convergence, continuity, differentiability and elementary integration theory.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3325 w/C or better)

MATH 4199. Individ Studies in Mathematic.

Individual Studies in Mathematics: Studies of topics not included in or going beyond the regular course offerings. May be repeated for credit.

Department: Mathematics

1 Credit Hour

1 Total Contact Hour

0 Lab Hour

0 Lecture Hour

1 Other Hour

MATH 4302. Fund Math Concepts Grades 4-8.

Fundamental Mathematics Concepts Taught in Grades 4-8: Mathematics taught in grades 4-8 will be examined from an advanced standpoint. This course is intended to help preservice middle school mathematics teachers make connections between their undergraduate mathematics education and the mathematics they will teach. Topics will be chosen from: number concepts and relationships, fundamental ideas of number theory, discrete mathematics, probability and statistics, numerical literacy, Euclidean and non-Euclidean geometry, transformational geometry, patterns, variables, and functions, multiple representations of functions, mathematical modeling, and concepts of calculus.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3308 w/C or better)

MATH 4303. Fundamental Math/Adv. Standpt.

Fundamental Mathematics From An Advanced Standpoint: Mathematics taught in secondary education will be examined from an advanced standpoint. This course is intended to help preservice secondary mathematics teachers make connections between their undergraduate mathematics education and the mathematics that they will teach. Topics covered in the course include real and complex numbers, functions, algebraic structures and solving equations, natural numbers, induction and recursion, divisibility properties of integers and polynomials, systems of modular arithmetic, and number fields.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of SR

Prerequisite(s): (MATH 3325 w/C or better)

MATH 4325. Modern Algebra.

Modern Algebra: Groups, rings, integral domains, and fields.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3325 w/C or better)

MATH 4326. Linear Algebra.

Linear Algebra (3-0) Vector spaces, linear transformations and matrix representations, canonical forms, eigenvalues, invariant subspaces, orthogonal and unitary transformations, bilinear and quadratic forms. Prerequisite: MATH 3325 with a grade of "C" or better.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3325 w/C or better)

MATH 4329. Numerical Analysis.

Numerical Analysis: This course is concerned with numerical algorithms for solving basic mathematical problems in science and engineering. Topics include, but are not limited to, computer arithmetic, nonlinear root finding algorithms, polynomial interpolation, numerical differentiation and integration, direct and iterative methods for linear systems, and solution of ordinary differential equations. Computer implementation of algorithms will be an essential component of the course as well.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3323 w/C or better) OR (MATH 4326 w/C or better)

MATH 4336. Applied Analysis II.

Applied Analysis II: Series solutions of differential equations. Fourier series and Fourier integrals. Bessel's equation and Bessel functions. Legendre's equation and Legendre polynomials, the Sturm-Liouville problem and eigenfunction expansions, and an introduction to partial differential equations.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 2326 w/C or better)

MATH 4341. Real Analysis.

Real Analysis: Convergence of series of constant terms; convergence of sequences and series of functions; and analysis of functions of several variables to include the differential approximation theorem, the inverse function theorem and the implicit function theorem.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 3341 w/C or better)

MATH 4370. Topics Seminar.

Topics Seminar: Organized lectures in mathematics on topics not represented among the course offerings. May be repeated for credit.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SR

MATH 4399. Indiv Studies in Mathematics.

Individual Studies in Mathematics: Studies of topics not included in or going beyond the regular course offerings. May be repeated for credit.

Department: Mathematics

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

0 Lecture Hours

3 Other Hours